foodwatch

Organic: A Climate Saviour?

The foodwatch report on the greenhouse effect of conventional and organic farming in Germany

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based on the study
"The Impact of German Agriculture on the Climate"
by the Institute for Ecological Economy Research (IÖW)

sponsored by the
Deutsche Wildtier Stiftung

KLEF Karl Linder Education Foundation

Karl-Ludwig Schweisfurth

Contents

The results and consequences of the IÖW study *"The Impact of German Agriculture on the Climate"* from the point of view of foodwatch

Introduction

There is a debate in Germany not only about which form of agricultural production is better, namely conventional or organic farming, but also about which type of production is less damaging for the climate. The conventional farming lobby argues that higher yields and production performance generate lower quantities of greenhouse gases per kilo of cereal or meat and thus protect the climate.[1] On the other hand, the Greens demand an "ecological bonus", above all for the organic farming sector.[2] In their view, this is justified by the fact that organic farmers do not use chemical pesticides or mineral fertilisers which make a considerable contribution to the greenhouse effect. Consumers also have a major interest in learning what impact their eating habits have on the climate. A large proportion of them presumably believe that those who eat organic food are also helping to protect the climate. But is that true?

There have been insufficient scientific findings with which to conduct a well-founded debate. The Federal Government gave the following response to a minor interpellation by the Greens in 2007 about the differences between conventional and organic farming in terms of their greenhouse gas emissions: *"No thorough, generally recognised and comprehensive comparison has yet been made of the difference in greenhouse emissions between conventional and organic farming".*[3]

To close this knowledge gap, foodwatch commissioned the Institute for Ecological Economy Research (IÖW) to examine the respective contribution of conventional and organic agriculture in Germany to the greenhouse effect. The study[4] sets out the differences in the emission of greenhouse gases, using the examples of wheat growing, pigmeat, poultry, beef and milk production. It concentrates on the production of raw materials and does not include food processing. Although the study only investigates these areas in detail, conclusions can be drawn for agriculture as a whole. The results show that considerable amounts of greenhouse gases can be avoided in the agricultural sector. Consequently, agriculture must finally become part of climate change policy in Germany and at EU level – with specific reduction targets. This is not the case at present.

This report is in two parts. The first part describes the results and consequences of the IÖW study "The Impact of German Agriculture on the Climate" from our point of view at foodwatch. The second part is an executive summary of the study produced by the IÖW.[5]. The IÖW study "The Impact of German Agriculture Germany on the Climate" was possible thanks to the financial support of and in cooperation with the Deutsche Wildtier Stiftung, the KLEF-Stiftung and Herr Karl-Ludwig Schweisfurth, for which foodwatch is extremely grateful.

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[1] Interview with Gerd Sonnleitner, Focus Nr. 26, 2007.

[2] Interview with Renate Künast, Schrot & Korn, 4/2008.

[3] Deutscher Bundestag, Drucksache 16/5346.

[4] Hirschfeld, Jesko, Julika Weiß, Marcin Preidl & Thomas Korbun (2008): Klimawirkungen der Landwirtschaft. Schriftenreihe des IÖW 186/08. Berlin.

[5] Hirschfeld et al. (2008): The Impact of German Agriculture on the Climate – executive summary in the second part of this report, Berlin.

Results

Agriculture emits as many greenhouse gases as road transport

With emissions of 133 million tonnes of CO_2 equivalent, agriculture is responsible for almost as many greenhouse gas (GHG) emissions as the road transport sector. 71% or 94 million tonnes are caused by livestock farming, well over half of which comes from beef and milk production. 29% or 39 million tonnes are due to the growing of crops for food. Despite these high amounts of greenhouse gases, agriculture is not part of German (or European) climate change policy. The Federal Government justifies this by saying it is not necessary because the generation of greenhouse gases in the agricultural sector is due to "natural processes"[6] However, the extent of greenhouse gas emissions from agriculture is not based on "natural processes" but is determined by the production methods chosen by people and by the eating habits of consumers.

