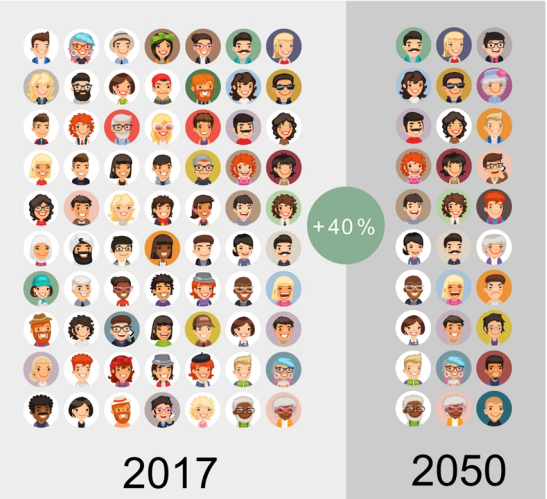
5.1.2

Feeding the planet: Challenges and accountability

Today, the Earth is home to more than seven billion people and the population is continuing to grow.
Latest estimates predict that, in 2050, world population will have reached 10 billion.

So the question we have to ask is how can we feed 40% more people with our available resources?



Until today, technical advances have made it possible to produce more.

Processing and preserving techniques have also improved. Sterilisation and artificial cold production allow food to be stored longer.

Also, in recent decades, international trade has intensified: Food is now transported quickly, by road, rail, ship or air.

These innovations allow industrialised countries to be 'food secure', meaning that they have stable access to food, both in terms of quantity and quality.

However, such food security is not guaranteed in all parts of the world, and some populations still lack resources and access to food. This is particularly the case in several sub-Saharan African countries, where diets mainly consist of cereals, roots and tubers that are poor in nutrients and often in insufficient quantities.

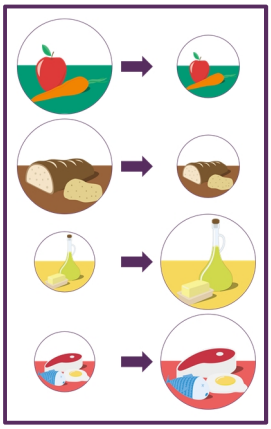
World population

11%
suffers from undernourishment

39%
suffers from overeating

As you can see, this means that there is an unequal redistribution of food in the world.
According to the FAO, the Food and Agriculture Organization of the United Nations, 11% of the world's population still suffers from undernourishment, although this figure is decreasing. On the other hand, 39% of the population is suffering from overeating, and this figure is increasing.

NUTRITION TRANSITION



Alongside this imbalance and population increase, certain populations are witnessing drastic changes in their diet.

A growing proportion of the world's population is adopting the diet of western countries, a diet very rich in animal proteins and fats. When a group of consumers changes its eating habits like this, we call this **nutrition transition**.

THE CHALLENGES OF STOCKBREEDING

The increased consumption of meat and animal products requires increasing the number of animals bred and producing plenty of cereals to feed them.

It is estimated that it requires 10 kg of plant protein to produce 1 kg of animal protein.

Hence, stockbreeding has the disadvantage of requiring a considerable amount of land, both directly and indirectly, to produce the cereals and plants it requires. As such, it plays a significant role in deforestation.

Stockbreeding also consumes large quantities of water. For example, a cow consumes about 100 L of water per day to produce 30 L of milk, whereas a human being consumes one to two litres of water per day. Water is also required to clean stables and to irrigate the crops grown to feed the animals.

On another note, stockbreeding, particularly of ruminants, produces a large amount of greenhouse gases. These contribute to global warming, responsible for climate change and its significant consequences.

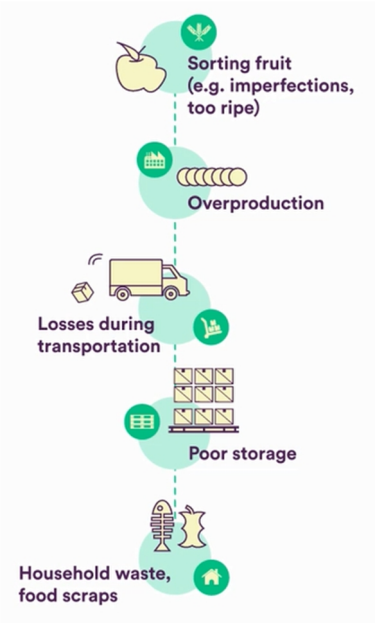
In addition to the increase in population, this change in diet means that, by 2050, agricultural production will need to more than double if it is to meet the food needs of people and livestock. Under current conditions, and without harming natural resources, is this actually possible?

LOSS AND WASTE

One avenue to explore is to determine how to reduce losses, when producing, harvesting, processing, transforming, transporting, preserving or storing food.

In Switzerland alone, two million tonnes of food are lost or wasted every year. This corresponds to the freight in 120 000 lorries, which, if lined up one behind the other, would equal a traffic jam from Geneva to Madrid.

The same is true at the global level. One third of foodstuffs are lost, amounting to approximately 1.3 billion tonnes a year. This is practically the equivalent of a full meal per person per day!



Food is wasted throughout its journey, from production through to consumption.

The first losses take place during farming, where products are thrown away if they do not meet the standard appearance or size. Other losses occur during industrial processing and transportation as, for example, food is discarded if it has been damaged during delivery.

Finally, households are the cause of half of all food waste, for instance when we buy more than necessary and the excess ends up in the bin.

