

For teachers and youth
who want to change the world



Menu for Change

— WHY RESPONSIBLE FOOD CONSUMPTION MATTERS —



Resource scarcity, increased population, decreasing land availability and accessibility, emerging water scarcity, and soil degradation require us to re-think how best to use our resources for future generations.

Hilal Elver
UN's Special Rapporteur on the Right to Food

Everywhere people ask: 'What can I actually do?' The answer is as simple as it is disconcerting: we can, each of us, work to put our own inner house in order.

E. F. Schumacher
Small is Beautiful: Economics as if People Mattered

If our starting point is a respect for nature and people, diversity is an inevitable consequence.

Helena Norberg-Hodge
Ancient Futures: Learning from Ladakh

You cannot get through a single day without having an impact on the world around you. What you do makes a difference, and you have to decide what kind of difference you want to make.

Jane Goodall

Living democracy grows like a tree, from the bottom up.

Vandana Shiva

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Why responsible food consumption matters



Food is a need, food is a pleasure, food is a matter of personal taste or cultural preference. What perhaps comes less quickly to mind is that food is first and foremost a human right that is still not fully realized for one person out of nine in the world. And looking at the future, food is a great global concern. By 2050, with the same planet, we will have to feed three times more people than a century before. From that perspective, food is much more than a private story. The choices we make regarding food production and consumption already have direct or indirect consequences on the climate, on the use of resources like water and land and on people's ability to feed themselves and live decent lives here and abroad.

Today, food production:

- contributes more to global warming than all cars, trucks, airplanes and trains combined;
- uses 70% of fresh water, but seriously degrades water quality due to pesticide and fertilizer runoff;
- accelerates the loss of biodiversity;
- is a major cause of deforestation and desertification.

But not every diet has an equal footprint. How positively or negatively our food choices impact people and the planet depend mainly on the five following aspects: what we eat, how much we eat (of what), how much food we waste, how our food was produced and who benefited from it.

Three times a day, each one of us has the possibility to choose food that better respects life in us and around us. In a world of over 7 billion people, our personal positive actions may seem to be a drop in the ocean, but they are not. As is the case with North Americans, our European diets have the greatest environmental footprint and are the drivers of several negative impacts. But within Europe, and especially within the nine countries that are part of this project, there are also many positive examples of responsible food consumption.

In this publication, we offer you a chance to discover more about how food shapes the world. The publication is structured in six parts, each illustrating and explaining one global food trend that is problematic and should be brought to the attention of all of us, from policy makers to the general public. **These six trends are:**

- the accelerating loss of varieties;
- the increasing consumption of meat and dairy products;
- the growing distance between farmers and consumers;
- the loss of seasonality;
- the runaway consumption of highly processed food and the presence of palm oil in half of processed food;
- the dramatic increase in food waste.

This brief guide to responsible food consumption is designed for teachers and youth who wish to become active global citizens. It combines basic information with stories, key facts and suggestions for activities and resources to go further.

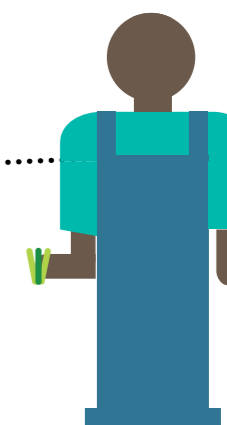
We Eat Responsibly is a global education project involving 550 Eco-Schools in nine European countries (Bulgaria, Croatia, Czech Republic, Latvia, Malta, Poland, Romania, Slovakia, Slovenia).

We Eat Responsibly:

- is supporting teachers in incorporating responsible food consumption topics into their lessons;
- is developing critical thinking of pupils and students and supporting their activities towards responsible change at schools and in their neighbourhood;
- is increasing awareness among parents and society of the global impacts of our everyday choices.

Project participants:

- 1,800 teachers and tutors are developing their knowledge and skills in understanding the links between food production, changes in society and the environment and the quality of our life;
- 550 European Eco-Schools are running a yearlong educational program on responsible food consumption topics;
- 90,000 students are looking for opportunities for responsible changes in their menu as well as in their neighbourhood.



For more information about the We Eat Responsibly project, go to our website:
www.eatresponsibly.eu



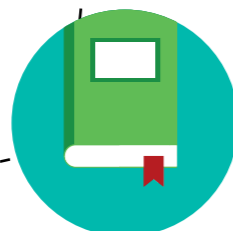


EATING
LOCAL AND
SEASONAL

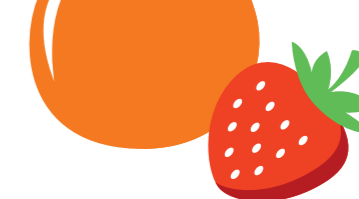
Definition corner

Fungicides: chemical products used to kill or inhibit fungi.

Ozone layer: a layer in the stratosphere, about 15 km above the earth's surface, that acts like a giant umbrella protecting the earth from ultra-violet rays (which are detrimental to plant and human health).



7



Is it the right time to eat strawberries?

— PROBLEMATIC TREND NO. 1 —
ANY FOOD AT ANY TIME,
FROM ANYWHERE.

Food is a reflection of local natural specificities. Because natural conditions are different in each region of the world, the food that grows in each region is different, too. Temperatures as well as humidity and sunshine vary from region to region and change in each season. Bananas grow best in tropical climates in regions close to the equator, in countries such as Ecuador, for instance. They don't have a specific harvesting season – they can grow all year round. On the other hand, apple trees would not survive tropical temperatures but grow well in the temperate climate of Europe and have a specific harvesting season: summer and autumn.

In every country, week after week, we move into another season that will bring different local food. Eating seasonal food is a guarantee of eating fresh food, which is richer in nutrients. Eating local food is also a guarantee that it has not travelled long distances to reach us and therefore did not cause unnecessary emissions of CO₂.

For people who live in cities and buy food in supermarkets, it may seem as if there were no more seasons or distances. The supermarket shelves look pretty much the same almost all year round. Tomatoes, cucumbers, apples and grapes are available throughout the whole year. This means that these foods travelled long distances and/or were produced in heated greenhouses, both of which involve a great deal of energy. Or it may mean that these foods are several months old and have received some treatment to slow their aging (for instance fungicides and waxing on apples). In that case they may have lost a large part of their precious nutrients and hold residues of pesticides.

As an example, for those of us living in Central Europe, apples should always be favoured over bananas; but if it's June, let's choose more delicious seasonal foods such as strawberries, for instance. However, in January it will be more sustainable to eat stored apples rather than strawberries.

Seasonal local food can often be cheaper than non-seasonal food, more tasty, and supportive of the local economy.



Network capturing world food trade interactions. Where to and from where does food flow? Are all countries participating equally? (Photo: B.S. Halpern (T. Hengl; D. Groll) / Wikimedia Commons, via Wikimedia Commons)



— THE STORY —

A (low-carbon) surprise dinner

"It's almost 4:30 in the afternoon! I hear someone ringing at the door!" said Cynthia, who was helping Agnieszka find extra cushions for sitting on the floor.

Josip, arms loaded with bottles of apple juice, enters with five other boys. Michaela, who was hosting the meeting, was frenetically running to open the door again to a new bunch of people. All her seventeen friends from the international study program were there, except Gregor.

Razvan opened the discussion: "So guys, what do we prepare for Gregor? Today is November 18th, so there are only two weeks left before the farewell party! I am sad he will be the first one to go back to his country, Slovenia, but I am very excited about our surprise party preparations!"

Cynthia continued: "We have found a great place! The grandmother of Michaela, our only real local friend, has agreed to let us use her house. It is spacious enough for 30 people, even to sleep over, and there is an open fire place. What we need to decide now is what we will prepare for dinner".

Agnieszka directly followed: "Since Gregor will be studying environment studies next semester, it would be logical and nice to make a meal that is environmentally-friendly, right? Something like a low-carbon surprise dinner!"

Cynthia added: "Oh, yes – good idea! It could be zero food miles!"

Martin: "What language are you speaking, girls? Zero what?"

Cynthia: "Zero food miles! It means food has not travelled hundreds or thousands of miles to reach you. A low carbon footprint means that the production or travel of your food did not emit too many greenhouse gases that warm up the atmosphere and cause climate change".

Josip, who had been silent until now, added: "If we want to lower our carbon footprint, we should make a seasonal meal. For instance, we shouldn't use strawberries, because the season here is over, so they would have to come from Spain, which is 2,000 km away. The same with tomatoes, which by now are being grown in heated greenhouses, thus using energy! So we need to choose local food from this season".

Martin: "But we won't have any fresh ingredients then! Nothing is growing here in November and December. You can only find food coming from abroad".

Josip said: "That's not true. We could make a very nice soup from fresh pumpkin for instance, because it was in season the last two months and they store very well. And before the soup, we could make delicious chips from the kale that is currently sold at farmers' markets. You just dry them in the oven with a bit of salt and few drops of oil and they get very crispy. It is delicious and much healthier than fried potato chips".

Michaela: "That's a great idea. We can also have fresh carrot and celery sticks, because they can be harvested even in the winter! I can make a nice sauce with yogurt and dill. In September I dried the dill I grew on my balcony!"

Agnieszka: "I would love to make something with spinach, potatoes and local goat cheese for the main meal. I will think about a recipe. I guess that if we want to reduce the carbon footprint, we should avoid meat, especially red meat".

Martin: "I don't like goat cheese very much! But I can handle it if we have a good desert. What about grilled pineapple?"



Agnieszka: "Well, that may be seasonal, but not very local! Pineapples are grown in the Philippines or Costa Rica and travel thousands of kilometres to reach us. Let's make a cake with apples and nuts instead. I filled up boxes and boxes of apples from the old trees at my grandmother's in September. Of course they are smaller and not as pretty as those you find in stores, but they are nicely sweet and a bit tart".

Michaela: "And they don't come from the other side of the planet, like New Zealand, which is 12,000 km away! That's more than I travel in one year! And it is not only all the fuel needed for such a long distance that is problematic. Do you know that many fruits and vegetables coming from abroad are harvested before they are ripe and receive post-harvest chemical treatment such as fungicides to increase their shelf-life?"

Josip: "And methyl bromide, a toxic pesticide is also widely used as a fumigant on the apples before transport, to kill insects that could be amongst the apples. This gas is bad for the ozone layer!"

Cynthia: "And if you look for local apples, you also support the local economy and preserve local varieties. I suggest adding a confit of plums on the apple cake. I made some last month, with a bit of cinnamon, sugar and rum. Our neighbours gave us so many plums this year we were able to make lots of preserves!"

Martin: "You know so much about seasonal food, guys. I am really impressed and am looking forward to tasting all this! I am sure Gregor will be amazed to discover how we are able to cook meals that are tasty and respectful of the planet!"



