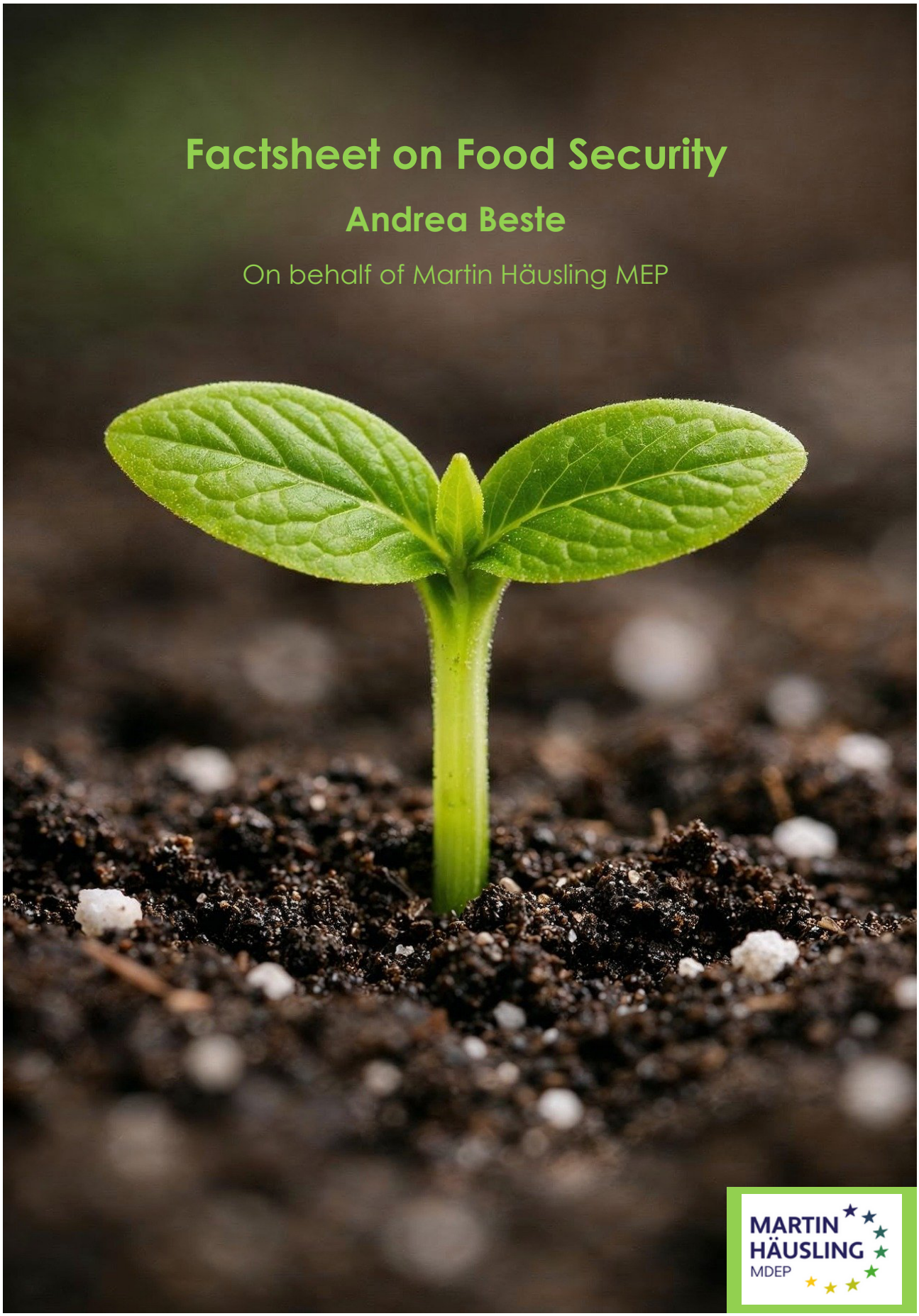
Factsheet on Food Security

Andrea Beste

On behalf of Martin Häusling MEP



MARTIN HÄUSLING MDEP

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Author:

Dr Andrea Beste
Institute for Soil Conservation & Sustainable Agriculture
Mainz

www.gesunde-erde.net

On behalf of

https://martin-haeusling.eu/

Factsheet on Food Security

Summary

'Food security' has recently returned to the agenda with renewed prominence. The term encompasses not only the sufficient availability of food but also access to it and the long-term sustainability of food supply. Food systems are coming under increasing pressure from climate change, environmental degradation, political crises and economic dependencies. At the same time, agriculture and food systems themselves contribute significantly to climate change and the loss of biodiversity.

