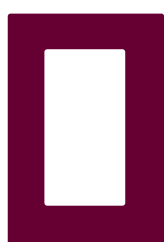




www.e-co-foot.eu

Teaching material on Ecological Footprint



LEARNING UNIT 1

GENERAL INTRODUCTION

AGE GROUP 1 (10 – 13 YEARS)

Version 2 | June 2020



This material is part of a course on the Ecological Footprint for students.

The course consists of the following modules for two age groups:



Age group 1 10-13 years	Age group 2 14-18 years
Calculator	
General Introduction	General Introduction
Mini Hectare Workshop	Mini Hectare Workshop
Nutrition	Nutrition
Housing	A. Housing core B. Housing additional
Mobility	Mobility
Other Consumption	Other Consumption
Background information	

All the material can be downloaded for free at www.e-co-foot.eu in different languages.

calculator.e-co-foot.eu is an online tool that allows students to log their daily activities and trace the Ecological Footprint of their habits. Group functions for teachers make it suitable for a warm-up or later check-up-session.

elearning.e-co-foot.eu is an e-learning package with selected content from the lectures. E-learning can be used for blended learning of this course, as homework or as training and competence check after in-class lectures.

IMPRINT

akaryon GmbH, Austria www.akaryon.eu

Plattform Footprint, Austria www.footprint.at

Colegiul „Vasile Lovinescu” Fălticeni, Romania www.agricolfalticeni.ro

Eötvös Loránd University (ELTE), Hungary savariakemia.elte.hu

Environmental Education Center (K.P.E.) Pertouliou-Trikkeon, Greece <https://blogs.sch.gr/kpepertoul/>

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LEARNING UNIT 1

THE ECOLOGICAL FOOTPRINT - GENERAL INTRODUCTION

TEACHING MATERIAL FOR AGE GROUP 1 (10 – 13 YEARS)

The aim of the Learning Unit is

- + to understand the Ecological Footprint as a practical measure to visualize the environmental impact of the global as well as the personal consumption.
- + to highlight the major social imbalance associated with overconsumption.

Short Overview

Duration of Learning Unit

Ca. 90 – 100 minutes or two lessons of 45–50 minutes

This Unit consists of

- This PDF document with description of the Unit
- PowerPoint Presentation: [ecofoot Introduction Presentation agegroup1.pptx](#)
- Exercise 1: [ecofoot Introduction Exercise1 Comparison countries agegroup1.pdf](#)
- PowerPoint Presentation: [ecofoot Introduction Game How big is its Footprint agegroup1.pptx](#)
- Optional exercise 2: [ecofoot Introduction Exercise2 Applying the 5F rules.pdf](#)

Brief description of the content of this Learning Unit

Students develop a global view of Earth and experience the limitations of natural resources in the spaceship game. They learn that the overuse of essential supplies for humanity leads to Overshoot and that ¼ of the world's population uses ¾ of all resources. Furthermore, the students learn to assess how big the Ecological Footprint of different activities in everyday life is.

The learning target of the spaceship game is to perceive Earth as a closed system, which provides only a limited amount of vital supplies (water, air and soil) for us humans to live. The goal of the game is the reflection of resource scarcity and injustice; and that these supplies should be common property should belong to all people TOGETHER.

Overview of contents

estimated duration

- | | |
|--|-------------|
| 1. Introduction | 1 min |
| 2. Spaceship game, summary, overshoot | 15 - 20 min |
| 3. Fair world? – World out of balance | 5 min |
| 4. Where does CO ₂ come from? Global warming | 5 - 8 min |
| 5. Ecological limits, limited resources | 2 min |
| 6. Ecological Footprint concept | 9 min |
| 7. Global m ² of roll, ham and hamburger | 3 min |
| 8. Explanation of exercise 1:
Ecological Footprint of rich and poor countries (as homework) | 2 min |
| Next lesson: | |
| 9. Discussion of exercise 1 on Footprint distribution worldwide | 5-8 min |
| 10. Average Footprint of an Austrian/Greek/Hungarian/Romanian | 5 min |
| 11. The most important things YOU can do – 5 Footprint Rules | 12 - 15 min |
| 12. Footprint game “How big is its Footprint?” | 20 (25) min |
| 13. Exercises optional | |
| - Exercise 2: Worksheet “Applying the 5 Footprint Rules” | 20 min |
| - Exercise 3: Writing an essay: How can I reduce my Ecological Footprint? | |
| - Calculate your Ecological Footprint | |

Setting

Classroom

Items:

Two blank sheets of paper in (size: A3), 1 roll, 1 towel (with a surface of 1.5 m²) or measuring tape with string/thread (to show the Footprint of roll and ham), beamer for PowerPoint presentation (also possible without beamer)

Worksheets for printing:

- worksheets for exercise 1: Ecological Footprint of rich and poor countries
- the 3 last pages of the Footprint game “How big is its Footprint?” (12.)
- optional exercise 2: Worksheet “Applying the 5 Footprint Rules”

Connection to subjects: geography, biology, science, chemistry, physics, environmental science, national language, religion, English, project lessons

E-learning: <https://elearning.e-co-foot.eu/>

Sequence

The spoken text of the teacher is in blue colour. The explanations of how the teacher acts are written in black.

