

Overspending our ecological budget

The increasing size of the world population has placed the natural environment under a great deal of pressure, and both nature and environment have suffered greatly as a result. But population growth is not the sole reason for environmental issues. In rich countries the damage to the environment is exacerbated by the increased prosperity, while in the Third World it is the fact that people are living in poverty which compels people to live an unsustainable lifestyle that harms the environment.

An oft-used method for calculating damage to nature and environment is the ecological footprint. In this part we run through some frequently used concepts such as the ecological footprint, biocapacity, the fair share and the ecological overshoot.



How much do we need: Ecological footprint

Humanity needs what nature provides, but how do we know how much we're using and how much we have to use? The ecological footprint has emerged as the world's premier measure of humanity's demand on nature.



Watch the video below to have a good overview of the ecological footprint:



To put it simple, it is the amount of land that a person or a country requires to support himself or itself. Every person needs a certain amount of land and water. This includes the areas for producing the resource it consumes, the space for accommodating its buildings and roads, and the ecosystems for absorbing its waste emissions such as carbon dioxide.

The symbolic name for that piece of land is the ecological footprint, and the measurement involves, as it were the size of the foot a person requires for support. For an overview of the six major components of the ecological footprint see the figure below.



FIGURE 1: COMPONENTS OF THE ECOLOGICAL FOOTPRINT



SOURCE 1: WWF, 2012



Task

Calculate your own ecological footprint on: <https://www.footprintcalculator.org/> -

How many Earths do you need to support your lifestyle?

- When is your personal Earth Overshoot day? What does it mean?
- Which land type is dominating your footprint?
- Which consumption type is dominating your footprint?
- How do you feel?



How much do we have: Biocapacity

So, it seems very simple to calculate the size of that the average footprint per person. Just take the total surface/area of the globe's land, and divide that equally amongst all the people. In the year 2000 there were over 6 billion people so there was 2,5 hectares available per person, a patch of land of 250 by 100 metres each. In 2011 the same calculation results in only 2,1 hectare per person, given the increase in population to 7 billion.

In reality, things are more complex. Firstly, not every square metre of land is available for human use, as a major portion is required for fauna and flora if we want to retain at least some of the present biodiversity. Furthermore, some of the land is completely unsuited to human purposes (ice fields of Antarctica, peaks of mountains, deserts, ...). The flipside is that certain parts of the seas and oceans can be included because, for example, they are used to catch fish. Another reason why this calculation turns out to be more complex is that not all usable pieces of land are of equal benefit. On the one hand, because some lands are more fertile or have a better climate than others, but on the other hand because people wish to undertake different activities on the land. People have different requirements when a plot of land is used to grow rice on compared to when it is used to build a town on or to play sports on.

All these issues are taken into account when it comes to calculating the ecological footprint. Every piece of land that has a high beneficial value is multiplied by a large factor, while all barren, dry and unusable areas are multiplied by a small factor. This results in a symbolic representation of the number of hectares that are available for humans. These imaginary hectares are called global hectares (gha). The available area is called the biocapacity (nature's supply).

In 2000 the available space per person stood at 1,95 gha, an amount that shrunk to 1,8 gha per person in 2007 and 1,7 gha in 2011. This amount is labelled the fair share of land every person is entitled to, it is the area that each of us can use. If we do not exceed that area we will preserve the ecosystem, and the environment will not be degraded (Roorda, Concoran & Weakland, 2012).

HUMANITY NOW OVERSPENDS ITS BIOLOGICAL BUDGET EVERY YEAR

Since 1970, our Ecological Footprint has exceeded the Earth's rate of regeneration. This overshoot erodes the planet's health and, with it, humanity's prospects.

Biocapacity, the ability of our planet's ecosystems to regenerate, is the underlying currency of all living systems on Earth. Everything depends on it. Ecological Footprint accounting measures both the biocapacity available as well as the demand people put on it through all of our activities: from food and fibre production to the absorption of excess carbon emissions.

