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LIVSMEDELS
VERKET
NATIONAL FOOD ADMINISTRATION

The National Food Administration's environmentally effective food choices

Proposal notified to the EU¹

Concerns the food groups:

Meat – beef, lamb, pork and chicken

Fish and shellfish

Fruits and berries, vegetables and leguminous plants

Potatoes, cereals and rice

Cooking fat

Water

1. The notification has been done in accordance with Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations and of rules on information society services (OJ L 204, 21.7.1998, p. 37, Celex 3199SL0034, as amended by European Parliament and Council Directive 98/48/EC (OJ L 217, 5.8.1998, p. 18 Celex 3199SL0048).

Meat – beef, lamb, pork and chicken

Meat – beef, lamb, pork and chicken – is the foodstuff with the greatest impact on the environment. In Sweden, we eat on average approximately 65 kg of meat* per person each year, which is slightly more than 10 kg more than ten years ago. To eat less meat, and to choose what you eat with care is therefore the most effective environmental choice you can make. From a health perspective, there is also no reason to eat as much meat as we do today.

Do you want to eat intelligently for the environment and your health?

- By all means, eat meat, but reduce the amount. Try replacing one or a few meals of beef, lamb, pork or chicken with vegetarian meals each week, or reduce meat portion sizes. *Environmental objective: reduced climate impact*
- Try to choose locally produced beef and lamb meat, preferably from animals which have grazed on natural grasslands. Look for "naturally grass fed meat" in your supermarket. *Environmental objectives: varied agricultural landscape, rich diversity of plant and animal life, non-toxic environment, reduced climate impact*
- Try to choose locally produced pork and chicken *Environmental objectives: reduced climate impact, non-toxic environment* or, where available, organic alternatives. *Environmental objective: non-toxic environment*

Did you know ...

... that 1 kg of beef produces 15-25 kg of greenhouse gas emissions, which is approximately ten times as much as as 1 kg of chicken? This is because cows' digestion of feedstuffs produces a lot of methane, which has an impact on the climate.
...that one third of all meat we eat is imported, and almost half of all beef?

*2005 Statistics published by the Swedish Board of Agriculture on the direct consumption of meat and cured meat products, not including ready-prepared meals.

The advice has been compiled by the National Food Administration in collaboration with the Swedish Environmental Protection Agency and is based on a scientific assessment published by the Swedish University of Agricultural Sciences.

Health and meat

Meat – beef, lamb, pork and chicken – is our most important source of iron and is a good source of protein. Children, youth and women of childbearing age are most in need of iron. Today, we eat on average 180 g of meat and cured meat products each day, but to cover our iron needs, 140 g per day is sufficient. For men and older women, even less is sufficient. Nor do we need as much protein as we eat today. From a health perspective, it is a good idea to reduce one's consumption of meat and cured meat products. This may reduce the risk of certain types of cancer.

The environment and meat

Meat – beef, lamb, pig and chicken – has a greater impact on the environment than most other foodstuffs. The environmental objectives that are most affected are: *reduced*

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climate impact, non-toxic environment, varied agricultural landscape and rich diversity of plant and animal life.



Reduced climate impact

Livestock production is responsible for almost one fifth of the world's total greenhouse gas emissions. Cattle and sheep, which are cud-chewing animals, produce particularly large emissions of greenhouse gases due to their digestion of feedstuffs (15-25 kg greenhouse gases/kg meat). Pigs and chickens produce significantly lower emissions (approximately 5 and 2 kg greenhouse gases/kg meat, respectively). However, organic chicken may produce more greenhouse gas emissions than conventional chicken since the chickens are raised longer and therefore need more feedstuff. On the contrary, there is no considerable difference for cattle and pigs.

The mineral and manure fertilisers used in the growing of fodder and the energy that is required for the cultivation and transport of feedstuffs also contribute to greenhouse gas emissions.

Transport can also produce large emissions depending on the distance the meat is transported and the type of transport used.



Non-toxic environment

The environmental objective *Non-toxic environment* is linked to the use of plant protection products in cultivation. As they are raised, pigs and chickens are fed more grain than cows and sheep. Grain cultivation uses considerably more plant protection products than the cultivation of coarse fodder, which cows and sheep mostly eat. Pigs and chickens are also often fed soya fodder, which requires large amounts of plant protection products during cultivation.