1. Introduction



Today we will talk about Planet Earth and the Ecological Footprint. The Ecological Footprint is a wonderful parameter that can measure how much we use from our environment.

2. Spaceship game:



Does somebody want to become an astronaut? Yes?! (Or no?) Now you all will become astronauts during the next thought experiment we will play. You have the extraordinary honour to join a NASA space mission to Ganymede. Ganymede is one of the four biggest moons of Jupiter and is very far away.

You have to travel for 9 months! It is a very adventurous and dangerous journey that no one has ever undertaken before. We now enter the spaceship and it rockets into space.

Playing a video of a spacecraft starting with countdown to launch (inserted also in the PPT):



mars lift off.mp4

This is a long journey and we will need lots of fuel and a big supply of food and water, to drink and to shower. We are living in the future and we have the possibility to freeze people and defrost them again. To save energy and food, we will freeze half of the crew. I am the freezing machine and I freeze now the left half of the class.



The teacher points at one half of the class with his/her hands: "Those of you whom I have pointed at are frozen NOW – freezing sound: <https://www.youtube.com/watch?v=ZqxKNEmIBCI> – and they close their eyes. The others are awake and travel the long trip to Ganymede lasting 9 months.

At last, you arrive on Ganymede and the frozen astronauts become defrosted. You wake up again – the teacher points with his/her hands at the half of the class – and you stretch and get up. One of you feels hunger and goes to the storage area. But suddenly (s)he comes back and is quite upset: there is so little stock in the storage! There is no chocolate, chips and pizza left and the stock of noodles, rice and bread looks quite small.

What did you do? (S)he asks the half of the crew, which hadn't been frozen on the trip to Ganymede. The "unfrozen" had eaten too much on their journey! You shrug your shoulders: we can't change that any more. Another one of the defrosted feels stiff and wants to take a hot shower to warm up after this long time of being frozen. He switches on the warm water but suddenly the orange warning lamp is shining – too little water! You are very surprised: the other half of the crew had wasted too much water on their trip. You are not amused at all about this unfair situation.

...The whole crew finishes the work they have to do on Ganymede and prepares to go back to Earth. You, the half of the crew that was awake on the journey to Ganymede, the teacher points to the half class,

who was unfrozen, lie down in the freezing machines – you have to be frozen for the long journey back. I press the button now to start the freezing. Oh, but the red warning lamp goes on! Short Alarm SOUND: https://www.youtube.com/watch?v=Wp0_Y72ARIA. The freezing machines broke down! The astronauts cannot get frozen! Here is the challenge: Now the whole crew has to get back to the earth healthy and alive. And the supplies are small. What can you do now?



You – the half of the crew that consumed more than they should have and the half that was frozen on the trip – have to find a solution now together. Discuss how to solve this problem together, so that everybody gets back alive to Earth. How will you divide the supplies, which you have on your spaceship, among the crew members?

How will you divide food, water and work? (work = repair things, operate computers, monitor and record data, clean the toilet and the bathroom, cooking, washing dishes, designing a fitness program, monitoring the store room, analysing the Ganymede samples).

The teacher takes the students' messages and directs the content of the proposals towards social behaviour solutions that regulate the distribution of the available food, water and work, and away from other solutions that pupils might find, for example like:

- *We order a spaceship from Earth coming towards us with food and meet this spaceship on half way back to Earth*
- *We collect our stool and grow new plants on it in the spaceship*
- *We kill one person, and eat him/her*

After the students have been discussing and developing solutions for some time, the teacher asks questions about possible solutions, should the students not have guessed them by themselves:

- *Will the astronauts who ate too much on the flight to Ganymede get as much food on the return flight as those who were frozen? Or will they get less on the return flight because they used up more on the outbound flight and gained some body weight?*

The teacher draws the three circles for food, water and work on the blackboard, and asks, who wants to draw into the first circle, how the food should be distributed. The solution is discussed. The teacher goes on asking:

- *How do you divide the water?*

- Do those who have eaten more on the outbound flight have to work more on the return flight?

The next pupil draws his suggestion of distribution of water into the circle, and the next the distribution of work.

These are all good ideas, but do you know exactly how much supply is left?

No? What do you have to do then? Measure exactly and write down everything. And then?

Organize! Divide the available supplies for the days and the persons.



This is called bookkeeping with the supplies. Because without a good bookkeeping, it could happen that the supplies go out too fast or that one eats more than his fair share. And everyone should come home safely, because everyone is important on the spaceship.