Both organic and conventional farming harm the climate

Both conventional and organic farming emit considerable amounts of greenhouse gases. Per kilo of cereal, organic farming generates 60% fewer greenhouse gas emissions than conventional production methods. Due to marked advantages in crop growing, its overall agricultural GHG emissions are about 15%-20% lower. However, in beef and milk production organic farms cause more GHG emissions in some cases than conventional farms. The argument by the Greens and ecological associations that organic farming is a climate saviour and thus merits a "climate bonus" is therefore untenable. But the claim by the conventional lobby that conventional farming is less harmful to the climate than organic farming because of higher yields and better efficiency is equally untenable.

Climate killer No. 1: agriculture on moorland

The main source of GHG emissions is moorland that is drained and farmed. Such moorland is responsible for almost 30% of all emissions, approx. 37 million tonnes, although it only accounts for 1.4 million hectares or 8% of agricultural land in Germany. The dispute over which form of production, conventional or organic, best protects the climate ignores the most effective and most economic form of agricultural climate protection: the rewetting of intensively farmed moorlands and their re-designation for nature and biodiversity conservation.

On drained moorland, organic farming methods generally perform worse than conventional methods because they require considerably greater areas per kilo of cereal, meat, milk etc. The advantages which organic farming enjoys on normal land due to its lower use of fertiliser are outweighed on moorland by the high area requirement. As a result, emissions from livestock farming on moorland are about twice as high as from conventional production. In cereal production, emissions from organic cultivation on drained mooorland are also about double those of conventional methods.

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6 Deutscher Bundestag, Drucksache 16/5346.

Stopping the agricultural use of moorlands and re-designating them as nature and biodiversity conservation areas would be extremely economic. Per hectare of these areas, arable farming causes 40 tonnes of greenhouse gases and livestock farming 18 tonnes per annum. The average net yield is €750 per hectare for livestock farming and €450 per hectare for arable farming.[7] The costs of avoiding one tonne of greenhouse gas ("avoidance costs") are thus €42 per tonne if dairy farming on moorland is discontinued. The avoidance costs of discontinuing arable farming on moorland are €11 per tonne. By comparison, the GHG avoidance costs of growing rape to produce diesel are several hundred euros.[8]

Long-term climate change target: 80 to 100 million tonnes fewer greenhouse gases in the agricultural sector

Germany's climate change target of reducing greenhouse gases by 20% by the year 2020 (compared with the base year 1990)[9] is achievable in the agricultural sector if land use policy (rewetting of moorland) is pursued consistently and conventional and organic farming methods are improved. By contrast, the targets for 2050 require fundamental decisions. The climate change targets for industrial countries prescribe a 60% to 80% reduction in greenhouse gases by 2050. For Germany, this would mean a reduction of between 80 and 100 million tonnes of CO_2 equivalent in the agricultural sector.

Organic farming: not a climate saviour

Organic farming is not a climate saviour in itself. Theoretically, full conversion to more climate-friendly organic farming methods could mitigate emissions by 15% to 20%. However, that would not be sufficient to achieve the long-term climate targets for the industrial countries, namely a 60% to 80% reduction by the middle of the century. In addition, full conversion whilst retaining the same production output would require 60% more area, about 10 million hectares. But this is not available in Germany (or Europe). Consequently, organic farming could only be conducted on the existing area if the production and consumption of meat (predominantly beef) and milk were to fall by 70%[10]. Greenhouse gas emissions in the agricultural sector would then decrease accordingly. The decisive factor in organic farming's contribution to protecting the climate would therefore consist primarily in reduced production due to lower yields on the same area rather than in the emission-saving methods of organic farming.

An alternative climate strategy would be to improve the technical methods employed in conventional farming, above all via the reduced use of mineral fertiliser. This improvement would save approx. 7% of GHG emissions. The additional area requirement of approx. one million hectares would be comparatively small. Combined with a reduction in production and meat consumption, agricultural emissions could also be considerably mitigated. However, this conversion would have fewer positive side-effects on the environment than full conversion to organic farming which contributes to improved water pollution control as well as biodiversity and countryside conservation.