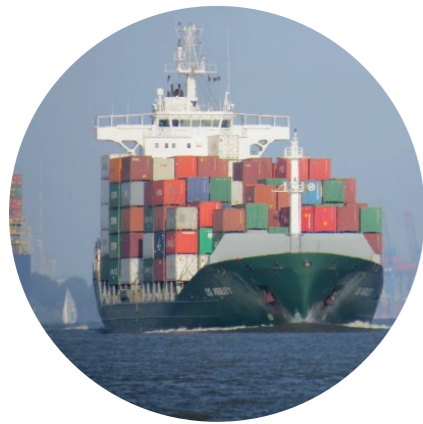
Questions to go further

- Which food is available in which season?
- How seasonal do we eat at school and at home?
- What is the average distance of one meal? What is the equivalent in GHG emissions?
- What are the multiple benefits of eating seasonal foods?

Eating strawberries as early as January or cucumbers all year round is possible due to production in greenhouses. An area near Almeria City, Spain, has the largest concentration of greenhouses in the world covering 26,000 hectares (equals to the size of the island of Malta). This area is called by locals "the sea of plastic". Many legal and illegal migrants are known to work there in conditions that don't respect human dignity. To find out more on human rights and decent work, see Chapter 4. (Photo: Google Earth)

Did you know that:

- fruits and vegetables that are not seasonal grow in heated greenhouses or come from far away? When fruits and vegetables are transported by air, they consume between 10 to 20 times more fuel than the same fruit or vegetable produced locally during the season.¹
- 1 kg of strawberry in the winter can require up to 5 litres of fuel to reach you.²



The concept of “food miles” expresses the distance that food travels before it is consumed. Reducing food miles means we cut the carbon emissions during transportation by boat, train, truck or plane. But the transportation accounts for only one part of the carbon footprint of the food. Production, processing and packaging count for even more. Moreover, what we eat also matters: vegetable production leaves a lower carbon footprint than meat production (learn more in Chapter 2). (Photo: Creative Commons)

Ideas for action:

- Calculate the footprint of a meal and analyse how it changes when you choose ingredients from a different origin.
- Make your own seasonal calendar of fruits and veggies and try new recipes.
- Find farmers who organically grow veggies, fruits, meat, eggs and cheese and from whom you can buy directly.
- Explore possibilities for your school canteen to purchase directly from local farmers and follow the seasons with them.

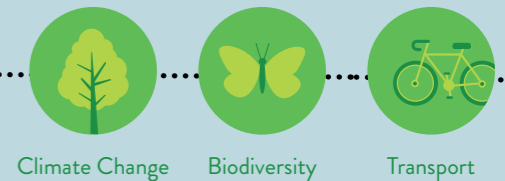
Resources to go further or get inspired:

Try to eat low carbon (take the quiz): <http://www.eatlowcarbon.org/>
 Food carbon footprint calculator: <http://www.foodcarbon.co.uk/index.html>
 About food miles: http://www.sustainweb.org/foodandclimatechange/archive_food_miles/
 Activity for students on local and seasonal food: <http://www.nourishlife.org/teach/curriculum/activity-2-seasonal-local-foods/>
 About food miles and health: <https://food-hub.org/files/resources/Food%20Miles.pdf>

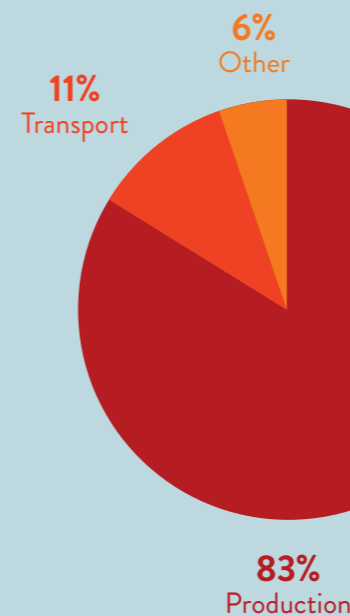


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Connecting the dots:



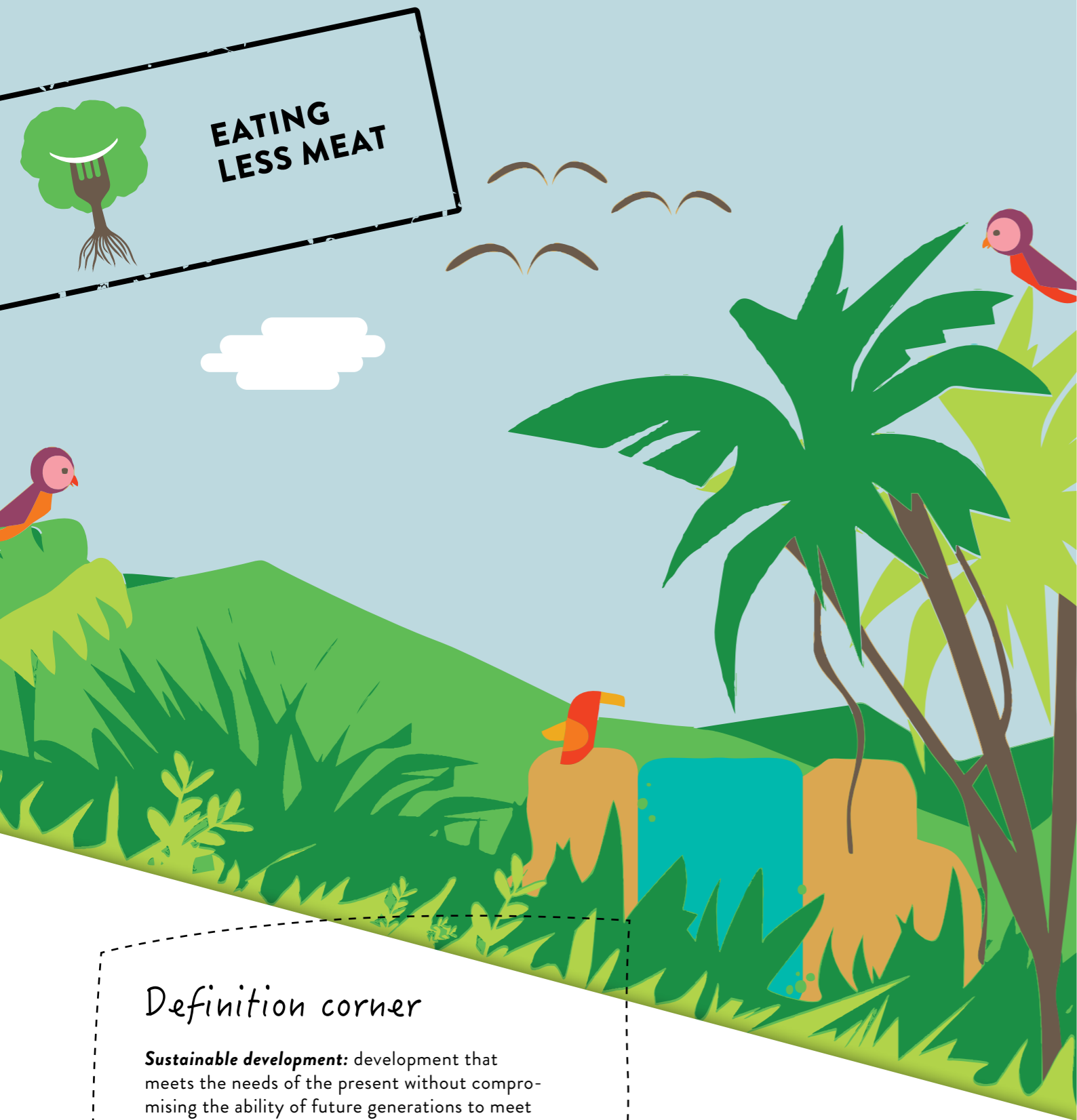
- Eating seasonal local food helps to limit unnecessary transport using energy.
- Eating seasonal local food helps to reduce GHG emissions, which cause climate change.
- Eating seasonal local food helps preserve biodiversity.



Production of food accounts for most of food related GHGs emissions

A study³ from USA found that transport contributes to 11% of food related GHGs. The production stage contributed to 83%. Production here includes food processing, manufacture and preparation, not just agricultural production. This is similar to the figure for food transport in the UK (12%).⁴ This shows there are many other questions to ask, beyond “Where my food comes from?”, “What do I eat” and “how was my food produced” are other key questions to explore in next chapters.



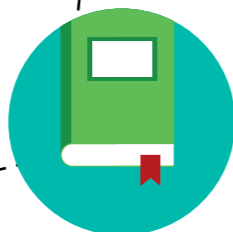


Definition corner

Sustainable development: development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Carbon dioxide (CO₂): a colourless gas that is released by burning fuels, by the burning of plant matter and by the act of breathing. In large amounts, CO₂ contributes to climate change.

Climate change: a long-term change in the earth's climate, especially a change due to an increase in the average atmospheric temperature.



2



What is the link between chicken wings and the Amazon Forest?

— PROBLEMATIC TREND NO. 2 —
THE GLOBAL INCREASE
IN MEAT CONSUMPTION

What if something as simple and usual as a piece of meat was in fact at the centre of many questions over the future of the planet? This question comes as two trends are in play: the first is that there are more and more people on the planet and by 2050, there will over 9 billion of us, requiring more food to be produced. The second trend is that meat and dairy products (milk, cheese, yogurt, etc.) are slowly entering the diet of more people every day. And raising livestock requires a lot of resources. In short, there are more people eating more meat and dairy while the resources at our disposal on our one and only planet remain the same.

While the growth in consumption is particularly visible in countries like China, the biggest meat eaters live in Europe, the United States and other industrialized countries, where consumption is somewhat stagnating.

Raising more animals poses more and more sustainability challenges. Meat consumption is considered by UN experts as a driving cause of climate change and is frequently linked with the overuse or pollution of natural resources (water, land, ecosystems).⁵

But how has meat become more problematic than transport for the climate? The reason is that a lot of land is needed for animals. Deforestation for growing feedstuff like soybeans and maize, or extending pastoral lands releases enormous amounts of carbon dioxide. Moreover, livestock itself is also known to directly emit large amounts of methane, a gas that warms the climate twenty-three times more than carbon dioxide.

Eating less meat can therefore be a very concrete step towards mitigating climate change, and is probably easier than transforming the entire transport system.

In the following story you can learn how our meat consumption is linked with the environment and livelihoods in Latin America.



Deforestation – a rainforest is cleared to make way for livestock grazing or the production of feedstuff for cattle. How is this linked to our meat and dairy consumption? (Photo: By Pedro Biondi/ABr [CC BY 3.0 br (<http://creativecommons.org/licenses/by/3.0/br/deed.en>)], via Wikimedia Commons)



— THE STORY —

From Paraguay to my plate

When Myriam passed through the imposing door of the Czech school, she suddenly felt her mouth go dry. She was anxious about her speech to the students. “How will they react?”

It was the same question that she asked herself two weeks before when the plane took off from her country, Paraguay. As a small-scale farmer, but also as a teacher, she believed that it was important to share with European youth what was happening in her region and in many other neighbouring countries like Brazil and Argentina. “Sharing and learning are the first steps to changing the world”, she thought.