That means you need THREE important things on the spaceship:

1. RULES about how the common supplies should be consumed
2. FAIRNESS and
3. a BOOKKEEPING, so that there will be enough for everyone

And there is one big spaceship you all know, where you already belong to the crew: SPACESHIP EARTH! Earth is like a spaceship flying through space. It is for us humans a unique place in space, it is the only place where we can survive. The spaceship Earth is a closed, sophisticated system with limited supplies, with which the crew, mankind has to get along.

We just found out on our small spaceship that we need rules and fairness and accounting. Do these rules also apply to spaceship Earth?The students think and answer.

No! On spaceship Earth, there are no rules for the commons, there is no fairness at all and no bookkeeping of the goods!



The commons must be enough for all people and must therefore be shared fairly. But to attain this, you need RULES! The supplies have to be divided fairly (evenly).

Everyone on spaceship Earth can decide for him/herself what (s)he does, which computer games (s)he plays or with whom (s)he meets. But how to deal with the vital supplies, should be decided together! You have to sit down and discuss together how they should be divided and used, as you did on your spaceship earlier. This happened on the climate change conference in Paris in 2015, where 174 countries agreed on the reduction of greenhouse gas emissions to fight climate change.

We won't solve the problem of climate change if we don't find common rules everyone follows (strong and weak). And it takes FAIRNESS so that no one starves or dies of thirst on the way home. And very important! We need BOOKKEEPING! Because how should we divide supplies if we do not know exactly how much there is?

And how does humanity actually deal with the supplies on Earth? They take out of nature as much as they want, without any limitations.



People catch more fish out of the sea than the amount which could regrow, they use and pollute more water than could be rebuilt, they cut down more trees in many regions than the regrowth and they blow more CO₂ into the air than the amount which could be fixed/absorbed again through forests or corals.

This leads to the overuse of the stocks of the earth, which has a technical term: the overshoot. We OVERUSE the earth!

Every year, a very IMPORTANT date is calculated by the Global Footprint Network: the World Overshoot Day. In 2019 it was on the 29th of July.

Until this day in the year mankind has used up the natural supplies that are supposed to last for a whole year! Already in July! This does not mean that in August, there will be nothing left to eat, but that we live on the supplies of the next generations and at the expense of nature and the disadvantaged three quarters of the world's population. The World Overshoot Day is taking place earlier each year. In 2018 it was on the 1st of August, in 2017 it was on the 2nd of August, in 2016 on the 8th and the year before on August 13th. In other words, the natural services that the ecosystem can sustainably provide are being used up ever faster. The impact of humanity on Earth exceeds Earth's capacity to supply humanity's current and future needs.

If you want to know more: Earth Overshoot Day: <http://www.overshootday.org/>

If you want to know more: Spaceship Earth: https://en.wikipedia.org/wiki/Spaceship_Earth

3. Fair world? – World out of balance



The ecological limits are constantly trespassed by humanity, but it is only a quarter of the world's population that consumes $\frac{3}{4}$ of the resources. The poorer $\frac{3}{4}$ of the world's human population and the wildlife can have only $\frac{1}{4}$ of Earth's resources.

Assets too are distributed very unequally by the unequal utilization of the resources:

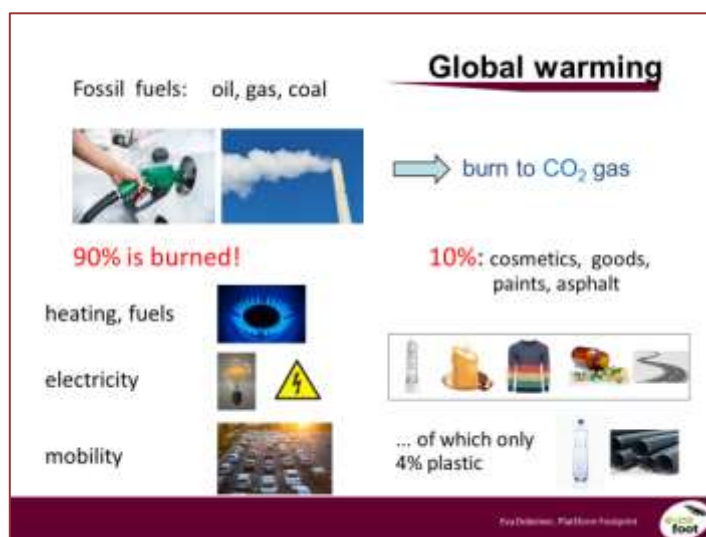
What do you think, how much does the richest 1% of humanity own? Students give estimates. More than all the others together! And the world is getting richer every year – by 5,000 billion dollars! But this capital gain benefits only **very** few people.

Climate change is mainly caused by the rich quarter of humanity – most of them live in Europe, North America and Australasia. The effects of climate change especially affect the remaining $\frac{3}{4}$ of humanity –

those, who did not cause it: the poor countries in the South. Why? Because the environmental impact in the South will be particularly strong, such as drought and because most people have no money to protect themselves from this impact. How do you feel about that? ... Is this fair? ...

