"AMERICAN WASTELAND"

– Jonathan Bloom

A passive methane vent slowly releases methane from a landfill in Chapel Hill, North Carolina.

PHOTO BY JONATHAN BLOOM

chapter 2

Does Food Waste Really Matter? Why You Should Care

There are at least four natural resources that have fueled our industrial food system that are now in steep decline: energy, climate, water, and soil.

—FREDERICK KIRSCHENMANN, FARMER AND DISTINGUISHED FELLOW, LEOPOLD CENTER FOR SUSTAINABLE AGRICULTURE, IOWA STATE UNIVERSITY

Walking up the side of a capped landfill is not an unpleasant activity. Nor should it be, as many old landfill sites are now recreational areas. Just be sure not to dig those tent stakes in too deep.

The original portion of North Carolina's Orange Regional Landfill, called the "north side," is now a 45-acre hill covered in dirt and a layer of green weeds. If you didn't know that a combination of household and commercial waste created the slope, you might call it bucolic. And you probably wouldn't have any clue of its substructure were it not for a series of what look like six-foot-tall candy-canes dotting the flattened top of the hill. These forty-five shafts, however, don't have stripes; they're gray and hollow. Indeed, they're pipes. When the wind blows in your direction, you get a whiff of their purpose: a faint smell of natural gas, just like those scratch-and-sniff warning stickers.

These pipes, also called "passive vents," sit atop holes drilled in every acre and filled with gravel that encourage the landfill gases to escape evenly, instead of building up and causing fires or explosions. The word "passive" is indicative of the county's approach. This portion of the Orange Regional Landfill, in Chapel Hill, North Carolina, closed in 1995, collected plenty of waste during its twenty-three-year lifespan. Yet, it is not large enough to require a mandatory landfill-gas collection system under Environmental Protection Agency (EPA) standards. Orange County, like most landfill owners not required to act, declined to install any kind of expensive gas-collection equipment, instead choosing that ever more popular option: nothing.

Orange County is not some environmentally unaware backwater. It's one of the more progressive places in the South, having adopted curbside recycling in 1989, and it now pays for restaurants, supermarkets, and schools to compost their food scraps through a private company. The town of Chapel Hill amended its zoning laws to green-light the state's first gold-certified building in the Leadership in Energy and Environmental Design (LEED) standard developed by the U.S. Green Building Council. Orange County is home to the forward-thinking University of North Carolina at Chapel Hill and the nearby enclave of Carrboro, the first North Carolina municipality to elect an openly gay mayor. Yet, it's also home to a decent-sized landfill.

To be fair, the county installed a gas-collection system across the street at the active portion of the landfill in 2007 (although that was after allowing that section's greenhouse gases to escape since it opened in 2000). There's even talk of harnessing the gas there to create energy in the near future. And well there should be, because there's plenty of energy-rich food in those hills.

Because Orange County has a high recycling rate and an abundance of restaurants, its landfill has a higher percentage of food waste than the average U.S. landfill. As more recyclables are sent elsewhere, food becomes a larger portion of what's left. Food waste makes up about 25 percent of Orange Regional's contents, said Blair Pollock, solid-waste planner at Orange County Solid Waste Department.[1] The county only subsidizes composting for its larger restaurants, and the county's rate of food waste disposal is only increasing. From 1995 to 2005, food's proportion of both the residential and commercial waste streams doubled.[2] And did I mention that food creates most of the methane in a landfill?

Burying a Problem

The majority of food discarded today ends up in a landfill, with its associated problems. Unfortunately, we seldom think about the effects of our food once it's gone because, well, it's gone. Then, it's somebody else's problem. "There's a misconception among the people. They think that throwing away food or organic materials is environmentally benign," said Jan Lundqvist, author of an influential waste study and a professor of water and environmental studies at Sweden's Linkoping University. "But it depends on how food is being disposed."

Food scraps are the second-largest component of the national waste stream, making up 19 percent of what we dump into landfills.[3] (And the landfill figures don't include the food we shoot down the garbage disposal, which can be up to three times what we put in the trash and has its own consequences.[4]) As anyone with a mailbox can understand, paper is the most common landfill stuffer, despite our significant recycling rate. Food's proportion of the waste stream, or, dare I say, the foodprint, steadily increased as we have recycled other materials at higher and higher rates. By contrast, we barely recycle, or compost, any of our food. As a result, while food is 13 percent of all materials discarded, it's 18 percent of whats dumped into landfills (after factoring in recycling).[5]

And whereas our landfilling of food is on the rise—the rate doubled from 1980 to 2007—our pitiful rate of composting has dropped.[6] From 1995 to 1999, composting, according to the EPA, dipped a bit.[7] Since the turn of the millennium,

this rate has increased slightly, but even with all the focus on increasing awareness of environmental issues, it hasn't exactly taken off. In 2000, we composted 2.5 percent of food discards.[8] In 2008, the rate was a strikingly similar 2.5 percent. Meanwhile, the overall recycling rate has done nothing but increase, climbing by 400 percent from 1989 to 1999.[9]

As previously mentioned, the average American sends more than half a pound of food to the landfill each day.[10] Good riddance and bon voyage, right? Yes, except that we're stashing pockets of greenhouse gases in the ground as little surprises for the next generation. Not all surprises are welcome. Food buried in a landfill today could still be emitting gas twenty years from now.

What does all this mean? In a word: methane.

Methane Mishegas

When solid waste rots in a landfill, it emits methane. And (with apologies to Adam Sandler) if trapping heat in our atmosphere was cool, methane would be Miles Davis.[11] Although methane is nowhere near as common as carbon dioxide, it's much more harmful. Methane has been found to trap heat far more effectively than carbon dioxide, with estimates of its "global warming potential"(GWP) 21 to 25 times more than that of CO_2 over a 100-year period. In other words, sending food to the landfill aids global warming in a major way.

Landfills are the second leading source of human-related methane emissions in the United States.[12] They accounted for 23 percent of all methane emissions in 2007, and, of all materials, food has the highest rate of methane yield.[13] (The largest anthropogenic source is enteric fermentation, or, as you might call it, livestock belching and flatulence.)

True, landfill methane emissions are not our most dire environmental problem; it is the ninth-largest source of greenhouse gas.[14] Still, food waste is an eminently fixable problem. It would be much easier to prevent paper and food from reaching the landfill than to keep vehicles off the road and out of the sky, numbers two and five in impact, respectively. (Increased paper and food recycling and wide-scale adoption of alternative fuels and public transport would be nice compromises, though.)

