

Other Environmental Impacts documentation for the ISCFC and I2SEA International Student Carbon Footprint Calculator

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CO2 and other greenhouse gas emissions are not the only environmental impacts of our daily activities; here we outline some of these other environmental impacts relevant to each question in the calculator. Use the links in the index at the top to skip to any question.

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TRANSPORT SECTION

******* Q1: Out with friends *******

Depending on the specific type of public transit used, other non-CO₂ emissions could be impacted. For example, older diesel bus coaches running dirtier diesel formulations may cause increases in carcinogenic particulates when compared to modern passenger vehicles.

On the other hand, traveling by electric trains might likewise promote substantially reduced non-CO₂ emissions when compared to passenger vehicles, depending on the source of electricity used for those trains (e.g. coal vs. nuclear vs. hydroelectric).

Nevertheless, we at I2SEA believe that one 'votes' for improved public transit every time one steps on a bus or train, which would hasten a future of cleaner, more efficient, and more convenient

public transit options in your community.

***** **Q2: After school** *****

Depending on the specific type of public transit used, other non-CO₂ emissions could be impacted. For example, older diesel bus coaches running dirtier diesel formulations may cause increases in carcinogenic particulates when compared to modern passenger vehicles.

On the other hand, traveling by electric trains might likewise promote substantially reduced non-CO₂ emissions (including sulfur dioxides and nitrogen oxides) when compared to passenger vehicles, depending on the source of electricity used for those trains (e.g. coal vs. nuclear vs. hydroelectric). Biodiesel also results in reduced non-CO₂ emissions.

Nevertheless, we at I2SEA believe that one 'votes' for improved public transit every time one steps on a bus or train, which would hasten a future of cleaner, more efficient, and more convenient public transit options in your community.

***** **Q3: Getting to school** *****

Public transit and biodiesel use can also lead to reductions in non-CO₂ emissions, including sulfur dioxides and nitrogen oxides, as described previously.

Obviously, the cleanest forms of transportation are self powered modes: walking, bicycling, skateboarding. Doing so also improves personal health through exercise.

***** **Q4: Air travel** *****

Airline travel has many other associated environmental effects aside from CO₂ emissions:

- Contrails (water vapor condensation 'clouds' forming behind planes in flight) are predicted to have as strong an effect on global warming as greenhouse gas emissions, and can vary regionally (Miake-Lye et al. *Aerospace America*, 2000).
- Airplanes release substantial amounts of ozone (smog), sulfur dioxide and particulates, all of which are harmful pollutants.
- Airports require substantial land use that could otherwise be used for farms or preserved habitat.
- Residents living near airports have been shown to be at greater risk of coronary artery disease from the noise, according to a 2000 study from the Germany environment department.

***** **Q5: Other travel** *****

Public transit and biodiesel use can also lead to reductions in non-CO₂ emissions, including sulfur dioxides and nitrogen oxides, as described previously.

Obviously, the cleanest forms of transportation are self powered modes: walking, bicycling, skateboarding. Doing so also improves personal health through exercise.

HOME SECTION

***** Q6: Family (household) size *****

In general, sharing your housing with others reduces not only your carbon footprint, but also other environmental impacts, such as construction material use and the amount of land use per person.

***** Q7: Home type *****

In addition to decreased energy usage, living in shared housing and apartment buildings results in reduced environmental impact through, for example, reduced need for construction materials and lower land use.

***** Q8: Heating months *****

Heating your home can have other environmental impacts aside from greenhouse gas emissions, depending on the source of your heat.

For example, coal extraction releases mercury into the environment, can poison local waterways, and often involves severe habitat disturbance. As the tragic oil spill in the Gulf of Mexico in April 2010 has shown, fossil fuel extraction can lead to extreme environmental damage in the event of an accident. Wood releases carcinogenic particulates into the air. Nuclear power has concomitant problems of storage of dangerous waste. Hydroelectric dams can alter natural river flows, interrupting salmon and other fish migration patterns.

These are only a subset of the potential environmental impacts of home heating energy sources on the broader environment.

***** Q9: Home heating method *****

Heating your home can have other environmental impacts aside from greenhouse gas emissions, depending on the source of your heat.

For example, coal extraction releases mercury into the environment, can poison local waterways, and often involves severe habitat disturbance. As the tragic oil spill in the Gulf of Mexico in April 2010 has shown, fossil fuel extraction can lead to extreme environmental damage in the event of an accident. Wood releases carcinogenic particulates into the air. Nuclear power has concomitant problems of storage of dangerous waste. Hydroelectric dams can alter natural river flows, interrupting salmon and other fish migration patterns.

These are only a subset of the potential environmental impacts of home heating energy sources on the broader environment.

***** **Q10: How much room heat?** *****

Heating your home can have other environmental impacts aside from greenhouse gas emissions, depending on the source of your heat.