Although the EU is largely self-sufficient in many agricultural products and even generates export surpluses, there is a strong dependence on imports, such as fertilizers and animal feed. Soya, in particular, is largely imported for animal feed, whilst a significant proportion of European cereal production is already used for feed. This structure leads to environmental pressures, disrupts nutrient cycles and exacerbates global land-use conflicts. Furthermore, rising prices for fertilizers and energy are exacerbating the economic problems faced by agricultural businesses.

Climate change is considered the greatest threat to food security. Extreme weather events such as droughts or floods are having an increasing impact on agricultural yields. At the same time, intensive farming with high use of pesticides and mineral fertilizers damages soil quality and biodiversity, and thus, in the long term, the very basis of food production. More sustainable approaches such as organic farming and agroecology are key to making food systems more resilient.

Further problems arise from the use of agricultural land for bioenergy or biobased industrial raw materials, as well as from speculation on global agricultural markets. Added to this is a large amount of food waste: in the EU, around 87.6 million tonnes of food are thrown away every year. Soil sealing and land consumption by infrastructure also reduce the amount of land available for agriculture.

In the long term, food security can only be achieved through a sustainable transformation of the food system. This includes reducing food waste, lowering meat consumption, significantly minimising the use of climate-damaging fertilizers and pesticides, and expanding organic farming. Such measures – already set as targets in the EU's Farm-to-Fork Strategy – reduce environmental impacts, protect biodiversity and increase the resilience of our agricultural systems. Unfortunately, under pressure from an agro-industrial lobby that profits from the status quo, the EU is currently rolling back these measures. This is neither reasonable nor scientifically justifiable, as we will see below.

Food availability and access

Food security is now at the top of the political agenda, both at EU and global level. Ensuring the availability of and access to food for consumers at reasonable prices are objectives set out in Article 39 of the Treaty on the Functioning of the European Union (TFEU).

In recent years, alongside wars and political crises, the impacts of climate change and environmental degradation have placed food systems worldwide under increasing pressure. This alone constitutes a global

crisis. Food systems are among the main drivers of climate change and biodiversity loss, and at the same time, food production is one of the sectors most severely affected by these phenomena.

In 2020, the FAO's High-Level Panel of Experts on Food Security and Nutrition (HLPE) highlighted two additional dimensions in its report. The first is the importance of the ability of food system actors to make their own decisions regarding food. The second dimension is sustainability, meaning the long-term capacity of food systems to ensure food security in a way that does not jeopardise the economic, social and environmental foundations of food security for future generations.

Europe as the world's breadbasket?

Food availability in the EU does not appear to be at risk today. At first glance, the EU is largely self-sufficient in key agricultural products and, overall, runs a food export surplus. It is a major exporter of wheat and barley and can largely meet its own needs for other staple foods such as maize and sugar. In the case of animal products, including milk and meat, the EU is also largely self-sufficient or generates surpluses that are exported[1] .

However, Europe also imports enormous quantities of fertilizers for crop production – which not only creates significant dependencies but also causes major climate and environmental damage[2] .
Around 30% of nitrogen fertilizer in the EU comes from imports. In crisis years (e.g. 2022 due to high gas prices), the share of imports rose at times to around 45%[3] . Russia remains the largest supplier[4] .

Feed for livestock production is also imported, which not only causes further environmental damage but also – in addition to the land used for feed production in Europe – occupies further land that is not available for regional food production in the countries of origin[5] . The EU's self-sufficiency in soya stands at only around 8%. Consequently, 92% of the soya used in the EU is imported[6] .

