



# WHAT'S THE ENVIRONMENTAL IMPACT OF YOUR CUP OF COFFEE?

Lifecycle assessments (LCAs) are a method of measuring environmental impact. For products, the LCA looks at the carbon emitted at each stage of its life. This includes how it was grown, transported, produced, packaged, used, and disposed of.

The lifecycle of a cup of Nespresso coffee starts on the farm and ends with the used capsule.



One of our most extensive LCAs was conducted across several European countries. It measured the impact of a lungo coffee (110 ml) made in a Nespresso machine.

**You can read the LCA here:**

Quantis lifecycle assessment: comparative LCA of Nespresso versus other coffee systems in Europe.

The LCA shows us which parts of the coffee's lifecycle drive its environmental impact.



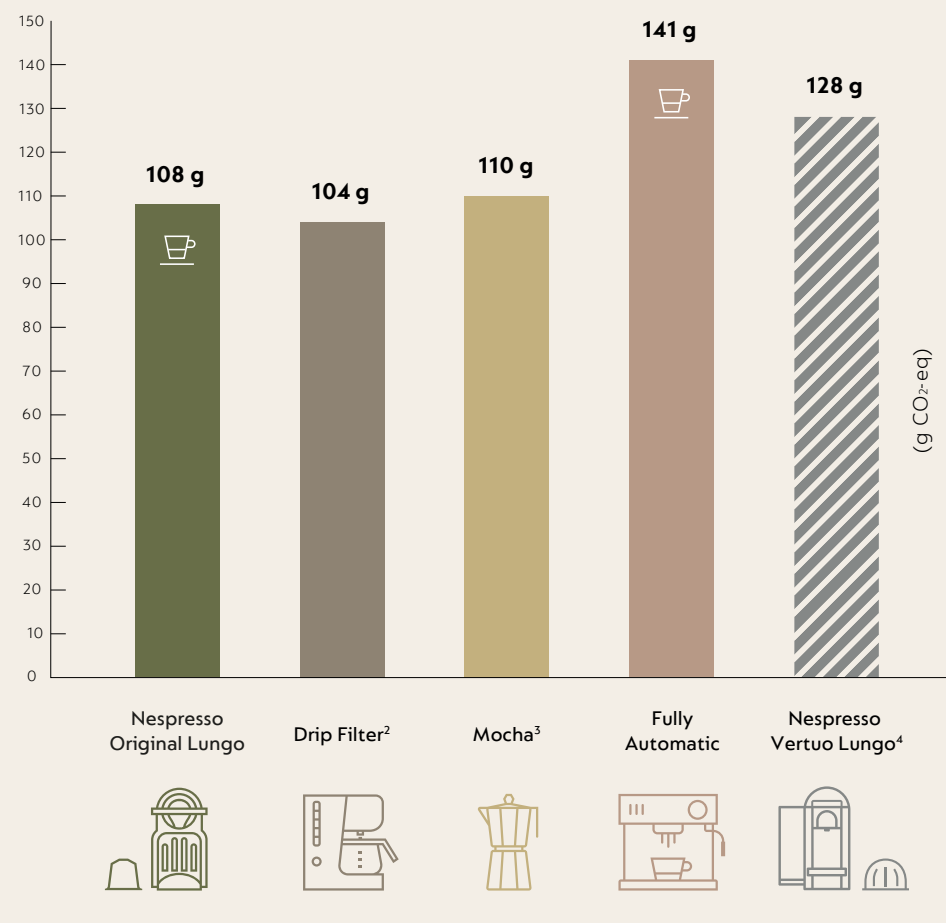
This LCA also allows us to compare the environmental impact of a Nespresso Original lungo to the same size coffee made in other coffee systems.

A lungo made in the Nespresso Original system incurs 108 g CO<sub>2</sub>-eq. This is a similar carbon footprint to the lungo coffee made in the drip filter or mocha. A lungo made in the full automat has 141 g CO<sub>2</sub>-eq. **This means that the Nespresso coffee has a ~23% lower carbon footprint.**

The Nespresso Vertuo system was not included in this study. What's more, the Vertuo system does not make a lungo of 110 ml. However, in order to get a better understanding of its carbon footprint, we used the same model of calculation as the LCA presented here. With this method, we estimate that a 110 ml coffee prepared in the Vertuo system would have a carbon footprint of approximately 128 g CO<sub>2</sub>-eq.

We have also carried out separate LCAs to measure the footprint of an espresso (40 ml) coffee prepared in the Nespresso Professional system. That comparison also showed the Nespresso system is more efficient than a full-automat.<sup>1</sup>

**What is CO<sub>2</sub>-eq?** Carbon dioxide or CO<sub>2</sub> equivalent is a metric measure used to compare the emissions from various greenhouse gases by converting them to the amount of CO<sub>2</sub> which would have the equivalent global warming impact.