For example, coal extraction releases mercury into the environment, can poison local waterways, and often involves severe habitat disturbance. As the tragic oil spill in the Gulf of Mexico in April 2010 has shown, fossil fuel extraction can lead to extreme environmental damage in the event of an accident. Wood releases carcinogenic particulates into the air. Nuclear power has concomitant problems of storage of dangerous waste. Hydroelectric dams can alter natural river flows, interrupting salmon and other fish migration patterns.

These are only a subset of the potential environmental impacts of home heating energy sources on the broader environment.

***** **Q11: Room heating method** *****

Heating your home can have other environmental impacts aside from greenhouse gas emissions, depending on the source of your heat.

For example, coal extraction releases mercury into the environment, can poison local waterways, and often involves severe habitat disturbance. As the tragic oil spill in the Gulf of Mexico in April 2010 has shown, fossil fuel extraction can lead to extreme environmental damage in the event of an accident. Wood releases carcinogenic particulates into the air. Nuclear power has concomitant problems of storage of dangerous waste. Hydroelectric dams can alter natural river flows, interrupting salmon and other fish migration patterns.

These are only a subset of the potential environmental impacts of home heating energy sources on the broader environment.

***** **Q12: Cooling months** *****

Cooling your home can have other environmental impacts aside from greenhouse gas emissions, depending on your local source of electricity.

For example, coal extraction releases mercury into the environment, can poison local waterways, and often involves severe habitat disturbance. As the tragic oil spill in the Gulf of Mexico in April 2010 has shown, fossil fuel extraction can lead to extreme environmental damage in the event of an accident. Nuclear power has concomitant problems of storage of dangerous waste. Hydroelectric dams can alter natural river flows, interrupting salmon and other fish migration patterns.

These are only a subset of the potential environmental impacts of electricity sources on the broader environment.

***** **Q13: Home cooling method** *****

In the 1970's, it was discovered that chlorofluorocarbons (CFCs), the refrigerants used in most air conditioners worldwide, were responsible for a demonstrable thinning of the ozone layer in the

earth's stratosphere. Stratospheric ozone reflects harmful ultraviolet-B (UVB) irradiation away from the earth; the thinning of the ozone layer, thus, exposed humans (especially those living in the southern part of the southern hemisphere) and other organisms to excess UV irradiation and increased cancer rates among other problems.

The global response to this discovery was impressive: the 'Montreal Protocol' on phasing out CFCs (1987) has now been adopted by 196 countries; this global effort has succeeded in stopping the further thinning of the ozone layer, and provides hope that we as a planet can similarly act to substantially & swiftly reduce CO₂ emissions.

Unfortunately, hydrochlorofluorocarbons (HCFCs) and hydrofluorocarbons (HFCs), the transitional replacements for CFCs under the Montreal Protocol, also contribute to global warming - they are thought to be thousands of times more potent greenhouse gases on a molecule-for-molecule basis compared to CO₂ (US Energy Information Agency).

Other environmental impacts of cooling relate to electricity used to run cooling systems, as described in [Q12](#), above.

***** **Q14: Room fans** *****

Electricity use in your home can have other environmental impacts aside from greenhouse gas emissions, depending on the source of your heat.

For example, coal extraction releases mercury into the environment, can poison local waterways, and often involves severe habitat disturbance. As the tragic oil spill in the Gulf of Mexico in April 2010 has shown, fossil fuel extraction can lead to extreme environmental damage in the event of an accident. Nuclear power has concomitant problems of storage of dangerous waste. Hydroelectric dams can alter natural river flows, interrupting salmon and other fish migration patterns.

These are only a subset of the potential environmental impacts of electricity use on the broader environment.

***** **Q15: Light bulbs** *****

Compact fluorescent lightbulbs (CFL) are both more energy efficient (i.e. lower wattage per lumen [light output units]) and longer-lasting than the typical incandescent light bulb.

However, CFL bulbs (unlike incandescent bulbs) contain mercury, a potent neurotoxin in extremely low doses. So unless they are disposed of properly, CFL use can lead to release of mercury into the air and water, and thus negatively impact humans and other organisms.

For more info, see <http://www.efi.org/factoids/mercury.html> and links therein.

The advent of LED lighting has allowed for reduced emissions without the associated issues of mercury contamination, though LED bulbs are often comparatively expensive.

Also, any electricity use in your home can have other environmental impacts aside from greenhouse

gas emissions, depending on the source of your heat.

For example, coal extraction releases mercury into the environment, can poison local waterways, and often involves severe habitat disturbance. As the tragic oil spill in the Gulf of Mexico in April 2010 has shown, fossil fuel extraction can lead to extreme environmental damage in the event of an accident. Nuclear power has concomitant problems of storage of dangerous waste. Hydroelectric dams can alter natural river flows, interrupting salmon and other fish migration patterns.

These are only a subset of the potential environmental impacts of electricity use on the broader environment.