Organic production does not use chemical plant protection products. In countries with colder climates, such as Sweden, less plant protection products are used, which means the difference between conventional and organic farming in these countries is not so great.



Varied agricultural landscape



Rich diversity of plant and animal life

Cows and sheep that graze outdoors contribute to a varied agricultural landscape – open landscapes. This particularly applies to animals that graze on natural enclosed pastures, so-called natural grazing areas. Outdoor grazing also contributes to a rich diversity of plant and animal life. Even livestock conventionally raised in Sweden contribute to a varied agricultural landscape and to a rich diversity of plant and animal life since Swedish law requires that *all* animals graze outdoors a certain period of time each year.

In well-forested Sweden, pastures are needed throughout the country in order to maintain landscape diversity and variation. In certain countries, on the other hand, large

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areas of rainforest are cut down to prepare space for livestock and the growing of fodder. In such cases, meat production can have a negative impact on plant and animal life. The felling of rainforests also produces a lot of greenhouse gas emissions, which has a negative impact on the climate.

Pigs and chickens do not contribute appreciably to a varied agricultural landscape or a rich diversity of plant and animal life.

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Fish and shellfish

Fish and shellfish are largely a wild resource which we must be economical with. In order to be able to eat fish in the future, we must take care of the fish we have today. It is therefore important to choose the "right" fish – fish that is caught or cultivated in a sustainable manner. It is good for your health to eat fish and shellfish 2-3 times per week.

Do you want to eat smart for the environment and your health?

- Choose fish and shellfish from stable stocks, see the National Food Administration's fish list*.
- Choose fish that is fished or farmed sustainably, for example fish with MSC  or Krav  eco-labels.
- Dare to try something new! When you try other types of fish than those you are used to, you help to lessen the load on certain species.

* The list of fish from stable stocks has been compiled in collaboration with the Swedish Board of Fisheries.

Did you know ...

... that a great deal of the fish we eat in Sweden is farmed salmon? Salmon farming requires a lot of fish feed and can even cause local eutrophication. It is therefore a good idea to vary our choice of fish more.

... that mussels are a really effective environmental choice? Since mussels do not require any feed at all and instead filter plankton from the water to feed upon, the cultivation of mussels can even decrease marine eutrophication.

... that transport from ports to processing plants and then on to shops constitutes just a small part of the greenhouse gases produced by fish? The majority comes from fishing boat fuel.

The advice has been published by the National Food Administration in collaboration with the Swedish Environmental Protection Agency and is based on a scientific assessment from the Swedish Institute for Food and Biotechnology, SIK.

Health and fish

Fish and shellfish contain a lot of vitamin D, iodine and selenium. Oily fish, such as salmon, herring and mackerel also contain omega-3 fatty acids which provide protection against heart and cardiovascular disease. It is therefore good to eat 2-3 portions of fish or shellfish per week and to choose different types of fish, both lean and oily ones. One portion corresponds to 100-150 g of fish. Some fish may contain environmental pollutants and therefore from a health perspective it is not good to eat them too often (see the fish list).

The environment and fish

The National Food Administration's recommendation to eat approximately 300 g of fish and shellfish per week implies an increase in comparison to current consumption. From an environmental perspective, we must change our way of consuming fish already today.

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This becomes even more important if the consumption of fish is to increase. The main environmental objectives affected by fish are: *balanced marine environment, flourishing coastal areas and archipelagos* and *reduced climate impact*.



Balanced marine environment, flourishing coastal areas and archipelagos

Fish stocks

A number of species are threatened by overfishing and it is therefore important to choose fish that come from stable stocks - see the fish list. Sometimes the stock of a certain species is endangered in one area but stable in another. This is the case with cod, for example, certain stocks of which are endangered. The area which cod comes from is now often indicated on packages and it is therefore possible to choose cod from stable stocks.