Half of the cereals grown in Europe are used as animal feed (around 50 million tonnes per year), two-thirds of the EU's arable land is used for animal feed, and the majority of the EU's agricultural sector is farmed intensively to maximise yields, which means it is dependent on mineral fertilizers, most of which are imported. This combination of feed and fertilizer imports also disrupts nutrient cycles and causes severe environmental damage.

The rise in fertilizer prices, attributed primarily to high natural gas prices, has driven some farmers and governments into debt and led to declines in production, whilst the major fertilizer manufacturers have more than tripled their profits over two years from 2020 till 2022[7] . The industry is dominated by global corporations, which have increased their profits from US$13 billion in 2020 to more than US$57 billion in 2022[8] .

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[1] https://knowledge4policy.ec.europa.eu/publication/commission-staff-working-document-drivers-food-security_en
[2] Climate impact: The production of nitrogen-containing mineral fertilisers is particularly energy-intensive and has a significant impact on the climate.
According to an estimate for 2007, 22 million tonnes of CO2 equivalents were emitted in the process, which in 2019 accounted for 2.8 per cent of Germany's total greenhouse gas emissions: https://www.oekolandbau.de/umwelt-und-gesellschaft/umweltleistungen-der-landwirtschaft/klimaschutz/welche-emissionen-lassen-sich-der-landwirtschaft-zurechnen/
Nitrogen fertilisers and the environment: https://helmholtz-klima.de/planetare-grenzen-stickstoff-phosphor
[3] https://capreform.eu/import-dependence-for-nitrogen-supply/?utm
[4] https://wits.worldbank.org/trade/comtrade/en/country/EUN/year/2024/tradeflow/Imports/partner/ALL/product/31?utm
[5] https://www.sciencedirect.com/science/article/pii/S095965262104347X
[6] https://www.tridge.com/news/we-wont-get-there-with-european-soya-utztcn?utm
[7] https://www.iatp.org/corporate-cartel-fertilises-food-inflation
[8] https://grain.org/system/articles/pdfs/000/006/903/original/The%20Fertiliser%20Trap%20English%20-%20Embargoed%208th%20November%202022.pdf?1667838216%20

What poses the greatest threat to food security?

Environmental legislation or the climate and biodiversity crisis?

Even though the European Commission has been talking almost exclusively about competitiveness in recent months, in its 2023 study on the factors that most influence food security, it writes:

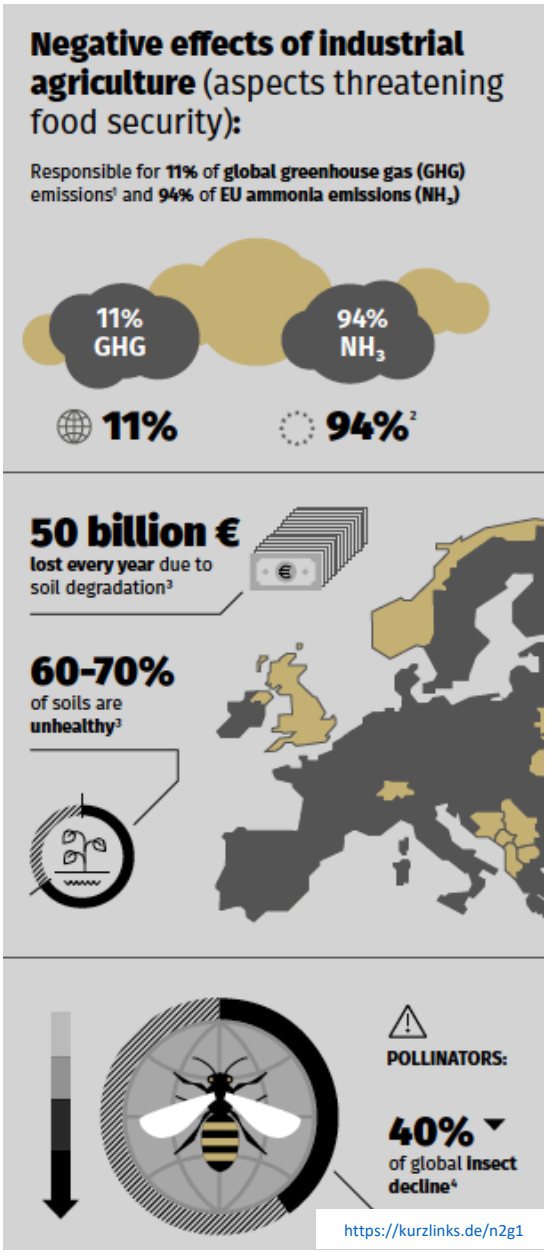
"Climate change is one of the key drivers of the long-term trend in food production. […] The excessive use of agrochemicals, such as pesticides and mineral fertilizers, and large machinery (e.g. intensive tillage) can have detrimental effects on soil health and biodiversity. Emissions from farming activities also contribute to climate change. This relation is again bidirectional. For instance, adverse effects of pesticides on biodiversity can increase crops' susceptibility to pests and diseases by reducing natural pest control, hence promoting more extensive use of pesticides unless alternative approaches, such as integrated pest management or agro-ecology, are promoted. Several unprecedented drought and floods events hit Europe in recent years with varied impact on different regions and crops. So far, a functioning EU common market provided protection against regional production shocks. Even in the best-case mitigation scenario, climate change impacts in Europe and the world will further worsen in the coming decades."