***** **Q16: Turning off lights** *****

Fluorescent and compact fluorescent bulbs (CFL) are more energy efficient (i.e. lower wattage per lumen [light output units]) and longer-lasting than typical incandescent lights.

However, fluorescent bulbs (unlike incandescent bulbs) contain mercury, a potent neurotoxin in extremely low doses. So unless they are disposed of properly, their use can lead to release of mercury into the air and water, and thus negatively impact humans and other organisms. Leaving on any light bulbs will lessen their life, thus -for fluorescent bulbs- increasing the use and potential environmental release of mercury.

For more info, see <http://www.efi.org/factoids/mercury.html> and links therein.

The advent of LED lighting has allowed for reduced emissions without the associated issues of mercury contamination, though LED bulbs are often comparatively expensive.

Also, any electricity use in your home and elsewhere can have other environmental impacts aside from greenhouse gas emissions, depending on the source of your electricity.

For example, coal extraction releases mercury into the environment, can poison local waterways, and often involves severe habitat disturbance. As the tragic oil spill in the Gulf of Mexico (April 2010) has shown, fossil fuel extraction can lead to extreme environmental damage in the event of an accident. Nuclear power has concomitant problems of storage of dangerous waste. Hydroelectric dams can alter natural river flows, interrupting salmon and other fish migration patterns.

These are only a subset of the potential environmental impacts of electricity use on the broader environment.

***** **Q17: Brushing teeth** *****

The environmental impact of excess water use goes well beyond the associated carbon footprint of water use.

Water is not an unlimited resource; it's availability has great seasonal and geographic variation. Furthermore, the global water cycle is such that there is a finite supply of water on this planet, most of which is in the form of undrinkable salt water or in difficult or impossible to access areas. Water

needs for humans include not only home uses like cooking, drinking and washing, but also for agriculture. Furthermore, humans are not the only organisms on the planet that depend on water. Overuse of water in your home can lead to over-draining local riverways, which can impact aquatic organisms (like salmon) and the animals that feed on them (like bears).

A tragic instance of this impact on salmon was seen in the Klamath River (near the California/Oregon border) in 2002, where tens of thousands of fish died as a result of low water flows caused by overuse of river water for agriculture.

Note also that models suggest that rainfall patterns and water availability will change as a result of climate change: some areas will be wetter, some will be drier. Thus, issues of water use and availability are likely to become even more severe in the future, as recent (2015) analyses of the water crisis in California have predicted..

***** **Q18: Water heating method** *****

Water heating can have other environmental impacts aside from greenhouse gas emissions, depending on how you heat your water and/or your local source of electricity.

For example, as the tragic oil spill in the Gulf of Mexico (April 2010) has shown, fossil fuel extraction can lead to extreme environmental damage in the event of an accident. Coal extraction releases mercury into the environment, can poison local waterways, and often involves severe habitat disturbance. Nuclear power has concomitant problems of storage of dangerous waste. Hydroelectric dams can alter natural river flows, interrupting salmon and other fish migration patterns.

These are only a subset of the potential environmental impacts of water heating sources on the broader environment.

See [Q17](#) (above) for more info on environmental issues related to water use.

***** **Q19: Showers (baths)** *****

Water heating can have other environmental impacts aside from greenhouse gas emissions, depending on how you heat your water and/or your local source of electricity.

For example, as the tragic oil spill in the Gulf of Mexico (April 2010) has shown, fossil fuel extraction can lead to extreme environmental damage in the event of an accident. Coal extraction releases mercury into the environment, can poison local waterways, and often involves severe habitat disturbance. Nuclear power has concomitant problems of storage of dangerous waste. Hydroelectric dams can alter natural river flows, interrupting salmon and other fish migration patterns.

These are only a subset of the potential environmental impacts of water heating sources on the broader environment.

See [Q17](#) (above) for more info on environmental issues related to water use.

***** **Q20: Toilet use** *****

The environmental impact of excess water use goes well beyond the associated carbon footprint of water use.

Water is not an unlimited resource; it's availability has great seasonal and geographic variation. Furthermore, the global water cycle is such that there is a finite supply of water on this planet, most of which is in the form of undrinkable salt water or in difficult or impossible to access areas. Water needs for humans include not only home uses like cooking, drinking and washing, but also for agriculture. Furthermore, humans are not the only organisms on the planet that depend on water. Overuse of water in your home can lead to over-draining local riverways, which can impact aquatic organisms (like salmon) and the animals that feed on them (like bears).

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Note also that models suggest that rainfall patterns and water availability will change as a result of climate change: some areas will be wetter, some will be drier. Thus, issues of water use and availability are likely to become even more severe in the future, as recent (2015) analyses of the water crisis in California have predicted.

***** **Q21: Washing dishes** *****

Water heating can have other environmental impacts aside from greenhouse gas emissions, depending on how you heat your water and/or your local source of electricity.

