Emissions of the Carbon Cycle

In the climate discussion, the so-called „CO_2 footprint“ of living beings, especially humans and farm animals, is increasingly declared as a problem, to the point,

- to discredit the eating of meat,
- slaughter farm animals (e.g. in Ireland),
- or even discouraging young people from having children.

This discussion is based on false premises. It is pretended that exhaling CO_2 has the same „climate-damaging“ quality as burning coal or petroleum.
A closer analysis of the carbon cycle shows the difference.

The carbon cycle

All life on earth is made up of carbon compounds.
The beginning of the so-called food chain is plants, which use photosynthesis to produce mainly carbohydrates, and in some cases fats and oils, from CO_2 in the atmosphere, thus storing both carbon and energy.

- The further processing of these carbon compounds is divided into several branches, where again a conversion into CO2 takes place:
- the immediate energy consumption of the plant, the „plant respiration“,
- the – mainly seasonal – decay of part or all of the plant, and humus formation,
- the energy supply of animals and humans as food. Here, apart from the direct energy supply, a transformation into proteins and fats takes place, partly also into lime.
- Proteins and fats are passed along the food chain.
- In the course of life, plants, animals and humans

release some of the carbon absorbed from food through respiration as CO2, and in some cases also as methane.
- With the decomposition of animals and humans, the remaining CO_2 is released again.
- The formed lime binds the CO_2 for a long time. E.g. each eggshell binds 5g CO_2 for a very long time.

Abstractly speaking, all CO_2 from all living things, whether bound or exhaled, ultimately comes from the atmosphere via photosynthesis.
All living beings are temporary stores of CO_2. The described mechanisms cause different half-lives of this storage.
Human interventions usually cause a prolongation of the storage and consequently a more sustainable use of CO_2:

- Mainly by conservation and thus stopping the decay processes. This refers not only to the preservation of food, but also through long-term conservation of wood, as long as wood utilization is sustainable. In this way, building with wood is a long-term commitment of CO_2.
- Last year’s grain is usually stored and only processed into bread etc. about a year later. In the meantime, this year’s grain plants have already grown again. Thus, the metabolic emissions from humans and animals are already compensated before they take place. If the grain were to rot without being processed, it would have already decomposed into CO_2 again last fall.
- The rearing of farm animals also means CO2 storage, and not only in the form of the long-lived bones. However, the use of fossil energy in mechanized agriculture and fertilizers must be taken into account here.

Limitation – fertilization and mechanization of

agriculture

3 factors mean that the production of food may still release more CO_2 than in „free nature“, namely when processes are involved that use fossil fuels:

- The use of chemically produced fertilizers
- the mechanization of agriculture
- the industrialization of food production.

Because of very different production processes, it is very misleading to speak of a product-specific carbon footprint.

To pick an important example, beef is usually given an extremely high „carbon footprint.“ Beef that comes from cattle raised largely on pasture – fertilized without artificial fertilizers – has a negligible „carbon footprint,“ contrary to what is disseminated in the usual tables. The same is true for wild animals killed in hunting.

An example that illustrates the duplicity of the discussion is the production of bio-fuels. This uses fertilizers and mechanical equipment powered by fossil energy in much the same way as the rest of agriculture. However, the fuels produced are considered sustainable and „CO_2-free.“

Dependencies

The most important insight from biology and ecology is that it is not within our arbitrary power to remove individual elements of the sensitive ecology without doing great harm to the whole.
Typical examples of such harmful influences are:

