



# The Food and Climate Connection in Health Care Food Service

This document provides an overview on the impact of climate change on health and agriculture and how health care food service can work to reduce its climate footprint. Almost all of these strategies have a variety of co-benefits and include improved nutritional health, support of local food economies and reductions in exposure to toxic pesticides. A climate change framework to health care food service provides an entry for a comprehensive preventive health agenda.

## Impacts on Health

According to the Intergovernmental Panel on Climate Change (2007), “warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level.”<sup>1</sup>

Human-caused climate change threatens global health in many ways. Researchers project that if unmitigated, it will increase malnutrition, expand the range of infectious diseases, threaten clean water supplies, worsen criteria air pollution and its respiratory and cardiovascular effects, cause more heat morbidity and mortality, and damage human life and health via increased and worsened severe weather events.<sup>2</sup> Furthermore, poor urban air quality is projected to worsen, and more intense and frequent heat waves will threaten human and non-human health.<sup>3</sup>

## Impacts on Agriculture

Agriculture has particularly strong ties to climate. Not only does how we farm and what food we produce influence climate change globally, climate change is projected to threaten agriculture and our ability to produce enough food. As a result of climate change, food yields are anticipated to change around the world. However, the places where yields are most likely to decline such as Asia and Africa, have some of the highest population concentrations. Changing climate patterns could create unpredictable threats to agriculture such as wind and water damage from worsened severe weather events; aggravated ozone pollution that will damage crops, and increase pests, crop disease, and invasive species; and more frequent and intense drought.<sup>4</sup>

Domestically, California grows one-sixth of all the produce eaten in the United States.<sup>5</sup> Yet, decreasing Sierra

snowpack will threaten the water supply for irrigated agriculture and it is estimated that by 2100 Californian farmers could lose 25 percent of their water supply.

## The Food and Climate Connection

While most people recognize the connection between direct energy use and climate change, many are surprised to learn about the significant contribution of food and food production to climate change. Our current industrialized agriculture and food system is very energy intensive. It relies on massive inputs of petroleum-based resources in the form of fertilizers and pesticides, and fuel for farm operations and processing. Poor soil and fertilizer management results in the loss of carbon soil and the release of nitrogen dioxide, further contributing to global warming emissions.

As a food type, red meat production is by far the biggest contributor to greenhouse emissions. This is primarily related to the carbon dioxide and nitrogen dioxide emissions associated with the massive amounts of synthetic fertilizers and pesticides used to grow feed crops, primarily corn and soybeans, and the methane gas produced by livestock.



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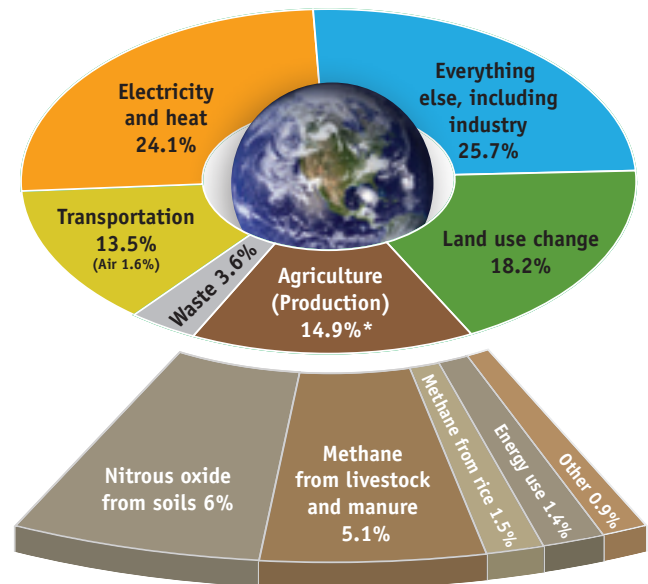
Food transportation's role in driving energy-related emissions is becoming more and more widely recognized. In the U.S., the typical food item now travels from 1,500 to 2,400 miles from farm to plate, and agriculture and food account for up to one third of the goods transported on our roads. In the last few decades we have witnessed an increase in foods transported by air and increase in the use of refrigerated foods.

Food waste that is land-filled results in methane gas production, a potent green house gas. Excess and unnecessary packaging from sources such as bottled water and processed foods are now commonplace and are a waste of resources. Increased reliance on refrigerated foods or the "cold chain" further add to the food climate footprint.

