

## **Description and definition**

Carbon footprint refers to the collection of greenhouse gases emitted by enterprises, activities, products or individuals through transportation, food production and consumption, and various production processes. In short, the more carbon dioxide increased, the larger value of carbon footprint occurs.

The measurements and calculations of carbon footprint can give people a better understanding about the influence of daily activity on the environment. For this project, the measurement and calculation focus on individual's carbon footprint.

## **calculation**

Calculation of carbon footprint, in this case, includes mainly three categories: transportation, diet and electricity Usage.

### **transportation**

This refers to an individual's driving. To calculate the result of carbon dioxide increased by someone's daily driving, need to have these data: car MPG, miles driven and the value of how much carbon dioxide produced from burning a gallon of gasoline.

About 19.64 pounds of carbon dioxide are produced for burning on gallon of gasoline if it does not have ethanol. And about 22.38 pounds of carbon dioxide are produced by burning a gallon of diesel fuel.

(<https://www.eia.gov/tools/faqs/faq.php?id=307&t=11>)

So, the formula of carbon dioxide increased by transportation(driving) is:

$$Result(pounds) = car\ MPG * miles * 19.64(or\ 22.38)$$

**Diet:**

To calculate the carbon dioxide emitted by food, use this table as reference.

Food group	Food	CO <sub>2</sub> -Emissions (in g per kg food)
Meat and sausages	Beef	13'300
	Raw sausages	8'000
	Ham (pork)	4'800
	Poultry	3'500
	Pork	3'250
Milk- and dairy products	Butter	23'800
	Hard cheese	8'500
	Cream	7'600
	Eggs	1'950
	Quark (curd)	1'950
	Farmer cheese	1'950
	Margarine	1'350
	Yogurt	1'250
	Milk	950
Fruits	Apples	550
	Strawberries	300
Baked goods	Brown bread	750
	White bread	650

For example, the production of 1 kg beef causes about 13.3 kg of CO<sub>2</sub>.

(<http://timeforchange.org/eat-less-meat-co2-emission-of-food>)

Source of data: “*Pendos CO<sub>2</sub>-Zähler*” ISBN: 978-3-86612-141-6 (The book is written in German language)

**Electricity Usage:**

The CO2 emission factor for electricity is taken to be 0.527 kg / kWh.

So, the formula we use for this section is:

$$\textit{result}(\textit{kg}) = 0.527 * \textit{electricity usage}(\textit{kwh})$$

**Conclusion:**

The total result of carbon dioxide is the sum of results of each section.

**Trees/CO2 facts**

A tree can absorb as much as **48 pounds (21.8kg)** of carbon dioxide per year and can sequester 1 ton of carbon dioxide by the time it reaches 40 years old.

Use this factor to calculate the trees the individual cost by his/her carbon footprint.