All 120 seats were taken in the auditorium. Students were getting extra chairs from other classrooms to take part to the event. It was the first time they would do something special on the occasion of World Food Day, which takes place each year on October 16th, the day the human right to food is celebrated all over the world.

When the audience was quiet, she began: “My name is Myriam. I live in Paraguay, a country in Latin America, and I came here to speak about an important problem for my community but also many others in Latin America. This problem has only 4 letters: S-O-Y-A”.

Myriam showed a picture which had been taken from the sky. One part seemed to be a forest, while the other part was a large field. She continued: “Today, in the region where I live, most of the fields are covered with soybean plantations. Big parts of the forests are cut down to make space for soy production. The same is happening in Brazil with the Amazon Forest. When the forest existed, temperatures were lower because trees help to bring humidity from the soil into the air. Now we observe that the climate is hotter with these big fields. But what are worse for us now are the planes”.

Planes? The students looked very confused. What could be the connection between planes and soy plantations?

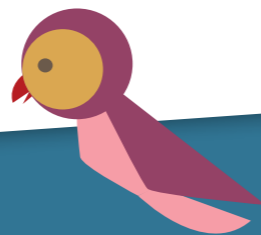
She explained: “Sometime planes spray the fields with chemicals to kill the insects threatening the soy beans. These chemicals are called pesticides. They also use tractors to do it, but given the size of the fields, they use planes to go faster. We breathe this air full of products dangerous for our health, and the water we drink is also being contaminated”.

She added: “This model of agriculture is called intensive or industrial agriculture, and it is very different from the way I, my brother and the rest of my family farm. We grow many different crops, not just one on a mass scale. We grow in harmony with nature, which means we work with nature instead of against her, and we primarily produce food for people”.

A student raised his hand: “For people? So, it means that soybeans are not for people? Who eats them then?”

With shiny eyes, Maria said: “Animals. Most of the soybeans are exported to your countries, in Europe. And this is not for human consumption but for pigs, chicken and cows. The feed is used mostly by intensive farms where animals are kept inside, and unfortunately this model of farming is growing in Europe”.

The students could not keep quiet; they were very surprised by what they had heard. One teacher, Ms. Frelichová, the science teacher had to ask for silence.



One student waved his hand and asked: “This means that all the soy crosses the Atlantic to get here? Does it mean there is a link between my pork steak and the destruction of the Amazon Forest?”

“Yes, unfortunately there is. Your food can link you to faraway places, and sometimes we don’t know it. You see, food changes the world. It can make it better, or it can make it worse. Worse is when it causes human rights violations or the destruction of the earth on which we all depend”.

“And how do I choose better?” asked the same student

“Well, you are already on the right track when you start asking questions! Then, the next step is about choosing more consciously what you eat, and looking for food that was produced in a way that respects your values. There are farmers in Europe who try to raise animals in ways that are respectful of life and nature, and instead of importing soy from my country, they let the animals graze outside or feed them feedstuff they grow themselves. This is very wise, and we should thank them for this.



Questions to go further

- What are the main causes of the deforestation of the Amazon Forest?
- How much meat do we eat per week? How much does that make per year?
- How is the meat I eat produced; where does it come from?

Up chickens from factory farms (Photo: By Secretaria de Agricultura e Abastecimento do Estado de São Paulo Agriculturas [CC BY 2.0 (<http://creativecommons.org/licenses/by/2.0>)], via Wikimedia Commons).

Down free range hens. (Photo: Creative Commons)

Did you know that:

- Already one-third of the world's arable land is used to feed livestock. By 2050, half of the arable land may be needed to feed livestock.⁶
- To feed European farm animals with soy, we need 11 million hectares of land in Latin America, which equals the size of Bulgaria.⁷
- There are an estimated 2,400 litres of water in a hamburger.⁸
- The United Nations Environment Programme recommends limiting the amount of meat we consume to 37 kg per person per year worldwide.⁹



Ideas for action:

- Collect recipes of tasty plant-based meals and choose one that you will cook with friends.
- Join the international campaign of meat-free Mondays.
- Learn about the coding on eggs that tells you more about how chickens were raised.
- Visit an organic meat farm in your region.



An agricultural aircraft sprays pesticides on a soybean field. (Photo: Creative Commons)

Resources to go further or get inspired:

Campaign against the expansion of soy plantations (video: "Soy in the name of progress"):

<https://www.youtube.com/watch?v=8y3pPt3dITQ>

Article "UN says eat less meat", in the Guardian:

<http://www.theguardian.com/environment/2008/sep/07/food.foodanddrink>

Article "Eating less meat curbs climate change", in the Guardian:

<http://www.theguardian.com/environment/2014/dec/03/eating-less-meat-curb-climate-change>

Article on dairy farming and the pollution of rivers:

<http://www.theguardian.com/environment/2015/oct/05/think-dairy-farming-is-benign-our-rivers-tell-a-different-story>

Article on meat consumption and health:

<http://www.theguardian.com/science/2014/mar/04/animal-protein-diets-smoking-meat-eggs-dairy>

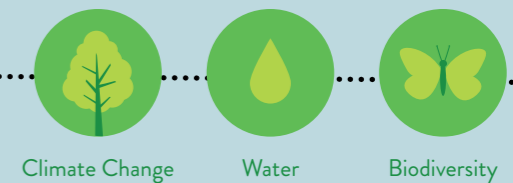
The Meat Atlas by the Heinrich Boll Foundation and Friends of the Earth: <https://www.foeeurope.org/meat-atlas>



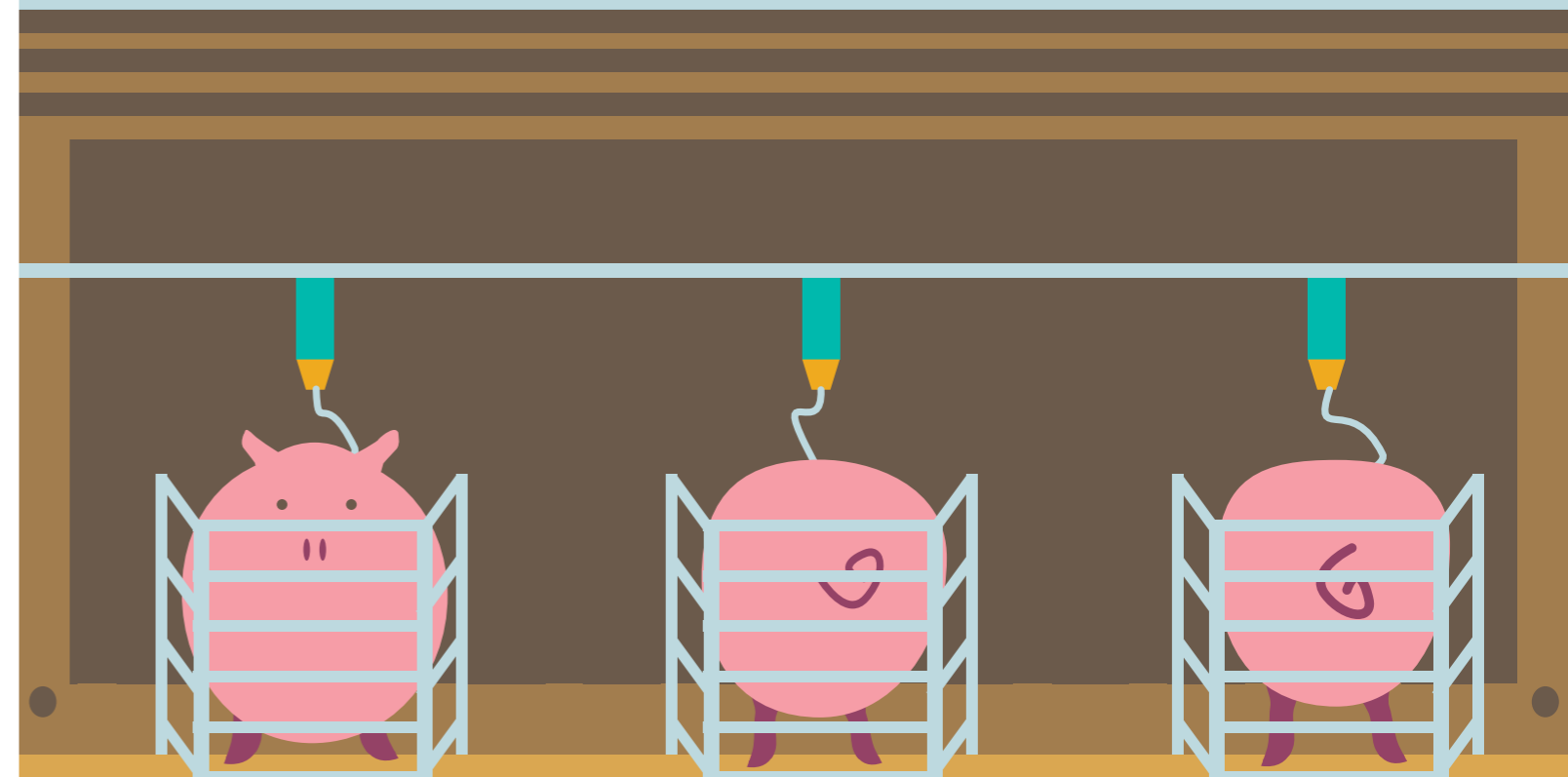
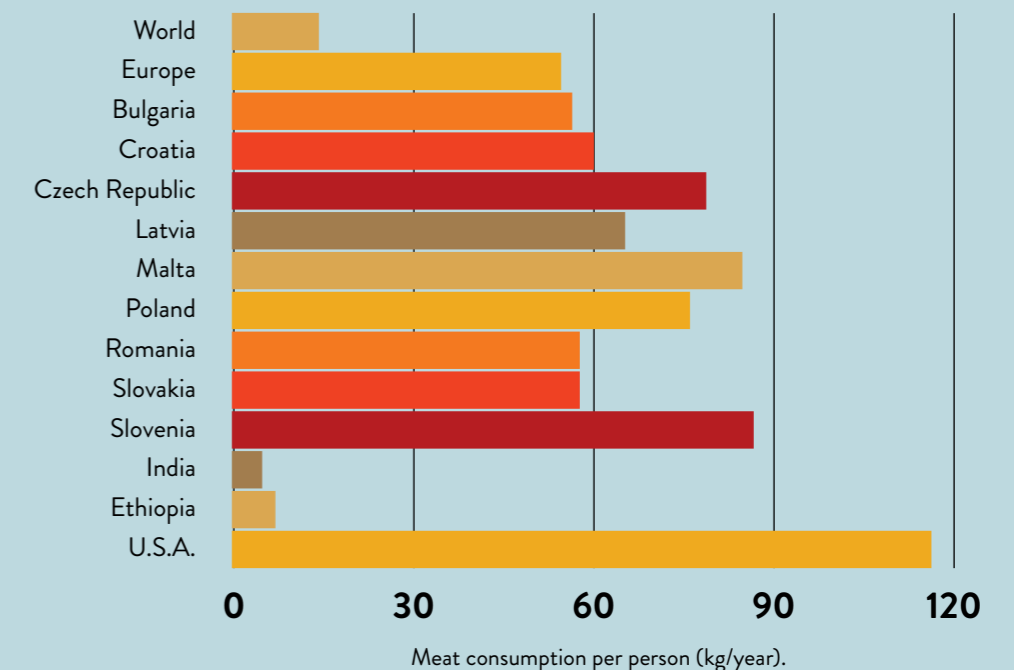
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Connecting the dots:

- Eating less meat helps fight climate change.
- Eating less meat helps save water.
- Eating better meat (raised in a sustainable manner) helps save ground water, preserve soil quality and save animal breeds.