In 1996, the EPA began to require gas-collection systems at the largest landfills. The most common solution was to install "wells," or long pipes reaching

into the mass of waste, to collect the gases. Today, progressive landfills then convert that captured methane into energy and, sometimes, renewable energy credits (RECs).

Today, more than half of all landfills are still just letting their methane escape. Typically, the reason is that they do not meet the EPA's definition of "large"—which is 2.5 million metric tons.[15] Because the small and medium-sized landfills aren't forced to collect methane, they don't. Those systems are expensive. As a result, 61 percent of all landfill gases generated in 2003 occurred at landfills without gas wells.[16] The Orange Regional Landfill is a prime example. In fact, it's among the worst-case scenarios—a landfill just under the tonnage cutoff point with a high percentage of food waste.

And even landfills that collect greenhouse gases miss a large amount of methane. Published estimates of how much methane escapes range from 25 to 50 percent.[17] Mort Barlaz, who completed the EPA's Waste Reduction Model (WARM) projections, was nice enough to "run a model" for me on emissions from food waste. He found that over the life of a typical landfill, a collection system would miss 38 to 45 percent of the methane being emitted.

Of the landfills that capture methane, slightly more than half simply burn it off. This "flaring" destroys the methane, but it creates the less harmful carbon dioxide in the process. At landfills this kind of emission isn't counted as adding carbon to the environment because it's considered to be preexisting, or biogenic, carbon. The other landfills that capture methane harness it to create energy, but these projects are not cheap. Despite the costs, the number of waste-to-energy plants is increasing, thanks to the allure of renewable energy credits and energy companies' increasingly enticing rates for bulk purchases of renewable energy.

Barlaz told me that, on average, landfills don't start collecting gas until they've been accepting waste for a year or two. The exact percentage of methane escaping during that window of opportunity is unknown, but Barlaz estimated it at 30 percent of the methane a food item will emit during its entire rotting process. In Salinas, California, Crazy Horse Canyon Landfill received great amounts of agricultural excess during its seventy-plus years in operation, but it only received a gas-collection system after it closed, in April 2009.[18]

In addition to aiding global warming, methane stinks. Air pollution can have more than one meaning. Sending more food to the landfill lowers the quality of life for neighbors of the landfill. And as environmental justice advocates will

tell you, landfills are predominantly located in areas with poverty and/or people of color. More than just being unpleasant, these odors can cause or exacerbate respiratory problems such as asthma.

Landfull

Groundwater pollution is another perk of landfilling food. Older landfills are dreadful in this regard, often with no liner between the seeping, toxic ooze and our drinking supply. Newer landfills must have a liner, and most do a decent job of keeping this "leachate" out of groundwater. But nobody is sure how long these liners—often a layer of clay—will last. If they falter, that leachate, caused by rain picking up various substances as it trickles through the trash, will find the holes. Those not employed by waste management companies acknowledge that, one way or another, landfills will eventually leak.[19]

No matter how you slice it, we're sending far too much food to the landfill—and that has dire long- and short-term consequences. In a nation with robotic vacuums and phones that can give us directions, we're essentially using a Stone Age solution—digging a hole in the ground and dumping stuff in it—to handle our waste. The authors of the Natural Resources Defense Council study "Is Landfill Gas Green Energy?" didn't mince words in analyzing the overall effect of landfills: "At best, the Environmental Protection Agency's current landfill regulations merely postpone the inevitable damage landfills will cause," they wrote. "Landfills are simply unsustainable, and therefore so is LFG [landfill gas]."

Americans make up less than 5 percent of the world's population, but we supply almost a quarter of global greenhouse-gas emissions. Making matters worse, we're terrible at "recycling" our food waste. Large-scale composting in America is all too rare. American cities and towns, however, are increasingly realizing the beauty of turning food waste into a useful soil amendment that recirculates nutrients into the growing of new foods (of which, about half will be wasted, but I digress). Some Americans are even learning about worm composting, and in addition, a fraction of Americans still feed scraps to hogs or other animals (such as goats). From bacon to goat's milk to soil-enhancing poop, there are inherent benefits for humankind resulting from these methods. Equally important, composting eliminates methane emissions, as food decomposes aerobically (as long as the pile is turned).

Barring a reduction in food waste or a widespread adoption of composting—reuse doesn't quite apply here—government agencies can alleviate the landfill problem. Municipalities, for example, can examine the progressive process of anaerobic digestion (AD) with an eye toward using it for energy production. That technology, now commonly used to process sewage sludge, harnesses the methane formed when bacteria consume food in a tank. Unlike landfill waste-to-energy systems, AD doesn't allow nearly half of the methane to escape, as the process occurs in an enclosed vessel. AD has been slow to catch on because of its upfront costs, but the technology, common in Europe, is beginning to make inroads domestically. In July 2009, a Bay Area utility company became the first facility in the United States to convert postconsumer food waste to energy through AD. (I'll go into more detail on this technology in Chapter 10.)

Squandered Resources

To fully understand the environmental impact of food waste, we must consider the resources that go into growing, harvesting, processing, transporting, and even cooking our food. Creating the meal on our plates is an energy-sapping, environment-impacting process. Wasting that food squanders our supply of water, depletes our soil's nutrients, and wastes the fossil fuels that are used throughout the food chain.

We grow about twice as much food as we need, but at a heavy cost—American agriculture currently uses about 10 percent of the nation's energy supply.[20] When you lump distribution with production, our food represents 17 percent of total American energy use.[21] We're inefficient in creating our food, with some items real resource hogs. It takes 8 calories of energy to grow every edible calorie of corn, for example,[22] and beef has a whopping 35-to-1 calorie ratio.[23] But no pressure to finish or take home that steak or anything.