For example, as the tragic oil spill in the Gulf of Mexico (April 2010) has shown, fossil fuel extraction can lead to extreme environmental damage in the event of an accident. Coal extraction releases mercury into the environment, can poison local waterways, and often involves severe habitat disturbance. Nuclear power has concomitant problems of storage of dangerous waste. Hydroelectric dams can alter natural river flows, interrupting salmon and other fish migration patterns.

These are only a subset of the potential environmental impacts of water heating sources on the broader environment.

See [Q17](#) (above) for more info on environmental issues related to water use.

Other environmental impacts from dishwashing relate to the manufacture and disposal of dishwashers and standard (non-organic) detergents entering aquatic habitats through wastewater. Problematic components of many detergents include phosphates, which have been linked to harmful algal blooms, and nonylphenols, which have been shown to be toxic to aquatic organisms and also have been linked to endocrine disruption via mimicking the vertebrate reproductive hormone estrogen. Nonylphenols have been banned by the EU but are still widely used in the USA and throughout the world.

***** **Q22: Washing clothes** *****

Water heating can have other environmental impacts aside from greenhouse gas emissions, depending on how you heat your water and/or your local source of electricity.

For example, as the tragic oil spill in the Gulf of Mexico (April 2010) has shown, fossil fuel extraction can lead to extreme environmental damage in the event of an accident. Coal extraction releases mercury into the environment, can poison local waterways, and often involves severe habitat disturbance. Nuclear power has concomitant problems of storage of dangerous waste. Hydroelectric dams can alter natural river flows, interrupting salmon and other fish migration patterns.

These are only a subset of the potential environmental impacts of water heating sources on the broader environment.

See [Q17](#) (above) for more info on environmental issues related to water use.

Other environmental impacts from clothes washing relate to the manufacture and disposal of washing machines and standard (non-organic) dish detergents entering aquatic habitats through wastewater. Problematic components of many detergents include phosphates, which have been linked to harmful algal blooms, and nonylphenols, which have been shown to be toxic to aquatic organisms and also have been linked to endocrine disruption via mimicking the vertebrate reproductive hormone estrogen. Nonylphenols have been banned by the EU but are still widely used in the USA and throughout the world.

***** **Q23: Drying clothes** *****

Clothes drying can have other environmental impacts aside from greenhouse gas emissions, depending on your local source of electricity.

For example, as the tragic oil spill in the Gulf of Mexico (April 2010) has shown, fossil fuel extraction can lead to extreme environmental damage in the event of an accident. Coal extraction releases mercury into the environment, can poison local waterways, and often involves severe habitat disturbance. Nuclear power has concomitant problems of storage of dangerous waste. Hydroelectric dams can alter natural river flows, interrupting salmon and other fish migration patterns.

Other environmental impacts from clothes drying relate to the manufacture, shipping and 'end of life' disposal of clothes driers, via other (non-greenhouse) pollutants released, the mining for heavy metals used in the processing units in driers, and so on.

These are only a subset of the potential environmental impacts of clothes drying on the broader environment.

***** **Q24: Cutting grass** *****

awn mowing can have other environmental impacts aside from greenhouse gas emissions, via fuel use (in gas mowers) or your local source of electricity (in electric mowers).

For example, as the tragic oil spill in the Gulf of Mexico (April 2010) has shown, fossil fuel extraction can lead to extreme environmental damage in the event of an accident. Coal extraction releases mercury into the environment, can poison local waterways, and often involves severe habitat disturbance. Nuclear power has concomitant problems of storage of dangerous waste. Hydroelectric dams can alter natural river flows, interrupting salmon and other fish migration patterns.

Other environmental impacts from lawn mowing relate to the manufacture, shipping, use and 'end of life' disposal of lawn mowers, via other (non-greenhouse) pollutants released, including carbon monoxide (a poisonous gas) and smog.

Furthermore, use of lawn equipment adds to 'noise pollution', which can negatively impact human health (e.g. through sleep impairment and hearing damage) and wildlife (e.g. disrupting animal migration patterns and communication), and also interacts with other environmental stressors like airborne pollutants. More information from the European Environment Agency at www.eea.europa.eu/themes/noise/about-noise.

These are only a subset of the potential environmental impacts of lawn mowing on the broader environment.

***** **Q25: Weed whacking** *****

Weed whacking can have other environmental impacts aside from greenhouse gas emissions, via fuel use (in gas models) or your local source of electricity (in electric models).

For example, as the tragic oil spill in the Gulf of Mexico (April 2010) has shown, fossil fuel extraction can lead to extreme environmental damage in the event of an accident. Coal extraction releases mercury into the environment and can poison local waterways and severely disrupt habitats. Nuclear power has concomitant problems of storage of dangerous waste. Hydroelectric dams can alter natural river flows, interrupting salmon and other fish migration patterns.