Info on meat consumption levels in partner countries and more:



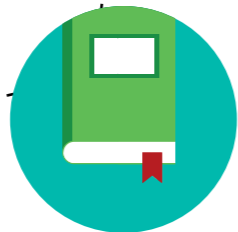


Definition corner

Nutrients: nutrients needed in small amounts are called micronutrients, like vitamins and minerals, while those needed in large quantities are called macronutrients, like carbohydrates, protein and fat. Nutrients provide the body with energy and what it needs for growing.

Peatland: wetlands made of a mixture of decomposed plants that has accumulated in a water-saturated environment over thousands of years. The peatland ecosystem is the most efficient carbon sink on the planet.

Carbon sink: natural systems that remove carbon dioxide from the atmosphere and store it. Oceans, peatlands, soil and plants act as carbon sinks.



3

Taking another look at biscuits



— PROBLEMATIC TREND NO. 3 —
WE ARE EATING MORE HIGHLY
PROCESSED FOODS

What do cookies, ice-cream, chips and a chocolate bar share in common? Simply, they are all highly processed foods. Unlike an egg, which is unprocessed, or bread, which is moderately processed, items such as cookies, chips and chocolate bars are highly processed foods requiring a lot of preliminary steps to be made; and unless they are homemade, they are likely to contain added sugar, fat and salt to make the taste more appealing, or conservatives to prolong their shelf life.

Along with bigger portions, highly processed foods are identified as a driver of the worrying increase of overweight and obesity worldwide. In the last ten years, obesity has become the world's number one health problem! One-third of adults in the world are overweight. While highly processed foods cause health concerns, they are also problematic from an environmental perspective. Baking, frying, drying and freezing are all processing methods requiring a lot of energy. Processed foods are thus much more resource-intensive than plain foods like veggies, fruits and eggs.

Another common trait of these foods is that they are all very likely to contain palm oil. It is estimated that that this vegetable oil is found in 50% of all packaged processed goods in your local supermarkets and shops, including food but also cosmetics, cleaning agents, animal food and even motor fuels.¹⁰ Most of the production of palm oil comes from Indonesia and Malaysia, where huge areas of rain forests and peatlands have been replaced by large-scale palm plantations. As a result, palm oil is directly linked with

the disappearance of precious ecosystems and with the remaining indigenous tribes losing their traditional way of life and means of livelihood. In the two following stories, you will learn more about healthy food, and the impact of palm oil plantations in Indonesia.



Palm oil plantation replacing rain forest in Indonesia.
(Photo: Glropolis)



— THE STORY —

Does that nourish me?

From a distance, Ondřej could see that his grandfather was already outside the house, ready to start the work. His grandfather was wearing old pants a bit torn by the feet and an old leather belt on which all sorts of tools were hanging.

“Ah! My grandson, I’m glad you’re helping me to repair this garden fence! But what do you have there, Ondra?” asked the grandpa.

“Chocolate biscuits with cherry jelly inside, they’re good!”

“Hmmm, good for what? Didn’t you have lunch with a dessert just a while ago?” asked the grandpa.

“Hmm, yes but it’s good for me! It is written here...full of energy!”

“Little Ondra, you will soon be 12...Do you really think so?”

Ondra leaned his head to the side: “What do you mean?”

“I think you are old enough to think with your own head, not with the one of the character on the pack of biscuits! With all this shiny packaging and ads on TV, it seems you stop asking questions. Now I am gonna tell you something important, something I learned and that I would like you to remember your whole life.”

Grandpa paused and placed his hammer back in one of the pockets of his belt and then said: “Food that brings you real energy is food that contains life inside”.

Ondra’s eyes widened and he repeated: “Life inside? Like when there is a worm in fruit?”

Grandpa laughed so hard his whole body was shaking.

“Not exactly, but you are getting close. Why do you eat food?”

Ondra answered without hesitation: “Because it tastes good. And also because it keeps me alive. Without food, I would get sick, and I could die.”

“Yes, you got it right. Food brings life to you. So, the best you can do for your body is to look for food with life inside! Life inside means that your food still holds the energy of life. Think of a seed. For instance, imagine a small pea. If you put water over it, and let it sit in the dark, the next day it will start to germinate. It means there is the great energy of life in this pea. It could become a big pea plant if you did not eat it. The same is happening with the sweet potatoes your grandma is cooking now. If I plant them again next year, I will have a lot more potatoes.”

“Ah, but then what about fruits? They also contain life in them, right?”

“Yes, they do, the fresher they are, the more life you get. The best is to eat food that just comes out of the soil, or that just got picked from a tree.”

“So, it means we are lucky that you are growing the food we eat grandpa!”

“Yes, we are. And it is also important to understand that the less you try to alter the food as nature makes it, the better chance you have to get most of the life inside. Your uncle who studied medicine would speak about keeping a maximum of nutrients and vitamins, but I prefer to simply speak about life!”

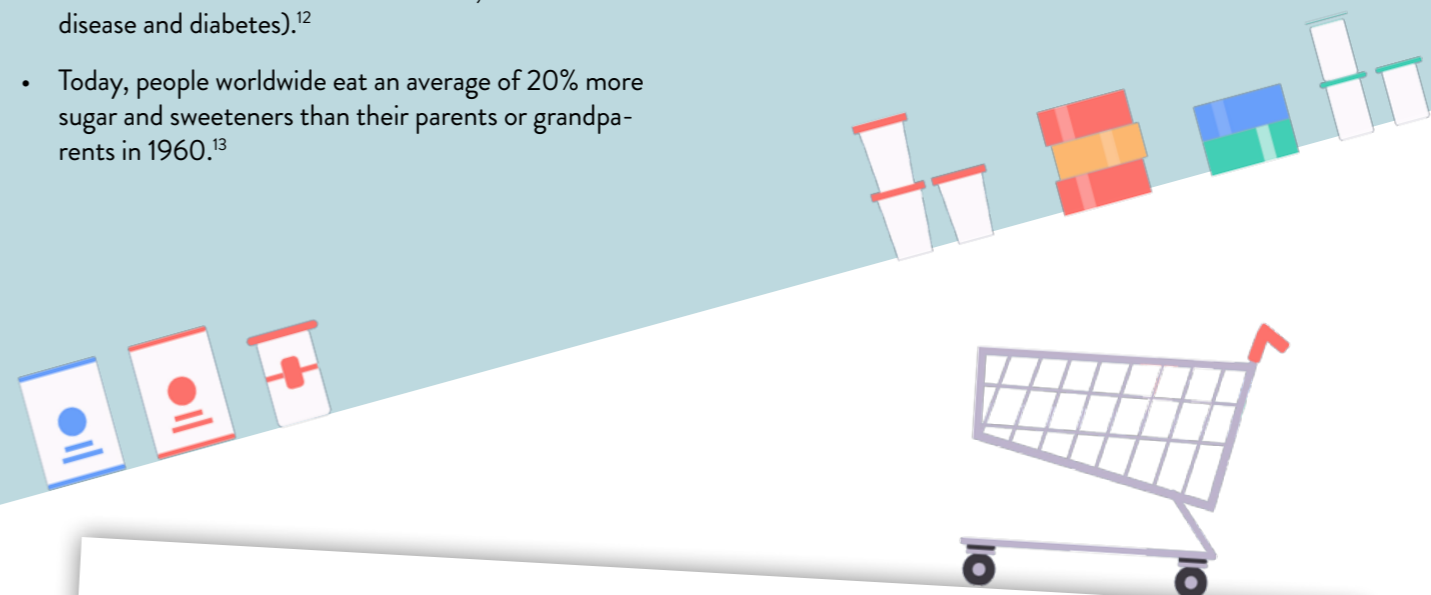
“What does it mean to alter the food?”

“Well, alter the food is when you transform it, process it. Look now at your biscuits... how much life do you think there is still inside?”



Did you know that:

- About 42 million children under the age of 5 were overweight or obese in 2013.¹¹
- At least 2.6 million people die each year as a result of being overweight or obese (as obesity is linked to a rise of chronic diseases such as cancer, cardiovascular disease and diabetes).¹²
- Today, people worldwide eat an average of 20% more sugar and sweeteners than their parents or grandparents in 1960.¹³



— THE STORY —

Our forest, my home

Bujang stopped and looked from the top of the hill. This place used to be his favourite one. If he climbed into the Langsat tree, he could actually see a lot without directly being seen. This was quite a special tree: not only did it give delicious fruit, but parts of the tree were also used for making traditional medicine. The bark could be used to treat malaria, which was quite important in a tropical country like Indonesia. Bujang’s grandmother taught him how to make the antidote. She also told him that all medicines are found in nature and that people who can recognize plants hold the most important knowledge.

From that tree, he could also more easily spot wild pigs to hunt. Although life was not always easy in the forest, that was his home and the home of his parents for many generations, and they were never hungry.

But in just a year’s time, everything had changed. The Langsat tree was no longer there. A deep frown appeared on the face of Bujang. Instead of a wild landscape with many diverse trees, flowers and other plants, oil palms grew in straight lines like soldiers. While beautiful in appearance, the straight palm trees did not host any plants other than the small grass between them, and the number of wild pigs had declined dramatically. Other food is also much scarcer now.

Bujang was still not used to the silence after all the noise of machines that were brought to cut the wild forest and that had replaced the symphony of birds, bugs, monkeys and orangutans that lived there before. There was no life left – his home had become a green desert.

Information on palm oil in Indonesia

What is palm oil?

Palm oil is the most traded oil in the world. Since its beginnings in the 1960s, palm oil production has doubled every ten years.¹⁴ It is widely used by the food industry because it is cheap to produce and can easily be processed and blended into various forms of products. That is why it can be found in a great number of highly processed foods. It is also used as cooking oil, as agro-fuel, in cosmetics and in detergent products.

Where is palm oil produced?

Most of the production takes place in Indonesia and Malaysia, followed by Thailand, Columbia, Nigeria, Papa New Guinea and Ecuador. Globally, it is estimated that more than 13 million hectares of land are used for palm oil plantations.¹⁵ This represents 1.6 times the entire land of Czech Republic! Due to growing mass demand for palm oil, plantations are spreading in tropical regions.

How does palm oil relate to the environment?

The fruits of palm trees can be harvested all year round and on average, ten tons of fruit can be produced per hectare. This means that for the same amount of oil, palm oil will require five to ten times less land than soya, sunflower or rapeseed oil,¹⁶ making it an efficient oil crop. However, the growth of demand and the predominant model of production pose serious environmental challenges.

