Lower Your Carbon Footprint Using the MyEarth App

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I. Introduction to the Carbon Footprint

What is meant by "carbon footprint"?
The dictionary definition of your carbon footprint is as follows:

carbon footprint
ˌkär-bən ˈfʊt-prənt/
noun
noun: carbon footprint; plural noun: carbon footprints
the amount of carbon dioxide and other carbon compounds emitted due to the consumption of fossil fuels by a particular person, group, etc.

Source: Google

In more general terms, your carbon footprint is the impact that your choices and behavior have on the environment. This directly affects the health of the natural environment, waterways, the air, etc., which in turns effects human health. Something bad released into the air in your back yard can eventually have effects across the globe in someone else's lungs, and vice versa. It's a global imperative that each individual on the planet understands his or her impact and how to minimize it. Our individual carbon
footprint is something we can track and measure, and eventually improve upon, which we will be learning more about in these lessons.

According to a student study at MIT (2008), the average carbon footprint of a variety of American lifestyles was 20 metric tons (or 22 US tons) per year, compared to a worldwide average of 4 metric tons per year.

It's a tricky thing to measure because there are many different variables and lack of available data, as we will see when we use the calculators that are available. On the MyEarth app they have already done the work to find out the impact of certain activities. It calculates the carbon you have saved, and then it adds up all your activities over time. So you can eventually see that you are making an impact, and then eventually add more activities, then aim to get your average on par with our global peers!

**Why is my carbon footprint important?**
The Industrial Revolution has been powered by the burning of fossil fuels, which has increased greenhouse gasses including carbon dioxide in the atmosphere. This causes a warming effect on the planet, which impacts ecosystems such as the ocean, making it warmer and causing disruptions to plant and animal life and weather patterns. The Climate Lab Book provides a number of illustrations of the changes in temperature, carbon dioxide concentrations, and other measures.

Many other human activities contribute to the carbon footprint, such as the car we drive, the food we eat, the products we buy, the waste we produce, how we power our homes and how efficiently we use
electricity. Being aware of all these things can help us to reduce our impact on the planet. If everyone on the planet consumed and behaved the way that most Americans do, human life on the planet would not be sustainable.

Considering the massive effects of all these activities on the global climate, the result is called "climate change." An excellent source of information about climate change, including evidence, causes, effects and solutions is at https://climate.nasa.gov/. There is global agreement among scientists, corporate and government leaders, religious and civic groups that people must take action now to slow and eventually reverse the effects of climate change. Otherwise, there may be catastrophic, permanent effects including rising sea levels, droughts, heat waves, mass extinctions and more extreme weather such as tornadoes and hurricanes. You can also learn much more about climate change in this course’s Climate Change Primer.

There are many pathways to reduce, or "mitigate" the effects of climate change, such as replacing fossil fuel energy with cleaner, renewable energy. However, a first line of defense is to reduce your own energy and resource use. These lessons will help you as an individual understand and practice some of the many ways you can reduce your impact.

**What are things I can do to reduce my carbon footprint?**

Spoiler alert: you don't have to completely change your life, spend a million dollars on new stuff, sacrifice everything you know and love, or become a hermit living in a tree to have an impact. A lot of it is just common sense, or just getting better informed. As we will see through these lessons, there are hundreds (and more) of choices and behaviors that can make a significant impact, or a small daily impact that adds up over time. And they are choices and behaviors that can improve the environment, make us feel better, save us money, show respect for people and planet, and inspire others to act. The biggest challenge is just to be aware of the possible choices and to exercise the best behavior.

**Choices**

Choice is defined as "an act of selecting or making a decision when faced with two or more possibilities." People today are constantly bombarded with opportunities to make choices. Having good information about the topics of your choices can help you make better, more informed choices.

**Behavior**

Behavior is defined as "the way in which one acts or conducts oneself, especially toward others," and in this case one could include "towards one's natural environment." Behavior is crucially important when it comes to managing your carbon footprint.

To manage your carbon footprint, you need to make informed choices to enact the optimal behavior. If you know that turning off a light truly is saving you money and reducing impact to the environment, you might be more prone to choose to turn off the light. So, one of the most important things you can do to reduce your carbon footprint is to learn about how to make good choices for the best behavior.

You can make many impactful choices, including reducing water use, buying local food, taking public transportation, and recycling certain materials can also help, and we will be covering all these areas in this course.
Can I really make a difference?

Profoundly! There are hundreds of companies that are improving their carbon footprints in areas like energy efficiency of their buildings, and they are saving literally billions of dollars. Not to mention energy efficiency activities reduce the amount of energy the buildings need, which often comes from fossil fuels. If you could reduce your household’s energy use (and energy bills) through things like replacing old lightbulbs with LEDs, using an adjustable thermostat, closing your blinds during the day, and using more efficient appliances, know that it’s also benefitting the environment, and in turn human health, why would you choose otherwise? Once you know that you can make a difference, you will make a difference. And people are going to notice, including your peers, teachers, and potential employers. Ability to make and act on good decisions is a valuable skill in itself for advancing society.

