CLASS THREE

THE CLIMATE CRISIS AND OUR DAILY LIVES

(view dark background)

"Don't ask yourself what the world needs. Ask yourself what makes you come alive, and go do that, because what the world needs is people who have come alive." Howard Thurman

Review and Reflections:

Highlights from Previous Classes:

◊ The first class looked at the connection between basic beliefs of faith groups and our responsibility to care for the Earth. It also explored the history of discoveries and actions that have led us to this moment of understanding.

◊ Class two introduced us to the basic science of climate change, the impact of the industrial revolution on the earth, and where all this extra CO2, methane and other greenhouse gases has and is coming from. It also touched on climate science denial.

Preview of Class Three:

Learning Objectives

⇒ Continue to develop a common climate language.
⇒ Explore how our daily lives intersect with the climate crisis.
⇒ Begin to discover how our daily choices can make a difference.
⇒ Experiment with measuring your carbon footprint.

Class Three Sections

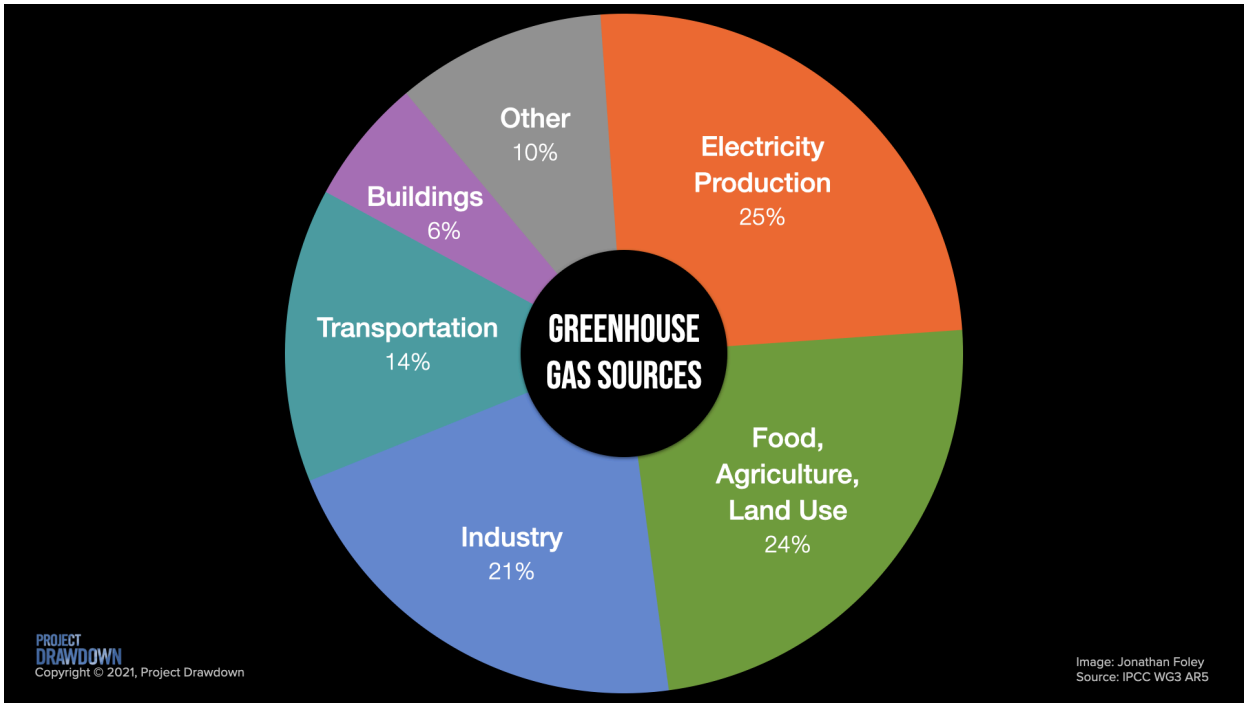
Section One: Developing a Common Language:

- **Exponential Growth** is growth which becomes ever more rapid in proportion to the growing total number or size. (Oxford Languages)
- **Climate Forcing** happens when the energy balance changes and forces a change in climate.
- **Climate Feedbacks** either dampen or amplify the effects of climate forcing.

- **A Carbon Source** is anything that releases more carbon into the atmosphere than it absorbs. (clientearth.org) Examples are burning of fossil fuels, burning of forests, melting of permafrost.
- **A Carbon Sink** is anything that absorbs more carbon from the atmosphere than it releases, for example, plants, the ocean, and soil. (clientearth.org)
- The amount of carbon dioxide and other carbon compounds emitted due to the consumption of fossil fuels by a particular person, group etc. is called the **Carbon Footprint** (Oxford Languages).