Other environmental impacts from weed whacking relate to the manufacture, shipping, use, and 'end of life' disposal of weed whackers, via other (non-greenhouse) pollutants released, including carbon monoxide (a poisonous gas) and smog. 'Two-stroke' gasoline models are particularly polluting: they release as much as 50% of the fuel during use directly into the environment without being burned.

Furthermore, use of (especially 'two-stroke') weed whackers adds to 'noise pollution', which can negatively impact human health (e.g. through sleep impairment and hearing damage) and wildlife (e.g. disrupting animal migration patterns and communication), and also interacts with other environmental stressors like airborne pollutants. More information from the European Environment Agency at www.eea.europa.eu/themes/noise/about-noise.

These are only a subset of the potential broader environmental impacts of weed whacking.

***** **Q26: Cleaning leaves** *****

Leaf blowing can have other environmental impacts aside from greenhouse gas emissions, via fuel use (in gas models) or your local source of electricity (in electric models).

For example, as the tragic oil spill in the Gulf of Mexico (April 2010) has shown, fossil fuel extraction can lead to extreme environmental damage in the event of an accident. Coal extraction releases mercury into the environment and can poison local waterways and severely disrupt habitats. Nuclear power has concomitant problems of storage of dangerous waste. Hydroelectric dams can alter natural river flows, interrupting salmon and other fish migration patterns.

Other environmental impacts from leaf blowing relate to the manufacture, shipping, use, and 'end of life' disposal of leaf blowers, via other (non-greenhouse) pollutants released, including carbon monoxide (a poisonous gas) and smog. 'Two-stroke' gasoline models are particularly polluting: they release as much as 50% of the fuel during use directly into the environment without being burned.

Furthermore, use of (especially gasoline) leaf blowers adds to 'noise pollution', which can negatively impact human health (e.g. through sleep impairment and hearing damage) and wildlife (e.g. disrupting animal migration patterns and communication), and also interacts with other environmental stressors like airborne pollutants. More information from the European Environment Agency at www.eea.europa.eu/themes/noise/about-noise.

These are only a subset of the potential broader environmental impacts of leaf blowing.

***** **Q27: Yard waste** *****

Burning of waste generates many non-greenhouse gas pollutants (such as carbon monoxide and particulates), which are major risk factors for lung cancer, heart disease and other health problems (US EPA). Backyard fires, if not properly controlled, can spread into larger forest fires, threatening wildlife and homes.

Composting (either at home or in a central facility) produces natural fertilizers that alleviates the need for mining for potassium and phosphorous as well as the use of fossil fuels in synthetic nitrogen production. Compost is also used in land reclamation, prevention of erosion and urban horticulture and agriculture. See <http://www.compostingcouncil.org> for more information.

***** **Q28: Garbage** *****

Landfill disposal of garbage pollutes the environment via breakdown of discarded items and release of potentially toxic components (such as chemicals in plastics or dioxins in bleached paper) into local waterways and the air. Such compounds can then negatively impact wildlife and human health. Emissions from the machinery used to transport and bury your waste can include carbon monoxide, smog, etc.

Landfill incineration can be very carbon-efficient, but can also directly release dangerous toxins into

the air, such as dioxins and mercury and acid-rain causing sulfur emissions. Scrubbers can prevent the release of some of these toxic compounds, but even the cleanest incineration facility results in dangerous emissions.

Discarded electronics waste ('e-waste') often gets shipped to developing countries where poor people make a meager living recovering marginally valuable metals, exposing themselves to many dangerous toxins.

The best way to mitigate your garbage footprint, and these other environmental impacts of garbage disposal, is to follow the 'three Rs' in this order: REDUCE ('pre-cycle': think about what you buy before you buy it!), REUSE (can you think of any other use for that thing you are about to toss? If you live in a poor country, you probably already do that!) and RECYCLE.

***** **Q29: Paper** *****

Although paper can be made from other material (including hemp), the vast majority of paper we use is made out of trees - more than 3 billion trees are cut down every year to make paper (*UN FAO*). That's more than 1/2 of a tree per person per year just for paper!

According to the *Ecology Global Network*, 75% of paper comes from secondary forests and 16% from tree farms: in both cases, land that could otherwise be reforested and/or reach full ecological complexity. Also, in many parts of the world, rain forests are under grave threat from the paper and pulp industry, as in Indonesia (see <http://ran.org/category/issue/paper>). Rainforests are among the most ecologically diverse habitats on the planet, and are rightly described as the 'lungs of the planet' since they efficiently absorb carbon dioxide.

Finally, the global paper industry is among the most polluting industries on the planet, according to the *US EPA* and the *Worldwatch Institute*. Paper mills release highly toxic compounds [such as formaldehyde, chlorine dioxide (bleach), toluene, sulfur dioxide (acid rain) and dioxins] into air and water, the latter because of the close proximity of paper mills to sources of fresh water as is required in the paper production process.