4. Climate change, CO₂

Generally CO₂ and other greenhouse gases lead to the natural greenhouse effect and bring the temperature of Earth's atmosphere from minus 18 °C without greenhouse effect to about plus 14 °C. So greenhouse gases are essential for the survival of mankind and basically there is nothing wrong in having greenhouse gases in the atmosphere. So what is the problem now that leads to climate change?



-> The influence of humans and the changes in very short time lead to global warming and dangerous consequences.

Why do we have climate change? How does it arise? The teacher receives the students' answers and adds the missing points. The combustion of fossil fuels produces CO₂ and is one of the most important influences to climate change. What are fossil resources? Oil, natural gas and coal.

These are for example burned in cars, power plants, factories, heaters and serve as an energy source. There are also important things, such as paints, clothing, asphalt, medicines or plastics made from oil.

But that's only 10% of the world's oil consumption (plastics make up only 4%). 90% is burned¹! Oil is too valuable to be burned.

¹ <https://www.srf.ch/wissen/natur/erdoel-der-unterschaetzte-stoff>, Thomas Häusler, 08.03.2013

Global warming

Human Enhanced Greenhouse Effect:
the atmosphere is warming up!

CO₂ is taken up by plants

CO₂ goes into the air

www.ecosia.org

Eva Dobner, Plattform Footprint

Is it possible that we recapture or bind CO₂ from the air that we released by combustion? Yes, through trees and other plants, because plants feed on CO₂. They take it up during the day with their leaves and convert it into plant parts and wood. When planting forests, CO₂ is bound from the atmosphere in the form of wood. However, there is not enough space on Earth to plant forests to recapture all the CO₂ emissions from the atmosphere. Therefore we must reduce our CO₂ emissions! Planting trees and consuming less products that need forest land (use the forest as a CO₂ sink) helps, but it's not enough to fight climate change and ecological overshoot.

(You can also plant trees by using the search engine www.ecosia.org)

If you want to know more: "Global climate change": <https://climate.nasa.gov/evidence/>

5. Ecological limits, limited resources

Natural Limits

How do we notice that we are consuming too much of Earth's supplies?

For measuring the "new" limits:

Ecological Footprint
helps to make
LIMITS
tangible and calculable.

www.footprint.org

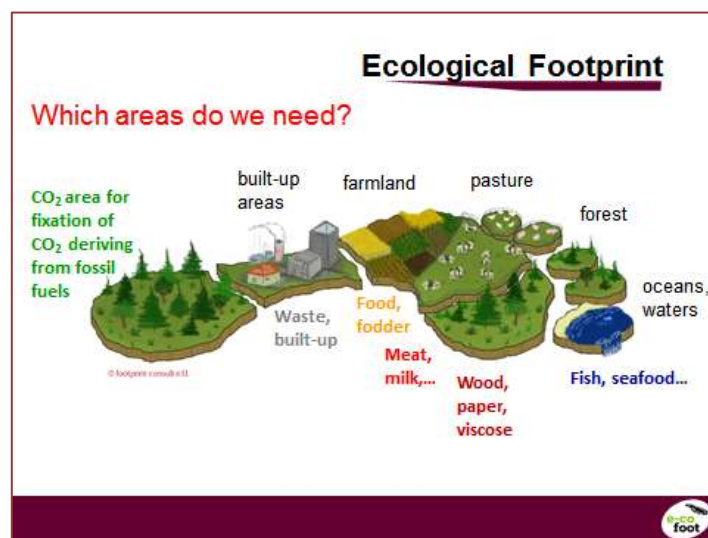
W. P. Kny, Plattform Footprint

How can we humans prevent ourselves from over-exploiting the natural supplies on Spaceship Earth? How can we realize that we have already exceeded the ecological limits? Stepping over these limits happens quietly and unobtrusively. There is no big BANG, like driving against a wall.

That's where the concept of Ecological Footprint helps us! The Ecological Footprint shows us when we consume too much of our environment. At the same time, it is a metaphor for the imprint we humans leave on Earth, the unmistakable trail of change we are making on Earth.

The Ecological Footprint is a wonderful measure of environmental consumption. It measures how much nature we consume in terms of area – of fruitful, productive area. Everything that we need to live – needs area. We can calculate the Ecological Footprint of a person, of a country, of a product like a chair or of food.

6. Ecological Footprint concept



The potatoes that I eat in one year obviously use up area. The meat that I eat also needs area, because the pigs are fed with grain. Then my clothes need area for cotton and wool. And wood for my furniture needs area in form of a forest. And then I also need area for the fossil energy, which I combust for my heating or for driving.


Burning gasoline or natural gas produces CO₂. CO₂, which comes from combustion, additionally warms up our atmosphere, more than we want. Therefore, we also calculate areas to bind this CO₂ by forests. Adding up all these areas that my consumption needs yields MY Ecological Footprint.

Ecological Footprint

What does it measure?

- + Area**
How much is available?
biologically productive areas
- Area for human consumption**
How much is used?