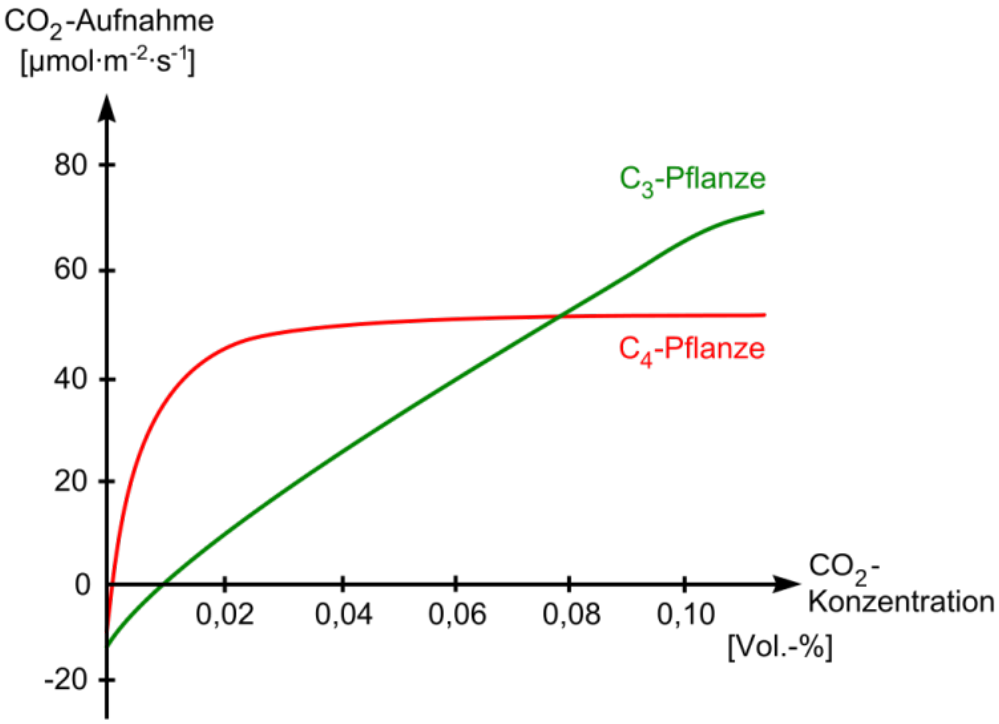
- Overgrazing, i.e., desolation by eating away at the (plant) bases of life. Examples of this are widely known. „Overgrazing“ can also occur as a result of „well-intentioned“ and assumed positive interventions

such as „water quality improvement“ in Lake Constance, with the result that there is no longer enough food for plants and animals in the water.