The Commission's study recognizes organic farming and agroecology as 'drivers of food security' that support the transition to reduced reliance on pesticides and avoid negative externalities such as the rapid decline in soil quality and the dramatic loss of pollinators, which form the basis of food production, leading to more biodiverse, healthier agroecosystems, while at the same time maintaining the viability of farms and the production of high-quality food.

To ensure a secure and accessible food supply in Europe in the long term, there needs to be a shift in both production and consumption towards a stable, sustainable and fair food system. Reducing dependence on external inputs, including fossil fuels used in the production of nitrogen fertilizers, while improving biodiversity and soil health, can be achieved by expanding the area under organic farming, combined with a reduction in meat consumption and food waste, as well as a return to more seasonal and regional products[9] .

[9] https://tporganics.eu/wp-content/uploads/2023/09/TPO_RnI_food_security_policy_brief_202309.pdf
https://food.ec.europa.eu/system/files/2020-05/f2f_action-plan_2020_strategy-info_en.pdf

There is ample evidence that intensive agriculture does not automatically lead to greater food security and may even contribute to food insecurity through price volatility and the damage caused to natural systems[10] .



The European Commission recognized this and presented the Farm-to-Fork Strategy (F2F) in 2020. The aim of restructuring the EU's food system from farm to fork with a view to sustainability was not only a sign of foresight, it remains urgently necessary to this day. However, the strategy was opposed from the outset (see below). Not just since the farmers' protests at the end of 2024, but since then up front, under pressure from the agricultural lobby as well as Conservatives and the Far Right in the European Parliament, a U-turn has been carried out, which completely contradicts both scientific findings (including the Commission's own, see above) and democratically initiated discourse processes such as the 'Strategic Dialogue on the Future of EU Agriculture'. Two areas of the report's recommendations are clearly in line with the F2F strategy:

Sustainable agricultural and food systems:
Sustainable agricultural practices are to be given greater support. This includes improvements in animal welfare as well as framework conditions that make it easier for consumers to follow a sustainable and balanced diet.

Greater resilience:
In view of climate, environmental and geopolitical risks, risk management and crisis instruments should be strengthened. Furthermore, agricultural land should be better protected, water-saving agriculture promoted and innovative breeding methods developed.

However, these pillars, which are so vital to the resilience of the EU's agricultural systems, are almost entirely overlooked in the European Commission's new proposal for agricultural policy from 2028 onwards. They are included only rhetorically, but are neither subject to uniform obligations across Europe nor adequately funded. The European Court of Auditors has also criticized this.

Priority for Food?

Land use, waste & speculation

In the EU in 2023, around 55% of grain was used for animal feed and around 4% for the production of agrofuels (bioethanol)[11] . Agrofuels are inefficient and do nothing to protect the climate – quite the opposite. Just like animal feed, they compete directly with food crops for land. In light of the global food crisis, Deutsche Umwelthilfe (DUH) and other experts are calling for an immediate end to the burning of

[10] https://www.oecd.org/en/about/programmes/net-zero-building-climate-and-economic-resilience.html
[11] https://knowledge4policy.ec.europa.eu/publication/commission-staff-working-document-drivers-food-security_en

food for so-called agrofuels. Fifteen years ago, ten international organisations recommended that the governments of the G20 countries end the promotion of 'biofuels'. These include the World Food Programme (WFP) and the Food and Agriculture Organisation (FAO) of the United Nations, the World Bank, the Organisation for Economic Co-operation and Development (OECD) and six other international institutions.