It's an accounting for nature.

W Policy Platform Footprint 

The Ecological Footprint is like an accounting for nature. If we had a bank account and we did not know how much our actual balance is, but withdrew money regularly, we would sometime overdraw our account – and we would not notice. But that's just how people act in the use of nature. They use natural capital without knowing how much is actually available and they get into the ecological minus.


The Ecological Footprint is like an account statement on nature: it tells us if we have anything left or are in debt.

Footprint accounting, on the one hand, indicates how much area there is on Earth – surfaces that are productive and that we can use to benefit people. And on the other hand, it shows how much area we use for our daily needs.

Bio productive areas are fruitful areas of land that we humans can use to harvest food for us or for our animals, or fibres (cotton, wood).

Ecological Footprint

How much fruitful area do we have?




21% biologically productive land

4% biologically productive ocean


< 25%

13 bn hectare*

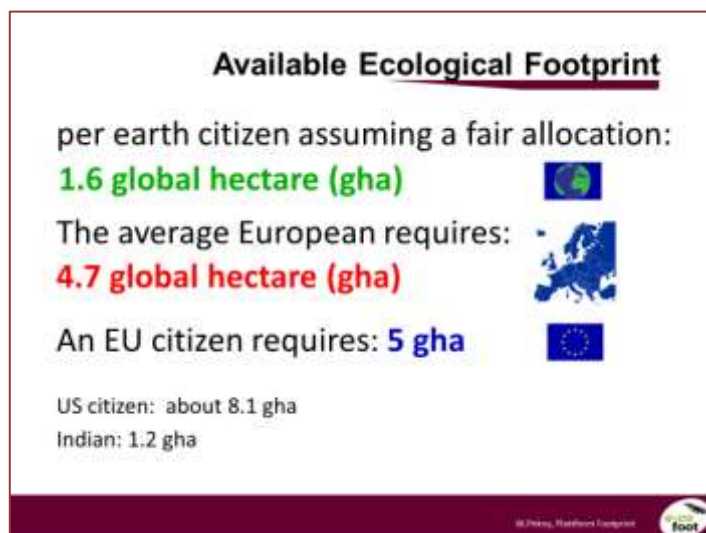


we divide 13 bn ha by the number of people on earth

*(2016/2019)

W Policy Platform Footprint 

Parts of the land areas are deserts or ice surfaces. Only 21% of the earth's surface is biologically productive, fruitful land (fields, pastures and forests) and only 4% of the oceans – mostly near the coast, where there are more nutrients. The Global Footprint Network has calculated that about a quarter of the world's surface is biologically productive – around 13 billion hectares. In 2016, around 7.5 billion people lived on Earth. If we divide the existing productive areas by the number of people on Earth, then...



...each Earth citizen gets 1.6 global hectares. THIS is the area that is available for every Earth citizen to meet his/her needs when the area is distributed fairly.

An average European (Austrian, Hungarian, Greek, Romanian) consumes almost three times (A: more than three times, GR more than twice, HU twice, RO one and a half times) as much, namely 5 gha.

A US American even claims 8.1 gha.

If all humans lived like we Europeans (Austrians, Hungarians, Greeks, Romanians), then we would need THREE planets (A: more than THREE planets, GR: two and a half planets, HU: about two planets, RO: one and a half planet) Earth!

If you want to know more: What is an Ecological Footprint?

www.overshootday.org/kids-and-teachers-corner/classroom-activities/

The Ecological Footprint: Global Footprint Network <https://www.footprintnetwork.org/>

7. Footprint of roll, ham and hamburger

Take, for example, a roll. The teacher picks up a roll. The Ecological Footprint of a roll is around 0.3 global m². (S)he picks up two white sheets of A3 paper and spreads the sheets side by side on the floor. Then (s)he puts the roll in the middle of it. This is the Ecological Footprint of a roll: The area that the roll needs from the wheat field to our plate.

Most of the time we do not eat an empty roll, but we add something else. If we add 5 slices of ham, they have an Ecological Footprint of 1.5 global m². The teacher spreads a towel of approx. 1.5 m² on the floor. This is the area that the ham needs when it is made of pork. If the meat originates from beef, it needs an area as big as a king size double bed (3.6 gm²)! Hamburgers mostly contain beef... but if you put only one slice of pork ham on the roll, its Footprint is only 0.3 global m².