Section Two: Sources, Contribution of Greenhouse Gases by Sector

In what sectors of our lives do we humans continue to add greenhouse gases to our air and oceans? There are different ways to divide up and report greenhouse gas emissions. The upcoming video by Drawdown divides them globally this way:



Electricity production 25%
(When coal and natural gas (methane) are used to produce electricity, CO2 is released into the atmosphere.)

Food, Agriculture, land use 24%
(This figure includes burning of forests (deforestation) to create places to grow food for animals that we eat, methane produced by livestock, and nitrous oxide produced by over fertilization.)

Industry, making things 21%
(Fossil Fuels are burned to create the high temperatures needed to create steel and other products. The chemical process to make cement also releases large amounts of CO2.)

Transportation of ourselves and our goods 14%
(This includes road vehicles 10%; air travel 2%; boats, trains, etc. 2%**)**

Buildings 6 %
(This includes heating, cooling and hot water for personal dwellings 4% and public buildings 2%)

Other 10%
(These greenhouse gases are a result of leakage in the energy industry, in refining, transporting and other miscellaneous areas.)

Watch this video from Drawdown's Climate 101 series: Unit 3, Reducing Sources (24 minutes).

Section Three: A Closer Look at Some of The Sectors In Our Daily Lives

This section is using a different source, Our World in Data, thus the numbers will be somewhat different than in section two. Different organizations who make these calculations for us divide things up a bit differently.

What We Eat: 18.4 to 25%
This category includes agriculture, forestry and land use, which account for 18.4% of greenhouse gas emissions. The food system as a whole including refrigeration, food processing, packaging, and transport accounts for about 25% of anthropogenic greenhouse gas emissions globally. Below is the breakdown for different parts of this contributor.

Livestock & manure (5.8%): Animals (mainly ruminants, such as cattle and sheep) produce greenhouse gases through a process called enteric fermentation. Microbes in the digestive systems break down the animals' food and produce methane as a by-product. Therefore, beef and lamb have a high carbon footprint. Eating less of these products can reduce the emissions of your diet. Nitrous oxide and methane can be produced from the decomposition of animal manures under low oxygen conditions. This often occurs when large numbers of animals are managed in a confined area (such as dairy farms, beef feedlots, and swine and poultry farms), where manure is typically stored in large piles or disposed of in lagoons and other types of manure management systems. 'Livestock' emissions here include direct emissions from livestock only. It does not consider impacts of land use change for pasture or animal feed.

Agricultural soils (4.1%): Nitrous oxide, a significant greenhouse gas, is produced when synthetic nitrogen fertilizers are applied to soils. This figure includes emissions from agricultural soils used for the production of all agricultural products, including food for direct human consumption, animal feed, biofuels and other non-food crops, such as tobacco and cotton.

Grassland (0.1%)**:** Grassland loses carbon as CO2 when it is degraded and sequesters carbon when it is restored. Currently, more CO2 is created than sequestered.

Cropland (1.4%): Cropland also either adds to greenhouse gases or sequesters them, depending on the management process. Currently, cropland increases greenhouse gases.

Deforestation (2.2%): Deforestation adds to greenhouse gases. Reforestation decreases CO2. Deforestation currently adds to a net increase of greenhouse gases.

Crop burning (3.5%): Leftover vegetation from crops such as rice, wheat, sugar cane, and other crops when burned releases carbon dioxide, nitrous oxide and methane.

Rice cultivation (1.3%): Flooded paddy fields produce methane through a process called anaerobic digestion. Globally, rice supplies mankind with one fifth of the calories needed to support life.

Food Waste: Over 1/3 of the food produced is wasted, either in the field, the processing plant, in distribution or after arrival to its final destination (home, restaurant, etc.). View THIS SHORT VIDEO on the life of a strawberry. How can we reduce food waste?

What We Wear: 8 to 10%
(Total emissions from the fashion and clothing industry have been difficult to estimate. A Quantis study in 2018 estimated that 8% of total global greenhouse gas emissions are from apparel and footwear. Other estimates are higher.)

