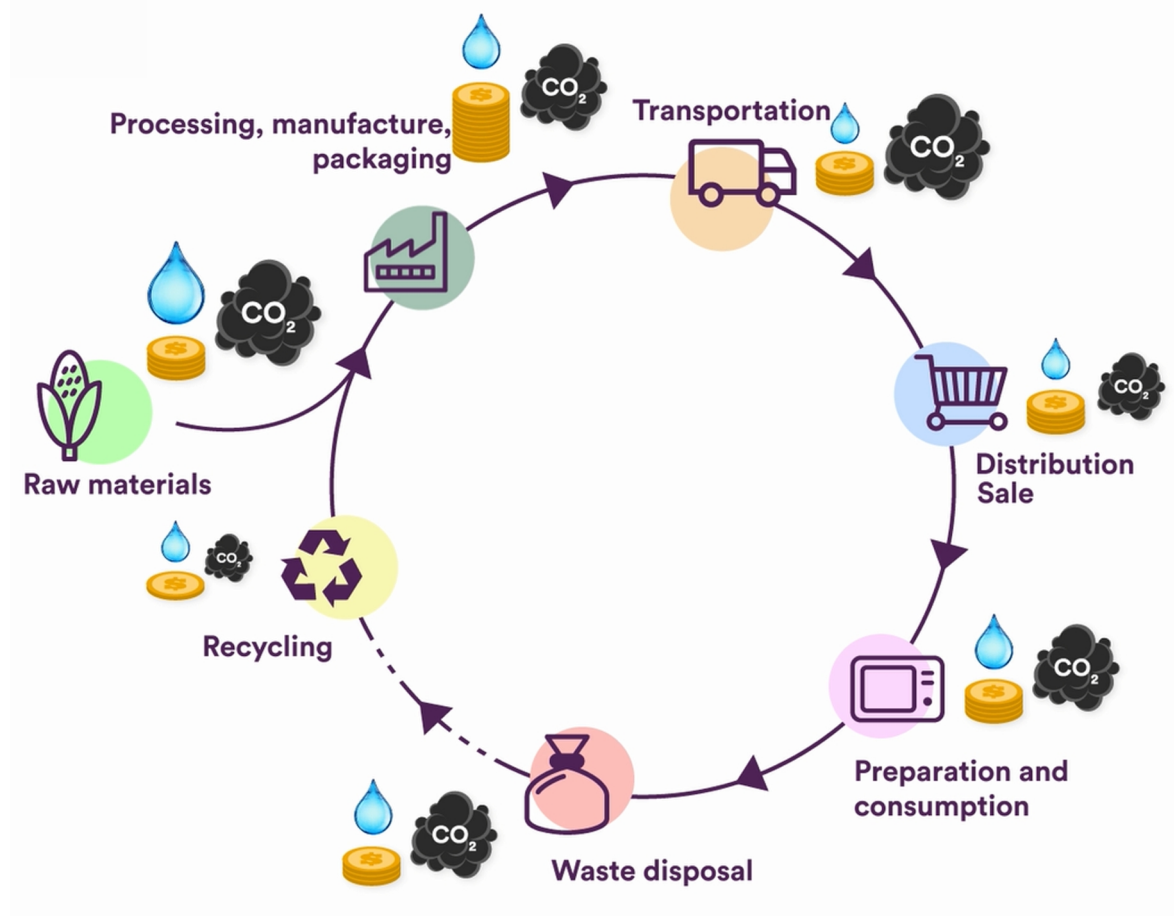


From farm to fork

THE LIFE CYCLE OF A PRODUCT

When talking about the life cycle of a product, we have to take into account all activities at each stage of the product's life. The life cycle begins with production, from the moment the raw materials are extracted or harvested, and ends with disposal or recycling as waste. Between these two points, a product goes through processing and assembly, packaging, transportation and, of course, consumption. We can follow a product's life cycle from start to finish.