8. Exercise 1: Ecological Footprint of rich and poor countries

The teacher prints out a worksheet with a map of the world in black and white and 4 sheets with the graphics of the national Footprints of all countries in the world and hands the worksheets out to the pupils. The worksheet is in the zip-file, named as follows:

[ecofoot_Introduction_Exercise1_Comparison countries.pdf](#)

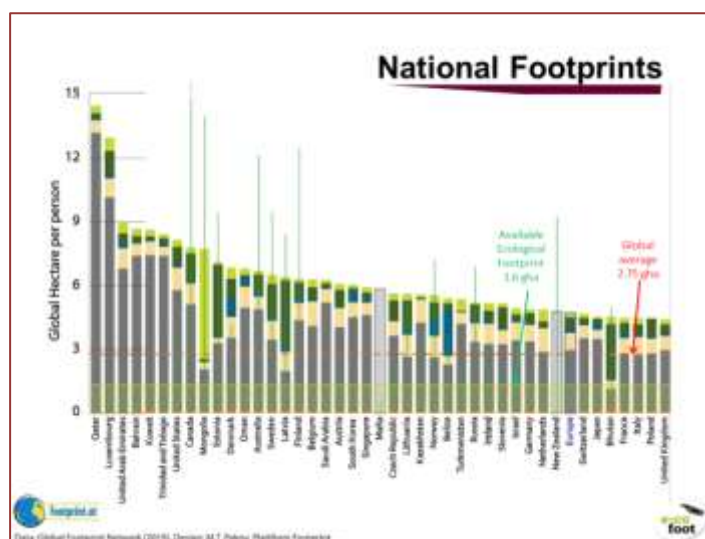
Optional: exercise without printing the paper worksheets but using only the internet instead:

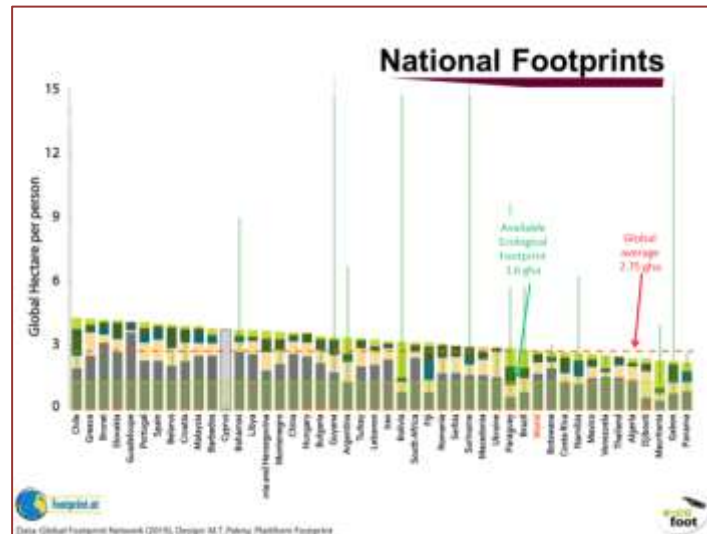
<http://data.footprintnetwork.org/#/>



The students explore the different Ecological Footprints of the nations of the world. They look for 6 countries with a big Ecological Footprint and 6 countries with a small Footprint and colour the map.

Depending on their age and interest they can also compare the number of their inhabitants and their Ecological Footprints and can compare also with the total world population.





9.

Discussion of exercise 1 (done as homework): Footprint distribution worldwide

The result could look like this (four examples, depending on the year):

Global South

Bangladesh:

0.8 gha/cap

India:

1.2 gha/cap

Global North

USA:

8.1 gha/cap

Canada:

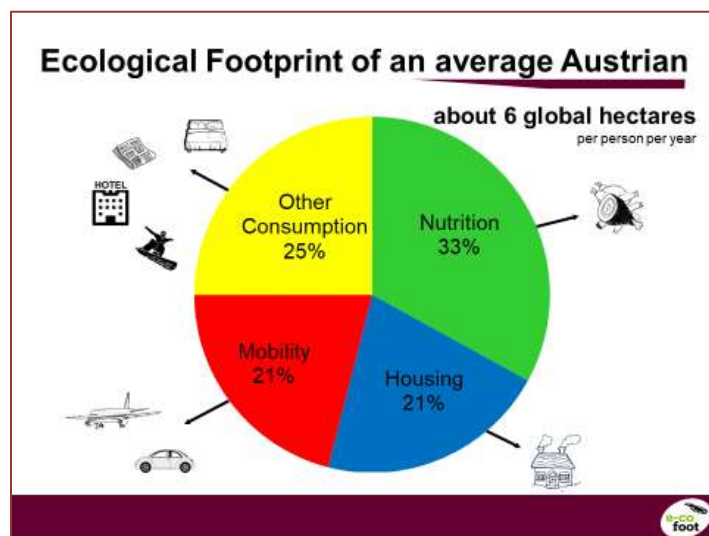
7.7 gha/cap

(Data: <http://data.footprintnetwork.org>, 2019/2016 Global Footprint Network)

What does this show us? That the countries of the Global South mostly have a low Eco Footprint. Twice as many people live in the poor countries than in the industrialized rich countries, but their Ecological Footprint is mostly lower than the fair share of 1.6 gha for each earth citizen.

As we have already talked about the unfair world (Chapter 3) the countries of the Global North have a big Eco Footprint – much bigger than the fair share per earth citizen. They make about a quarter of the world's population, but consume 3 to 5 times more of the earth's biocapacity – the natural resources.