While estimates vary, a recent study estimated the contribu-

## Greenhouse Gas (GHG) Emissions

GHG Emissions (yr 2000), in CO<sub>2</sub> equivalents



\*This figure excludes emissions from manufacturing fertiliser, which other sources estimate at 1% of total greenhouse emissions. It should be noted that food supply-chain emissions from transport, refrigeration, processing, preparation and waste are not highlighted and have been generally included in the other sectors above.

SOURCE: World Resources Institute



tion of the food system as high as one third of all green house gas emissions.<sup>7</sup> By creating menus and serving foods that are produced and distributed in ways both reduce embodied energy in foods and greenhouse gas emissions, hospital foodservice can play an influential role in reducing climate change impacts. Moreover, hospital food service operations can adopt waste minimization and energy efficiency practices that similarly minimize their carbon footprint.

## Not All Climate Change Gases are Equal

While most people concerned with climate change know that it is good to reduce carbon or CO<sub>2</sub> emissions. Yet, CO<sub>2</sub> is not the only green house gas. In fact, there are other green house gases such as methane and nitrous oxide, that are far more potent than CO<sub>2</sub> in their impact on climate change. Fortunately, these are less abundant. Climate change scientists have measured their impact on global warming relative to CO<sub>2</sub> and have come up with some equivalency factors.

Common Name(s)	Chemical Formula	Global Warming Potential <sup>11</sup>	Common Sources
Carbon Dioxide	CO <sub>2</sub>	1	Fossil fuel Combustion
Methane	CH <sub>4</sub>	23 times bigger impact	Ruminant Animals, Organic matter decomposing in Landfills
Nitrous Oxide or Nitrogen Dioxide	NO <sub>2</sub>	298 times bigger impact	Fertilizer Overuse

# Food Service Climate Change Reduction Strategies

## Balanced Menus — Less Meat, Better Meat Menus:

Reducing meat and instituting menus that support plant-centered diets is the most important step hospitals can take to reduce the climate change impacts of their food offerings. Reducing meat served in hospitals not only reduces greenhouse gas emissions associated with livestock production, it offers other health benefits. The regular consumption of meat and high-fat dairy products increases the risk of chronic diseases, especially cardiovascular disease, stroke and some cancers, the leading causes of death in the United States.

Some hospitals have implemented vegetarian menus, and others have significantly reduced their meat offerings. The British National Health Service recently announced it will institute vegetarian menus and reduce meat offerings in all of the nation's public hospitals, in order to reduce its carbon footprint.<sup>8</sup> Numerous hospitals taking a disease prevention approach have already endorsed a voluntary one-day a week meatless menu. Other facilities have reduced their overall purchase of meat and replaced the rest with meat from sustainable sources.

## Buy Local and Seasonal Food:

Hospitals can reduce long-distance and energy intensive transport of foods by procuring local food, developing seasonal menus, and considering transport mode. Food shipped by air, typically highly perishable foods such as berries, has a much higher energy and climate change burden than other modes of transport such as train, ship, or truck. Typically, out of season rapidly perishable foods such as berries have some of the highest climate impacts. Seasonal foods are those foods that are grown locally in season.

## Procure Organic or Sustainable Certified Foods:

According to the USDA-funded National Center for Appropriate Technology, growing research is showing that organic production systems are one of the most climate-friendly systems of food production. Organic systems of production increase soil organic matter levels and eliminate the emissions from the production and transportation and use of synthetic fertilizers.<sup>9</sup> Recent research suggests that organic farming, if used for all food production, could absorb and sequester more than half of all present-day CO<sub>2</sub> emissions every year.<sup>10</sup> Climate benefits accrue from buying food from certified organic producers who commit to these environmental and soil-enhancing standards. Other third party sustainably certified foods include Food Alliance.

## Biobased Serviceware and Waste Prevention:

Assess use of Biobased disposables and identify opportunities to switch to reusables for patients, staff and visitors. Many hospitals now add a nominal charge for their to-go containers. Donate food, where possible.