Energy is required at all stages of the food chain. We even use energy—via our refrigerators—to keep our food from spoiling. When you add refrigeration to the energy needed to cook, the average American home invests more of its

energy dollars in food than it does in anything besides heating and cooling the home itself (refrigerators use an average of 10,270 kcal of energy per person per day).[24] In 2000, University of Michigan researchers found that it took an average of 7.3 units of fossil-fuel energy to produce, process, transport, and store 1 unit of food energy.[25] Then again, that statistic becomes less surprising when you consider the inputs required at every stage of the food chain. Processing alone can be quite resource intensive. In a true sign of why it's evil, instant coffee requires the most processing energy per kilogram. The bad news for all of us is that chocolate is second (providing another reason, as if you needed one, not to waste it).[26]

Chemical fertilizers also require a great deal of energy to produce, and large-scale commercial farms now use these chemicals almost exclusively (as opposed to organic fertilizers). In fact, synthesizing nitrogen and natural gas into fertilizer accounts for 40 percent of the food system's energy use, making it the largest user of fossil fuels in the food chain.[27] In addition to the energy implications, the liberal application of fertilizer and pesticides depletes the soil and causes the nitrogen runoff responsible for that charming 7,000-square-mile Gulf of Mexico dead zone.[28] It has reached the point where the EPA is considering limiting fertilizer use. These practices are made all the more galling by the fact that humans have had a perfectly feasible soil enhancer for eons—manure. Yet, when you move from multifaceted farms to the monoculture approach, livestock are separated from the crops, and the manure is no longer so conveniently located. Manure is heavier, too, and thus more expensive to transport than chemical fertilizer.

Oil pervades agriculture's energy use. Today's crude approach to farming relies on petroleum at all levels, from making fertilizer to fueling the machines that plant, harvest, and ship our foods. About 400 gallons of oil are expended to feed one person for a year, roughly equivalent to thirty-three car refuelings.[29] Food transport represents more than 20 percent of all U.S. goods shipped.[30] The average food item travels 1,500 miles before it's eaten (or thrown away).[31] And oil shows up in unexpected places—for example, it powers irrigation systems. The USDA has estimated that making our irrigation systems just 10 percent more efficient would save 80 million gallons of diesel, not to mention countless gallons of water.[32]

Down the Drain

Ah yes, water. Let's not forget about that. American agriculture swigs water at an alarming rate. Farm uses, both animal- and crop-related, represent 90 percent of U.S. consumptive water use, a statistic that should put lawn watering guilt in perspective.[33] To reach that amount, we're diverting rivers and pumping water from aquifers faster than they can replenish themselves. In that sense, we're "mining" our water resources in a way that's anything but sustainable.[34] Waste makes it even less so.

While people living and farming in nonarid climates have long taken this resource for granted, they are coming to realize just how valuable it is. Without water, today's agricultural system wouldn't work, as one-third of the world's crops come from irrigated, not rain-fed, systems. As with energy, some of our food choices are less than efficient when it comes to water use. Taking into account the water used to grow the grains fed to cattle, it takes 15 tons of water to produce 2.2 pounds of red meat.[35] To then waste such a large proportion of our food means we're squandering all that water. And that's the main conceit of Jan Lundqvist's research.

In addition to teaching at Sweden's Linkoping University, Lundqvist is a senior scientific adviser at the Stockholm International Water Institute (SIWI). He came to my attention as a lead author of the 2008 SIWI report "Saving Water: From Field to Fork—Curbing Losses and Wastage in the Food Chain." Given its bent, it comes as no surprise that SIWI studies food waste: If you're interested in water conservation, you have to be interested in food waste. "I see them as very much intertwined," said Lundqvist, who told me that he tries to avoid food waste by not purchasing too much at once or blindly following best-by dates. "If we can reduce losses in food, we can cut the amount of water wasted. I hope that our 'luxury habit' of throwing away part of the food we buy will decrease as people learn about the environmental implications."

Soil depletion occurs almost any time you farm. You're using the soil's nutrients, enriched by centuries of decomposing plants, to grow crops. The more you deplete the soil, the more you need fertilizers, and a vicious cycle is set in motion. Soil erosion, exacerbated by row crops, is also part of the cycle. And overgrazing and clearing forests to make way for fields isn't helpful. The United

States is losing soil ten times faster than it can replenish itself. In just the past forty years, 30 percent of the world's arable land has become unfit for farming due to erosion. In short, our full-steam-ahead approach to agriculture, including increased watering and liberal fertilizer use, accelerates topsoil loss.[36]

If we're going to exhaust our soil, we may as well use the material we grow. Trimming waste would slow demand for more farmland, which would in turn reduce soil depletion and prevent erosion. More of our fields would have a chance to lay fallow. Since it takes hundreds of years to create an inch of topsoil, this wouldn't allow the soil levels to regenerate, but it would slow the rate of depletion.

And, as Tristram Stuart pointed out in *Waste*, the increased demand created by our waste launches an unhappy chain of events. Added demand for certain grains, partly for ethanol, increases commodity prices. That prompts opportunists in developing nations to create more arable land. In Brazil, that usually means cutting down rain forests. In Kenya, it meant draining and plowing the Tana River Delta, ruining the habitat of hundreds of species, including fishermen.[37]

And that demand is artificial, stimulated by a policy of maximum production with its accompanying subsidies. U.S. production is not driven by consumption. If it was, we wouldn't create twice as much food as we need. There are gluts in many commodity crops, and, increasingly, in corn. The abundance of inedible corn grown for the purpose of producing ethanol doesn't help the American poor; it has only hogged arable land, helping to spark increased food prices. And when surplus crops are shipped abroad to poorer nations, they undercut the ability of local farmers in those countries to make a living, as they can't compete on price with foods heavily subsidized by Uncle Sam.

In sum, we're wasting resources by growing too much stuff, which causes soil depletion, which in turn requires us to use more fertilizers (and fossil-fuel resources) to maintain yields. Meanwhile, we're speeding up erosion and using up our precious aquifers. There are newer seeds that don't require as much water or fertilizer, but for the most part, the cycle continues. The better we understand this scenario, the less likely we are to squander food.

Some people are trying to do something about our squandered resources. One such guy is Albany, California, restaurateur Aaron French, chef at the

Sunny Side Café. In addition to going to lengths to reduce waste in his restaurant, French also writes a column under the handle The Eco-Chef. When I met French, I asked him why he tries to avoid waste. "It's just the right thing to do," said French. "It really hurts me to see food brought all this way—with all the associated carbon effects—and then discarded. I compost, but even now it's not going directly into that food cycle, not fertilizing crops. All our problems come from not doing what we're supposed to—putting it back in the food cycle."

Yet, one suspects, most chefs aren't quite as eco-conscious. Perhaps they would be if they paid as close attention to the restaurant's stinky, rotting output as they do to their appetizing, fresh input.