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[7] Agrarpolitischer Bericht der Bundesregierung 2007, Teil A, Lage der Landwirtschaft, 1.2.1. Landwirtschaftliche Haupterwerbsbetriebe.

[8] Expertise by the Advisory Council for Agricultural Policy at the Federal Ministry of Food, Agriculture and Consumer Protection (BMELV), November 2007.

[9] The official reduction target is 40%; but 20% have already been achieved – largely due to the collapse of the energy-intensive GDR industry.

[10] Assuming that the area for growing crops for food remains unchanged.

Effective climate protection through agriculture is only possible without "biofuel"

An effective climate change policy for the agricultural sector excludes the cultivation of biofuel crops (e.g. rape for diesel, wheat for ethanol). If agriculture is to be converted to mitigate greenhouse gas emissions, it will require more land area in any case: the rewetting of moorland and conversion of farming methods would generate an additional area requirement. Using land to grow biofuel crops, as envisaged in German and European climate change policy, would thus restrict or prevent these positive climate measures. Since it is already doubtful whether biofuel crops have any positive effect on the climate, this would be doubly harmful in terms of the growing of biofuel crops.

Agriculture must become part of climate change policy

In view of the great potential for reducing greenhouse gas emissions in agriculture, it is essential for agriculture to become part of German and European climate change policy. Specific reduction targets must be formulated for this purpose. With consistent conversion of land use, organic production methods and a cutback in the consumption of meat and milk products, agricultural GHG emissions can be mitigated by about 80 million tonnes, or 60%. The Federal Government's climate change target envisages saving 270 million tonnes per year in all industrial sectors (apart from agriculture) by 2020. Agriculture's considerable saving potential must not be ignored.

Environmental levies and emission taxes instead of subsidies

The upcoming reform of the EU Common Agricultural Policy must be geared towards protecting the climate. The existing system of subsidies supports agricultural production across the board via area premiums and is extremely harmful to the climate. The system of subsidies must be abolished and replaced with a system of environmental levies and emission taxes. The taxes or levies must be imposed on the emissions of greenhouse gases as well as on the use of climate-relevant inputs (mineral fertiliser, pesticides) and applied equally to organic and conventional agriculture.

Including agriculture in emissions trading is not feasible. The emissions from individual farms are too varied. The quantities of emissions vary greatly depending on the respective differences in livestock farming methods, soil conditions and other factors.

The price of more climate-friendly agriculture: expensive meat

The environmental levies which should replace subsidies (see above) will lead in particular to higher beef and milk prices and to a corresponding fall in demand. On the other hand, the consumption of pigmeat and poultry, which are generally less harmful to the climate, would increase. But a significant fall in the consumption and production of meat as well as in the wastage of meat[11] would have not only negative but also positive effects, namely on people's diet in Germany which is based on excessive meat consumption. In the light of higher food prices, however, social policy must ensure that everyone has enough to eat and the possibility of eating a balanced diet.

[11] At present, about a third of every slaughtered animal is no longer consumed due to the low prices.

Eco-label: no guidance for climate-friendly consumption

The eco-label does not give sufficient guidance to consumers who want to eat organically and protect the climate. Greenhouse gas emissions are not part of the criteria for theeco-label. The production of organic milk causes more GHG emissions, for example, if the milk comes from an average organic farm than milk from a conventional farm with more climate-friendly dairy farming methods. The production of organic beef (ox fattening) causes up to 60% more GHG emissions than conventional production (bull fattening).

A "CO_2-labelling" of products is not viable in our opinion at foodwatch. The effects on the climate of making a product, from generating the raw material as well as from further processing and transport, are very varied. CO_2-labelling would either require excessive investigation and checking or would not be very meaningful. However, not only the difficulties of comparisons within one production sector but also comparisons between different products such as pigmeat, poultry meat, sausage, cheese and milkwould overtax the consumer and thus remain ineffective. Consumer information must be easy and quick to understand. CO_2-labelling therefore can and must not replace an effective climate change policy. This must begin with agricultural production and include regulatory intervention.

