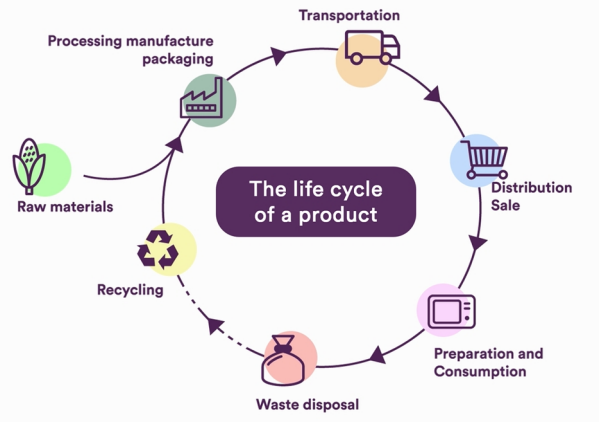
5.3.4

Ecological balance sheet

INTRODUCTION: LIFE CYCLE ASSESSMENT OR 'ECO BALANCE SHEET'

All the products we consume have an impact on the environment, but this impact varies according to the type of product and its life cycle, from its production to its disposal.

To better understand a product's ecological balance sheet, we need to start by listing all the stages, from extraction of the raw materials, to processing and refining, transformation into the finished product, packaging, distribution, consumption and disposal or recycling. Plus, of course, transportation, which may be involved in several of these stages.



The ultimate goal is to identify the steps that have the most negative influence on the environment, in order to put actions in place to mitigate their impact. Measurements are taken throughout the cycle, from the raw materials used, to the energy consumed, emissions into the environment and generated waste. All these steps can influence air, water and soil quality. The depletion of natural resources must also be taken into account.

Let us try to weigh up the environmental impact of our Margherita pizza.

CARBON FOOTPRINT

Let us first talk about the carbon footprint, which is used to evaluate the impact of a product on global warming. The goal is to measure greenhouse gas emissions at each stage of manufacturing a product.

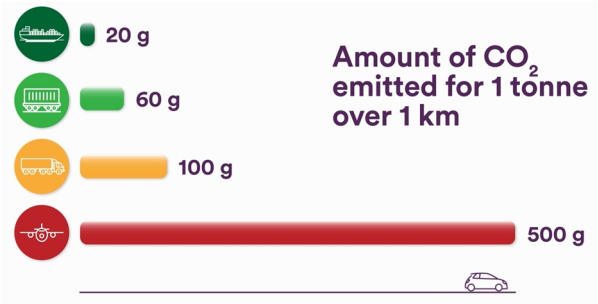
Let us look at the activities that contribute to the production of greenhouse gases in the life cycle of a pizza.

Farming is primarily responsible. Growing tomatoes and wheat generates emissions, mainly due to the use of agricultural machines that consume fuel, releasing CO_2 into the atmosphere.

Stockbreeding also has an impact, as milk is the raw material for mozzarella and cows emit methane.

The energy used for processing raw materials and for cooking, packaging and refrigeration, also contributes to the emission of greenhouse gases.

Of course, the transportation of products also requires fuel. Some means of transport contaminate more than others: Aircraft and lorries, for example, pollute heavily. Finally, many consumers use their cars to go shopping, which adds even more pollution to the life cycle of products.



WATER CONSUMPTION

There is also considerable impact on water consumption. Water is used at all stages of a product's life cycle, whether crop farming or stockbreeding, manufacturing, packaging, cooking or disposal. Making a Margherita pizza consumes an average of a 1200 litres of water, i.e. the equivalent amount of water you would use if you spent one and a half hours in the shower.

Water consumption of course begins with cultivating plants. It is also very high in stockbreeding, whether used directly by the animals or in growing their food.

Large quantities of water are also used for washing the tomatoes, in livestock housing, for machines and utensils, for preserving the mozzarella, refrigerating food, and so on.

During a product's life cycle, as well as consuming water and emitting greenhouse gases, it also releases substances that can damage the environment. Pesticides used to prevent insects from ruining crops, and fertilisers used to improve plant growth can pollute soils and rivers. Stockbreeding also releases substances, nitrates and phosphates, which accumulate in water and disrupt biodiversity. Some industries discharge polluted water into streams during the manufacturing process.

A MORE ECO-FRIENDLY PIZZA?

What can we do to get a pizza whose life cycle will have the best ecological balance sheet?

As you now realise, it is necessary to act at several levels, including the raw material production models, the manufacturing processes, the choice of packaging, the distribution circuits, etc. Consumers also have a role to play, by preferring products that are environmentally friendly, for example by choosing local and seasonal products.