Although recycling paper also releases some of air and water pollutants, the amounts are far lower than for virgin paper (*Environmental Defense Fund white paper*, 2002). Note that not all 'recycled paper' is actually recycled. Unused scraps resulting from the production of paper can be called 'recycled' when re-fed into paper production. The term 'post-consumer recycled paper' is more like what you probably think about when you imagine recycled paper: paper that was used one or more times and then reprocessed into new paper.

***** **Q 30: Phone charging** *****

Cell phone use can have other environmental impacts aside from greenhouse gas emissions, via your local source of electricity, as described in this box in previous questions.

Other environmental impacts from cell phones relate to the manufacture, shipping, and 'end of life' disposal of cell phones and auxiliary components (including batteries), via other (non-greenhouse) pollutants released, including carbon monoxide (a poisonous gas) and smog. The metal

components of cell phones, such as palladium, copper and platinum, must be obtained by mining, which can be quite destructive of natural habitats, depending on the mining techniques used. Poorly regulated mining operations will pollute waterways (thus harming people and other animals downstream) as will improper disposal of phones when they are no longer working or needed.

Cell phone metal components can also be recovered by recycling, but many electronics are sent to underdeveloped countries for recycling, where poor people dig through piles of electronics waste (e-waste) to recover circuit boards and other marginally valuable components, exposing themselves to disease-causing toxins and hazardous materials.

For more information, see the 2005 *New York Times* article "[Below a mountain of gold, a river of waste](#)," and the 2008 *National Geographic* article "[High Tech Trash](#)."

***** **Q31: Watching TV** *****

Television (TV) use can have other environmental impacts aside from greenhouse gas emissions, via your local source of electricity, as described in this box in previous questions.

Other environmental impacts from TVs relate to the manufacture, shipping, and 'end of life' disposal of TVs and associated components (e.g. remote control & batteries), via other (non-greenhouse) pollutants released, including carbon monoxide (a poisonous gas) and smog. The metal components of TVs, such as lead, copper and platinum, must be obtained by mining, which can be quite destructive of natural habitats, depending on the mining techniques used. Poorly regulated mining operations will pollute waterways (thus harming people and other animals downstream) as will improper disposal of TVs when they are no longer working or needed.

The metal components in TVs can also be recovered by recycling, but many electronics are sent to underdeveloped countries for recycling, where poor people dig through piles of electronics waste (e-waste) to recover circuit boards and other marginally valuable components, exposing themselves to disease-causing toxins and hazardous materials.

For more information, see the 2005 *New York Times* article "[Below a mountain of gold, a river of waste](#)," and the 2008 *National Geographic* article "[High Tech Trash](#)."

***** **Q32: Home computer** *****

Computer use can have other environmental impacts aside from greenhouse gas emissions, via your local source of electricity, as described in this box in previous questions.

Other environmental impacts from computers relate to their manufacture, shipping, and 'end of life' disposal, as well as associated components (e.g. cables, mouse, keyboard), via other (non-greenhouse) pollutants released, including carbon monoxide (a poisonous gas) and smog. The metal components of computers, such as lead, copper and platinum, must be obtained by mining, which can be quite destructive of natural habitats, depending on the mining techniques used. Poorly regulated mining operations will pollute waterways (thus harming people and other animals downstream) as will improper disposal of computers when they are no longer working or needed.

The metal components in computers can also be recovered by recycling, but many electronics are sent to underdeveloped countries for recycling, where poor people dig through piles of electronics waste (e-waste) to recover circuit boards and other marginally valuable components, exposing themselves to disease-causing toxins and hazardous materials.

For more information, see the 2005 *New York Times* article "[Below a mountain of gold, a river of waste](#)," and the 2008 *National Geographic* article "[High Tech Trash](#)."

***** **Q33: Laptop computer** *****

Computer use can have other environmental impacts aside from greenhouse gas emissions, via your local source of electricity, as described in this box in previous questions.

Other environmental impacts from computers relate to their manufacture, shipping, and 'end of life' disposal, as well as associated components (e.g. cables, mouse), via other (non-greenhouse) pollutants released, including carbon monoxide (a poisonous gas) and smog. The metal components of computers, such as lead, copper and platinum, must be obtained by mining, which can be quite destructive of natural habitats, depending on the mining techniques used. Poorly regulated mining operations will pollute waterways (thus harming people and other animals downstream) as will improper disposal of computers when they are no longer working or needed.

The metal components in computers can also be recovered by recycling, but many electronics are sent to underdeveloped countries for recycling, where poor people dig through piles of electronics waste (e-waste) to recover circuit boards and other marginally valuable components, exposing themselves to disease-causing toxins and hazardous materials.

For more information, see the 2005 *New York Times* article "[Below a mountain of gold, a river of waste](#)," and the 2008 *National Geographic* article "[High Tech Trash](#)."

***** **Q34: Other electronics** *****

Use of electronics can have other environmental impacts aside from greenhouse gas emissions, via your local source of electricity, as described in this box in previous questions.