Hauling (Is a) Waste

In addition to the landfill emissions—all that methane—we're creating more problems when we transport our waste from state to state. The long-distance hauling spews air pollution in the form of smog-forming compounds, particulate matter, and toxic chemicals. And a full quarter of the trash we bury or burn every year has crossed a state line.[38] Between 1995 and 2005, interstate shipments of trash more than doubled, with Pennsylvania, Michigan, and Virginia becoming key dumping grounds.[39] The Keystone State, in particular, received nearly one-fifth of the total waste shipped between states in 2005.[40] In 2008, Pennsylvania received waste from twenty-four states, including Colorado, Florida, Mississippi, and Nevada.[41] It even received 542 tons of waste from Puerto Rico.

These days, interstate waste is usually shipped by 18-wheelers averaging 4 to 7 miles per gallon. That's pretty abysmal, especially when considering that most of the 169 million tons of waste thrown out could have been recycled.[42] Plus, because food waste is about 70 percent water, this shipping is far less efficient than it could be.[43] Commercial food operations or municipalities could use simple "pulpers," machines that dewater (and lighten) waste, to reduce fuel consumption.

In processing New York City's waste alone, garbage trucks make 250,000 trips throughout the city and the same number of long hauls out of state.[44] Now consider that the average garbage truck, with its frequent stops and idling, gets about 3 miles per gallon.[45] Where I live, in Durham, North Carolina, the city collects the solid waste and ships it to a landfill outside of Lawrenceville,

Virginia, as Durham's own landfill closed in the mid-1990s. It's a 154-mile round trip.

American landfills are filling up or reaching their mandated closing dates, and fewer new ones are being constructed, mostly because it's incredibly difficult to site a new landfill (in short, because of the whole "Not in My Backyard" thing). When they are built, new landfills tend to be farther from population centers (and the waste), requiring more fuel consumption from hauling. The number of U.S. landfills dropped by 78 percent from 1988 to 2007.[46] Yet, as their numbers shrink, their average size increases.[47] America's average landfill is growing, just like our farms. So-called "mega-landfills" dot the economically depressed, Rust Belt states of Pennsylvania, Michigan, Indiana, and Ohio. Communities receive a share of the landfill's revenues, but that cash influx comes at a price. Landfills create decades of work for a few, but they bring centuries of environmental impact for all.

Tightening the Belt

Go outside and turn on your car. Don't ask questions, just do it. Now walk away. You heard me, just leave it running. Set your watch for thirty minutes. When that time is up, you can turn off your car.

While no sane person would let their car idle for a half hour, it burns through the same amount of money that we squander each day in wasted food (based on 2009 gas prices).[48]

Here's an even more evocative image: Just take $2,200 in cash and flush it down the toilet. Better yet, dump it into the garbage disposal—it'd be more fitting. That amount is how much the average family of four loses in wasted food each year.[49] That's based on a 25 percent loss rate, what Garbage Project founder William Rathje gave me as his estimate for the amount of food we throw out or put down the garbage disposal. If, however, you want to be more conservative, then use the more commonly cited 15 percent rate of waste, which would yield about $1,350.[50] In either case, imagine having that cash on hand to invest or spend. At the very least, it would buy a heck of a lot of compost bins!

That lost money, "opportunity cost" to those who survived Econ 101, is one way to view food waste through economics' steely lens. It assigns a value to our

waste, and, if you're like most humans, this can encourage waste avoidance. It's money that could be in your bank account rather than the store's. Grocers, of course, aren't too concerned with this problem, because our discarded food often means we've spent more than we needed to at their store. That's not a dig at grocers—there'll be plenty of time for that in Chapter 7—and I'm not saying grocers deliberately prompt waste, just that they have a direct incentive to help you not avoid it. From that perspective, I tend to view any supermarket promotion with a bushel of skepticism.

Whether you squander $2,200 annually or not—and it's been shown that people tend to underestimate their own profligacy—food waste likely has a significant impact on your budget. Your groceries are "sunk costs." You've spent your money on that food, and now you either use it or squander its value. This inefficient use of goods represents a "market failure": There is no way to resell the items you've already bought. You can't sell off that extra pound of meat that you bought "just to be on the safe side." Food's perishability and our social norms preclude a secondary market for household foods. Craigslist has created many new markets, but this isn't one of them. Even with shelf-stable foods, I haven't heard of any peer-to-peer food selling.

Although we can't sell our unwanted food like a used car, we can each trim thousands of dollars from our household budgets by reducing our food waste. Unfortunately, that will require us to make a few changes in how we shop—and I mean more than remembering to bring those reusable grocery bags into the store. "I think that the obvious task would be to try to convince or stimulate consumers to reduce their wastage," said Lundqvist, the Swedish water expert. "It's in their own economic interest. It doesn't make much sense to pay for a lot of food, carry it home and then throw it away while it's perfectly good to eat. It doesn't make sense."

Yet we do that—not just occasionally, but over and over again. Basic economic principles do not explain our food choices. Why does food prompt such irrational behavior? Our need to eat and food's perishable nature separates it from other goods. But is it really that different?

On a macroeconomic level, our waste throughout the food chain spurs price increases. If less food were wasted, we wouldn't need to grow as much, which would lower input costs. To keep up with the anticipated waste, we've had to grow more crops, depleting the soil at a faster rate, requiring more fertilizer,

pesticides, and irrigation, all of which come at a price, making food more expensive (and doing a number on the environment).

Someone has to pay for these increased costs, and, for the most part, it isn't the farmer, the processor, or the retailer. It's you and me. Consumers are subsidizing the waste throughout the food chain, as it is built into the price of goods, said Dave Swenson, an economist with Iowa State University's Leopold Center for Sustainable Agriculture. "The consumer pays for the commodity they get plus all that got lost along the way, going back to the farmer," said Swenson. "At the point at which it gets too expensive, we stop buying something."

Though few of us are aware of this relationship between waste and prices, it isn't exactly news. A 1977 General Accounting Office report to Congress spelled it out quite clearly: "Consumers ultimately bear the cost of losses in the form of higher prices. This is due to factoring anticipated loss into cost and hence, the pricing structure."[51]

The cost in dollars is not easy to tally. At the retail level, where waste occurs at tens of thousands of supermarket and restaurant locations, the losses quickly add up, but few grocers keep track of waste as a separate entity. It's just buried within the term "shrink," which also includes theft and damage. And at restaurants, waste is just part of the equation for "food cost." As long as enough entrées are sold, kitchen and storage loss can be ignored. One thing is certain, though: The majority of all this preconsumer waste ends up costing us. It's also an unnecessary drain on the economy.

