Food

Physics and Mathematics of Sustainable Energy

College of the Atlantic. November 9, 2023

1. (a) Suppose you eat around 2 kg of red meat per week. (This is roughly the average per capita US consumption.) What is the CO_2e associated with this over the course of one year? (Assume the beef is from a beef herd, not a dairy herd.) Is this a lot or a little?

   (b) Suppose you replace this red meat in your diet with chicken (poultry). How much CO_2 have you prevented from being emitted?

   (c) How much driving in an average car would emit a similar amount of CO_2?

2. Answer the following questions using Table 1 and Figure 2 from Weber and Matthews.

   (a) How much energy does it take to ship 3 metric tons of corn from Iowa to Bar Harbor via truck?

   (b) How many tons of carbon dioxide does this emit?

   (c) What is the total emissions associated with 3 tons of corn?

Some useful info:

- Burning one gallon of gasoline releases 38 kWh of energy and 9 kg of CO_2.