Why is it interesting to know the route a product takes? First of all because, in analysing each step, we can understand what manufacturing actually costs. Secondly, because each step can have an impact on the environment, for example, through the use of non-renewable energy, or water, or through the emission of greenhouse gases or pollutants. The aim is therefore to identify sources of pollution and waste, to find alternatives that are more environmentally friendly.



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THE LIFE CYCLE OF A PIZZA, STEP BY STEP

Let us continue with our example of pizza and go through its life cycle together. As a reminder, the raw materials used to make a Margherita pizza are wheat, tomato, water and milk.



A product's life cycle starts from the production and extraction of the raw materials required to make it. For our pizza, growing the wheat and tomatoes involves the use of fertilisers, water and crop protection products (pesticides). The wheat and tomatoes are then harvested, often with machines that consume energy. Likewise, to obtain milk, we feed cows with the cereals we grow, we give them water to drink, we use machines to milk them, and then other machines to refrigerate the milk.



In a second step, the raw materials must be processed or refined. Tomatoes are transformed into tomato puree, milk into mozzarella and wheat into flour.



Processed raw materials, such as wheat flour, tomato puree, yeast and mozzarella are then transported either to points of sale, for use in the home or restaurants, or to another factory that uses them as ingredients to prepare pizzas. Transportation, manufacturing and packaging form the third stage in the life cycle of our products, a stage that still consumes energy.



The next phase in the life cycle of pizza is eating that pizza. A homemade pizza is both prepared and cooked at the place of consumption, while an industrial pizza is ready to go directly into the oven. Of course, you still need energy for preheating the oven and cooking.



Finally, after eating the pizza, the packaging must be discarded or recycled. The waste is then transported to a recycling or incineration site. This last stage of a product's life cycle is also often energy intensive and a source of emission into the environment.



THE COST OF A PIZZA

Pizzas may appear to be similar yet their prices may vary. This disparity is due not only to the cost of raw materials, but also to the cost of each of the steps involved in making and distributing the pizzas. The selling price of a ready-to-eat product will vary depending on the methods used in processing and manufacturing it, and on the choice of packaging and the marketing options.

Large-scale industrial production can reduce manufacturing costs by automating and accelerating part of the production process. However, savings can be made throughout the manufacturing chain, right until the product is put on sale.

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Observing the successive steps in view of reducing costs could also serve to reduce environmental impact.

An assessment of the life cycle will also be useful at this level. It will help distinguish the environmental cost of each step and decide on the actions to be taken to reduce a product's ecological footprint. We will look into this later.

From farm to fork

With regard to the environment, when we talk about the life cycle of a product, we refer...

- to every stage the product goes through, from start to finish
- only to the manufacturing of the product
- only to the recycling processes

Why is it important to define the life cycle of a product?

- Because it is important to recycle products
- To identify the stages which need to be assessed in terms of their environmental impact

A life-cycle analysis only focuses on greenhouse gas emissions, responsible for global warming.

- True
- False

In the life cycle of a pizza packaged in a cardboard box, we do not include...

- the stage when wheat is turned into flour
- the stage when the raw materials or the pizza are stored
- the stage after recycling the cardboard packaging into paper and its further use

Cooking a pizza at home is part of the life cycle of that pizza.

- True
- False

Answers

With regard to the environment, when we talk about the life cycle of a product, we refer...

- to every stage the product goes through, from start to finish**
Well done! It covers every stage, from the production of the raw materials to consuming the end product and recycling waste and the product packaging.
- only to the manufacturing of the product**
Wrong! Try again.
- only to the recycling processes**
Wrong! Try again.

Why is it important to define the life cycle of a product?

- Because it is important to recycle products**
Wrong! It is important to find solutions for recycling waste, but that is not the reason for defining the life cycle.
- To identify the stages which need to be assessed in terms of their environmental impact**
Well done! It is important not to omit any of the consequences. For example, the pollution of the soil during cultivation, or the emission of greenhouse gases during transportation and the elimination of waste.