Opportunity cost—that lost chance to pursue an alternative course—means potentially twice the waste. What isn't used and what could have been used are both lost. "If you're doing one thing, it comes at the expense of not doing something else," Swenson said. "What other things could we do with this land and these resources that are now going to grow corn?"

To gain further perspective, I put down my economics textbook and met face-to-face with an actual economist. Fortunately, I'm good friends with the son of a Nobel Laureate in Economics. I've known Amartya Sen, the Thomas W. Lamont University Professor at Harvard's Economics Department and 1998 Nobel Prize winner, since my college days and actually lived for a year with his son Kabir in the family's Harvard Square home. In a chat at a Cambridge restaurant, Sen noted that the resources wasted in growing and transporting today's food such great distances is a more significant problem than the food left on our plates. Later, he flashed his blend of insight and wit in discussing the irrational behavior surrounding food waste. "Buying three shirts and then throwing one away would be regarded as unorthodox behavior. But buying a sandwich and eating half and throwing the other half away is not," Sen said over his salad.

Waste Adds Up

I'd love to put a government-issued or peer-reviewed dollar figure on American food waste. Unfortunately, there hasn't been an all-inclusive look at U.S. food loss since 1997's "Estimating and Addressing America's Food Losses." Produced by the USDA's Economic Research Service (ERS), the study remains the most up-to-date federal review of food waste ever completed. And unfortunately, there isn't likely to be another one anytime soon. Brian Wansink, who headed the USDA's Center for Nutrition Policy and Promotion from 2007 to 2009, told me that studying food waste didn't exactly top the department's to-do list. "I think there are so many bigger fish to fry, I think they don't see it as a big priority now," said Wansink, who has returned to his post as director of the Cornell Food and Brand Lab.

Calculator in hand, I'm prepared to step into that void. Assessing the cost of our waste requires determining how much food we actually have. Using the ERS' food availability data for 2007, the most recent set available, I calculated that we produced 591.4 billion pounds of food (believe it or not, the ERS doesn't have this total already figured for you; you have to tally the different food categories).[52] Using the conservative 27 percent waste estimate from that 1997 USDA report, the United States chain wastes 160 billion pounds of food annually.[53] That's right, we produce almost half a billion pounds of food waste per day.

Given that amount, what's the actual cost? Former University of Arizona anthropology researcher Timothy Jones, who specializes in food waste, estimated it was "at least $100 billion" in a July 2005 article, in which he concluded that we squander around 100 billion pounds. If we go on the rough estimate of $1 per pound of food wasted, which I've heard used elsewhere as well, that would mean a loss of $160 billion dollars a year.

To put that in perspective, that's more than the GDP of Hungary, New Zealand, or Peru.[54] But does that amount really matter? Again, opportunity cost comes into play. What else could our nation put that money toward? For sure,

some waste is unavoidable and it will never be eliminated. But if we dedicated our collective effort to the topic, we could certainly halve it. That $80 billion would be spread among farmers, processors, retailers, restaurants, and, mostly, consumers. And I doubt there would be many complaints from anyone about taking a portion of that pot.

Another way to view food waste is as a real waste of taxpayer money. The 1977 General Accounting Office report's title really says it all: "Food Waste: An Opportunity to Improve Resource Use." Under the heading "Plate Waste Results in Substantial Losses of Federal Funds," the GAO calculated that $267.5 million in federal funds were squandered. The study arrived at that number by applying the USDA's estimate at the time, a 15 percent loss rate, to the $1.8 billion in federal funds used to purchase food for various federal food programs, such as the National School Lunch Program (NSLP), the school breakfast program, summer feeding, commodity grants for elderly feeding, and direct distribution to institutions.

Employing that same method with the 2008 NSLP cost of $9.3 billion, we can estimate that today's plate waste from the program costs $1.4 billion.[55] That's not to say that this entire sum could be recouped, because there will always be some waste. Yet, some estimates of school lunch waste are even greater. Ethan Bergman, a professor of food science and nutrition at Central Washington University, found that elementary-school students waste more than a quarter of their food, which would put NSLP losses at more than $2 billion.

The Triple Bottom Line on Waste

LeanPath sells one product. The Portland, Oregon, company's ValuWaste System is a digital scale with an attached touch screen that wouldn't look out of place in *Star Wars*. The accompanying software helps commercial-kitchen managers recognize and reduce waste. It's intended for schools, hospitals, restaurants, and other institutions, where kitchen staff members are instructed to use the gadget to weigh and then classify the food they're throwing away. The ValuWaste software then provides data about what is being wasted and why, allowing managers to better manage their inventories and improve their bottom line.

ValuWaste provides a decent estimate on the cost of commercial-kitchen waste. Using the system and client feedback, founder and president Andrew Shakman has found that kitchens waste between 4 and 10 percent of all food purchased. In some extreme cases they squander as much as 15 percent. It's important to note that this represents only kitchen, or preconsumer, waste, and does not include the food squandered by diners. This waste—from overproduction, spoilage, expiration, trimmings, burned items, catering leftovers, and contamination—provides a glimpse of the potential savings for large kitchens that trim their food waste.

Several examples from LeanPath clients illustrate how kitchens' ValuWaste analyses translate into dollars and cents. In a *Baltimore Business Journal* article, a spokesperson for Baltimore's Sinai Hospital said the administrators expected to save $100,000 annually by trimming 2 percent of the hospital's food budget.[56] North Memorial HealthCare in Minneapolis saved nearly $50,000 in its first year using the system, 2006.[57] That same year, the hospital halved its preconsumer waste total, and waste and expenses at the institution have continued to decrease since then.

Quite simply: When commercial kitchens waste food before it's served or even cooked, they reduce their profits. And those unused items, as well as whatever consumers discard, merge to form another cost—waste removal. This expense includes both hauling and the landfill gate charge, known as the "tipping fee" or "tip fee," and varies widely from state to state. While one would think that all restaurants would save money by sending food waste to commercial composters, keep in mind that in some states, composting is more expensive than the no-effort, knee-jerk method of throwing everything away. The hauling distances for the two options often determine which is cheaper.