The clothing industry is a large contributor to the climate crisis in numerous ways. According to Brian Resnick in The Goods by Vox, 60% of the materials used globally for clothing production in 2019 were petroleum based synthetic fibers, such as nylon, polyester, acrylic, lycra, etc. Why are they a problem? The production of these petroleum-based materials results in the release of 3.2 billion tons of greenhouse gases annually (Nature Review). Synthetic products take a long time to decompose, thus adding to our **waste problem**. Eighty pounds of clothing per person are added to our landfills in the US each year. News.un.org reported that every second, one garbage truck of textiles is landfilled or burned. Many people believe that if they give their used clothing to non-profit organizations to recycle, they are reducing their waste. But many of these donations actually go to a landfill or are burned, in both cases releasing more greenhouse gases into our atmosphere.

The fashion and textile industries are also major **polluters of water** at all stages of the value chain: agricultural runoff from cottonfields causes algal blooms that choke rivers; the dyeing process of fabric releases a cocktail of toxic chemicals. In addition, washing clothes made of these fabrics releases microplastic fibers which end up in our rivers and oceans and contribute to the plastic pollution problem. These fibers are consumed by marine life and eventually make their way into the human body. ("Out of Fashion-the Hidden Cost of Clothing Is a Water Pollution Crisis" by Mike Scott September 19, 2020 in Forbes magazine.)

In the 1990's **FAST FASHION** was introduced into the US by a retailer, Zara, from Spain. Zara's mission is to provide inexpensive products in stores just 15 days after the design process is completed. Similar companies sprang up, including H&M, Topshop, Primark and many others. The target population for this product market is 18 to 24 year-olds, especially young women. Production is often outsourced to countries with poor labor laws resulting in low pay and unsafe working conditions for workers. The cheap prices and increase in production have led to overconsumption and many of these products end up in our landfills in a short time. View THIS SHORT VIDEO on the fashion industry and fast fashion.

Three things happened historically that led to the fast fashion industry. First the industrial revolution replaced much of human labor for fabrication of materials with machines, speeding the process. Clothing still has to be sewn together and globalization allows for cheap labor for this part of the process by sending that work to the global south. And, finally, the introduction in the 1970's of synthetic fabrics made from fossil fuels produced cheap materials. Fast fashion may be cheap to the purchaser, but it is costly to the workers and the Earth.

How We Travel and Transport Things: 16.2%
(This information comes from Our World in Data based on stats from 2016. The percentage includes a small amount of electricity used…indirect emissions…, as well as all direct emissions from burning fossil fuels to power transport activities. These figures do not include emissions from the manufacturing of motor vehicles or other transport equipment.)

Road transport (11.9%): This includes emissions from the burning of petrol and diesel from all forms of road transport which includes cars, trucks, motorcycles and buses. Sixty percent of road transport emissions come from passenger travel (cars, motorcycles and buses); and the remaining forty percent from road freight (trucks). This means that, if we could electrify the whole road transport sector, and transition to a fully decarbonized electricity mix, we could feasibly reduce global emissions by 11.9%.

Aviation (1.9%): This number represents total emissions from both domestic and international passenger and freight travel, with 81% of the total emitted in passenger travel, and 19% in freight.[7] Sixty percent of passenger emissions are created by international travel, and 40% by domestic.

Shipping (1.7%): These are emissions from the burning of petrol or diesel on boats. This includes both passenger and freight transport.
Rail (0.4%): Emissions from passenger and freight rail travel are included here.

Pipeline (0.3%): Fuels and commodities (e.g. oil, gas, water or steam) often need to be transported (either within or between countries) via pipelines. This requires energy inputs, which results in emissions. Poorly constructed pipelines can also leak, leading to direct emissions of methane into the atmosphere. However, this aspect is captured in the category "Fugitive emissions from energy production".

What We Do With Our Trash: 3.2%
(from Our World in Data based on stats from 2016)

Wastewater (1.3%): Organic matter and residues from animals, plants, humans and their waste products can collect in wastewater systems. When this organic matter decomposes it produces methane and nitrous oxide.

Landfills (1.9%): Landfills are often low-oxygen environments. In these environments, organic matter is converted to methane when it decomposes.

Where We Live and Work: 17.5%
(from Our World in Data based on stats from 2016)

Residential buildings (10.9%): This is the percentage of energy-related emissions from the generation of electricity for lighting, appliances, cooking and heating/cooling our homes.

Commercial buildings (6.6%): These are energy-related emissions from the generation of electricity for lighting, appliances, and heating/cooling in commercial buildings such as offices, restaurants, and shops.

Section Four: Measuring Our Carbon Footprint

HERE and HERE are two of many sites that will help you measure your carbon footprint. It will take some effort to collect the information to get an accurate picture, but it will provide a baseline for measuring your progress in decreasing the climate crisis as you decrease your carbon footprint. There are many different apps available, so find one that seems easy for you to use.