Other environmental impacts from electronics relate to their manufacture, shipping, and 'end of life' disposal, as well as associated components (e.g. cables, remote controls), via other (non-greenhouse) pollutants released, including carbon monoxide (a poisonous gas) and smog. The metal components of electronics, such as lead, copper and platinum, must be obtained by mining, which can be quite destructive of natural habitats, depending on the mining techniques used. Poorly regulated mining operations will pollute waterways (thus harming people and other animals downstream) as will improper disposal of electronics when they are no longer working or needed.

The metal components in electronics can also be recovered by recycling, but many electronics are sent to underdeveloped countries for recycling, where poor people dig through piles of electronics waste (e-waste) to recover circuit boards and other marginally valuable components, exposing themselves to disease-causing toxins and hazardous materials.

For more information, see the 2005 *New York Times* article "[Below a mountain of gold, a river of waste](#)," and the 2008 *National Geographic* article "[High Tech Trash](#)."

FOOD SECTION

***** Q35: Calories per day *****

As we will discuss in subsequent questions (below), there are numerous environmental impacts related to your food choices. Thus, the more calories each individual consumes on average, the greater his/her total environmental impact.

Also, studies on a wide variety of animals (from fruit flies to worms to mice) have shown that there is a single consistent predictor of increased lifespan: caloric restriction (CR).

Note, however, that there can be serious side-effects to CR, especially if taken too far. Weiss and colleagues (*J Appl Physiol*, 2007) found that CR in humans can lead to loss of muscle and aerobic capacity, thus effecting ones ability to undertake physical exertion, and could lead to frailty problems later in life. Exercise can also reduce calories, and does so (according to the Weiss et al. study) without this loss of muscle and aerobic capacity.

Furthermore, if one is restricting ones calories, it is important to do so wisely. For example, Weiss and colleagues speculate that the muscle and aerobic problems in the CR study group may be related to decreases in protein consumption concomitant with their decrease in caloric intake. The exercise study group did not show this protein intake decrease.

It is important to consult a health care professional before undertaking any drastic change in your diet.

***** Q36: Diet *****

Your food choices .have numerous other environmental implications aside from greenhouse gas emissions. For example:

- The industrialization of agriculture comes with increased fuel use. As the tragic oil spill in the Gulf of Mexico in April 2010 has shown, fossil fuel extraction can lead to extreme environmental damage in the event of an accident. Aside from carbon dioxide, fossil fuel combustion produces many other harmful pollutants, including cancer-causing particulates, acid rain-causing sulfur dioxides and nitrogen oxides and smog-causing ozone.
- Eating farmed animals means that much agricultural land needs to be set aside for food for large herbivorous animals. Increased demands on land means less preserved native habitat, and the extinction of native species of plants and animals.
- Heavy use of artificial fertilizers leads to run off of these chemicals into local waterways, making them unfit for drinking, and when the rivers meet the sea, this leads to massive buildup of nitrogenous and phosphorous compounds in estuaries and nearshore habitats.

In an extreme example, the massive use of these fertilizers every year in the central USA leads to

extremely high levels in the Mississippi River, which, when it flows into the Gulf of Mexico, leads to algal blooms that use up all of the oxygen. The result is a yearly 'dead zone' region of the Gulf that's over 22,000 square kilometers (=8500 square miles), almost completely devoid of animal life! That's an area larger than the entire country of El Salvador or almost as large as the US state of New Jersey!

*******Q37: What do I eat?*******

It is important to note that we are using average values here for broad categories of animals and animal products to calculate footprints. This is not strictly accurate, as pigs and goats, for example, surely have different footprints.

The same can be said for other environmental impacts associated with farming. Again, to take the example of goats, the farming methods for rearing them are typically much less polluting (in terms of chemical use and runoff, for example) than typical pig farming methods.

Likewise with other animals; for example, farmed and wild caught fish and seafood can differ substantially in environmental impacts, sometimes in surprising ways (see [Seafood Watch](#)).

We at I2SEA advocate that you get to know the ways in which the animals you eat (and the animal products that come from them) were raised or obtained, so you can make informed food choice decisions.

*******Q38: Eating organic*******

There are many environmental benefits of organic farming methods aside from greenhouse emissions.

For example, organic methods avoid the use of artificial pesticides and herbicides, many of which can be toxic to humans and other animals and non-animals. Organic methods also prohibit use of artificial fertilizers, which run off into waterways causing algae blooms, oxygen depletion and oceanic 'dead zones.'

One controversial farming method prohibited in organic farming is the use of genetically modified organisms (GMOs). Examples of widely cultivated GMO plants are those that confer resistance to commonly used herbicides, and that produce pesticides inside their cells. The herbicide resistance genes are known to be transferred through hybridization to wild plants, raising concerns of developing 'superweeds' resistant to these commonly used herbicides.

For plants containing pesticides, there is evidence in some cases of unintentional impact on animals, such as through the drift and incidental consumption of toxin-containing pollen by beneficial insects.