The mass expansion of monoculture plantations in recent years has made them the primary driver of deforestation in Indonesia.¹⁷ Indonesia's rate of deforestation is one of the highest in the world.¹⁸ Every year, more of the forests and peatlands that act as important carbon sinks are burnt. As a result, Indonesia is one of the top emitters of greenhouse gases in the world, despite the fact that it is not an industrial country.¹⁹ This year, the intensity of forest fires has been so great that neighbouring countries (Malaysia,



Oil palm fruits (Photo: Glopolis)



Tropical forests disappear to make way for palm oil (Photo: Creative commons)



Haze in Penang (Malaysia) due to fire in Indonesia, hundreds of kilometres away, in September 2015 (Photo: Glopolis)

Singapore) have had their pollution levels (Pollutant Standards Index) peaking at 341 (300 already being considered as hazardous for health).²⁰ In some places in Indonesia the levels were as high as 2,000 points!

The destruction of precious ecosystems also threatens wildlife. As a consequence of deforestation orangutans, Sumatran tigers and elephants are three of many species facing the risk of extinction.

What are the impacts of palm oil on livelihoods?

Suku Anak Dalam (meaning "Children of the Forest") is one of the last Sumatran tribes whose traditional way of life is fully dependent on the tropical forest. Of the approximately 200,000 members of the tribe, only 1,500 individuals retain the traditional way of life. As a result of the shrinking forest, a large number of these nomads have been forced to settle directly on palm plantations.

A third of the palm plantations in Indonesia are managed by smallholder farmers. Palm oil can be an opportunity for many to earn money. Yet, this business does not necessarily mean a long-term and stable source of income for all. Prices of palm oil are unstable and the fertilizers that smallholders must buy are expensive. When palm oil prices decrease, smallholders are those most at risk to make no money.

What are the solutions?

On the production side, it is necessary to put a halt to deforestation and provide priority support to communities to conserve and protect their forests and manage plantations sustainably. Conserving forests can provide other sources of more sustainable incomes. Besides, it is necessary to encourage the food industry to avoid palm oil or at least, to commit to the highest standards of sustainability.

As consumer, the best approach is to choose foods that do not contain palm oil. In fact, given that palm oil is mainly present in highly-processed foods with little real benefits for health, avoiding palm oil can also be a great incentive to shift our diets to other foods that are healthier. If one cannot avoid palm oil, it is necessary to choose products from brands that commit to the highest standard of sustainability. Although imperfect, a certification system exists that tries to put into place guarantees for more sustainable palm oil production.



An oil palm plantation seen from a plane (Photo: Glopolis)
Truck gathering the harvest in the province of Western Sumatra, Indonesia (Photo: Glopolis)

Questions to go further

- What can be the health effects of eating highly processed food? How can it affect the environment?
- What is regarded as "knowledge" in the story on palm oil?
- Why is the protection of ecosystems important?
- Is there palm oil in the food we have at home or in our snacks at school? And which food that we like contains no palm oil?



Ideas for action:

- Collect blossoms of trees, dry them and organise a small tasting of herbal teas. Find out which local plants are known to have medicinal properties.
- Compare the sugar, salt or fat content of different foods and drinks and look for healthier alternatives by creating your own recipes for home-made cakes, lemonade or fresh juice (including vegetables!).
- Make a review of the snacks other children brought to schools and look in the list of ingredients to see if they contain palm oil. Discuss alternative snacks that you like that don't contain palm oil.
- Write a collective letter to food producers using palm oil as an ingredient and urge them to change their recipe or to use palm oil with the highest standard of certification.



Children from the Suku Anak Dalam tribe in the province of Western Sumatra, Indonesia. A smallholder harvesting oil palm fruits in the province of Jambi in Sumatra, Indonesia. (Photo: Glopolis)

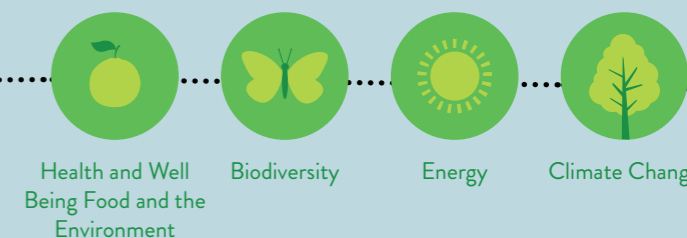
Resources to go further:

Infographics on diets and the rise of obesity: <http://www.odi.org/future-diets>
 Interactive statistics on diets in the world by National Geographic
<http://www.nationalgeographic.com/what-the-world-eats/>
 About a healthy diet: <http://www.healthyplate.eu/>
 About the certification of sustainable palm oil: <http://glopolis.org/en/palm-oil/>
 Solutions to destructive industrial scale palm oil plantations (with videos): http://www.greenpeace.org/international/Global/international/code/2012/Forest_Solutions_2/goodoil.html
 Project of a French student who lives without palm oil: <http://www.lifewithoutpalmoil.org/>
 Article about an Indonesian village that rejects palm plantations: <http://news.mongabay.com/2015/10/advances-from-oil-palm-interests-leave-sulawesi-village-unmoved/>



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Connecting the dots:



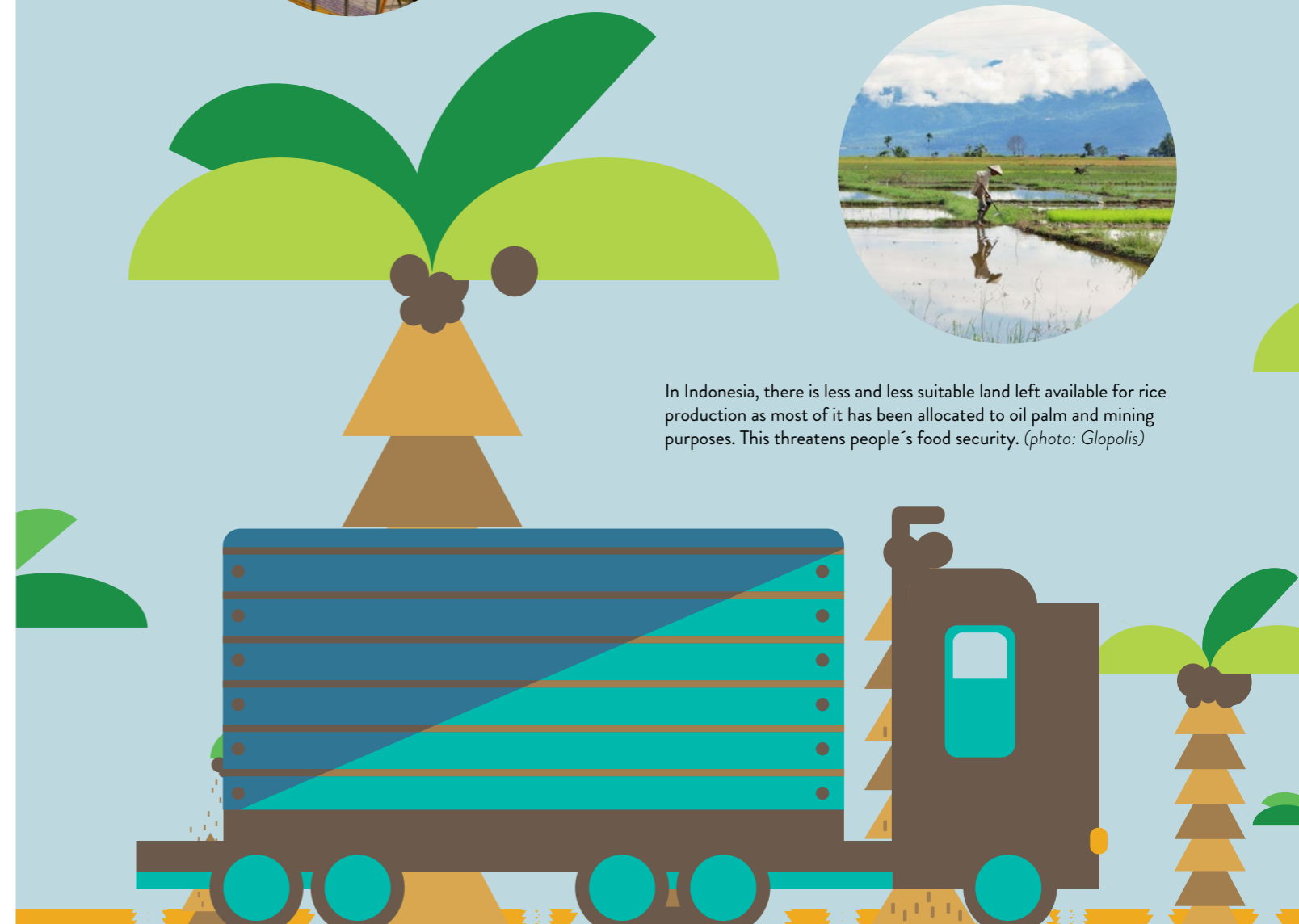
- Eating less highly processed foods and more fresh and whole foods contributes to better health.
- Eating fresh food is less energy intensive than processed or frozen foods and therefore does not contribute to climate change as much.
- Choosing food without palm oil helps preserve Indonesian rainforests and the livelihoods of local inhabitants



Highly processed foods often contain palm oil. Although the food industry makes efforts towards deforestation-free production, the mass production of palm oil through monoculture planting remains highly problematic from an environmental and social perspective. (photo: Glopolis)



In Indonesia, there is less and less suitable land left available for rice production as most of it has been allocated to oil palm and mining purposes. This threatens people's food security. (photo: Glopolis)

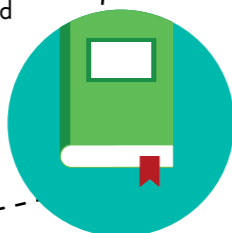




KNOWING
MY FARMER

Definition corner

Community supported agriculture (CSA): an alternative locally based economic model of agriculture and food distribution. A group of consumers financially support a local farmer to produce fruits and vegetables for an entire season and receive their share of fresh foods on a regular basis. Most often the production model is organic agriculture.



4

Who are the people behind my food?

— PROBLEMATIC TREND NO. 4 —
A GROWING GAP BETWEEN
FARMERS AND CONSUMERS

What is the percentage of our food for which we know where it was produced, by whom and under which conditions? If the answer varies from case to case, the general trend is that (unless we produce it ourselves) we know little about what is behind our food. The gap between consumers and farmers is growing. This gap is not only geographic but also reflected in the fact that there are many actors (processors, brands, supermarkets, etc.) that stand between consumers and farmers.

How can we know then if farmers or farm employees receive a fair price for their products? In Europe, many farmers have quit farming because they don't earn enough. In developing countries, small-scale farmers face sometimes very difficult situations that can cause them to live in hunger and poverty. For farm workers employed in large-scale production for exports (bananas, tea, cocoa, etc.) the work can sometimes be unsafe and miserably paid.