Cereals, oilseeds and protein crops are now classified as 'flex crops', which can be used for any of the 4 Fs – Food, Feed, Fertiliser, Fuel. It is precisely this flexibility that makes them so attractive to investors. Thanks to flex crops, land conversion is now possible immediately and on a large scale. The proportion of land classified as 'non-food land' has been rising since the turn of the millennium. This trend is continuing and is leading to land grabbing in many places. On the 'free' global market, it is then the greater purchasing power of wealthy classes and countries that determines whether food is used for plastics, agrofuels or animal feed.

An analysis of the expansion of biogas cultivation also shows that the increasing use of silage maize for energy is displacing arable land from food production. Furthermore, the use of bioenergy is simply inefficient compared to other renewables.

The International Panel of Experts on Sustainable Food Systems (IPES Food), a kind of donation-funded, internationally composed scientific World Food Council with Olivier De Schutter, the former UN Special Rapporteur on the Right to Food, as co-chair, also highlights the role of food speculation. The expert panel calls for urgent measures to support food-importing countries (including through debt relief); the curbing of excessive commodity speculation; greater market transparency; the establishment of regional grain reserves and food security response systems; and an accelerated transition to diverse and sustainable food production at local and regional levels.

In the European Union, a considerable area of land is sealed every year by development and infrastructure (e.g. roads, car parks, buildings or industrial sites). According to data from the European Environment Agency (EEA) and the European Commission, the average annual increase in sealed land area is around 300–430 km² per year (depending on the period). For the years 2006–2015, the average annual increase in land sealing was around 332 km². That is roughly five times the area of the city of Paris. As sealed land loses its ecological functions almost permanently, land sealing is regarded as a key environmental problem for biodiversity, the water cycle, agriculture – and food security.

At present, it would still be possible to achieve the 'Zero Hunger' goal. According to the FAO, the fact that this is not being achieved is also due to food waste.
Further reading: FAO (2018):

Food loss and waste and the right to adequate food. Making the connection, Rome, Food and Agriculture Organization of the United Nations.

In the EU, this amounts to around 87.6 million tonnes of food annually.

The issue of crop yields…

Globally, agricultural yields fall with every degree of global warming – despite 'modern' farming methods and despite farmers' adaptation measures. This is shown by a study published in the journal *Nature*. Sustainable food security is threatened by certain intensive farming methods which, whilst yielding higher yields in the short term, are associated with enormous environmental and social costs and thus undermine the foundations of production as well as long-term food security.

The goal of maximizing yields has so far gone hand in hand with intensive fertilization, irrigation and the use of pesticides. Pörtner et al. and Poux et al. argue that food insecurity is essentially a consequence of an unsustainable food system that jeopardizes long-term food production. Yields from intensively farmed monoculture fields in southern Europe are partly attributable to the intensive irrigation of areas that were traditionally rain-fed or planted with drought-resistant, perennial crops. This intensification of production has exacerbated water scarcity in many semi-arid areas and contributed to desertification, which in turn leads to yield losses.

In a response from the Commission to the Council's request for an impact assessment, the Commission acknowledges that the current limits for maximum permissible pesticide residues in food are set for individual substances only and that current measures to protect human health do not adequately account for potential mixture effects. Heavy reliance on chemical pesticides leads to the development of pest resistance, which can result in increased pesticide use (the so-called 'pesticide treadmill')[12] .

Against this backdrop, 3,600 scientists emphasized as early as 2020 that moving away from the Green Deal is not the right approach, in response to emerging criticism from the Conservatives.

It is often claimed that more sustainable farming methods lead to lower yields. Firstly, this is not true from a global perspective; secondly, even if it were, it would not be a reason not to switch, as yield security and the resilience of ecosystems increase through more sustainable methods. What use are higher harvests to us if, at some point, we can no longer harvest anything at all?

