



BUS

WHISKY

SUSTAINABILITY AND IMPACT REPORT 2024/2025

Bus Whisky Distillers BV



Introduction

At Bus Whisky Distillers, we are committed to creating exceptional whisky while taking responsibility for the planet we call home. Our sustainability practices are ingrained in everything we do, from grain to glass. With a distillery located in the beautiful Dutch countryside, we embrace the principles of environmental stewardship, innovation, and community engagement. This report outlines our efforts to reduce our environmental impact and foster a positive relationship with the environment.

At Bus Whisky Distillers, sustainability is more than just a commitment; it's a way of life. By focusing on responsible practices, reducing our environmental footprint, and investing in the community, we are dedicated to creating a better world for future generations. We look forward to continuing our sustainability journey and achieving even greater impact in the years to come.

Dennis & Ezra



1. Carbon Footprint

Our mission is to operate a net-zero-carbon business model (scope 1 & 2) by utilizing renewable energy and reducing emissions across all operations.

Energy-neutral whisky distillery

Bus Whisky's distillery runs on green power from rooftop solar panels, solar water heaters, heat pumps and biomass. And in addition, we try to utilize as much waste heat as possible. In the stills, the hot alcohol vapor is cooled back with water so that the alcohol liquefies again at the end. The cooling water thus becomes warm. Even so hot that we can fill our boiler with it just fine for mashing. But we have much more cooling water "left over" than we need for mashing (brewing). So when the boiler is full, the hot cooling water is sent to first the building's floor heating system, then to the solar water heater, the boiler for showers and dishwashers, and then to a buffer water which is connected to the source of one of our heat pumps, respectively. And finally, the final cooled water is used to water the garden or runs into one of the large ponds on our property so that it does not end up in the sewer.

If we have insufficient hot water if, for example, the sun is not shining hard enough, we always have a backup supply to keep the brewing water electrically at temperature. That way we are sustainably assured of continuity.

Blue diesel

Our distillery's tractor is fueled with blue diesel. Blue diesel is another name for an HVO. That stands for Hydrotreated Vegetable Oil. Blue diesel is made entirely from renewable and sustainable resources, such as waste vegetable oil. Among other things, the frying oil from the Bus Whisky restaurant is processed at the biodiesel plant, where diesel is made from 88% waste and residues (cooking oils, animal fats) and 12% renewable vegetable oils, sourced from certified plantations.

Biomeiler

We have built a biomeiler in which we want to compost organic material such as beer brew and barley straw, among other things, and use the heat generated in the process by the brewing as a heat source for our heat pumps, and gradually compost for the grain fields will be created naturally.

Electric driving

At Bus Whisky we drive all electric. All company cars are electric and are charged by our own solar panels. We also have 10 electric 4x4 jeeps, so you can combine a visit to our distillery with a sustainable ecotrail through the beautiful surroundings of Bus.



2. Sustainable Ingredients

Bus Whisky takes pride in sourcing ingredients local and responsibly.

Single estate whisky

One of the main ingredients of Bus whisky is malt, which is made from malting barley. The malting barley for this craft whisky is grown in-house on our own farm. Our malting barley is grown without the use of fertilizers and without the use of any pesticides.

Growing our own barley also means reducing transportation emissions and supporting regional and regenerative agriculture. All of our grain is grown using organic methods, ensuring no harmful chemicals enter the ecosystem.

An eye for heritage & culture

Brewing barley is grown in-house, partly using the antique machinery of the local dorsclub de Stofvreters. The dorsclub is rooted in the region and consists of hobbyists and collectors of old agricultural machinery. The club tries to preserve these machines if necessary to restore and maintain them in their original state. They do this by regularly working with them. Among other things, they sow the flowery field edges for us with antique tractors and sometimes help with the harvest with an antique combine.

Water Efficiency

The distillation process uses a significant amount of water, and we are working on a closed-loop water system. By recycling and reusing water, we save millions of liters annually.



3. Waste Reduction

Waste management is a key part of our sustainability goals.

Circular Economy

At Bus Whisky, we strive to make our operations as waste-free as possible. All by-products from distillation, such as draff and pot ale, are repurposed for animal feed or used as natural fertilizers.

Turning beer brew into food products

We make bread from brewer's grains as well as granola. For pizza dough we use up to 5% brewing grain, for pasta up to 10% brewing grain and we turn it into a breeder for poultry, meat, fish. Also in desserts we are going to use brewing cereal for blondie, brownie or Madeleine. And what about cookies with coffee based on brewing cereal or a bitter garnish based on brewing cereal. But also crackers, soft bake bars and baking mixes based on brewing grain are possible.

Brewers' grain concrete

Whisky has one pretty big residual stream and that is "beer brewers grain" or "brewers grain." Most distilleries and breweries drain this residual stream to livestock farms where it is fed to animals. We do the same, and in return we get brewers grain-fed beef carpaccio for the Bus Whisky restaurant or bacon strips for the BBQ, we bake bread and we make granola from it for overnight guests at the Bus Whisky B&B and at the Bus Whisky farm campground. But drying beer brew takes a lot of energy, so it's not sustainable up front.