For the emission of greenhouse gases it is less relevant whether consumers eat organic or conventional products. Much more important is the quantity of beef and milk products they consume, regardless of whether these were produced organically or conventionally. Consumers who eat conventionally but consume less beef and fewer milk products harm the climate much less than consumers with a high consumption of organically produced beef and milk products.

How much climate does my meal cost?[12]

One kilo of wheat, produced conventionally, causes the same amount of GHG emissions as a car (BMW 118d) travelling a distance of 3.4km. The corresponding value for a kilo of organically produced wheat is 1.5 km. However, one kilo of beef from organic ox fattening has a carbon footprint equal to a distance of 113 km. Conventionally produced, this figure would be 71 km. For 10 litres of milk, required to produce one kilo of cheese, the equivalent distances are 71 km (conventional) and 66 km (organic) (cf. Figure 1).

[12] Model calculation per person and year from the effects on the climate ascertained in the attached study for winter wheat and the production of beef, pigmeat, poultry and milk. An equivalent of 10 litres of milk is taken for cheese. Consumption quantities are based on average values for Germans according to Eurostat 2002. The burden on the climate of different eating habits is derived from the average consumption of beef, pigmeat, poultry, milk, cheese and cereals. In the case of a meat-free or milk-free diet, the corresponding number of calories was offset by higher cereal consumption. The burden on the climate thus refers to examples of average consumption not to actual baskets of goods of certain consumer groups (e.g. omnivores, vegetarians).