## Reduce Food Waste and Compost:

A significant amount of food is unnecessarily wasted through overproduction and spoilage. Better planning and tracking can minimize food waste and its associated embodied energy. Composting diverts organic matter from landfills, reducing landfill methane emissions. Therefore, composting food waste from food service is an important waste management component to climate change mitigation. Composting simultaneously creates a recycled product that can be used in place of synthetic fertilizer. By reducing the need for synthetic fertilizer, composting reduces greenhouse gas emissions as synthetic fertilizer production and use are significant contributors.

## Eliminate Bottled Water:

Bottled water is up to 2000 times more energy-intensive than tap water and bottled water that requires long-distance transport is far more energy-intensive than bottled water produced and distributed locally. The annual consumption of bottled water in the U.S. requires the equivalent of between 32 and 54 million barrels of oil—roughly one-third of a percent of total U.S. primary energy consumption. Several U.S. cities and prominent employers have stopped providing bottled water at their facilities, urging tap water as a more energy efficient and generally less wasteful option. Hospitals might incorporate bottled water reduction or elimination decisions into their food-related climate change programs.

## Energy Efficiency and Water Reduction:

Commercial kitchens are one of the highest energy consumers in buildings. Energy Star food service appliances and equipment such as fryers, hot food holding cabinets, commercial solid door refrigerators and freezers, and commercial steam cookers can save cut energy use by up to one half as compared to their conventional counterparts. Water reduction measures, through the use of water saving equipment such as kitchen hoods, steamers, and ware washers should also be considered.

# Hospitals in Action

**Loma Linda University Medical Center** and other hospitals in the Adventist Health System, which includes 37 hospitals in ten states, actively promote a completely vegetarian diet and menu.

**Holy Redeemer Medical Center in suburban Philadelphia** has implemented a composting program. Composted food waste from the hospital supplies two local farms, nourishing the soil. Creating a closed loop system, those farms then supply the hospital kitchen with fresh, local produce.

**USA: Jewish Home Lifecare, New York:** This nonprofit nursing facility has over 1,600 beds, and treats 10,000 patients on three campuses. In 2008, the facility decided to eliminate bottled water, and now uses pitchers of water and reusable glasses in meetings and conferences, thus removing 42,000 plastic bottles from the waste stream and saving over \$10,000 annually.<sup>11</sup>

**Good Shepherd hospital in Hermiston, Oregon** purchases grass-finished, organically pastured beef that is raised and processed within 50 miles of their facility. Increased cost has not been a big issue. Even though some of the products they are purchasing are higher in cost, they have been able to stay within their budget by decreasing their meat inventory and discontinuing specialty meat purchases. They have also lowered the amount of meat served in their cafeteria by both reducing the amount of meat used in formerly meat heavy dishes like chili and casseroles and also by serving meat as a stand alone entrée less often.

## ENDNOTES

1. Intergovernmental Panel on Climate Change (IPCC) (2007) *Fourth Assessment Report, Summary for Policymakers*.
2. IPCC (2007).
3. IPCC (2007).
4. IPCC (2007).
5. See Christian Science Monitor <http://features.csmonitor.com/environment/2009/02/26/drought-hits-california-farmers-hard/>
6. Livestock's long shadow: environmental issues and options. FAO p. 93.
7. Environmental Impact of Products (EIPRO): Analysis of the life cycle environmental impacts related to the total final consumption of the EU25, European Commission Technical Report EUR 22284 EN, May 2006).
8. See <http://www.guardian.co.uk/society/2009/jan/26/hospitals-nhs-meat-carbon>
9. See <http://attra.ncat.org/attra-pub/PDF/carbonsequestration.pdf>
10. See <http://features.csmonitor.com/environment/2009/03/12/new-way-to-farm-boosts-climate-too/>
11. GWP for 100 year time horizon. [http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1\\_Print\\_Ch02.pdf](http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1_Print_Ch02.pdf) p212

## RESOURCES

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American Medical Association – Sustainable Food Resolution Report of the Council on Science and Public Health - Resolution 405. <http://www.ama-assn.org/ama1/pub/upload/mm/475/refcomd.pdf>

Food Climate Research Network <http://www.fcrn.org.uk/>  
The Food Climate Research Network is a UK research council-funded initiative. It works to research & promote ways of achieving absolute reductions in greenhouse gas (GHG) emissions from the whole UK food chain.

Climate Analysis Indicators Tool (CAIT) is an information and analysis tool on global climate change developed by the World Resources Institute. <http://cait.wri.org/>



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