The expense of collecting and disposing of food waste is a significant portion of its real cost. Trimming the total amount of waste created reduces the price of disposal. That's usually the case regardless of whether a business or institution is charged for trash removal by weight or by frequency of removal, or "pulls." Walter Thurnhofer, director of food and nutrition at the University of Washington Medical Center in Seattle, told me that the hospital saw great savings when it first began composting in the spring of 2007. Two and a half years later, the hospital's kitchen staff and restaurant customers were diverting 200 tons of food scraps and biodegradable cups and plates annually to a nearby composting operation, that charged $40 per ton. Compare that to the $135 per ton landfill disposal rate, and you find that the hospital saves almost $20,000 annually.

"It's kind of doing the right thing and saving money at the same time. So it's a win-win," said Thurnhofer, who oversees food and dining at the hospital. "It's a bit of a challenge because you have to educate people on what they can and can't compost. But once people get the hang of it, it's not too bad."

Because food waste is wet, heavy stuff, diverting it can save money. The suburban Boston grocery chain Roche Brothers trimmed 40 percent from its waste bill by diverting organics from their waste.[58] Two of its stores each saved $60,000 in 2003 through avoided disposal costs.[59] When all its factors are considered, food waste is expensive. It would be even more so if American food wasn't historically cheap. That's why, when LeanPath's Shakman pitches a new client, he discusses the environmental benefits, but focuses on the bottom line. "We lead with saving money," said Shakman. "The driver for people, the thing that gets them to actually move and make something happen, is still economic."

While money is a major character in the story of waste—both as a cause and as an effect—there's one more player—ethics. Dave Swenson, the Leopold Center economist, discussed the problem with placing economics above all. "Economics has a lot of trouble reconciling its solutions with 'the way of the ought,'" he said. "In other words, how ought we behave? An economist says we should behave rationally. But a homeless outreach coordinator would have a different response. So there's a fundamental battle there. There are truly limits to what economists can inform us about, because, ultimately, we're human beings who interact on a social basis. Economics is just one tool for interpreting human behavior. It's not *the* tool."

Discarded Morals

Anna Williams, who is eighty-nine, comes to the Seymour Center in Chapel Hill, North Carolina, most days to eat lunch, socialize, play dominoes, and, occasionally, take a class. Recently, she's been enjoying the one on jewelry making. Williams, deferentially referred to as "Miss Anna" by the staff, grew up in rural Chatham County. Like most families in the county, her people farmed. As with most farming families of the Depression era, they didn't have much. And like most African American families in the South, they learned to be self-reliant.

It comes as little surprise, then, that with eleven siblings, the concept of "food waste" was foreign to Williams. "I don't remember much about the Depression," she said. "It was sort of hard for my daddy to feed us all. There were twelve of us. We had it, whatever there was to eat. My daddy farmed. He grew beans, corn, cotton, peas, cane, and other vegetables. You had to eat quickly and get back to the field. No food was wasted, not with twelve of us."

Williams, in jeans, a red floral print blouse, and loafers, recalls learning to can food to "put it up" for the winter. All edibles had a purpose, and waste wasn't in the vocabulary. "We raised hogs and chickens, too. But there were no food scraps left to feed them."

She also raised six children of her own, and can't remember ever having much to save for later. That's why she finds it strange to be confronted with waste so often, especially at the buffet restaurants she occasionally frequents as a treat with her family. When I asked Williams how she felt when she sees food being thrown out today, she responded, "I wish I had some of that food when I was growing up."

One doesn't have to have grown up in a large African American family in the South during the Depression, though, to see a generational gap in attitudes toward food waste. Senior citizens of all income levels and backgrounds remember a time when food was regarded as something to be used completely. The leftovers were used for later meals, chicken bones were boiled to make broth, and even the string from the butcher wraps were saved for later use.

Florene Funk, enjoying a pot roast lunch (of which she didn't leave a crumb) at the same senior center as Williams, was born on Easter Sunday in 1924 and grew up in the working-class town of Mebane, North Carolina, one county over from Williams's girlhood home. Funk's father owned a grocery store and meat market with a chicken coop behind the store. "We also had a backyard cow, but lived a block and a half from town. A vegetable garden, too," said Funk, clad in a white cardigan and pants and wearing dark sunglasses, which she occasionally removed to reveal deep blue eyes. "During the Depression, every night my father would bring home food that didn't sell and mother would can it up. She'd be up late Saturday night doing that."

That experience stayed with her. She employed those values as a homemaker in Greensboro, raising two sons, and remains frugal today, living on her own in

a townhouse near one of her sons. "I don't waste food as an adult. I really don't know why. I wonder if it was because I was a Depression child," said Funk, who remembers Franklin Delano Roosevelt's inauguration speech and hobos begging for food at her back door. "But we certainly didn't go without."

In pondering the topic of food waste over her slice of pecan pie, Funk vacillated between tough love and compassion. At one point, she struck a hard line: "What this country needs is a good Depression. Then people would appreciate the food and not waste it."

In the end, though, empathy seemed to triumph. "I don't think food is distributed fairly," Funk said. "It's too bad there's a lot of hunger and there is a lot of waste in the world. But that's normal—everyone feels that way, don't they?"

Later, when I asked Funk why it mattered whether we wasted food, she contemplated the question as if considering why the sky is blue. With her answer, Funk underscored how ingrained avoiding waste used to be, how squandering food was just not done. "I'm not sure why one cares about it, but you do," she said.

On Ethics

When I began this research, I knew it was wrong to waste food, I just couldn't tell you why. Or at least, I couldn't make a coherent ethical argument against it. After researching the topic for a few years, I was confident that the environmental consequences alone made it immoral to waste food. Building an ethical case against waste without mentioning methane, however, was a bit more difficult. I had a sense that there was more to it than that—that the number of Americans who don't have enough to eat made it unethical to waste food, for example—but I wasn't quite sure how to express that idea. How should the argument be framed? To better understand all the facets of waste's moral implications, I sought (and continue to seek) others' views.

With that motive, I called Paul Root Wolpe, director of the Emory Center for Ethics at Emory University in Atlanta. Wolpe grew up as a rabbi's son outside of Philadelphia. Two of his three brothers followed in their father's footsteps, prompting Wolpe to joke that he's the black sheep of the family—"I just became an ethicist."

Wolpe said that he wouldn't go so far as to classify wasting food as shameful, but that he did think it was "morally wrong." His logic sounded downright rabbinical. "The reason that it's wrong to waste food is because it leads to what the Western religious world calls 'the hardening of the heart,'" Wolpe said. "To treat food cavalierly leads to a lack of appreciation of the importance of food, of the fact that some go without it, of the suffering of animals that the carnivores among us are willing to tolerate to eat our food. It shows such a profound lack of appreciation for all that eating food represents."