This situation is totally out of line with the crucial roles farmers and farm workers play as those who feed us and as those who must manage humanity's most important resources: soil, water and biodiversity. Farming is also what shapes the landscape and stands as an important motor of local economies.

Local initiatives like direct supply of canteens by local small farmers, direct sales at the farm, farmers' markets and community-supported agriculture can help narrow the gap between production and consumption. Without

wholesale or retailers, farmers can retrieve a higher share of the sale price. The closer consumers are to the farmers, the more they also have a chance to learn and influence how their food is produced and ask for farming without synthetic fertilizers and pesticides.



Consumers also have the opportunity to influence the model of farming abroad. The system of labels such as "biological"/ "organic" and "fair trade" helps to ensure farmers or farm workers earn a decent wage. In the following story, learn more about working conditions in the orange juice industry.



— THE STORY —

What was squeezed for my orange juice?

The ladder was sinking deeper into the earth as Eduardo was adding more and more oranges to his bag. He was now standing 2 meters above the ground and all his body was stretched to reach a distant branch full of the shiny fruit. With one hand, Eduardo pushed his black hair away from his forehead. Beads of sweat rolled down his face.

From the top of his ladder, Eduardo, 18 years old, looked around at the small orange plantation with a smile of satisfaction. Although the work was demanding, he was happy to be where he was today. Life had gotten much better for him and his mother since they joined the fair-trade movement two years before. Now they had enough money to rent a small house and live decently. This hadn't been the case a few years earlier.

Eduardo remembered how he felt imprisoned on the big orange plantation where he worked at the time. The memory of the accident was still vivid. It was a day in November 2015. That day Eduardo had a bad headache because of the heat. He could feel the heavy bag full of fruit painfully hanging and cutting into his shoulder. It was 5 p.m. and he had only two hours left to harvest fifteen bags of oranges. If he harvested less than the required 60 bags a day, he could be fired. Each bag weighed a minimum of 20 kg, for which he would receive only 0.15 euro. Sometimes it could even be lower if the price of orange juice was decreasing.

Eduardo's mother had also been a worker at the same orange plantation for ten years. It was clear that her health had declined under the hard physical work and intense rhythm. She had frequent back pain and her breathing was not very smooth due to the pesticides that were sprayed on a regular basis while workers were around.

That day in November, Eduardo's mother fell from the ladder. He was not close to her when it happened, but he heard Antonio, another worker, screaming. He rushed to the next tree alley and saw her on the ground, laying still. At that moment Eduardo could not hear anything besides his own heartbeat accelerating. He almost could not breathe himself, until the moment she moved and gave some signs of life.

After several weeks of absolutely needed rest, his mother recovered. But their deepest fear became a reality. Neither of them were hired again the next season. Never in ten years had she dared to stay home, even in the case of fever because she feared she could lose her job. But that did not matter to the plantation manager.

Eduardo and his mother went through a very difficult time, but Eduardo's optimistic nature kept him believing that life would get better. And one day, he met Salvatore from the Fair Trade premium committee. Salvatore explained to him with passion that he worked at producing fair orange juice. Fair Trade meant that workers received a minimum wage that would not change, even if the price of juice fell on the international market. The plantation where Salvatore worked also grew oranges organically. The harvest was a bit lower, but the quality of the juice was higher and workers were not falling sick. Consumers were paying more but in fact that price was just the true price of dignity.

From the top of his ladder, Eduardo was thinking of people drinking fair orange juice in Europe at the same moment. Were they aware of the positive difference they made for him and his mother?



EU organic farming label, Fair Trade label



Questions to go further

- Where is the food from the canteen bought? Could local small farmers directly supply the canteen?
- What is Fair Trade? What guarantees does it provide food producers?
- Is it possible to find Fair Trade products in our country?

Oranges ready for transport. (Photo: By Dickelbers (Own work) [CC BY-SA 3.0 (<http://creativecommons.org/licenses/by-sa/3.0/>)], via Wikimedia Commons) Worker on an orange plantation – Brazil. (photo: Christiliche Initiative Romero)

Did you know that:

- only a small percentage of juice consumed by Europeans is Fair Trade.
- workers on orange plantations earn their salary based on the weight of oranges they harvest, not an hourly wage. Each day a worker carries about 2 tons of oranges.²¹
- around 40% of the world population works in agriculture and large share of smallholder farmers in developing countries are women.



Ideas for action:

- Visit farmers in your regions and discuss what it means to them to receive a fair price for their products.
- Find out about the local products sold directly by farmers in your region and organize a farmers' market at school.
- Organize a fair trade breakfast at school and tell people the story of their food.
- Engage in the Make Fruit Fair campaign by asking supermarkets and shops in your country to sell fair fruit.



Smallholder farmer in Burkina Faso. (photo: Aurèle Destrée)

Resources to go further:

Study on the orange juice industry

http://www.ci-romero.de/fileadmin/media/informieren-themen/studien/CIR_Orange_juice_study_low_sp.pdf

About Fair Trade: <http://www.fairtrade.net/about-fairtrade.html>

About the international campaign for fair fruit: <http://makefruitfair.org/>

About farmers' markets at schools: <http://www.soilassociation.org/schoolfood/schoolfarmersmarkets/londonfarmacademy>



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Connecting the dots:

- Shopping at farmers' market, buying at the farm or finding a farmer to bring food to my home means I have a chance to ask and learn what methods of production were used and to favour organic methods.
- Choosing food from abroad according to labels give me more influence over the impacts of my diet on other people and environment.
- Knowing our farmer also means we can reduce the distance between the farm and our fork!



You can buy a wide range of Fair trade products.
(photo: By FairtradeSverige (Own work) [CC BY-SA 3.0 (<http://creativecommons.org/licenses/by-sa/3.0/>)], via Wikimedia Commons)





Definition corner

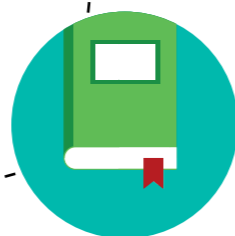
Biodiversity: the amount of diversity between different plants, animals and other species.

Agrobiodiversity: the biodiversity among agricultural crops or livestock such as wheat varieties and cattle breeds. Agrobiodiversity is a vital part of biodiversity, which is developed and managed by farmers, herders and fishermen.

Food security: when all people in the world have sufficient access to safe and nutritious food at all time.

Open-pollination: when pollination occurs by insects, birds, wind, humans or other natural mechanisms. Open pollinated plants adapt to local growing conditions and climate year-to-year.

Hybridization: a controlled method of pollination in which the pollen of two different species or varieties is crossed by human intervention. The first generation of a hybridized plant tends to grow better and produce higher yields than the parent varieties, but the following generations produce low yields, therefore growers who use hybrid plant varieties must purchase new seed every year.



5



Preserving diversity in my food garden

— PROBLEMATIC TREND NO. 5 —
WITH MORE STANDARDIZED FOODS,
WE ARE LOSING VARIETIES

When we enter a supermarket, we are surrounded by full shelves of all kinds of food, sometimes coming from faraway countries. It creates the impression that there is a large choice and an ever increasing diversity of available food; but appearances can be misleading.

The United Nations agency on food issues, called the Food and Agriculture Organization (FAO) explains that although 7,000 species of plants have been cultivated in human history, presently, 75 percent of the world's food is generated from only 12 plants and five animal species.²² Four crop species (rice, wheat, maize and potato) are responsible for more than 60% of human energy intake.²³ Due to people's dependency on this relatively small number of crops for their food, it is crucial to maintain high genetic diversity within these crops through the preservation of varieties. But the FAO warns about the serious problem that for each crop species (for instance wheat), the world has already lost a great number of varieties (wheat has thousands of different varieties, but we plant fewer and fewer of them).

Over 100 years (1900-2000), 75 percent of agrobiodiversity was lost because farmers worldwide have abandoned numerous open-pollinated varieties.²⁴ Due to a move to industrial farming methods and also due to complex laws, farmers have turned increasingly towards commercial hybrid varieties. These have helped achieve the highest yields, uniform size, appearance and taste. They also met the demand of consumers who ask for cheap food of a consistent

quality.²⁵ But the downside is that farmers have been growing considerably less diverse wheat, tomato and potato varieties, and this loss weakens our capacity to grow enough food in the future. Learn in the following story why preserving agrobiodiversity is important.



Diverse varieties of maize. (Photo: Sam Fentress [CC BYSA 2.0 (<http://creativecommons.org/licenses/by-sa/2.0>) or GFDL (<http://www.gnu.org/copyleft/fdl.html>)], via Wikimedia Commons)



— THE STORY —

A mysterious animal

It was about the middle of the afternoon when the first drop of rain fell on the cheek of Tereza.

“O-oh... we’d better quickly find somewhere to hide before the storm starts.”

A flash of light appeared in the grey sky. Tereza and Jana started to pedal faster on the muddy path as the rain was now pouring down. Their bikes were sliding on the wet soil. “Look! Let’s head over there!” Jana was pointing in direction of a white building after the turn of the path. A few meters from the building, they could smell the odour of wet straw and understood that the place was a farm. They passed an open fence, dropped their bikes on the ground, and pushed open the first door they could reach. The air was warm inside and the ground was soft. When their eyes got used to the darkness, they wondered if they were dreaming...

“Is it a sheep, or... a pig?” mumbled Jana. A few seconds later, the hairy animal, surprised by the two intruders, made some sound that left no doubt...

“A pig!”

A second later, someone entered the stable. It was a tall woman, with a raincoat, who was smiling at them.

“Hello, young ladies. I saw you coming in, so I thought I would offer you some hot tea while waiting for the rain to stop. Come with me to the kitchen.” Jana and Tereza gladly accepted the invitation. The girls entered the kitchen, where smells of herbal tea were mixed with something baking in the oven. They sat down quietly, both hoping to learn more about the mysterious pig that looked like a sheep.

“You must have been a bit surprised to meet Ruby,” said the lady farmer.

“Ruby? That’s the name of the pig?” asked Tereza.

“Yes, it is,” smiled the lady. Ruby is a pig from a breed named Mangalitsa. As it mostly lives outside, it gets woolly like a sheep, especially during winter. This breed was under threat of extinction but has been saved. That’s because in Hungary, they started to seriously raise more of them again.”

“Extinction? You mean that it could disappear forever? How is that possible?”

“Because nowadays, farmers are asked to produce a lot for little money, so most of them choose amongst the five most raised breeds that grow fast and give a lot of meat. Large intensive farms are replacing small scale farmers like me that usually go for more diverse breeds. Here, I also keep other pigs from the breed Turopolje,²⁶ originating from Croatia, a breed that is almost extinct. It is a pig that can be raised sustainably outside but needs time to grow.”

“The disappearance of diversity is not only the problem with animals – it is also a problem with fruits, cereals and vegetables!” said a man who had just entered the kitchen. Water was dripping from his hat. While he placed it on the hook behind the door, he said: “Hello, I am Peter!”

“Hi,” said Tereza and Jana together.

“I heard you were talking about diversity. Would you like to taste our carrot cake?”

A sweet smell spread all over the room when Peter opened the oven.