10. Average Footprint of an Austrian



An average Austrian has an Ecological Footprint of 6 global hectares per year.² What is the Footprint of an Austrian composed of?

33% is nutrition (food and drink) with 1.8 global ha. Austrians need for food and drink more global hectares than the fair share per person is on Earth (1.6 gha). Thereof 75% is for meat and animal products.

21% is made up of housing, of which the biggest part is heating and electricity.

21% of the Footprint of an Austrian is mobility, which means the moving of people from one place to another. Most of them stems from driving a car and flying.

25% is the other consumption – this is everything else we buy except food; such as furniture, clothing, paper and the other things of everyday life. The largest share of “other consumption” is paper. An average Austrian consumes about 230 kg of paper a year.

11. The 5 most important things YOU can do

What can WE do specifically to reduce OUR Ecological Footprint? Look at the four areas we just discussed: nutrition, mobility, housing and other consumption. How could we change our consumption in these areas to reduce our Footprint?

Pupils make suggestions. Which of the things, that you suggested, have a bigger impact and which a lower impact? The teacher collects the ideas of the pupils. Think about the effect of these measures on reducing the Footprint – and write them on the blackboard: those actions you guess having a little impact on the left side, those with high impact on the right side and the medium ones in between. Pupils are doing so. You wrote a lot of interesting things you can do on the blackboard.

² 2016/2019

We have summarized the most important things that each of us can do in order to significantly reduce your Footprint and we call them 5-Finger Rules as we have 5 fingers on our hands:



1. Enjoy a sustainable lifestyle! Enjoy the good feeling of not living at the expense of others! Enjoy more time, more friends, more joy, more knowledge, more wisdom – having no, or almost no Footprint – and less products.
2. Act together to create a sustainable world that supports living on a small Footprint!
3. Reduce meat and animal products! Significantly reduce the amount consumed (1 slice of sausage instead of 5), prefer as much as possible products from organic farming, prefer seasonal products!
4. Travel with a small Footprint: Flying – better never! Ride cars less! Slower, never alone and as soon as possible electrically using green electricity!
5. Home green home: well insulated, using renewable energy for heating and electricity, access to public transport, smaller!

The pupils compare the measures they wrote on the blackboard with the 5-Finger Rules and discuss them with the help of the teacher.

12. Footprint game “How big is its Footprint?”

The worksheet is in the zip-file, named as follows:

[ecofoot_Introduction_Game_How_big_is_its_Footprint_agegroup1.pptx](#)

The teacher places sheets with one small, one medium, and one big Footprint on three different, easily accessible places in the classroom (or hangs them up visibly with adhesive tape).



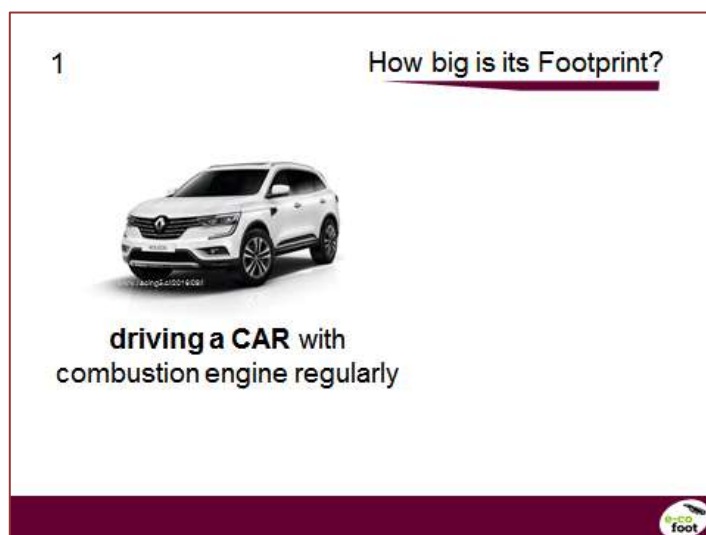
Here are three different sized footprints:

- the small green footprint – means a small Ecological Footprint
- the medium-sized orange footprint, a medium Footprint and
- the large black footprint means a big Ecological Footprint.

I'll show you pictures of different things from everyday life one after the other and you should think and decide if they have a small, medium or big footprint and then you have to go to the appropriate footprint area.

Optional, if there is not enough space in the classroom for movement:

The pupils build small groups. The picture e.g. of a car is shown and the question “How big is its Footprint” is asked. Then the pupils discuss in their groups and give hand signals: one little finger for a small Footprint, five fingers for a medium Footprint, two hands for a big Footprint.



Optionally the teacher can use a table which should be ready in advance, on the blackboard or whiteboard, smartboard or on a flipchart sheet – the students could fill in or, they could use different colours.