I spoke with Tony Campolo, a pastor and a sociology professor at Eastern University in St. Davids, Pennsylvania. Campolo is also an author with a strong social-justice bent, and he advised Bill Clinton on spiritual matters during some of his harder times. Given that skillset, I figured Campolo's insight would pass muster. He called our squandering of food irresponsible, but not surprising. "When you talk about wasting food, you're talking about a society that wastes everything," said Campolo. "It's almost as though food is just one symptom of the overall problem."

Certainly, many of the ethical implications surrounding food waste stem from the idea that millions of Americans—and a billion people around the world—don't get enough to eat. Some even starve. Alice Waters is someone who appreciates and even reveres food. She not only started Chez Panisse, the influential Berkeley, California, eatery, she's a founding foodie of America's locavore culinary scene. She also established the Edible Schoolyard program at a local middle school to better connect kids with their food. When I asked Waters for her take on the juxtaposition of waste and hunger, she told me, "It's shameful to be wasteful around food when someone else is hungry. And I think we all know it."

When we waste food that is nourishing and possibly even tasty, I'd call that a shame. But is it shameful? That question leads us to one of the dominant associations we have with food waste—the often-maligned dinner-table commandment: "Clean your plate, there are children starving in (pick a country)." That notion is a thorny one. It invites guilt to the dinner table, which is never a good thing. It also implies a linear relationship between the two ideas, when it's anything but. The notion that you could somehow help hungry people far away with what's on your plate makes no sense. Getting that food to a developing

nation is, to put it nicely, logistically challenged. Amartya Sen called it "an unrobust thought" and advised against overeating in a misguided attempt to help others.

Yet, there's something to associating unfinished food with hunger, morally speaking. The essence of "clean your plate" remains meaningful—value your food. As does the secondary message—Don't forget that some people don't get enough to eat. The problem comes when the two are linked too closely. Perhaps separating these messages is the answer; we could all stand to be reminded to respect our food and think of those less fortunate.

That's not to condone the outright wasting of food (rest assured!), but to hopefully be more thoughtful with it. Being thankful for our food, and possibly making donations of time or money to a charity, is a more useful approach than feeling guilty or mythically linking plate waste with those in need. As Campolo told me, we should be aware of the suffering of others, but also act in our own lives. "It's not a simple problem. We can't just ship our excess food over to India," Campolo said. "But I think, symbolically, being more responsible with our food should start in our own homes."

Wolpe agreed that even though our dinners may not feed those in need, our behavior still matters. "The reverence for our food—even if you have plenty of it—is important because it's a constant reminder of the preciousness of food," Wolpe said. "Maybe the result of that is that we'll write a bigger check. That Oxfam would have more money to feed the hungry. Not only is that a more effective way of handling hunger, it's also truer."

When I spoke with Ron Sider, another Eastern University professor and theologian, he went a few steps beyond merely advocating respect for our food supply. Sider is director of the Sider Center of Ministry and Public Policy, president of the center's Evangelicals for Social Action, and author of a book entitled *Rich Christians in an Age of Hunger*. Citing widespread starvation, poverty, and death around the world from preventable diseases, he came down hard on waste. "I think it's sinful. It's immoral to throw away and waste so much of the food we grow when other people are dying of starvation," Sider said.

Sin. That word brings us to an important territory for understanding the ethics of waste: religion. For Anna Williams, wasting food is wrong because it goes against her faith. She told me that the topic arises now and again at her church, Mt. Zion Baptist. "It comes up that it's a sin to throw away food. It's talked about in Sunday school and the preacher talks about it in his sermons. He tells 'em about how they should take care of food, and God created it for them, and if you read your Bible, it'll tell you about it," Williams said.

Getting Biblical with It

What, then, does that Bible say? There are many passages in the Old Testament, informing both Judaism and Christianity, that espouse an appreciation for making use of what remains after the harvest. They appear primarily as part of the discussion of gleaning, which forms part of the law of Moses that follows the giving of the Ten Commandments. Deuteronomy 24:21 (NIV) reads, "When you harvest the grapes in your vineyard, do not go over the vines again. Leave what remains for the alien, the fatherless and the widow."

In Leviticus 23:22 (NIV) the Lord issues similar, ahem, advice to farmers: "When you reap the harvest of your land, do not reap to the very edges of your field or gather the gleanings of your harvest. Leave them for the poor and the alien. I am the LORD your God."

In addition to teaching charity, these selections imply that we shouldn't squander our food, because others would love to have it.

Brother Jerry Smith, a sixty-one-year-old Franciscan monk and the executive director of the Capuchin Soup Kitchen in Detroit, agrees with that take. I asked him for the Christian view of food waste. He warmed up to the topic by talking about hunger. "The Scriptures are all about food and taking care of each other and feeding the hungry," said Smith, who has worked to alleviate hunger in both Detroit and Central America, where he was a missionary and a Peace Corps volunteer. "But it's also all about justice. In a world of scarcity, when one group wastes what could be the essence of life to another population, that's just really outrageous. There are lots of places in the Scriptures that talk about justice. That's not a huge leap to say it's wrong that one group can waste so badly, when another doesn't have what they need."

Sider believes that wasting food goes against Judeo-Christian teaching because it squanders our earthly gifts. "Christians and Jews certainly believe that this material world is a good gift from the Creator. God has given us this material

world, and when we use the earth in wasteful ways, then we're not respecting the Creator. So it's important for us to respect the Creator by in fact not wasting the material world," Sider said.

More specific to Christianity, a notable New Testament passage from the Gospel of John teaches that Jesus could stretch food with the best of them. With only five small loaves and two little fish, Jesus fed more than 5,000 followers and *still* had leftovers. Most importantly, he told his supporters to save the remains. "When they had all had enough to eat, Jesus said to his disciples, 'Gather the pieces that are left over. Let nothing be wasted'" (John 6:12 [NIV]).

Sider finds further support for his argument against waste from a central tenet of Christianity—Jesus taking a human form. "I think the most profound Christian affirmation of the goodness of the material world is the incarnation," said Sider. "That God became flesh and actually took on a human body. That's an amazing affirmation of the goodness of the material world. It strengthens any kind of argument that we shouldn't waste the material world."