“You make it from your own carrots?” asked Tereza.

“Yes, I picked the first ones yesterday”. Peter brought a carrot that was red and oddly shaped. “That’s

surprising, isn’t it? I grow fifteen different varieties of carrots here. Every year I collect the seeds and replant them the next year. I exchange my seeds with other people as well. The loss of varieties is a global problem, but solutions start locally.”

“It is the first time I’ve ever seen such a funny-looking carrot. It gives a beautiful colour to this cake. Is that why you say it is important to preserve crop diversity or are there other reasons?” asked Jana.

Peter stopped cutting the cake and looked at her.

“That’s a very important question. Well, there are at least three reasons for preserving old varieties. First of all, it helps me to keep my food garden healthy. I realized it when my cabbage was being attacked by insects for the second year in a row. So, I planted two old varieties of cabbage. They were smaller but the problem disappeared. Then I started to look for more open-pollinated seeds of other crops that can adapt on their own to my local environment. Maybe you learned in history class about the great Irish potato famine of 1845?”

“When all the Irish potatoes were destroyed by some pest?” said Tereza. “It lasted several years. Thousands of people were starving and had no other choice than to migrate to survive. Many moved to the USA.”

“Yes,” said Petr, “they were cultivating only two or three varieties of potatoes that got attacked by mould and rotted in the fields. Thus, that crisis was clearly linked to the low number of cultivated varieties.”

The second reason for preserving crop diversity,” continued the lady farmer, “is that it is our best chance to adapt to climate change. You probably have seen how the river was low this summer, right? It was very hot. In the future, average temperatures will keep rising and there will be more frequent droughts or flash rains like today. Some varieties cope better with droughts, some with a humid climate. If today we lose some varieties forever, we might miss them tomorrow. Preserving crop diversity is essential for our own future. If agriculture won’t adapt to climate change, neither will we!”

“That sounds very serious. I’ve never heard that before,” said Jana.

“Yes, we are probably not looking at it seriously enough,” added Peter. “It is important to start developing solutions. For instance, I have a friend in India who plants five different varieties of rice in the same field, just to make sure that there will be at least some that will grow, regardless of the heat.”

“That’s clever! Especially since rice is the foundation of Asian diets,” said Tereza.

Peter added: “To stop the extinction of varieties that are not often cultivated, a gigantic seed vault has been built in the ice of the island of Svalbard in Norway. You should learn more about this.”

“And the third reason,” added the lady, “is that the diversity of plants and animals is part of our cultural heritage. Behind each traditional apple or pig there are stories of farmers, families and regions who gave their name to the variety they helped nature to create. It is a heritage that should be treated with the same reverence as our castles, monasteries and temples!”

“But you will understand the most important reason of all,” concluded Peter, “when you taste a piece of this cake or one of the delicious yellow tomatoes I picked just before the rain! Enjoy!”





Up Turopolije pig. (Photo: Creative Commons)

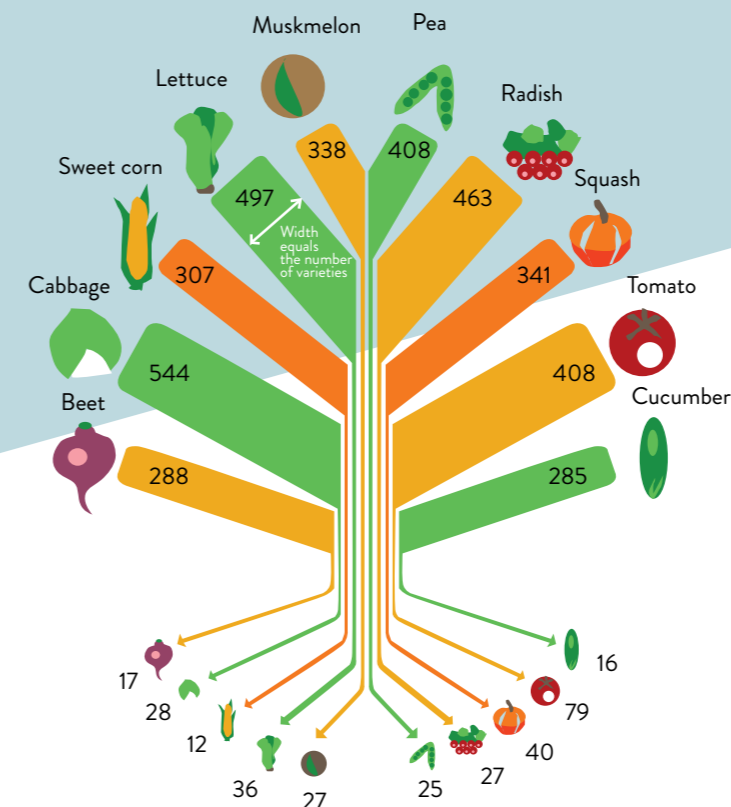
Down Mangalitza pig. (Photo: By Nienetwiler (Own work) [CC BY 2.5 ch (<http://creativecommons.org/licenses/by/2.5/ch/deed.en>)], via Wikimedia Commons).

Questions to go further

- What was the Irish potato famine about?
- What is the Svalbard seed vault and why was it created?
- How many different varieties do we grow in the school garden? Do we have a seed bank (also called a seed library) in the school?
- What are the varieties and breeds of my region? Why should we keep raising them today?

A Century Ago

In 1903 commercial seed houses offered hundreds of varieties, as shown in this sampling of ten crops.



As we've come to depend on a small number of commercial varieties of fruits and vegetables, thousands of traditional (also called heirloom) varieties have disappeared. It's hard to know exactly how many have been lost over the past century, but a study conducted in 1983 by the Rural Advancement Foundation International in USA gave a clue as to the scope of the problem. The survey, which included 66 crops, found that about 93 percent of the varieties in the USA had gone extinct. More up-to-date studies are needed. Source: National Geographic, <http://ngm.nationalgeographic.com/2011/07/food-ark/food-variety-graphic>

Ideas for action:

- Start to grow food! If you don't have a small garden, pots of aromatic herbs by the window are a good start.
- Grow a greater diversity of varieties in the school food garden.
- Look for old varieties of fruit and organise a tasting of different apples or any of your locally grown fruits.
- Create a small seed bank with your classmates: collect various seeds, name them and exchange them.

Why Conserve Farm Animal Diversity?

The conservation of domestic animal diversity is essential to meet future needs. The earth comprises a vast range of environments in which agriculture must be practised. These environments are not static but are dynamic and may change through seasons, years and decades. Maintaining genetic diversity is an insurance package against future adverse conditions. Due to diversity among environments, nutritional standards and challenges from infectious agents, a large number of breeds are required.

Maintaining diversity also provides stability. If more than one breed or species is kept, given the failure of one to produce under certain conditions, others can be drawn upon. By maintaining more breeds and species, farmers are thus spreading risk.

In addition, with increasing global human population pressures, the quantity of food and other products must increase. Indeed, it is predicted that more than a doubling of meat and milk production will be required over the next 20 years. The increasing demand for a broad range of products, both locally and globally, requires a dynamic, adaptable and adjustable livestock system.

Extract from FAO, Worldwatch list for domestic animal diversity, 3rd edition, 2007 <ftp://ftp.fao.org/docrep/fao/009/x8750e/x8750e.pdf>, p. 22.

The explore further:

Video on preserving biodiversity from Slow Food (9min) : https://www.youtube.com/watch?v=JvNG986_3RU

Video on food diversity loss from Cary Fowler, ex-director of the Global Crop Diversity Trust (20 min) <https://www.youtube.com/watch?v=Uwl012o8P7I>

Video on how seed laws reduce biodiversity from the Greens/EFA (3min): <https://www.youtube.com/watch?v=NEztiaM2vF4>

Short text on preserving seed diversity, quartet course from the University of Chicago <http://foodsecurity.uchicago.edu/research/preserving-seed-diversity/>

Short text on agriculture and biodiversity: <http://www.sustainabletable.org/268/biodiversity>

Study from FAO on Sustainable diets and biodiversity, 2010 <http://www.fao.org/docrep/016/i3004e/i3004e.pdf>

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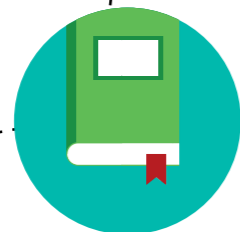


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Definition corner

Virtual resources: the volume or quantity of resources that were used for producing the product, measured over its full production chain.



6 Wasting our future?

— PROBLEMATIC TREND NO. 6 —
ONE-THIRD OF FOOD
IS WASTED GLOBALLY

As much as one-third of the world's food ends up lost or wasted. Every year, consumers in industrialized countries waste almost as much food (222 million tons) as is produced in Sub-Saharan Africa (230 million tons).²⁷ It is estimated that about 89 million tons of food is wasted every year in European Union.²⁸ To make it more concrete, imagine that every week each of us throws four full meals away.

Food wastage is hard to fathom in a world that is not yet free from hunger. One person out of nine still does not have sufficient access to food today. But let's refrain from the easy solution of saving food on one side to give it on the other. Food donations do not present a long-term solution, as they do not address the root causes of the food insecurity problem. The contrast of food waste and hunger should force us to question how much we truly value food as the essence of life and avoid wasting it, given that at the same moment, somewhere else in the world, some people haven't eaten as much as they need.

But food wastage is also hard to understand in a world of limited resources. It is particularly alarming to note that 30% of sea fish never gets to our plates, despite the fact that fish stocks are rapidly decreasing. One-third of food being wasted means that one-third of all fuels, fertilizers and water for production were used in vain. It also means that deforestation, damage to soil and greenhouse gas emissions related to food production were unnecessary. Worse, additional pollution is then caused when uneaten food ends up in incinerators

rather than in composting systems. Imagine that we waste precious resources to produce food and on the top of it, we cause additional air pollution and emissions of CO₂ that warm up the planet. In the following story, learn more about the virtual resources behind our food.



These bananas will be wasted because they are rejected by supermarkets due to their non-standard shapes or sizes. (Photo: Feedback/Tristram Stuart)



— THE STORY —

All the water we eat

Although the radio was playing loud, John still felt sleepy when he got to the kitchen. His younger brother Matthew was licking his fingers full of honey that was flowing down his bread. His feet were moving with the rhythm of the music, and softly kicking his red backpack just by the bottom of his chair.

“Good morning John”, said his mum. “I can see early morning will never be your thing. Your puffy eyes are asking for more sleep. But, we are OK with time; you still have 15 min before the school bus picks you up. Come and get your breakfast”.

The 7 o'clock news jingle made his mum stop speaking.

A male voice announced “Fires in Southern California have forced thousands of people to flee their homes. An order of evacuation was given yesterday afternoon for the city of San Marcos, which was covered in a thick layer of smoke. About 30,000 hectares have been destroyed by the flames since the beginning of last week. Firefighters said the intensity was unprecedented”.

“How big is 30,000 hectares?” asked Matthew with a full mouth.

“Well, that makes about 30,000 times one football field!” said John

“How come so much can get burnt?” asked Matthew.