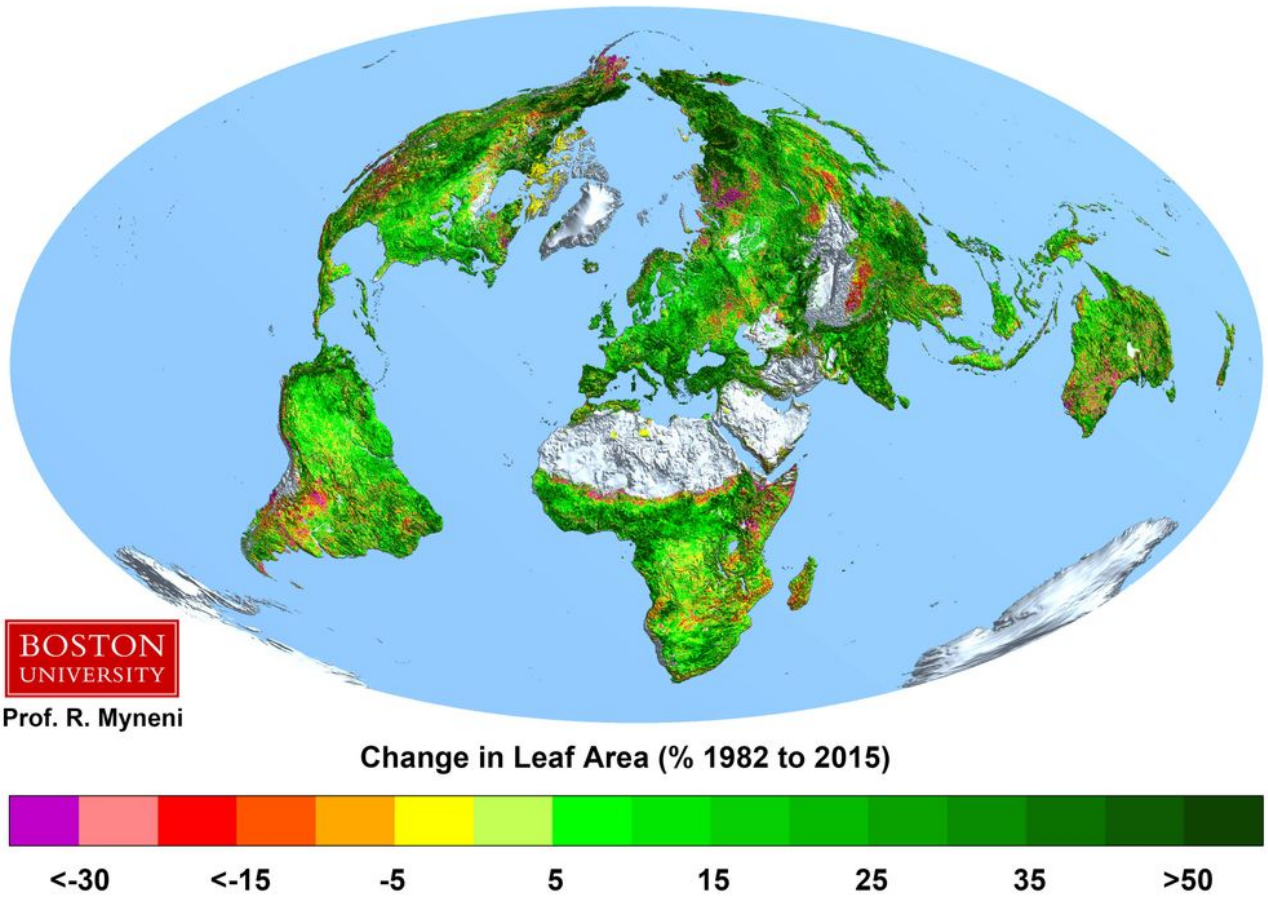
- Less well known is „undergrazing,“ particularly the failure to remove withered tumbleweeds in the vast semi-arid areas of the world. To address this problem, Alan Savory has introduced the concept of „Holistic Management“ with great success. This concept includes as a major component the expansion of livestock production.If plants are not further utilized by „larger“ animals, then they are processed by microorganisms and generally decompose again quickly, releasing the bound CO_2; in some cases they are converted into humus. So nothing is gained for the CO_2 concentration of the atmosphere if e.g. cattle or pigs are slaughtered to allegedly improve the CO_2 balance. On the contrary, the animals prolong the life of the organic carbon-binding matter.

Dependence of plant growth on CO_2

Plants thrive better the higher the atmospheric CO_2 concentration, especially C_3 plants:



For plant growth, the increase in CO_2 concentration over the last 40 years has been markedly favorable, and the world has become significantly greener, with the side effect of sink effect, i.e., uptake of the additional anthropogenic CO_2:



C_3 plants do not reach the same uptake of CO_2 as C_4 plants below a concentration of 800 ppm. That is why many greenhouses are enriched with CO_2.

Conclusions

Knowing these relationships, compelling conclusions emerge:

1. Because of the primacy of photosynthesis and the dependence of all life on it, the totality of living things is a CO_2 sink, so in the medium and long term the CO_2 concentration can only decrease, never increase, because of the influence of living things.
   All living beings are CO_2-storages, with different storage times.
2. There are at least 3 forms of long-term CO_2-binding, which lead to a decrease of the CO_2-concentration:
   - Calcification
   - humus formation
   - non-energy wood utilization

3. The use of „technical aids“ that consume fossil energy must be separated from the natural carbon cycle in the considerations. It is therefore not possible to say that a particular foodstuff has a fixed „CO_2 footprint“. It depends solely on the production method and animal husbandry.
4. A „fair“ consideration must assume here, just as with electric vehicles, for example, that the technical aids of the future or the production of fertilizers are sustainable.

In addition, taking into account the knowledge that more than half of current anthropogenic emissions are reabsorbed over the course of the year, even a 45% reduction in current emissions leads to the „net zero“ situation where atmospheric

concentrations no longer increase. Even if we make little change in global emissions (which is very likely given energy policy decisions in China and India), an equilibrium concentration of 475 ppm will be reached before the end of this century, which is no cause for alarm.