II. Calculate Your Carbon Footprint

Now we’re going to need to do some calculations to get to the numbers we need for the MyEarth App. This will help with each module so we’ll go over it here as well as in each module’s “ACT” section.

We are going to learn about what goes into our carbon footprint, and how to calculate the best way to reduce our own personal footprint. It’s going to be a different experience for each person depending your personal lifestyle, how much math you want to get into, and how much you want to reduce your carbon footprint.

The first thing we want to do is calculate our own personal carbon footprint. You can do this by using an average for a typical American, or you can use a calculator to get into more detail about your specific activities and lifestyle.

1. Average American Carbon Footprint

   • In the MIT example above, the average American footprint was 22 tons of CO2 per year for each individual.
   • Shrinkthatfootprint.com (http://shrinkthatfootprint.com/american-carbon-footprint) puts the average at 19 tons per person.
   • University of Michigan (http://greenliving.lovetoknow.com/What_Is_the_Average_Carbon_Footprint) estimates the individual carbon footprint at 21.5 metric tons (23.7 US tons) CO2/year.
   • Cool Climate Maps (http://coolclimate.berkeley.edu/maps) can provide your average household CF by zip code. For my zip code the average is 49.7 tons CO2/year, which is fairly close to the average of the calculators I get below for my household.

2. Calculators

   All of these calculators are a bit different, measure different things, in different levels of detail, and some are based out of the UK. There are certainly other calculators available that are not listed here, and we are not saying these are the best, but rather the ones that seem to be the most commonly used. They give widely varying results. For example, several ask for zip code and annual income, and variations in these numbers alone can cause wide differences in your individual measure. Please note that some calculators ask you for some pretty detailed information sometimes (like calories from junk food, kwh of electricity used, e.g.), so sometimes
you just need to give your best guess if you don’t know. You can either just pick one, or use a few and take an average. See examples below as per the variations in the calculators. (Note that the example shows a calculation for a household of four people.)

a. [http://www.footprintcalculator.org/](http://www.footprintcalculator.org/): note that it gives you the CF in tonnes, so you need to convert. See Calculation Help section below for help with calculations. Example result: 15 tonnes CO2/year (=33,069.4 pounds CO2)

b. [https://www.carbonfootprint.com/calculator.aspx](https://www.carbonfootprint.com/calculator.aspx): Example result: 34.65 metric tons CO2 (38.2 US tons, or 76,400 pounds)

c. [http://coolclimate.berkeley.edu/calculator](http://coolclimate.berkeley.edu/calculator): Example result: 55.3 tons CO2 (110,000 pounds); 38.3 tons (or 76,600 pounds) on my second try (being more careful about answers, because 55.3 is just crazy!)

d. [https://www3.epa.gov/carbon-footprint-calculator/](https://www3.epa.gov/carbon-footprint-calculator/): Example result: 51,732 pounds (25.866 tons)

e. [http://www.nature.org/greenliving/carboncalculator/index.htm](http://www.nature.org/greenliving/carboncalculator/index.htm): Example result: 42 tons CO2 (84,000 pounds)

Since I have gone through the trouble of using each calculator, I’m going to average it out to 53,634 pounds CO2/year for the purposes of my final carbon footprint which I’ll use to calculate my target carbon savings.

3. Calculation Help

If you want to convert metric tons of CO2 to pounds of carbon per day (what’s used in MyEarth App), the calculation would look like this:

a. 15 metric tonnes * 1.10231 = 16.5347 US tons per year
b. 16.53465 tons * 2000 lbs/ton = 33,069.3 pounds CO2 per year
c. 33,069.3 / 365 days/year = 90.6 pounds CO2 per day
d. 90.6 pounds CO2 * .272 = 24.64 pounds of carbon a day.

The MyEarth app tells us:

> We simply calculated everything in CO2 then multiplied by .272 which is the molecular ratio of Carbon in the molecule CO2.

We can also get a lot of good use here out of calculators online. So just go to Google and type in e.g. “convert tonnes to tons” and a calculator comes up.

### III. MyEarth App and Tracking Your Carbon Savings

**How MyEarth Helps You Track Your Savings**

In the MyEarth app, the categories are broken down into:

- Electricity (lbs of carbon savings)
- Travel (lbs of carbon savings)
- Food (lbs carbon savings)
- Recycling (lbs of carbon savings)
• Water (gallons of water savings)

So we’re going after carbon savings and water savings.