CREATION JUSTICE TIPS

- Extracting and burning fossil fuels for energy (electricity, transportation and heat) create the vast majority of carbon emissions. In the U.S. and other industrialized nations, this accounts for over 80% of annual emissions. It will not be possible to prevent a climate crisis until we STOP burning fossil fuels.
- Refuse fast fashion allure and consumerism pressures. Reduce the amount of clothing you buy. Reuse your garments for many years. Repair minor problems like a missing button or a loose hem. Recycle textiles responsibly. Remember the “lilies of the field” and Jesus’ assurance.
  (Matthew 6:28-33).
- From our United Methodist social principles: “we urge United Methodists to adopt sustainable habits and practices, including refraining from overconsumption, repurposing

and recycling materials, avoiding products that pollute or otherwise harm the environment, and reducing the carbon footprints of individuals and families by reducing overall reliance on fossil fuels for heat, transportation, and other goods."

- Go thrifty; save the earth! When you purchase from a thrift or second-hand store, your choice uses fewer resources, generates fewer emissions and less waste, gives other people work, extends the life of the clothing, and keeps textiles out of the landfill. Try thred up, an online source, or one of the 4,245 goodwill stores. Some churches also offer "nearly new" clothing at low or no cost.

- Read the clothing labels. Avoid fossil-fuel-based synthetics (polyester, nylon, acrylic, spandex, lycra). Choose items made of natural fibers (organic cotton, linen, wool, silk, hemp), recycled materials and fibers (including polyester), or sustainable plant-based tencel.

- Have eco-friendly fun with friends. Host a party for passing along the clothes children outgrow so quickly or for exchanging outfits with friends of the same size. Set a stitch-it-up time for learning the how-tos of mending, getting the repairs done, and talking about caring for the earth and one another.

- When you need to buy clothing, shop for the company, not just the product. Support businesses that practice sustainability and fair worker treatment in their products and production. Here's a list of 35 ethical and sustainable clothing brands.

- Make your clothes last longer. Wash them in cold water, which is less damaging than hot. Wash a full load, which reduces the agitation's wear-and-tear on the items. Add a few pinches of salt rather than color-"safe" chemical bleaches, which are hard on the materials. Choose other natural remedies for getting stains out. Hang your clothes outside to dry.

- Avoid the landfills. Charities, thrift stores, "upcyclers," and selected manufacturing all benefit from your donations through retold, a mail-in service for recycling not just clothing but also household textiles, such as blankets, towels, and so on)—even wedding dresses. Retold takes items in poor condition as well as those worthy of resale. By carefully sorting through donations, the company has already diverted 18 million tons from landfills.

- Look at what you are wearing. Whose hands cut the fabric? Whose labor stitched the pieces? Were they safe in their working conditions? Were they paid a living wage? Pray and advocate for garment workers. When you dress, say a blessing for those who provide for you.

- Nurdles (microplastics) leached from the wastewater of washing machines cleaning clothing made of synthetic (petroleum-based) fibers, end up in the water systems of the world. Untold numbers of fish and other marine life try to eat them and starve to death. Untold numbers of people eating fish are ingesting plastic. Switch to clothes made of organic fibers or use a guppyfriend washing bag to stop microwaste.

- Use a carbon footprint calculator from the internet to quickly see how much carbon pollution comes from your individual use of energy at home and on the go. You'll be able to

compare that to an average usage. Armed with that information, you can make changes that will save both energy and money.

- According to the 2019 U.N. Report on Climate Change, what we eat matters. Current food choices cause 25–30% of greenhouse gas emissions. Meat, especially beef, is the single food with the greatest impact. Choose more of your food from grains, fruits, vegetables, and nuts.

Critical Beliefs Underlying This Curriculum

1. Individuals can make a difference, especially as part of a large grassroots movement which you are helping to create by participating in this study.
2. In addition to individual actions, we can make a difference by influencing governments, corporations, organizations through our votes, our voices and our pocketbooks.
3. Talking about the climate crisis is critical. Share your thoughts and stories with friends, family, acquaintances and on social media.

Additional Resources for Further Study:

Documentary: Climate Refugees on YouTube

To explore the idea of exponential growth and understand why there is a sense of urgency among scientists about how quickly climate change is impacting all of creation and why there is a need to act now, watch THIS VIDEO.

HERE is an interesting written interview with Katharine Hayhoe on carbon footprints and carbon shadow.

Website: The Planetary Healthy Diet from The Eat-Lancet Commission.