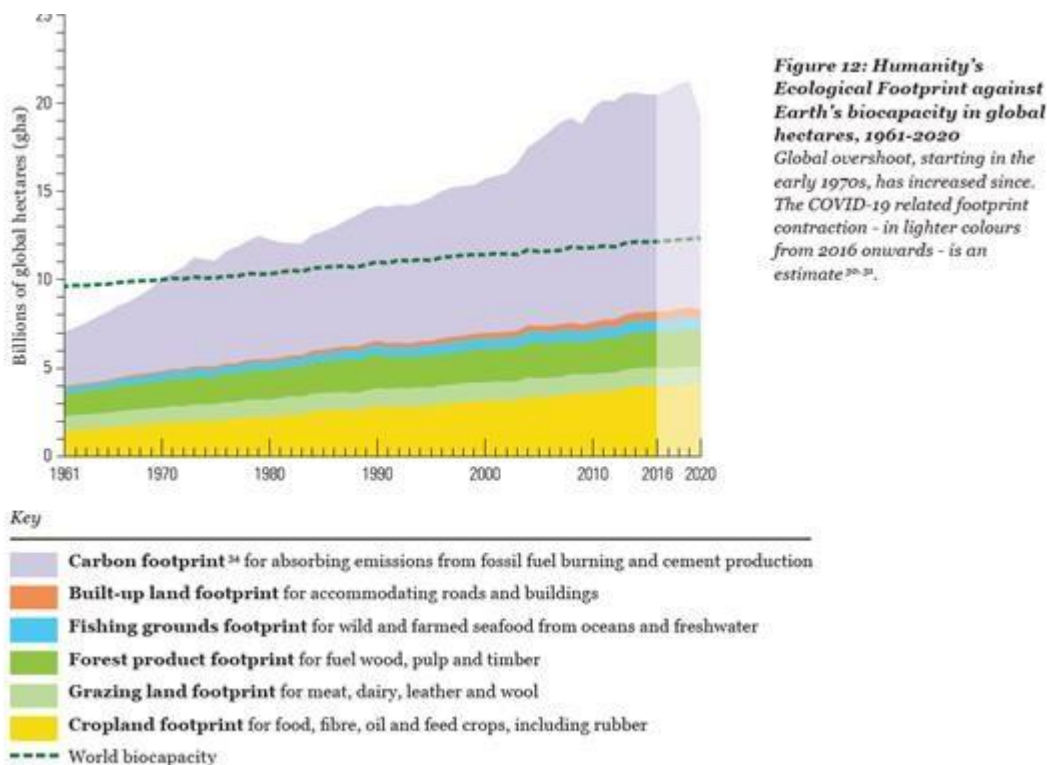
This ecological balance sheet allows us to contrast biocapacity with all the human demands that compete for biologically productive areas. The common measurement unit



are global hectares: biologically productive hectares with world average productivity. Thanks to this common measurement unit, countries, regions, cities, individuals, and products can be compared across the world and over time.

Through changes in technology and land management practices, global biocapacity has increased by about 28% in the past 60 years 30, 31; however this may be an overestimate because the UN statistics used undercount losses such as soil erosion, groundwater depletion and deforestation. Still, this increase has not kept pace with growth in aggregate consumption: humanity's Ecological Footprint, also estimated from UN statistics, has increased by about 173% over the same time period and now exceeds the planet's biocapacity by 56%.

FIGURE 2 HUMANITY'S ECOLOGICAL FOOTPRINT AGAINST EARTH'S BIOCAPACITY



SOURCE 2: WWF, 2020

This means that the human enterprise currently demands 1.56 times more than the amount that Earth can regenerate. It is like living off 1.56 Earths. As with the 2008 economic crash, this year's lockdowns due to COVID-19 have reduced humanity's demand by nearly 10%. However, since this reduction was not caused by structural change the gains are unlikely to last, and may even delay action on climate change and biodiversity loss (WWF, 2020).