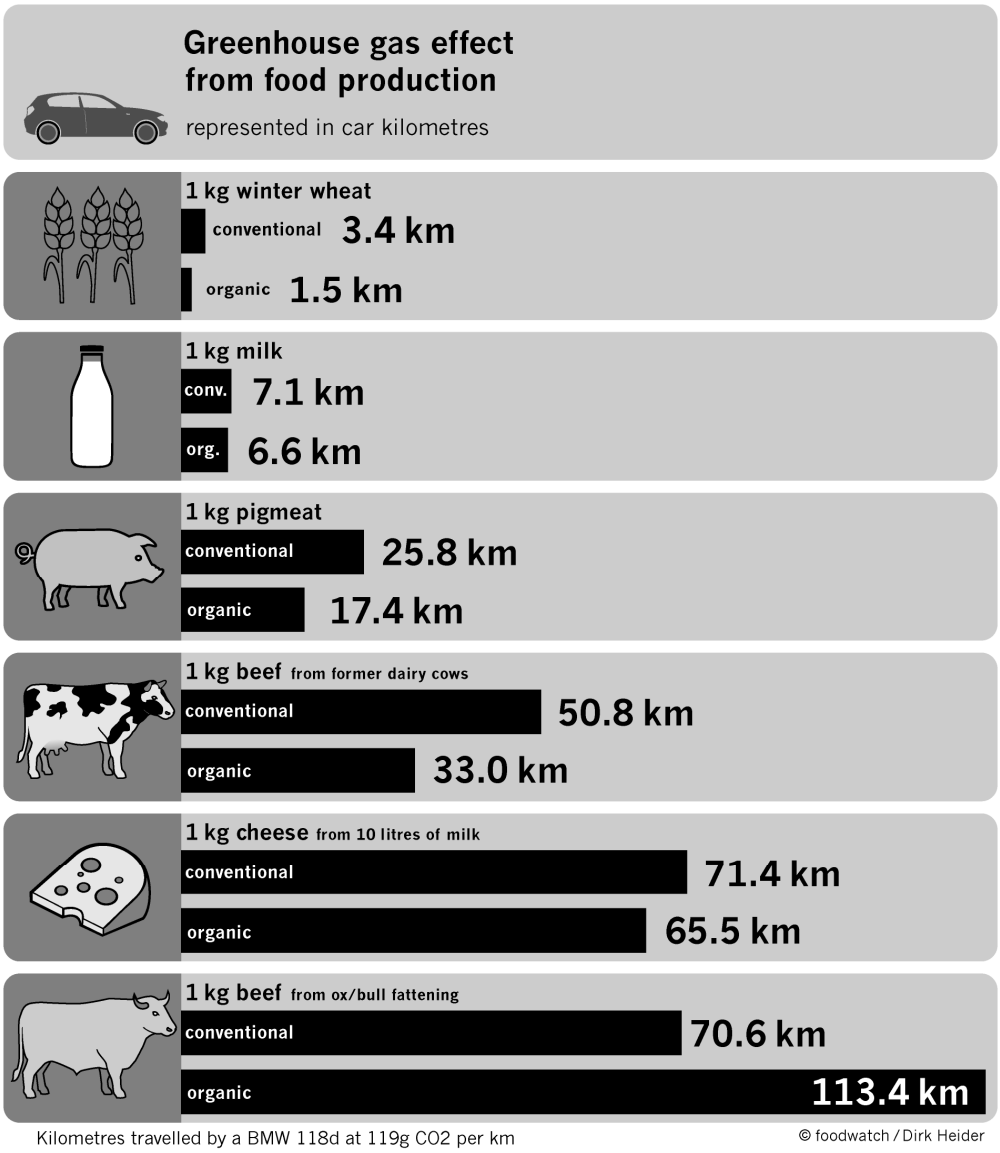

Figure 1: Greenhouse gas effect from food production (represented in car kilometres)

Consumers of conventional pigmeat are responsible for far fewer GHG emissions than consumers of organic beef or organic milk products. One kilo of organically produced beef causes four times as many GHG emissions as a kilo of pigmeat from more climate-friendly conventional production. In other words, a consumer of organic beef is responsible for as many GHG emissions in one year as a consumer of the same quantity of conventional pigmeat in four years (cf. Figure 1).

If one compares the effects on the climate of different diets, the league table of climate protectors among the consumers of agricultural products would look as follows: the biggest sinners against the climate are conventional and organic omnivores. The GHG emissions they cause per year by consuming agricultural products would correspond to a car journey of 4,758 km, i.e. Helsinki-Florence and back, for conventional foodstuff. The organic omnivore would not come off much better, namely 4,377 km. Better than an organic omnivore is a conventional omnivore who eats pigmeat instead of beef. His consumption would be the equivalent of 4,209 km.

By renouncing meat, but not milk products, the distance would be 2,427 for the conventional version or 1,978 km for the organic version. The best protectors of the climate are those who consume neither meat nor milk products. Their diet results in a distance of 281 km per year (organic), i.e. Hamburg-Hanover and back, or 629 km for conventional foodstuff (cf. Figure 2).