Fishing methods

Some fishing methods harm the marine environment and certain marine species more than others, for example, bottom trawling and scraping. Selective fishing equipment, which catch only target fish, is preferable to equipment which creates a lot of so-called by-catch. Fishing nets, hooks, longlines and cages are examples of selective equipment which also do not damage the seabed. Eco-labelled fish has been caught using methods which respect the marine environment. A number of producers also provide information regarding fishing methods - read package labels. If you have doubts, do not hesitate to ask in the shop.

Farmed fish and shellfish

Fish and shellfish farming can cause local eutrophication and harm sensitive coastal environments, depending on where and how farming is done. Such is the case with the farming of giant shrimp/tropical shrimp. The farming of predatory fish, such as salmon and cod, also requires the fishing of great quantities of forage fish. Mussels, on the other hand, take their food directly from the sea. This means that mussel farming may actually decrease eutrophication of the oceans.

Eco-labelled fish and shellfish

There are currently two eco-labels in Sweden – MSC (Marine Stewardship Council) and Krav. Read more about them in the information panel below. An eco-label guarantees that the fish comes from stocks that are fished sustainably and that it has been caught or farmed in ways that impact the environment as little as possible. At present, there is not a very large selection of eco-labelled fish, but the selection is increasing. There are other types which are good despite not being eco-labelled - see the fish list.



Reduced Climate Impact

Greenhouse gas emissions primarily come from the fuel of fishing boats, the energy used in processing and from transport. Generally, most emissions come from fishing boats whereas transport from docks to production/processing and onwards to shops represents less.

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Fish from weak stocks produce more greenhouse emissions per kilogram of fish than fish from strong stocks, since it takes longer to catch the same amount of fish. More fuel is therefore used.

Fishing methods which actively drag equipment, such as bottom trawlers, require more fuel and therefore generally produce more greenhouse emissions than equipment such as longlines and nets.

Information on ecolabels



MSC (Marine Stewardship Council): international label which takes account of fish stocks, bycatches, and impacts on the marine environment.



Krav: Swedish label which takes account of fish stocks, bycatches, impacts on the marine environment and the environmental impact of fishing boats.

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Fruits and berries, vegetables and leguminous plants

Fruits, berries, vegetables and leguminous plants have very different environmental impacts depending on how and where they are cultivated and how delicate they are. Your choices are therefore very important. A good rule of thumb is to choose seasonal, local and preferably organic products. It is good for your health to eat approximately 500 g of fruits and vegetables every day, preferably fibre-rich vegetables and leguminous plants since these are especially nutritious.

Do you want to eat intelligently for the environment and your health?

- Choose seasonal and locally grown vegetables. *Environmental objectives: reduced climate impact, non-toxic environment*
- Try to choose pesticide-free vegetables, for example organic. *Environmental objective: non-toxic environment*
- Choose fibre-rich vegetables such as root vegetables, broccoli, white cabbage and onion. They have less of an impact on the environment than tomatoes, salad and cucumber, can be stored for long periods and are locally produced all year round. *Environmental objectives: reduced climate impact, non-toxic environment*
- Eat more beans, lentils and peas – these are good choices regardless of whether they are dried or canned, especially if they replace part of your meat consumption. *Environmental objective: reduced climate impact*
- Choose locally produced fruits and berries, when available. *Environmental objective: reduced climate impact, non-toxic environment*
- Try to choose pesticide-free fruits and berries, for example organic. Bananas, citrus fruits and grapes are fruits that are treated with the most pesticides – it is therefore particularly important to choose pesticide-free for these fruits. *Environmental objective: non-toxic environment*
- Fruits and vegetables are delicate foods. Reduce waste by storing them properly and not buying more than you use! *Environmental objectives: reduced climate impact, non-toxic environment*

Did you know ...

... that one kilogram of carrots produces only one tenth of the greenhouse gas emissions that one kilogram of tomatoes does? It is therefore a good idea to choose a carrot instead of a tomato from time to time.

... that more and more greenhouses are being heated by fossil-free fuels? In Sweden, for example, it is calculated that 80% of all tomatoes will be cultivated in fossil-free greenhouses in 2009.

... that Sweden is one of the biggest consumers of bananas in the world? On average, we eat 17 kg of bananas per person each year. It is therefore a good idea to choose fruits and berries sometimes instead of bananas, as these have less of an impact on the environment.