1. Quantis lifecycle assessment: comparative LCA of Nespresso versus other coffee systems in Europe.

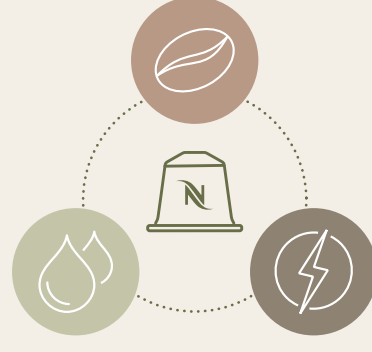
2. Drip Filter 6.4 g/110ml. Data source: draft PEFCR coffee – 7 g roasted beans for a 120 ml coffee.

3. Mocha 8.5 g/100 ml. Data source: extrapolated from Vega Coffee website\* – 25.5 g for 6 cups (300 ml) moka coffee maker.

4. Vertuo based on estimates following the same model of calculation, unverified.

## WHY IS THIS?

### THE BENEFITS OF PRECISION CONSUMPTION



The Nespresso system uses a precise amount of ground coffee, water and energy to make one cup, which minimizes food, water and energy waste. In many scenarios this more than compensates for the additional packaging used for portioned coffee.

Using a lower amount of coffee grounds to make each cup is one key driver of Nespresso's lower carbon footprint.



**6.1 g**

In this LCA, the lungo made in the Nespresso system uses 6.1 g coffee.



**9 g**

The lungo made in the full automat uses 9 g coffee.<sup>5</sup>

According to this study, the Nespresso system gives you more coffee gram-for-gram than a full automat machine.

Nespresso machines tend to weigh less than full automat machines. This also helps to drive the lower carbon footprint per cup. When making coffee using other methods, there are variables which can impact the footprint.

For example, filling a kettle with too much water, using more coffee than is needed, or making too much coffee and throwing some of it away. A precision consumption system removes these variables and reduces food waste by making one cup at a time.

5. According to the EU Product Environmental Footprint



When you recycle your Nespresso capsules, you lower the carbon footprint of your coffee. The recovered aluminium and coffee grounds are recycled, resulting in a positive benefit.

On the other hand, if capsules go into landfill, there is a negative impact and the footprint per cup increases. If capsules are thrown into general waste and are incinerated, the energy can be recovered. This has a positive impact on the carbon footprint.

**This LCA takes the recycling and landfill/incineration rates of each country into account.**



## GREEN COFFEE

The amount of green coffee needed to make each cup is one of the biggest drivers of your coffee's carbon footprint, representing 32% of the emissions from an Original lungo.

Through the Nespresso AAA Sustainable Quality™ Program, we're working directly with farmers to reduce the impact of coffee cultivation. Using primary data, we estimate that the coffee we source through AAA generates emissions of 3.9 kg per kg of green coffee. The average emissions for green coffee, according to the World Food LCA database, is 7 kg per kg of green coffee.

6. Based on World Food LCA database.

7. The AAA green coffee emission factor is a weighted average emission factor for 11 AAA coffee origins.

8. 2020 carbon footprint of a cup of 40 ml of Nespresso coffee (vs 2009 life cycle assessment study).

When comparing different methods of preparing coffee in an LCA, the study uses the same green coffee data as a baseline.

**7**

### AVERAGE GREEN COFFEE EMISSIONS FACTOR

The average carbon footprint in green coffee is estimated at 7 kg of carbon per kg of coffee.<sup>6</sup>

**3.9**

### AAA PROGRAM EMISSIONS FACTOR

The estimated emissions from coffee grown by farms as part of the AAA Sustainable Quality program are lower than the average emissions of growing coffee.<sup>7</sup>

## DID YOU KNOW?

IN THE PAST DECADE, WE HAVE REDUCED THE CARBON FOOTPRINT OF A CUP OF NESPRESSO COFFEE BY 24%.<sup>8</sup>

## WHAT ABOUT COMPOSTABLE CAPSULES?

In 2023, Nespresso launched a new paper-based compostable capsule as a pilot in France and Switzerland. We carried out a new LCA comparing a 40 ml espresso made using the paper-based capsule with other portioned systems and a full-automat in Switzerland.

The results below show that the carbon footprint of a Nespresso paper-based compostable paper-based capsule is similar to one made using a Nespresso recyclable aluminium capsule. In fact, the footprint of coffees made in all the portioned systems in the study are similar, and all are significantly lower than one made in a full-automat machine.

## WHY IS THIS?

The differences between these systems is largely driven by the amount of coffee needed to make each cup.

For example, although a coffee ball does not have the packaging material of a capsule, the system uses more coffee to make each cup.

**You can read the study here.**

## RECYCLABLE VS COMPOSTABLE