When a vegetable is produced off-season, in a greenhouse, heating and lighting that greenhouse consumes energy. Today, tomatoes grown in greenhouses produce twenty times more greenhouse gases than seasonal tomatoes.

The pizza toppings will also influence its environmental impact. For example, a pizza with salami, ham, mushrooms and peppers pollutes more than a Margherita pizza. Firstly, simply because of the number of ingredients, as each item has its environmental impact, but also because it contains animal products whose production generally has a greater ecological impact than that of vegetable cultivation.

Finally, cooking the pizza will have an equally significant impact. Every time we prepare a pizza at home, we preheat and then use our oven. The energy used here can be much higher than the energy required for growing the ingredients and making the pizza in a factory. The type of home oven and the energy source are paramount. We may use a gas oven or an electric oven in a country where the electricity comes from a renewable source, or from the combustion of coal, or nuclear power.

As far as packaging is concerned, the least polluting is...no packaging at all! Packaging consumes energy from when it is produced to when it is disposed of, or even recycled. It is therefore more ecological to favour products without packaging, or, if this is impossible, products with recyclable packaging.

Assessing product life cycles and, as such, their ecological balance sheet, is part of the actions producers and distributors are now taking in order to reduce the environmental impact of food. Based on this diagnosis, they can identify changes to make to reduce the environmental impact, while maintaining production capacity and controlling costs. This is a process improvement approach, as has already been undertaken for decades in the economic sphere, only now taking the environmental aspect into account.

As consumers, what can we do to reduce our negative impact on the environment? We can adopt new habits, no matter how small the change may seem because, together, they will eventually have an effect.

First, go shopping by bike or on foot, or use car sharing.

We can choose pizzas with seasonal ingredients, grown in a region close to where the pizzas are then made. Also, we can make sure we have an energy-efficient oven for cooking our pizzas.

This reasoning obviously applies to all kinds of food!

Changing our habits to promote sustainable consumption is a principle that we can apply to all types of products.

5.3.4

Ecological balance sheet

By performing an environmental assessment of a food product, we can find out if it...

- O pollutes a lot
- O is expensive
- O is healthy

Which action will only have a small impact on the environmental assessment of a product?

- O Going shopping on foot or by public transport
- O Choosing an energy efficient oven
- O Choosing only gluten-free or lactose-free products

Answers

By performing an environmental assessment of a food product, we can find out if it...

- ● **pollutes a lot**
  Well done! Without doing this environmental assessment, it is difficult to know how much the consumption of a given food product pollutes.
- ○ **is expensive**
  Wrong! The environmental assessment does not tell us that. Try again.
- ○ **is healthy**
  Wrong! The environmental assessment does not provide any information about the nutritional value of a foodstuff.

Which action will only have a small impact on the environmental assessment of a product?

- ○ **Going shopping on foot or by public transport**
  Wrong! Choosing an alternative form of transport to our own private car has significant impact on the assessment, particularly with regard to greenhouse gas emissions.
- ○ **Choosing an energy efficient oven**
  Wrong! Optimising this stage would have considerable impact. Cooking food has a high impact, especially if the oven has to be preheated.
- ● **Choosing only gluten-free or lactose-free products**
  Well done! Although these choices may be justified from a nutritional point of view, they may not have a significant positive impact on the environmental assessment.

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The preferred choice

[8-10 years old]

Choose which of the following two meals is the most eco-friendly, in other words, which has the least impact on the environment.

Meal 1	Meal 2
beef steak aubergines imported from Spain a glass of bottled water	chicken drumstick local potatoes and salad a glass of tap water

Which is the most eco-friendly?

- ○ Meal 1
- ○ Meal 2

Explain your reasoning:

Answers

The preferred choice

[8-10 years old]

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Which is the most eco-friendly?

○ Meal 1
● **Meal 2**

Explain your reasoning:

Breeding poultry, such as chickens, requires a lot less water and food; hens can often even be fed with leftover food. There is also the fact that breeding ruminants, such as cows, generates large quantities of greenhouse gases (especially methane).

Transporting food consumes energy and often generates greenhouse gases. It is therefore preferable to consume local products, such as the potatoes in meal 2. However, this is only true for seasonal products, as producing vegetables locally but in heated greenhouses may require a considerable amount of energy.

Whenever possible, drinking tap water is better for the environment. Bottled water requires energy for the bottling process and raw materials for packaging, and transporting bottled water results in the emission of greenhouse gases.