A life-cycle analysis only focuses on greenhouse gas emissions, responsible for global warming.

- True**
Wrong! This analysis does not only cover greenhouse gas emissions. It also measures many other elements, such as the consumption of water and energy, and the degradation of the soil.
- False**
Well done! Although the evaluation of greenhouse gases is important, it is not the only element covered.

In the life cycle of a pizza packaged in a cardboard box, we do not include...

- the stage when wheat is turned into flour**
Wrong! This stage is part of the pizza's life cycle.
- the stage when the raw materials or the pizza are stored**
Wrong! This stage is part of the pizza's life cycle.
- the stage after recycling the cardboard packaging into paper and its further use**
Well done! Recycling the cardboard is part of the pizza's life cycle, but not the future use of the paper this recycling produces. We have to stop at some point.

Cooking a pizza at home is part of the life cycle of that pizza.

- True**
Well done! That is right, because the type of oven (electric, gas) and the time needed to preheat it can have a significant impact.
- False**
Wrong! Try again.

Diagram of a product's life cycle

[11-13 years old and 14-15 years old]

Label the seven main stages in this diagram of the life cycle of a product.

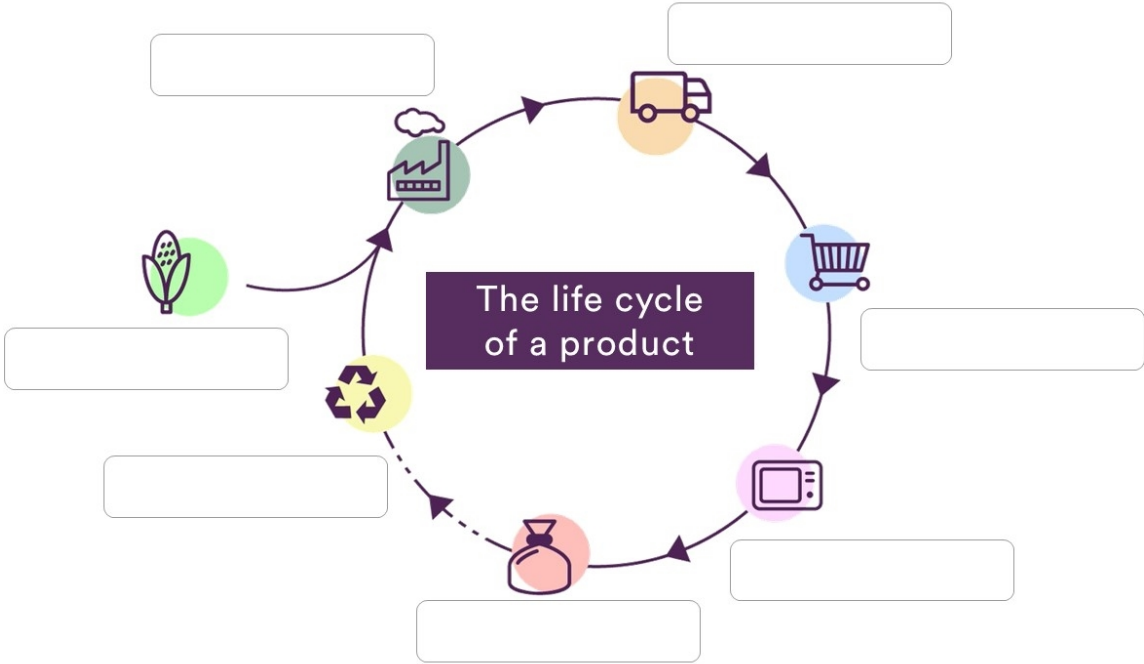
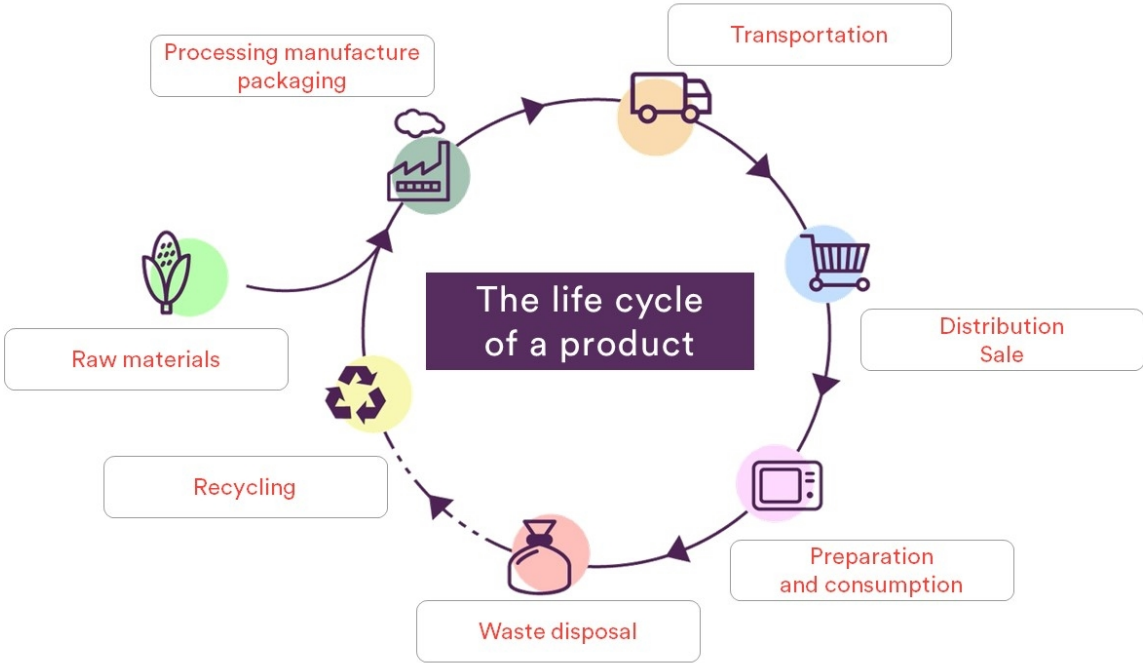