Optional: the responses of the pairs/subgroups can be recorded to this table


Footprint Game „How big is its Footprint?“

Put an "X" or circle on your group's choice

	Group 1			Group 2			Group 3			Group 4		
Car	big	med	small	big	med	small	big	med	small	big	med	small
Newspaper	big	med	small	big	med	small	big	med	small	big	med	small
Cat	big	med	small	big	med	small	big	med	small	big	med	small
Cycling	big	med	small	big	med	small	big	med	small	big	med	small
Hamburger	big	med	small	big	med	small	big	med	small	big	med	small
French Fries	big	med	small	big	med	small	big	med	small	big	med	small
Flight	big	med	small	big	med	small	big	med	small	big	med	small
Natural Gas	big	med	small	big	med	small	big	med	small	big	med	small
Green electricity	big	med	small	big	med	small	big	med	small	big	med	small
cheese	big	med	small	big	med	small	big	med	small	big	med	small
music, dancing	big	med	small	big	med	small	big	med	small	big	med	small

Then the solution, which footprint is the right one is shown. After that, a short explanation appears why e.g. a car with combustion engine has a big Footprint.


1



driving a **CAR** with combustion engine regularly

has a high fuel consumption and produces a lot of CO₂ emissions

How big is its Footprint?



After that the pupils are asked, how the Footprint of e.g. driving a car with combustion engine can be reduced.



How can we reduce its Footprint?



small car



electric car with green electricity



Take your neighbour or friend with you




Or don't use a car at all! 😊

In the PowerPoint presentation the pictures of different consumption goods and activities are shown successively, with a subsequent solution of which Footprint is the right one.

Overview FOOTPRINT GAME:

No.	PICTURE		SHORT EXPLANATION
1	driving a CAR with combustion engine regularly	big Footprint	It has a high fuel consumption and produces a lot of CO ₂ emissions.
2	Daily newspaper (paper)	medium Footprint	Paper needs a lot of energy in the production, forest grows slowly and can only be processed after many decades.
3	Cat	big Footprint	A cat gets food every day, which contains meat.
4	Cycling	small Footprint	Only manufacturing and maintenance of the bicycle are needed.
5	Hamburger (eating regularly)	big Footprint	Hamburger is made of beef; to produce a calorie of beef you have to feed the animal with 10 calories worth of plant food.
6	Fried potatoes / French fries	small Footprint	Food that does not contain any animal products usually has a small footprint, even if it does not grow in the own country, like oranges (if they grow naturally in their country of origin without glasshouse).
7	Flight to Madrid	big Footprint	Aircraft consume a lot of fuel; the exhaust gases have a higher greenhouse effect at this altitude.
8	Heating with natural gas	big Footprint	Natural gas burns to CO ₂ and promotes climate change.
9	Cheese (eating regularly)	big Footprint	1 kg of cheese requires about 10 litres of milk. High-performance dairy cows get to eat soy from South America and produce methane, which is 20 times more greenhouse-active than CO ₂ . It takes 2 – 3 years until they give milk.
10	Using green electricity in the household	small Footprint	Green electricity has only one-tenth of the normal electricity Footprint.
11	Listening to music, dancing	small Footprint	A radio/mobile phone is produced once and used for many years.

You can find the THREE FOOTPRINTS TO PRINT AT THE END OF THE DOCUMENT.

Exercises

13. Exercise 1: Ecological Footprint of rich and poor countries

See chapter 8, end of the first lesson.

14. Exercise 2: Worksheet “Applying the 5 Footprint Rules”

The worksheet is located in the zip-file, named as follows:

[ecofoot_Introduction_Exercise2_Applying the 5F_rules.pdf](#)

Duration: 20-25 minutes

Aim of the exercise: There is generally a lot of pieces of advice on what can be done for the environment and there is often no overview of which measures are more important and more effective than others to reduce the Ecological Footprint. Therefore, the 5 Footprint Rules have been formulated and their implementation will be practiced in this exercise.

There is a worksheet with 34 different everyday habits that have different impacts on the environment. Students should mark the activities they do regularly in their families. They should also mark those activities that belong to the 5 Footprint rules (F) as well as those that have a negative impact on the environment (-). For example:

We buy products in returnable packaging (e.g. drinks, print cartridges)	
We reuse things.	
We buy disposable products because we think they are practical	-
We minimize the number of plastic bags we bring home along with our shopping.	
We use for shopping multipurpose fabric bags.	
We use green electricity from a green electricity supplier	F

Then they compare the answers in the class and discuss.

15. Exercise 3: Writing an essay - How can I reduce my Ecological Footprint?

16. Exercise 5: Calculate your Footprint

<https://calculator.e-co-foot.eu/>

Sources and Bibliography

Footprint data: 2019/2016

Global Footprint Network. <http://www.footprintnetwork.org/en>

Plattform Footprint www.footprint.at

Picture credits can be found at the end of the PowerPoint presentation.

17. Annex: THREE FOOTPRINTS TO PRINT for the Footprint game “How big is its Footprint?”



Big Ecological Footprint



Medium Ecological Footprint



Small Ecological Footprint