1. Electricity

- Mini fridge (1.8 lbs carbon); Turn down your heat (3.5 lbs carbon); Efficient light bulbs (1.2 lbs carbon); Air dry your clothes (2.7 lbs carbon); Take the stairs (0.5 lbs carbon); Wash/air dry dishes (1 lb carbon); Washing machine – cold only (1.1 lbs carbon); Unplug chargers (0.22 lbs carbon); Turn off that TV (0.52 lbs carbon); Reduce your gaming (0.4 lbs carbon)

2. Transport

- Bikers commute – 5 miles (1.8 lbs carbon); Park that car – take the bus – 20 miles (7.1 lbs carbon)

3. Food

- Food miles (1.5 lbs carbon); Reduce your waste (0.9 lbs carbon); Don’t eat pork (0.5 lbs carbon); Cut the beef (2 lbs carbon); Pass up that 6 pack (2 lbs carbon)

4. Recycling

- Use a refillable bottle (0.3 lbs carbon); Glass bottles – 6 (4.4 lbs carbon); Plastic bottles – 6 (0.26 lbs carbon); Aluminum cans – 6 (.14 lbs carbon); Plastic milk jug (0.18 lbs carbon); Bring your own bag – paper (0.22 lbs carbon); Bring your own bag – plastic (0.65 lbs carbon); Printer paper – 100 sheets (0.8 lbs carbon); Newspaper/magazine - 2 (1.3 lbs carbon)

5. Water

- Pre-chilled water (2 gal); Let the dishwasher do the work (10 gal); Brush w/ H20 sense (2.5 gal); Unthaw smart (6 gal); More efficient watering (10 gal); Scrape, don’t rinse (5 gal); Shorter shower (12.5 gal); Conservative flushing (7 gal); fix that leak (6.5 gal); Upgrade your toilet (13 gal); Energy efficient washing machines (15 gal); Rain garden (20 gal)

Calculate Your Target Carbon Savings

You can either wing it and just select random MyEarth activities each day and watch your savings pile up, or you can make an effort to hit a certain target each day. Here’s an example of setting a target.

I’m in charge of the purchases and expenses of my household, so I’m using a household annual carbon footprint of 53,634 pounds of CO2 as my starting point. For the purposes of MyEarth, I want to get that number to pounds of carbon per day. No problem

So I’ll start from step 3.a. in “Calculation Help” above since I already have my number in pounds:

53,634 pounds CO2 / 365 days/year = 147 pounds CO2 per day

147 pounds CO2 * .272 = 40 pounds of carbon a day.

My target is to reduce my CF by half, so I need to get to 20 pounds carbon per day, which means I need to produce a carbon savings of 20 pounds per day. Now I can try to select a number of activities per day that will add up to that total.
How To Get Best Results Using MyEarth App

“It’s part of a complete breakfast.” Remember the cereal commercials that say that? What they mean is, if you add in other stuff, you’re going get a more “complete” nutritional package. In the case of MyEarth, you can look at it as part of a complete low-carbon lifestyle strategy.

MyEarth is extremely useful in making you aware of activities that are contributing to your carbon footprint, and to help you choose better behaviors. It’s fun and easy to use, and helps you to see the impact of your activities as well. However, it might be the case that you’re not going to be able to hit your target or reduce your emissions as much as you want just by doing the limited number of activities in the MyEarth app. In that case, you can add activities that aren’t included, then subtract that out of your target so that it can be something you can reach on MyEarth. Here’s an example.

Let’s say there is no combination of realistic activities I can do per day that’s going to get me to a 20 pounds per day target savings. So I’m on Berkeley’s Cool Climate Calculator ([http://coolclimate.berkeley.edu/calculator](http://coolclimate.berkeley.edu/calculator)) and I find out that my car is costing me about 22,000 pounds of CO2 per year. That’s a big chunk of my CF. If I get a car with better gas mileage, let’s say double the gas mileage, I can reduce my annual CF by 11,000 pounds CO2 per year in one fell swoop. Then after doing my calculations to get my target daily carbon savings, I get to a target daily savings of 16 pounds of carbon. Now I can go back in and line up my activities again, or identify other areas that aren’t on MyEarth where I can reduce my CF and contribute to my daily carbon savings that way.

“MyEarth is part of a complete low-carbon lifestyle strategy.”

IV. Assignments

1. Calculate or determine your carbon footprint.
2. Calculate your target carbon savings, and determine the activities on MyEarth that will help you meet your goal.
3. Identify 1-3 additional ways you could meaningfully reduce your carbon footprint in addition to using MyEarth.

These instructions are provided by ACERC at SIU in Carbondale, Illinois: [http://energy.siu.edu](http://energy.siu.edu). Please email acerc@siu.edu or call +1.618.453.7327 with any questions. They MyEarth app was produced by Dr. Nancy Wong at University of Wisconsin.