“Because the wind is pushing the fire in all directions,” said his mum.

“And because the trees, bushes and grass are very dry, it makes the fire spread very easy and quickly,” added John.

The news presenter continued with a serious tone, on another story: “And now the local news: Yesterday Berkeley students launched a campaign against food wastage. They want to draw attention to the resources wasted when food is thrown away. Our reporter was on campus last night with Linda and Ralph, 19-year-old students from the economic faculty. He interviewed them as they were projecting giant images of food waste on the facade of a university building. Listen to them.”

A positive voice followed: “Hello my name is Linda. Today, we launched our campaign named ‘Don’t waste our future’. The aim is to draw everyone’s attention to the fact that food waste also means wasting precious resources like water, land and energy. We decided to undertake this campaign after we realized the extent to which all problems are interconnected”.

The reporter interrupted. “Yes, on the posters that you placed in the corridors of your faculty, we see a bin full of food but also fire. Do you mean that food wastage is linked to the fires in Southern California? Can you explain this for our listeners?”

Linda continued. “Yes, we waste about a third of the food we produce. It basically means that farmers pump an incredible amount of water in vain. Overusing water makes our country drier and drier, which increases the risks of fire.”

The reporter: “Ralph, can you tell me where the idea for the campaign came from?”

With a dynamic voice, Ralph explained: “I eat at the university cafeteria every day of the week, and I noticed that almost two out of three students don’t eat all the bread they are served. Hundreds of slices end up as trash. So, as I study economics, I wondered how much money the cafeteria could save by serving one slice of bread less to 4,000 students. But then I realized that it is not only about how much money the university can save, but it is also about how many resources society could save!”

Linda added: “Yes, we were shocked to learn how much water we eat! We consume much more water by eating than through anything else. This water is called virtual water – the water needed to grow food. This is something that surprised us a lot. My mom always told me to watch out to not unnecessarily let the water tap run when I brush my teeth, but in fact this is nothing compared to all the water that is wasted when we throw away food!”

The reporter asked: “Could you give us one example?”

Ralph: “For instance, although a glass of milk contains two decilitres of milk, 200 litres of virtual water actually went into its production. Or one kilogram of chicken requires 4,300 litres of water. Can you imagine? If you waste it, it is like flushing your toilet 470 times for nothing.”

The reporter: “And that may cause problems for our environment, isn’t that right?”

Linda: “It definitely does. We are facing more and more droughts in California. It is visible at Pine Flat Lake, which is a fresh water reservoir many cities depend upon. Its levels are dropping every year. We use the water faster than the natural cycle can replenish it. This makes our environment more prone to fires, but it also means we risk not having sufficient water for people in the future.”

The reporter: “You make important links that people don’t often hear about. And what do you think the solutions are?”

Ralph: “Well, you can directly think about no longer filling private swimming pools and limiting the watering of lawns. But if we want to have a larger, long-term impact, we have to stop wasting food! If we stop wasting, we don’t have to produce so much, and we can then save one-third of the water in California”.

Matthew and John are interrupted in their careful listening by a loud horn from outside. They see the yellow school bus through the window and quickly grab their backpacks. At that moment, something unusual happens. As they are both ready to rush to the door, they stop. Both look at their glasses of milk still half full on the table. They simultaneously run back, reach out for it and swallow the last gulp of milk. This was their first conscious action, later followed by many others, against food wastage.



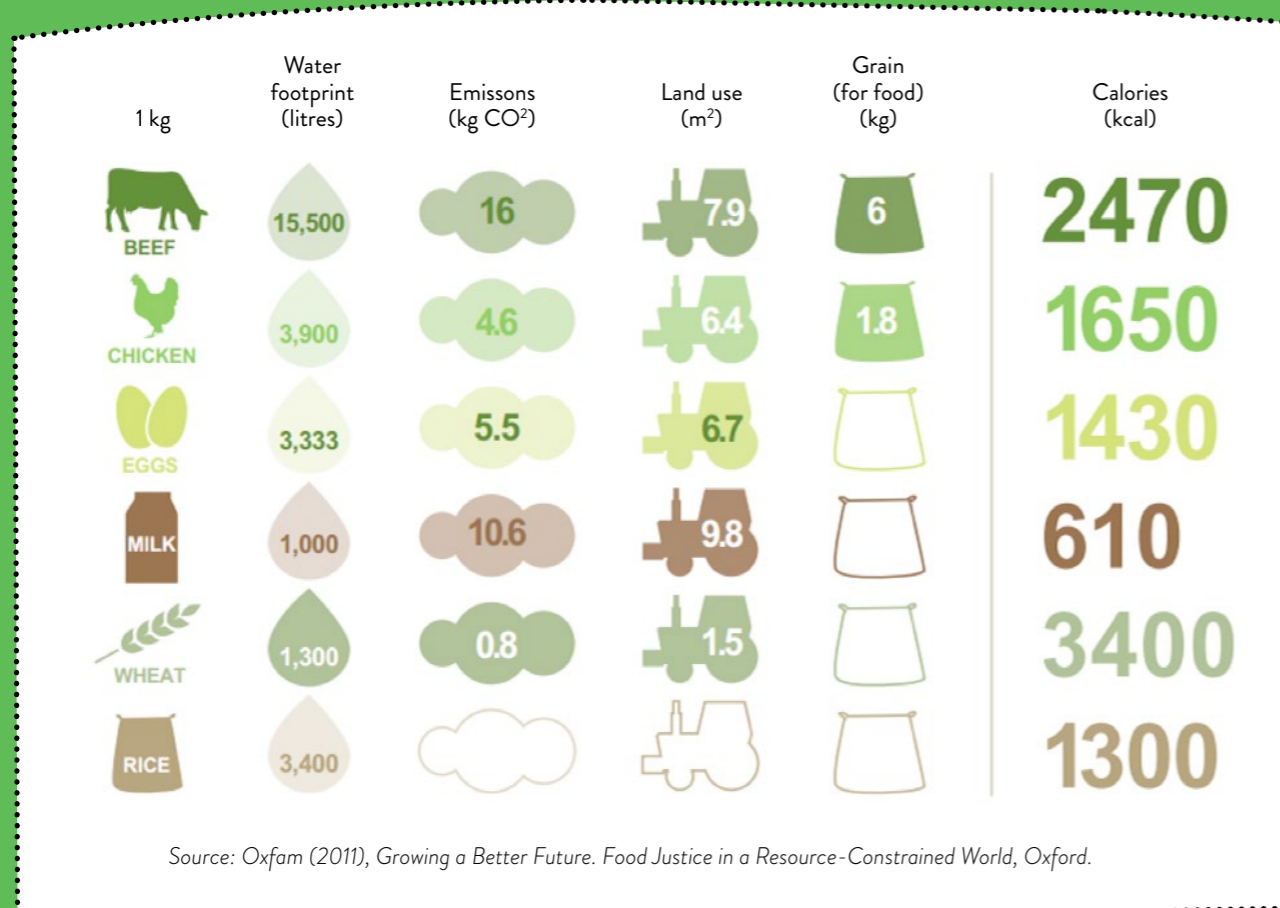
Lake Oroville, the second largest manmade reservoir in California, dries up during drought due to excessive underground water use. (Photo: „California Drought, Lake Oroville State Recreation Area“ by Ray Bouknight, link <http://bit.ly/2brgfoC>, is licensed under CC BY 2.0)



Questions to go further

- What are the direct and indirect impacts of food wastage?
- How much food is wasted as food snacks and for lunch?
- How can food be stored in the fridge and outside it?
- What can we do with food scraps?
- What are the difference between “sell by”, “best-by” and “use-by” dates?

The ecological footprint of food



The virtual water in our food

What do we use the world's water for?

- Agricultural 70%
- Municipal 19%
- Industrial 11%

Source: FAO

- 1 glass of milk 200 litres
- 1 cup of tea 35 litres
- 1 cup of coffee 140 litres
- 1 orange 50 litres
- 1 apple 70 litres
- 1 glass of wine 120 litres
- 1 potato 25 litres
- 1 hamburger 2400 litres

Source: FAO
<http://www.fao.org/nr/water/photos/2008/virtual.html>

Did you know that:

- People in developing countries waste only between 6 to 11 kg per person per year, compared to 95 to 115 kg in industrialized countries.²⁹
- Globally, about 30% of cereals, 40-50% of fruits and vegetables, 20% of all oilseeds, meat and cereals and 30% of fish are being wasted.³⁰
- About 250 billion m³ of water were used to produce 1.3 billion tons of food that was ultimately wasted. This is as much as the annual flow of the Volga, the largest river in Europe.³¹
- We use about 1.4 billion hectares of farmland to produce food that will never be eaten. This is more than the total surface of China.³²



Green beans from our supermarkets. Coming all the way from Kenya and cut in order to fit standard packaging, which results in wasting up to 1/3 of their size. (Photo: Creative Commons)



Ideas for action:

- Learn to distinguish between “sell by”, “best-by” and “use-by” dates.
- Weigh the food that is wasted at the school canteen and discuss options for reducing it.
- Think up and cook recipe from leftovers.
- Learn how best to store different food in the fridge and outside.
- Make your own vermi-compost.



Green bean plantation in Kenya. Fertile land and water precious to local communities is virtually exported when beans are sold to European consumers. Kenyan beans are exported all year round despite the fact that green beans can also be grown seasonally in European countries. (Photo: Creative Commons)

To explore further:

Discover the water we eat everyday - interactive website: <http://www.angelamorelli.com/water/>

Virtual water poster from FAO: <http://www.fao.org/nr/water/photos/2008/virtual.html>

Think, Eat, Save campaign: <http://www.thinkeatsave.org/index.php/multimedia/videos>

Food Waste: the environmental cost (video 6 min)

<https://www.youtube.com/watch?v=VaouOWx3Bmo>

Food wastage footprint from FAO (video 3 min): <https://www.youtube.com/watch?v=loCVrkcaH6Q>

How much does food wastage cost? from FAO (video 3 min): <https://www.youtube.com/watch?v=Md3ddmtja6s>



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We Eat Responsibly is an EU action-oriented global learning program that aims to develop critical thinking, knowledge, skills and attitudes to enable young students to adopt new consumption and behaviour patterns. It supports teachers in incorporating responsible food consumption topics into their lessons and it empowers pupils and students to lead activities for responsible changes at schools or in their neighbourhood. The program also aims to raise awareness among parents and the school's larger community of the global impacts of our everyday choices.



Founded in 2004, Glopolis is an independent think-tank dedicated to creating a more responsible economy, smarter energy policies and stable food markets. We work with governments, businesses, experts, civil society and local communities to create innovative responses to the challenges of development from the integrated perspective of a global polis. Glopolis provides holistic analysis and vision, stimulates multi-stakeholder, inter-disciplinary debate and engages in practical action in the Czech Republic as well as in other countries, rich and poor.

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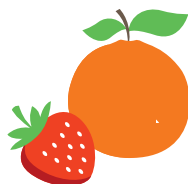


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