FIGURE 3: HUMANITY'S ECOLOGICAL FOOTPRINT BY LAND USE AND BY ACTIVITIES

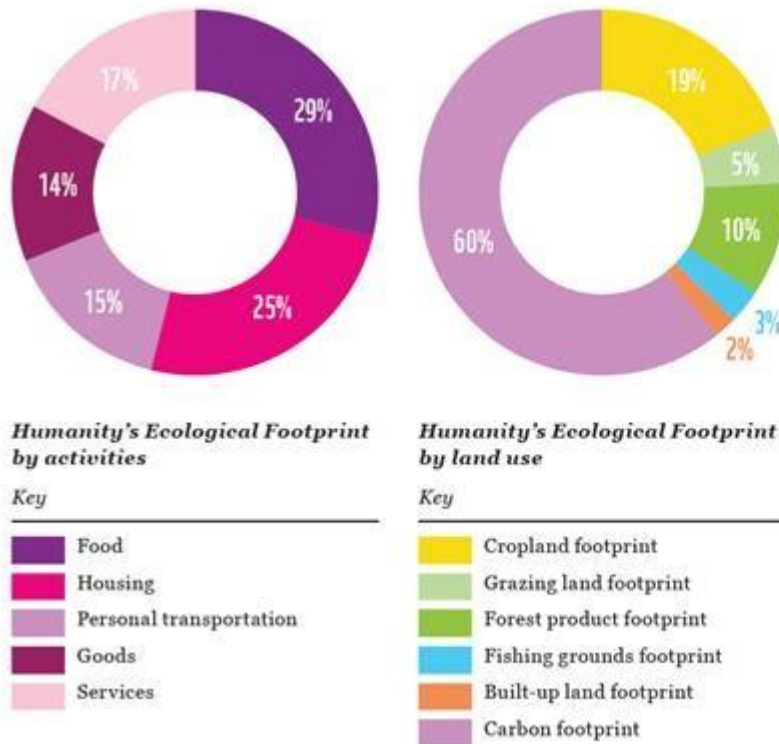


Figure 13: Humanity's Ecological Footprint by land use and by activities
The Ecological Footprint measures how much demand human consumption places on the biosphere and compares it to what ecosystems can renew. In 2020, the world average Footprint amounts to 2.5 global hectares per person, compared to 1.6 global hectares of biocapacity. It can be broken down by area categories (outer circle) or, using Multi-Regional Input-Output Assessments, by activity fields (inner circle)^{35, 36, 39, 36}.

SOURCE 3: WWF, 2020

Consumption around the world

Natural resources are unevenly distributed across the Earth. The pattern of human consumption of these resources differs from resource availability, since resources are not consumed at the point of extraction. Looking at the Ecological Footprint of each person at the national level provides additional insight into where the world's resources are being consumed.

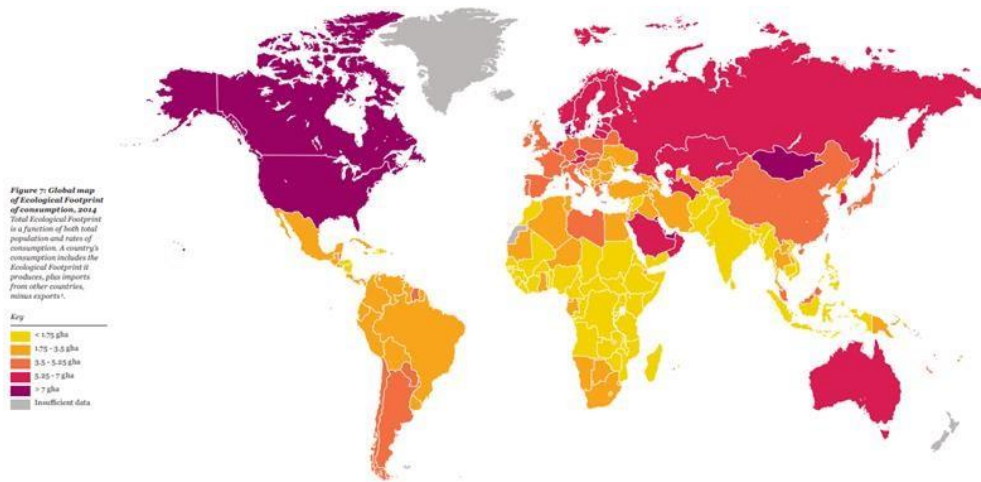
Varying levels of Ecological Footprint are due to different lifestyles and consumption patterns, including the quantity of food, goods and services residents consume, the natural resources they use, and the carbon dioxide emitted to provide these goods and services.





Task

Click on the interactive map:



- Look up your own country
- Does your country have an ecological deficit or an ecological reserve?
- Can you explain the differences in Biocapacity between countries?
- Which kind of countries are below the 'Fair Share'?
- What is the evolution of ecological footprint per capita for some low and medium developed countries?



Task

Pick 1 activity (food, housing, transportation, goods & services)

- Make a list of practical tips and tricks to limit your own footprint. Try to categorize them:
- What actions do you already practice?
- What measures are easy for you to take?
- What measures are hard for you to take?

For a theoretical overview of the barriers [click here](#)