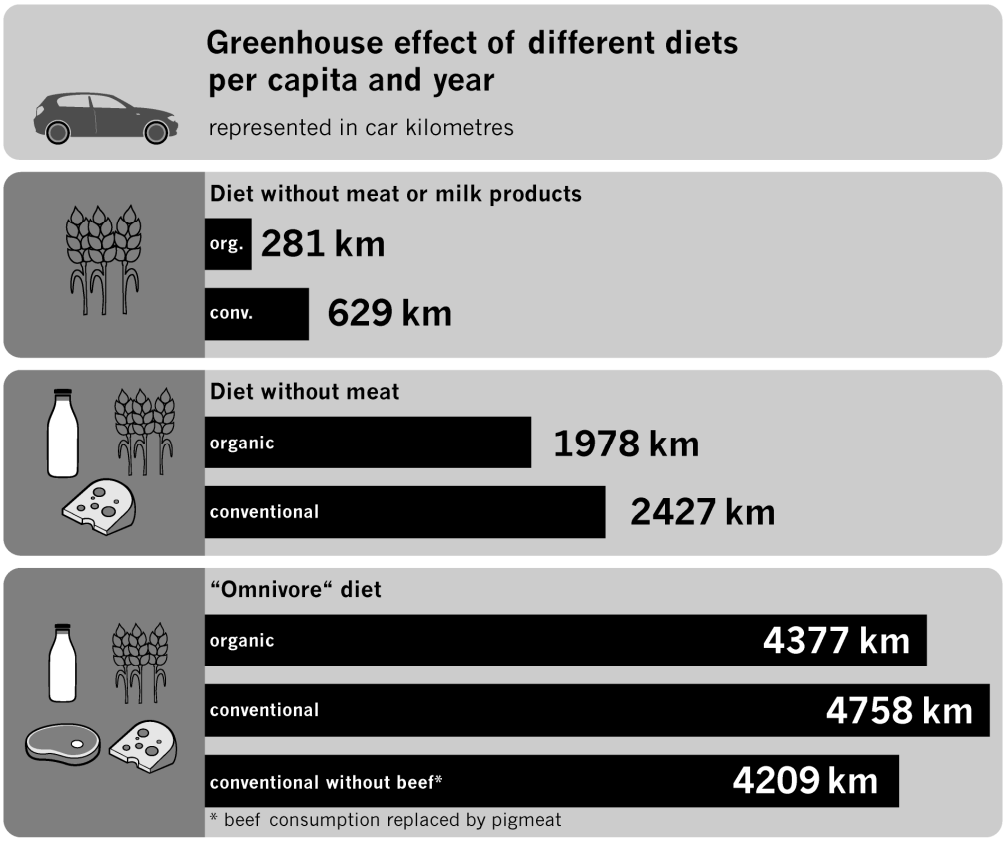

Figure 2: Greenhouse effect on different diets per capita and year (represented in car kilometres)

“Regional” is not necessarily good for the climate. The belief that buying regional products makes the biggest contribution to protecting the climate because the GHG emissions from transport are removed is very often an illusion. One famous example is the conventionally produced apple which is transported by ship from New Zealand to Germany and consumed in Hamburg. It harms the climate less than an organically produced apple from Southern Tyrol purchased by a consumer in Hamburg.[13] Transport costs, with the exception of air transport, play a relatively minor role in the food sector, both in terms of energy consumption and as a cost factor. Conditions and methods of production are usually most crucial.

[13] Elmar Schlich, Äpfel aus deutschen Landen – Energieumsätze bei Produktion und Distribution, Cuvillier, Göttingen, 2008.

Résumé and Demands

Agriculture in Germany produces 133 million tonnes of CO_2 equivalent each year – almost as many GHG emissions as the road transport sector. Both conventional and organic farming make a considerable contribution to the greenhouse effect. Although organic farms emit 15% to 20% fewer greenhouse gases overall, they cause more emissions in some parts of milk and beef production. The eco-label contains no criteria with regard to energy consumption or GHG emissions. Those who buy organic products do not necessarily have a climate-friendly diet. More important are personal eating habits, especially the quantity of beef and milk consumption which is particularly harmful to the climate.

Consequently, foodwatch demands:

1. Agricultural policy must become part of climate change policy – with specific reduction targets.
2. The most efficient measure for saving considerable amounts of greenhouse gases (30%) is to stop the agricultural use of moorlands (1.4 million hectares) and re-designate them as nature conservation areas.
3. Organic farming in itself is not a climate saviour. Full conversion of agriculture to organic farming methods could mitigate emissions by up to 20%, but only on an additional area of 10 million hectares (on top of the existing 18 million hectares). This is not available in Germany or Europe. A long-term, sustainable reduction of greenhouse gases in the region of 60% to 80% therefore requires a decrease in the production of meat and milk of approx 70% with the area under agricultural use remaining constant.
4. The system of EU subsidies must be replaced by a system of environmental levies and emission taxes which are imposed on both organic and conventional production. The aim is to raise the price of meat (above all beef) and milk production, which is particularly harmful to the climate, so that demand and production fall. At the same time, social policy must ensure that people have enough to eat and a balanced diet.
5. Growing crops to produce fuel prevents an effective climate change policy in the agricultural sector. These areas are needed for growing food if previously farmed moorland is to be rewetted and agriculture made more ecological overall.
6. Product information such as CO_2-labelling is not viable. The State must provide consumers with detailed information about the impact on the climate of the individual foodstuffs in their diet.