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Health and fruits, berries, vegetables and leguminous plants

Fruits and berries, vegetables and leguminous plants contain fibre, vitamins, minerals and antioxidants and may provide protection against certain types of cancer and cardiovascular disease. Leguminous plants are also a good source of protein. A recommended quantity is 500 g of fruits, berries, vegetables and leguminous plants per day. It is also good to vary one's consumption of these foodstuffs.

The environment and fruits, berries, vegetables and leguminous plants

Among fruits, berries, vegetables and leguminous plants, there is a very large variation between choices that are better for the environment and those that are worse. The main environmental objectives that are affected are: *reduced climate impact* and *non-toxic environment*.



Reduced climate impact

Fruits, berries and leguminous plants have varying impacts on the environment depending on the distance and way they have been transported, whether they are grown outdoors or in greenhouses, the manner in which the greenhouse is heated and the use of fertilisers.

Transport can represent a large part of greenhouse emissions, particularly long-distance haulage and air transport. Delicate fruits and vegetables require refrigerated transport, which further increases greenhouse gas emissions.

Fibre-rich vegetables such as root vegetables, broccoli, white cabbage, cauliflower and onion have less of an impact on the environment than salad vegetables such as tomatoes, salad and cucumbers. Fibre-rich vegetables are often grown outdoors, which requires considerably less energy than greenhouse cultivation. These vegetables can also be stored for long periods of time, which decreases waste both in the shop and at home.

Even leguminous plants such as beans, peas and lentils have a relatively low environmental impact. Dried leguminous plants have the lowest impact. Leguminous plants can also be stored for long periods, which means that there is little waste. Leguminous plants are rich in protein and can therefore replace some of your meat consumption, which produces considerably more greenhouse gas emissions.

Cultivation in greenhouses that are heated with fossil fuels has a considerably greater impact upon the climate than cultivation outdoors or in greenhouses that are heated with waste heat or biogas. It is estimated that 80% of all Swedish tomatoes will be cultivated in fossil-free greenhouses in 2009.

Fruits and berries are primarily grown outdoors and a great deal of greenhouse gas emissions come from transport, refrigerated storage and the use of fertilisers.

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Non-toxic environment

The environmental objective, *non-toxic environment* is linked to the use of plant protection products. A relatively high amount of plant protection products is used in the cultivation of fruits, berries and vegetables in comparison to the cultivation of cereals, for example. More pesticides are generally used on fruits than on vegetables. Fruits treated with the most pesticides are bananas, citrus fruits and grapes.

The quantity and type of plant protection products that are used depend on cultivation techniques and climate factors. In countries with colder climates, such as Sweden, less plant protection products are used than in warmer countries.

Greenhouse cultivation often requires considerably less plant protection products than outdoor cultivation since humidity and insects can be controlled differently. Organic farming does not use any chemical plant protection products.

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Potatoes, cereal products and rice

Potatoes, cereal products - pasta, bread and grains – and rice have a low environmental impact in comparison to meat and fish. Both for the environment and your health, it is therefore good to fill a large part of your plate with potatoes, pasta, wheat germ, or the like.

Do you want to eat intelligently for the environment and your health?

- Try to choose locally grown potatoes. *Environmental objectives: reduced climate impact, non-toxic environment*
- Try to choose locally produced cereal products, such as bread, flakes, grains and pasta. *Environmental objectives: reduced climate impact, non-toxic environment*
- Try to choose pesticide-free cereal products and rice, for example organic alternatives, when available. *Environmental objective: non-toxic environment*
- Rice has a greater impact on the environment than cereals and potatoes. Instead of rice, try wheat germ or oats. *Environmental objectives: reduced climate impact, non-toxic environment*

Did you know ...

... that rice farming produces large amounts of methane? This is why the climate impact of rice is three times that of cereals and potatoes.

... that rice consumption in Sweden has increased by 40% since 1990? On average, we eat 5-6 kg of rice per person each year. From an environmental perspective, it would be good if this consumption does not continue to increase.