*******Q39: Eating local*******

There are many other reasons to consume locally grown food aside from climate impacts. For example, locally grown foods:

- may be healthier, in that they may be consumed sooner after being picked;
- support local economies
- can avert food crises, since distributed local production will offer local sources to quickly deal with nearby food shortage situations;
- also reduce the non-greenhouse impacts of the use of fossil fuels, such as oil spills, cancer-causing particulates, acid rain-causing sulfur dioxides and nitrogen oxides and smog-causing ozone.

***** **Q40: Composting** *****

Composting at home means less need to send food scraps away in garbage, using fuel and adding to landfills and landfill runoff into water ways.

Composting is also fun and easy, even when you don't have a large yard.

[Click here](#) for more information.

***** **Q41: Take away containers** *****

The production of plastic and/or paper take away containers involves various non-greenhouse gas pollutants, including dioxins, bis-phenol A and phthalates.

(for more info on environmental & health impacts of these compounds see ourstolenfuture.org.)

Many such containers cannot be recycled or composted, and hence end up in landfills. Styrofoam (polystyrene) is a famously harmful compound in this and other ways. [Click here](#) for more details.

Worse still, much discarded plastic ends up in waterways, where it eventually contributes to the staggering amount of plastic collecting in remote parts of the worlds oceans. When swallowed, such plastic can harm many oceanic creatures, including sea birds and marine mammals.

[Click here](#) for more information.

***** **Q42: Burning wood** *****

Burning wood produces other air pollution other than CO₂ emissions, most notable particulates that have been linked with cancer.

But the most serious environmental threat from deforestation is habitat loss and resulting species declines and extinctions from insufficient habitat.

PURCHASES SECTION

***** Q43: Clothing *****

There are many other environmental issues associated with clothing production, including the massive use of pesticides and herbicides (and genetically modified varieties) in cotton production, the use of fossil fuels (and their other environmental problems discussed previously) in the production of nylon, polyester and other 'non-natural' materials, artificial chemicals used in dyeing many clothes, and the releases of dioxin and other compounds from the bleaching processes used to make clothes pure white.

Furthermore, there are environmental justice issues related to the production of clothing in poorer countries, with workers exposed to unsafe and harsh working conditions for little pay.

For more information see:

- Claudio L. 2007. Waste Couture: Environmental Impact of the Clothing Industry. *Environmental Health Perspectives* 115: A449-A454.

***** Q44: Packaging choices *****

In addition to energy and CO₂ savings, buying less packaging (and recycling what you do buy) results in less degradation of garbage into toxic components (and subsequent environmental release) such as dioxins from paper and hormone mimics from plastic.

Worse still, much discarded plastic ends up in waterways, where it eventually contributes to the staggering amount of plastic collecting in remote parts of the world's oceans. When swallowed, such plastic can harm many oceanic creatures, including sea birds and marine mammals.

[Click here](#) for more information.

***** Q45: Drinking water *****

In addition to energy and CO₂ savings, avoiding buying plastics results in less degradation of garbage into toxic components (and subsequent environmental release) such as hormone mimics, which show up in breast milk and can harm organisms ranging from microscopic plankton to large animals.

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[Click here](#) for more information.

***** Q46: Shopping bags *****

In addition to energy and CO₂ savings, bringing your own bags to stores (and recycling those that you do get) results in less degradation of bags into toxic components (and subsequent

environmental release) such as dioxins from paper and hormone mimics from plastic.

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[Click here](#) for more information.

***** **Q47: Electronics** *****

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For more information, see the 2005 *New York Times* article "[Below a mountain of gold, a river of waste](#)," and the 2008 *National Geographic* article "[High Tech Trash](#)."

***** **Q48: Recycling at home** *****

In addition to energy and CO₂ savings, recycling the waste that you generate results in less degradation of garbage into toxic components (and subsequent environmental release) such as dioxins from paper and hormone mimics from plastic.

Worse still, much discarded plastic ends up in waterways, where it eventually contributes to the staggering amount of plastic collecting in remote parts of the worlds oceans. When swallowed, such plastic can harm many oceanic creatures, including sea birds and marine mammals.

[Click here](#) for more information.

***** **Q49: Recycling at school** *****

In addition to energy and CO₂ savings, recycling the waste that you generate results in less degradation of garbage into toxic components (and subsequent environmental release) such as dioxins from paper and hormone mimics from plastic.

Worse still, much discarded plastic ends up in waterways, where it eventually contributes to the staggering amount of plastic collecting in remote parts of the worlds oceans. When swallowed, such plastic can harm many oceanic creatures, including sea birds and marine mammals.

[Click here](#) for more information.

***** **Q50: Reusing** *****

For all of the reasons mentioned previously, reusing items does not only save energy and reduce CO₂ emissions, but mitigates other pollutants as well, such as those from degrading paper and plastics.