Diagram of a product's life cycle

[11-13 years old and 14-15 years old]

Label the seven main stages in this diagram of the life cycle of a product.



Life cycle assessment

[11-13 years old and 14-16 years old]

Work with a classmate to choose a product you eat regularly and analyse its life cycle. Show the materials used to make it, the different stages it undergoes from the farm to the fork, and any measures for waste disposal or recycling.

You can either write a description or draw a diagram.

Life cycle assessment

[11-13 years old and 14-16 years old]

Work with a classmate to choose a product you eat regularly and analyse its life cycle. Show the materials used to make it, the different stages it undergoes from the farm to the fork, and any measures for waste disposal or recycling.

You can either write a description or draw a diagram.

Answers:

Have the following points been covered?

- The main stages of the life cycle
production and harvesting of raw materials – processing and manufacture – transportation – sale – consumption – recycling – waste disposal
- The various raw materials
- The packaging and its raw materials.

Discuss with the pupils the points raised. They will probably not have included the packaging (its raw materials and how it is made). These are points worth discussing with them. You can also highlight the transportation between the point of sale and the point of consumption.

The cost of a product

[11-13 years old and 14-15 years old]

Why can similar pizzas have different prices?
Give at least two reasons.

- 1. _____

- 2. _____

- 3. _____

- 4. _____

Answers

The cost of a product

[11-13 years old and 14-15 years old]

Why can similar pizzas have different prices?
Give at least two reasons.

1. The cost of the raw materials may vary.
2. Large-scale production can reduce manufacturing costs by automating and accelerating part of the production process.
3. The marketing method can influence the retail price.
4. The choice of packaging can have an impact on the retail price.