The advice has been compiled by the National Food Administration in collaboration with the Swedish Environmental Protection Agency and is based on a scientific assessment published by the Swedish University of Agricultural Sciences

Health and potatoes, cereals and rice

Potatoes, cereal products – pasta, bread and grains- and rice contain important vitamins and minerals. Whole grain versions also have a low glycemic index (GI), are rich in fibre, iron and folate (folic acid) and may provide protection against heart and cardiovascular disease as well as certain types of cancer.

The environment and potatoes, cereals and rice

Potatoes, cereal products – pasta, bread and grains- and rice have a low environmental impact compared to many other food groups. The environmental objectives *reduced climate impact* and *non-toxic environment* are primarily affected. From an environmental perspective, it is therefore good to continue to fill a large part of your plate with potatoes, pasta, wheat germ, etc.

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Reduced climate impact

Greenhouse gas emissions are primarily produced by cultivation and transport. Potatoes produce the least greenhouse gas emissions while rice produces the most greenhouse gas emissions.

During cultivation, the use of fertilisers, foremost mineral fertilisers, and the plowing of the earth produces the most greenhouse gas emissions. Water-soaked rice fields produce considerably more greenhouse gas emissions than cereal and potato plantations, given that methane is released from the ground. In comparing portion sizes, the difference between rice and potatoes decreases, but a clear difference remains. This is because the weight of potatoes does not change when they are cooked, whereas rice more than doubles its weight when cooked. The difference between rice and cereal products also decreases if one takes into account the energy used in the production of pasta, couscous, bread, etc.

Since the cultivation of cereals, rice and potatoes produces rather minimal greenhouse gas emissions, the emissions from transport take on a comparatively large effect. How big these emissions are depends on the distance the foodstuffs are transported and the type of transport used.



Non-toxic environment

The environmental objective *non-toxic environment* is linked to the use of plant protection products. Generally, less plant protection products are used in the cultivation of cereals than potatoes. The most plant protection products are used in rice farming.

The amount and type of plant protection products that are used depends on the cultivation technique and climate factors. In countries with a colder climate, such as Sweden, generally less plant protection products are used in comparison to warmer countries. With respect to potatoes, the use of chemical products to prevent the germination of potatoes during storage is forbidden in Sweden.

No chemical plant protection products are used in organic farming, which is positive in terms of the environmental objective *non-toxic environment*. However, this can be a problem for potato cultivation, since there is a risk of decreased yields due to disease. This means that certain years, yield loss can be considerably greater than for conventional potato farming.

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Cooking fat

The fats that are used in oils, margarines, cooking fat blends and butter each have different impacts on the environment. Rapeseed oil and olive oil are the best fats from both an environmental and health perspective.

Do you want to eat intelligently for the environment and your health?

- Choose rapeseed oil and cooking fats which contain a lot of rapeseed oil, or olive oil. Rapeseed oil is best from an environmental perspective and is also healthy. *Environmental objectives: varied agricultural landscape, rich diversity of plant and animal life, non-toxic environment, reduced climate impact*
- Reduce the use of palm oil, which is found in some cooking fats. Read package labels and rather choose products containing rapeseed oil. *Environmental objectives: varied agricultural landscape, rich diversity of plant and animal life, non-toxic environment, reduced climate impact*

Did you know ...

... that a lot of oil palm cultivation is done on land that was once rainforest? This has a negative effect on both the climate as well as on plant and animal life.

... that butter can be considered a by-product of milk production and is a resource we should take advantage of from an environmental perspective? However, for health reasons, it is good to limit consumption, since butter contains a lot of saturated fat.

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Health and cooking fat

Cooking fats are made from a blend of different fats, for example, rapeseed oil, sunflower oil, palm oil and butter. Liquid margarines and light margarines made of rapeseed oil contain a lot of unsaturated fat, including omega-3 fats, which are good from a health perspective. Even olive oil contains a lot of unsaturated fat. Margarines are also some of our most important sources of vitamin D. Butter and palm oil contain a lot of saturated fat and a small amount of unsaturated fat, which increases the risk of heart and cardiovascular disease.

The environment and cooking fat

Palm oil is the fat with the greatest impact on the environment. It can be difficult to know if a product contains palm oil, since it is not necessarily listed on the package label. One way of avoiding palm oil is to choose instead cooking fats that contain a lot of rapeseed oil.