A scenario analysis from 2017 found that a 100 percent transition to organic farming, without changes to land use, requires more land than conventional farming, but significantly reduces nitrogen surpluses and the use of pesticides. However, a transition would be possible in combination with a reduction in food waste and feed production on arable land, accompanied by a corresponding reduction in the production and consumption of animal products.

However, the following points have not yet been taken into account:

1. Instead of so-called 'land efficiency', which calculates only the yield of the market crop, organic farming has 'deep efficiency'. It has a significantly better balance, whether in terms of energy consumption, climate protection and adaptation, humus formation, water storage, groundwater recharge, flood protection or biodiversity. A large proportion of the biomass yield in organic farming feeds soil organisms, with the well-known positive effects on ecosystem services. These are 'yields' for society that bring prosperity and save costs. They must be included in the energy balance or, shall we say, the efficiency assessment.*Read more on Europe*

2. The current benchmark for yield is the output of vulnerable high-yield crops in an unsustainable system. In other words, we know the system does not work, yet we still use it as a yardstick. This 'experimental approach' underpins 90% of all comparisons between organic and conventional farming, but it is simply inappropriate.

3. Highly adapted mixed-cropping systems, such as agroforestry and permaculture systems, generate significantly higher yields per unit area than conventional monocultures. Consequently, organic farming in the tropics already achieves yields of up to 174% compared to conventional control plots (average of 133 evaluated studies).
   Read more

[12] https://durham-repository.worktribe.com/output/1418179

Similar and in some cases higher figures (up to 250%) were found in:
Read more 1 & *read more 2*

4. The University of California, Berkeley, also calculated an average yield that was lower by just 19.2% for US cropping systems. This difference was halved again when the comparison was made not just between the yields of individual crops (e.g. maize with maize and wheat with wheat) but between entire cropping systems.
Read more

The peer-reviewed Global Hunger Index 2021, produced in part by Welthungerhilfe, states: *"Governments and donors must strengthen climate-resilient and diversified farming methods as well as local markets*."

Adaptation rather than intensification…

Biodiversity & emissions

What we need is not an expansion of production at the expense of the climate and biodiversity, but rather better adaptation of our agricultural systems to climate extremes – as confirmed by the latest "Global Food Policy Report 2022" – and this can only be achieved through more agroecology and organic farming. Even flower strips and hedges can improve pest control by 16%. In some cases, these positive effects can translate into higher yields.

Organic farming reduces nitrogen use by around 100 kg/ha, thereby reducing nitrogen surpluses to less than 20 kg/ha. As a result, the land emits less ammonia, nitrous oxide, and nitrate into water bodies, the atmosphere, and ecosystems. This benefits biodiversity, drinking water protection and drinking water treatment.
Compared to conventional farms, organic farms use on average 50% less energy per unit of land. CO2 emissions per unit of land are correspondingly lower in organic farming. Even when taking into account higher yields and milk production, conventional farms generate on average 35% more CO2 per unit of product than organic farms. Organic dairy and mixed farms have by far the lowest GHG emissions in crop production.

Agroecology is definitely worthwhile

Plants can survive without synthetic plant protection

In organic farming, too, plants and animals are protected against pests and diseases. Organic farming does not simply mean eliminating pesticides. In organic farming, plants are protected using methods that work with nature, not against it. For example, plants are not fertilized with mineral fertilizers, which make them and the soil unhealthy. As a result, higher disease resistance has been demonstrated on organic land.
Read more 1 & *read more 2*

Studies show that the biodiversity of flora and fauna is significantly greater on organic farmland than on conventional farmland. This means that beneficial organisms can also survive better on these plots. Farmers can deploy beneficial organisms in a targeted manner, ensuring they cause no damage to plants.
Read more

Even if not all aspects of organic farming are practised in the same way, it is always worthwhile to farm more sustainably. Some examples:

Studies on yields with reduced pesticide use

Contributions to reducing pesticide use whilst maintaining the productivity and profitability of potatoes.

A French study concluded that total pesticide consumption could be reduced by 42% in 59% of the farms in the test network without any negative impact on productivity and profitability.