Sider also told me that he finds food waste wrong from both an environmental and a social-justice standpoint. "When some of us overeat and harm our bodies by being too fat and also waste food, we're doing it at a time when some are desperately hungry," said Sider, seventy. "The primary reason we should not waste is to spend less money on food we throw away so we have more money to share with poor people."

In Judaism, the prohibition against wasting or unnecessarily destroying anything of value comes from the Talmudic concept of *bal tashchit*, which translates directly to "thou shalt not destroy," but is sometimes interpreted as "thou shalt not waste."[60] This idea, which forms the basis of Jewish environmentalism, stems from Deuteronomy 20:19–20 (NIV): "When you lay siege to a city for a long time, fighting against it to capture it, do not destroy [*lo tashchit*] its trees by putting an ax to them, because you can eat their fruit. Do not cut them down. Are the trees of the field people, that you should besiege them? However, you may cut down trees that you know are not fruit trees and use them to build siege works until the city at war with you falls."

So the next time you're laying siege to a city, don't fell fruit-bearing trees, because that wouldn't be right. Invading armies in those times apparently regularly destroyed orchards, vineyards, and fields to demoralize their enemies, but God forbade it and took the time to explain that to Moses. In pondering that passage,

Talmudic scholars divined a general prohibition against waste. To them, the commandment of *bal tashchit* was serious business. To wit, the Talmudic version of the "Clean Your Plate" edict was that "Jews should be taught when very young that it is a sin to waste even small amounts of food."[61]

Avoiding waste in general is the way to respect the earth and God's creation, wrote Rabbi Samson Raphael Hirsch, a nineteenth-century German. "Regard things as God's property and use them with a sense of responsibility for wise human purposes. Destroy nothing! Waste nothing!"[62]

The word "destroy" arises frequently in discussions of *bal tashchit*, but I hadn't considered that verb in the context of food waste until reading the following excerpt from the Jewish laws related to marriage and family life: "Whoever breaks vessels or tears garments, or destroys a building, or clogs up a fountain, or destroys food violates the prohibition of bal tash'chit."[63]

Just as avoiding food destruction is one way to honor God's creations, so is pursuing thrift. Rabbi Hirsch expanded on the concept of demolition: "Destruction does not only mean making something purposely unfit for its designated use; it also means trying to obtain a certain aim by making use of more things and more valuable things when fewer and less valuable ones would suffice."[64]

While the idea of *bal tashchit* has long informed a general sense of stewardship over the earth, it became a rallying point for Jewish environmentalists in the 1970s. More recently, in response to those who would wonder if environmentalism is worth the trouble, the Jewish Nature Center wrote on its website: "We practice bal tashchit for one reason—because it is the right way to live. And what each of us must learn is that we change the world by changing ourselves. Then we let the change spread outward—to our children, our loved ones, our friends, our business partners and co-workers—and so on and so on until one day the unimaginable becomes reality."[65]

I couldn't write a more cogent argument for why you should care about food waste and why one person's actions make a difference. On the latter point, imagine what would happen if everyone did his or her best not to waste food. The sentiment, as the Jewish Nature Center pointed out, would spread. Unfortunately, the opposite also occurs: One person wasting leads to another doing the same. One individual or family influences another, and pretty soon a community becomes more profligate. Before long, this behavior influences an entire culture.

Islam's take on food waste is even clearer, if that's possible. No scholar is needed to interpret this line of the Koran: "O Children of Adam! Wear your beautiful apparel at every time and place of prayer: eat and drink: But waste not by excess, for Allah loveth not the wasters."[66]

Another passage from the Koran repeats that last line, albeit with more detail preceding it on food cultivation. "It is He Who produceth gardens, with trellises and without, and dates, and tilth with produce of all kinds, and olives and pomegranates, similar (in kind) and different (in variety): eat of their fruit in their season, but render the dues that are proper on the day that the harvest is gathered. But waste not by excess: for Allah loveth not the wasters."[67]

That passage brings up an important point, which must be stressed: Avoiding waste doesn't mean we can't enjoy the fruits of the earth. "I think it's important when we talk about wasting food not to give the impression that the answer is asceticism," Sider said. "The Christian view is that the world is good, we are called to delight in it, to dance, rejoice and celebrate in the material world. It's not that we shouldn't have a Thanksgiving feast. That's an appropriate way of celebrating the material world. But what's wrong is throwing away a third of that Thanksgiving feast. You can use that for the next week."

In the idea of karma, common to Hinduism, Buddhism, and several other Eastern religions, wasting food is a real no-no. In Hinduism, specifically, all food is to be revered because it is a manifestation of the Supreme Being. There are shunned foods, but in general, it is treated as sacred.[68] Sanskrit scripture says, "*annam parabrahma swaroopam*," or roughly, "Food is a manifestation of the Supreme Being."[69] Because food is a gift from God, it should be treated with great respect. Buddhism, at least the version of it found in Japan, informs the Okinawan cultural habit of *hara hachi bu*. The idea is that you eat until you're 80 percent full (it translates literally to "stomach 80 percent"), and avoid taking too much food.[70] In addition to preventing overconsumption, the habit suggests a healthy respect for food and an aversion to waste.

A Final Thought

The ethicist Wolpe raised his two children to eat kosher, in the Jewish tradition. Yet, he had other motives, too. "There's a religious reason to it, but more than that, it gives them a reverence for food. It changes your approach to food. You have to eat more intentionally. If you didn't keep kosher, eating can be done with much less thought," said Wolpe, who noted that keeping kosher was just one vehicle for teaching children to think about what they eat.

Wolpe also emphasized that reducing waste was important, but shouldn't be taken to the extreme. "If you have three peas left on your plate, you haven't committed some egregious moral transgression," he said. "No person can buy exactly and only what they need. There's always going to be some kind of waste."

That thought contains undeniable common sense, but also a risk, which Wolpe recognized. By that logic, we could conclude that we don't need to worry about our household food waste because it occurs on such a small scale—that we're off the hook, ethically speaking, for our waste. With so many environmental messages floating around, we already face myriad green pressures. We have to get the right lightbulbs, use eco-friendly cleaning products, trim our gas usage, use cloth shopping bags, and more. So-called green fatigue often occurs. When it does, it's tempting to ask: "Why should I bother?" While I don't believe we should feel guilty for wasting food, I do think we should strive to avoid it as much as is humanly possible. We can be mindful of all that went into growing, shipping, and preparing our food and remember that there are those who go without enough to eat. Then, we should act accordingly.