In conclusion, we are confronted with a growing world population, which consumes increasing amounts of products of animal origin, and which produces its food by using methods not yet adapted to preserving natural resources, and wastes nearly one third of all foodstuffs.

5.1.2

Feeding the planet: Challenges and accountability

In 2016, there were just over 7 billion people living on Earth. What will the world population be in 2050?

- O Just under 4 billion
- O Almost 10 billion
- O More than 20 billion

Having access to sufficient and stable quantities of food of appropriate quality is called...

- O food security
- O food safety
- O food dependency

What proportion of the world's inhabitants still lacks food?

- O 39%
- O 11%
- O 1%

What proportion of the world population suffers from overeating?

- O 39%
- O 11%
- O 1%

What is nutrition transition?

- O When a population adopts new eating habits
- O The time it takes food to travel through the digestive tract
- O The trade of food between countries

How much plant protein is required to produce 1 kg of animal protein?

- O 2 kg
- O 10 kg
- O 100 kg

Stockbreeding...

- O is responsible for all deforestation
- O uses much less water than crop farming
- O releases greenhouse gases into the atmosphere

One third of all food produced is wasted.

- O True
- O False

Answers

In 2016, there were just over 7 billion people living on Earth. What will the world population be in 2050?

- ○ **Just under 4 billion**
  Wrong! Unless there is a major worldwide catastrophe, it is very unlikely that the population will decrease as much as that.
- ● **Almost 10 billion**
  Well done! It is estimated that the global population will grow by almost 3 billion people between 2017 and 2050.
- ○ **More than 20 billion**
  Wrong! The world population is in fact growing, but not at that rate.

Having access to sufficient and stable quantities of food of appropriate quality is called...

- ● **food security**
  Well done! That's right. There are no longer any famines in industrialised countries, as innovations in agriculture and trade have made them food secure.
- ○ **food safety**
  Wrong! Food safety refers to the assurance that food poses no health risks to consumers. It does not concern assuring sufficient quantities of food.
- ○ **food dependency**
  Wrong! Try again.

What proportion of the world's inhabitants still lacks food?

- ○ **39%**
  Wrong! That is not the correct answer. Unfortunately, many people still cannot access sufficient quantities of food, but the proportion is not that high.
- ● **11%**
  Well done! In 2016, almost 800 million people still lacked sufficient quantities of food. This is equivalent to 11% of the world's population. The United Nations aims to eradicate world hunger by 2030.
- ○ **1%**
  Wrong! Unfortunately, the current figure is higher. However, this could be the percentage in the near future, as the United Nations aims to eradicate world hunger by 2030.

What proportion of the world population suffers from overeating?

- ● **39%**
  Well done! That's correct! Overeating may lead to obesity and health problems such as diabetes and cardiovascular diseases.
- ○ **11%**
  Wrong! 11% actually corresponds to the proportion of undernourished people, i.e. those suffering from hunger.
- ○ **1%**
  Wrong! The proportion is much higher.

What is nutrition transition?

- ● **When a population adopts new eating habits**
  Well done! This term is currently used in reference to populations in developing countries adopting a Western-style diet, high in meat and fat.
- ○ **The time it takes food to travel through the digestive tract**
  Wrong! This is bowel transit time, and nothing to do with nutrition transition.
- ○ **The trade of food between countries**
  Wrong! Try again.

How much plant protein is required to produce 1 kg of animal protein?

- ○ **2 kg**
  Wrong! It is more than that. Don't forget that animals need food as they grow and they do not convert all the protein they eat into meat.
- ● **10 kg**
  Well done! This is the amount required to produce beef protein, but the figure is slightly lower for poultry or fish.
- ○ **100 kg**
  Wrong! Try again.

Stockbreeding...

- ○ **is responsible for all deforestation**
  Wrong! Livestock farming is one of the main causes of deforestation, notably to free up land to grow food for the animals. However, it is not the only cause.
- ○ **uses much less water than crop farming**
  Wrong! Water is needed not only for the animals to drink and for cleaning the barns, but also for irrigating the crops grown for animal fodder.
- ● **releases greenhouse gases into the atmosphere**
  Well done! This is particularly the case of ruminants, such as cows, which release methane. This greenhouse gas has an even greater effect than carbon dioxide.

One third of all food produced is wasted.

- ● **True**
  Well done! This corresponds to wasting one meal per person every day of the year.
- ○ **False**
  Wrong! It is in fact true that one third of all food is wasted.

ACTT05C01L02_A

A waste-o-meter

[8-10 years old, 11-13 years old and 14-16 years old]

Making a 'waste-o-meter'

Discuss with your classmates or family how you could create a tool to show the amount of food we waste.

Here are some examples:

ACTT05C01L02_D

What are the possible solutions?

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

How could we increase agricultural production and the quantity of food available? Suggest four solutions, describing them in as much detail as possible.

Answers:

1. _____
   _____
   _____
   _____
   _____

2. _____
   _____
   _____
   _____
   _____

3. _____
   _____
   _____
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   _____

4. _____
   _____
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Answers

What are the possible solutions?

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

How could we increase agricultural production and the quantity of food available?
Suggest four solutions, describing them in as much detail as possible.

Answers:

1. Improve yields. This means increasing the quantity of product harvested on a given cultivated area.

2. Rationalising agriculture, by developing new farming techniques to guarantee more efficient use of pesticides, fertilisers and water, while ensuring increased yields.

3. Reduce the consumption of meat in western countries and seek to reduce the effects of nutrition transition, whereby the population of some countries is adopting a Western-style diet very rich in animal proteins.

4. Reduce loss and waste during food production, processing, transportation, storage, sale and consumption.