Cooking fats primarily affect the environmental objectives *reduced climate impact, non-toxic environment, varied agricultural landscape* and *rich diversity of plant and animal life*.

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Reduced climate impact

Greenhouse gas emissions primarily come from the use of fertilisers in cultivation, the energy used in processing and from transport. How big the emissions from transport are depends on the distance the cooking fat is transported and the type of transport used.

The cultivation of oil palms generally has a greater impact on the climate than rapeseed and olive cultivation. This is because oil palms are often cultivated on land that was once rainforest. When forests are cut down, a lot of greenhouse gas emissions are produced. Currently, there are some certified oil palm plantations where cultivation is more sustainable, but they are still few.

Butter produces approximately six times more greenhouse gas emissions than rapeseed and olive oil. Among other factors, this is because butter comes from cows which release large amounts of methane. On the other hand, butter can be considered a byproduct of milk production. Since we need a certain production of milk, we get butter "on the house" and from an environmental perspective, it would therefore be a good idea to take advantage of this.



Non-toxic environment

The environmental objective *non-toxic environment* is linked to the use of plant protection products. The cultivation of rapeseed generally uses less plant protection products than olive and oil palm cultivation, and the products that are used are also often less toxic.

Organic farming does not use any chemical plant protection products.



Rich diversity of plant and animal life



Varied agricultural landscape

Rapeseed plantations are good so-called break crops and as such contribute to a varied agricultural landscape. Rapeseed cultivation is also good for plant and animal life, for example by encouraging pollinating insects such as bees and bumblebees.

Olives and oil palms are often cultivated in large intensive cultivations, which does not promote a varied agricultural landscape. On intensive olive plantations, the ground underneath the trees is kept grass-free with the help of plant protection products, which has a negative effect on plant and animal life and creates a great deal of soil erosion.

Butter is made from the milk of grazing cows. In Sweden, outdoor grazing contributes to the environmental objectives *varied agricultural landscape* and *rich diversity of plant and animal life*. Indirectly, butter can therefore contribute to both of these environmental objectives.

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Water

As opposed to many other countries, in Sweden we have access to healthy water directly from our faucets. The choice of packaged water is therefore often an unnecessary burden on the environment, even if the burden is relatively small.

Do you want to make intelligent choices for the environment and your health?

- Choose tap water whenever possible – it is of high quality and is also inexpensive. *Environmental objective: Reduced Climate Impact*
- If you buy packaged water, choose locally produced water. *Environmental objective: Reduced Climate Impact*

Did you know ...

... that in Sweden, we drink approximately 27 litres of packaged water per person each year? That is over twice as much as 10 years ago. But we drink even more soft drinks – approximately 75 litres per person each year. In comparison to soft drinks, water is a better choice for both one's health and the environment.

The advice has been published by the National Food Administration in collaboration with the Swedish Environmental Protection Agency and is based on a scientific assessment from the Swedish Institute for Food and Biotechnology, SIK.

Health and water

Water is our most important foodstuff. We need at least 1.5 litres of water each day, in addition to the fluids we get from food. Swedish tap water is generally of high quality. Therefore, from a health perspective, there is no difference between drinking tap water or packaged water.

The environment and packaged water

Packaged water has a relatively low environmental impact in comparison to other foodstuffs. Primarily the environmental objective *Reduced Climate Impact* is affected. We also have outstanding tap water in Sweden and the choice of packaged water is therefore often an unnecessary burden on the environment.



Reduced climate impact

Processing and transport make up the most greenhouse gas emissions with respect to packaged water.

A large part of the greenhouse gas emissions come from transport. How big the emissions are depends on the distance the water is transported and the type of transport used. The longer the transport, the greater the emissions.

The production of packaged water produces the most greenhouse gas emissions. The emissions come from the production of packaging, reuse/recycling and waste management.

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Packaging materials produce different levels of greenhouse gas emissions. Glass bottles that are refilled produce less emissions than PET bottles and recyclable aluminium cans. The size of packaging also has an effect on emissions. As such, a 1.5 litre PET bottle produces less emissions than a 33 centilitre glass bottle, since less material is used for each litre of drink. This presupposes that the entire contents of the bottle are drunk, and that bigger bottles do not lead to increased consumption.

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