A foresight study conducted by INRAE in 2023, 'European Pesticide-Free Agriculture in 2050', helps to identify available options and possible pathways towards the elimination of chemical pesticides.

The transition to pesticide-free agriculture is a key element of a sustainable agricultural and food policy that can secure sufficient harvests in the long term in the face of population growth and climate change. The authorisation, regulation and use of pesticides must take into account current findings regarding their health, environmental and public welfare impacts: BUND recommendations for implementing a pesticide reduction strategy in Germany.

We must not allow activities and those committed to more sustainability to be held back by pseudo-debates that reinforce outdated and ideological viewpoints.

We can't afford that?

It actually works out cheaper for society: take pear cultivation, for example. The company EOSTA has calculated that, in conventional pear production, the negative effects on soil quality incur costs of 1,163 euros per hectare per year. Organic production, by contrast, had a positive impact on the soil, estimated at 254 euros. Thus, the organic pear yields a total cost saving of 1,317 euros compared to the supposedly cheaper pear from conventional cultivation – and that's just in terms of the soil cost factor!
Read more

Soil & More estimated the cost of groundwater pollution at €1,298 per hectare of conventionally grown potatoes, whilst for one hectare of organically grown potatoes the figure is €0.40.
Read more

A 2021 study by Le Basic concluded that the costs associated with the impact of pesticide use in Europe on human health, water quality, soil and, ultimately, food production – costs that must be borne by society through public expenditure – are much higher than the net profits of the pesticide sector itself. The report concludes that the current agricultural model has largely benefited agri-food companies, whilst farmers are losing out due to unstable world market prices for their produce.
Read more

Organic farming delivers numerous societal benefits for environmental and resource protection and saves society enormous follow-up costs.
Read more

Our future food supply will not be secure if we continue to undermine the ecosystem services that form the basis of production by providing pollination, healthy soils, natural pest control and functioning food chains.

Stakeholders of the status quo are fighting for their profits

The Farm-to-Fork Strategy (F2F) presented by the European Commission in 2020 called, as part of the 'Green Deal', for the transformation of the EU's food system from farm to fork with a view to sustainability. It set out key reduction targets for the use of pesticides and fertilizers and proposed increasing organic farming to 25%.

Given the numerous reports in recent years that have highlighted major shortcomings in the sustainability of the current agricultural and food system, this was an important and timely signal. Yet from the outset, the Green Deal came under fierce attack from those profiting from the current system. In response to this pressure, the European Commission has shifted its green agenda towards 'competitiveness'. This is extremely short-sighted, particularly with regard to food security (see above).
The global players in the chemical and seed industries predominantly rely on an industrial agricultural model, technical solutions and genetic engineering, rather than on ecological systems. This is understandable, as the promotion of agroecological methods runs counter to their business interests (e.g. patenting and sales of fertilizers and pesticides). They were therefore among the strongest opponents of the F2F strategy from the outset. The non-governmental organisation Corporate Europe Observatory (CEO) has demonstrated in several analyses that some of the supposedly scientific criticism of the European Commission's 'Farm-to-Fork' strategy is based on studies that were directly or indirectly initiated or funded by actors in the agricultural and pesticide industries.

According to research by CEO, a coordinated lobbying campaign was mounted around this reform. Impact assessment studies played a central role in this, warning of significant negative consequences of the strategy – such as falling agricultural production, rising food prices or risks to food security. However, CEO and other organisations found that several of these studies had been commissioned by trade associations or industry-linked actors, including the pesticide lobby group CropLife Europe, the farmers' association Copa-Cogeca, the meat lobby platform European Livestock Voice, and the seed association Euroseeds. According to analyses, a total of six such studies were funded and subsequently circulated in political debates.

Lobby groups referred to their findings in letters, events and media campaigns to sow doubt about the planned environmental targets and prevent stricter regulations. Critics accuse the studies of failing to take key factors into account, such as the potential effects of changing dietary habits, reduced food waste or positive ecological impacts such as improved natural pest control. As a result, the negative consequences of the strategy were systematically overestimated.

Further examples of unscientific criticism of facts regarding agroecology and sustainability:

Example 1

Example 2

FAQ on 'Organic'