Bus whisky has therefore bet on its own invention: brewer's mash concrete. Adding lime to brewers' grains creates a durable type of concrete that absorbs CO₂ during the curing process. The moisture from the brewers' grains is actually very useful in this process. This gives us a CO₂-negative building material that can also be used on land as an organic fertilizer after demolition. A patent for this application has already been applied for and TU Eindhoven has started further research into the application and possibilities of brewer's gravel concrete. The intention is to give this new building material a major role in the construction of a new distillery, in which straw-a residual product of barley cultivation-will also be given a prominent role. Straw is a good insulating material. A building made of straw is very energy efficient or even energy neutral. The primary energy required to produce the straw is virtually zero. Straw is the dry stem of cereal crops. The crop absorbs CO₂ from the atmosphere as it grows and stores it in the stalks. Building with straw is therefore building with "conserved" CO₂, it remains extracted from the atmosphere at least as long as the building exists.

Methanol

Whisky distillation is done in 3 steps: the pre-run, the mid-run and the post-run. During the pre-flow, a small amount of methanol is released. We take it out periodically and process it into coolant for our heat pump, antifreeze for the car windshields, and



house-fired lighter fluidtheor de Bus Whisky Restaurant BBQs. So nothing is thrown away.

Alcohol-free beer

We are also very excited about our latest new plan to make alcohol-free beer from the pot ale residual stream of our whisky production. To make whisky first you basically brew a beer of about 8% without hops during the mashing process, from which you then extract the alcohol in the still, but just throw the rest away. But what are you actually left with if you think carefully? Exactly, alcohol-free beer! Now that alcohol-free "beer" is still pretty sour. But if you adjust the brewing process a bit you get a nice blond beer without hops. So we have to adjust the brewing process and add hops to the alcohol-free beer afterwards. New innovative process steps are needed that are quite demanding. But it should be possible to reduce our footprint even further by preventing food waste and adding value to an enormous residual stream, knowing that alcohol-free is the growth market for the coming decades, so the potential impact that can be realized is great. We have already completed the first experiments. If successful, our innovation will soon be copyable by others and scalable, as we do not patent sustainability innovations on principle. Are you a student who would like to do an internship or graduation project? Let us know!



4. Packaging Innovation

Packaging represents a significant part of the carbon footprint in any product. At Bus Whisky, we have taken steps to reduce the impact of our packaging:

100% Recycled Glass

Our whisky bottles are going to be made from 100% post-consumer recycled glass, cutting the carbon footprint of our bottles by 40%.

Plastic-Free Packaging

We have eliminated the use of plastic in our packaging. Cork stoppers, recyclable labels are used to ensure the entire package is eco-friendly.

Bee-keeping

One unique aspect of our whisky is the sealing of each bottle with beeswax, which comes directly from our own beehives located on the distillery's estate.

Our on-site beekeeping operation not only provides a sustainable source of beeswax but also supports local biodiversity and pollination efforts. By using beeswax from our own hives, we reduce the need for synthetic or outsourced materials, contributing to a more eco-friendly packaging process. The beeswax seals are not only a natural and biodegradable choice but also add a personal touch to each bottle, reflecting the close connection between our whisky and the environment.

This practice reinforces our commitment to fostering a self-sustaining ecosystem on the distillery grounds, where nature and whisky-making exist in harmony. The bees not only thrive on the wildflowers we plant but also give back by providing the wax we use to seal each bottle, ensuring that our whisky is protected in a way that is as natural as the ingredients inside.



5. Biodiversity and Regeneration

Our distillery sits within a landscape rich in biodiversity, and we are committed to preserving and enhancing it.

No till

No-till farming is an agricultural practice where the soil is left undisturbed by traditional methods of plowing or tilling. Instead of turning over the soil, seeds are directly sown into the earth, allowing the soil structure to remain intact. This approach helps preserve the soil's natural composition, which enhances its ability to retain moisture, reduces erosion, and promotes biodiversity. By keeping the soil undisturbed, no-till farming also reduces the release of carbon stored in the soil, helping to lower greenhouse gas emissions.

Cover Crop Clover

We experiment with clover under our malting barley as a cover crop to retain moisture, suppress weeds and add biodiversity and CO₂ to the soil.

Biodiversity

Flowered field edges are also standard practice to contribute to the ever decreasing biodiversity in the countryside. Five percent of Bus Whisky's fields are flowered field edges. Next year, we expand our biodiversity initiatives by shipping seed of native wildflowers with each bottle of whisky, supporting local pollinators such as bees and butterflies.

Converting brewer's grains into animal protein via mealworms

Traditionally, brewers' grains are often used as animal feed for cows or pigs. Because these animals are warm-blooded, part of the energy is converted into heat, making the conversion from vegetable to animal protein less efficient. So can't we put cold-blooded animals in there? Hence Bus Whisky has started raising trout. Mealworms are going to convert the brewers grains into animal protein and we feed the mealworms back to the fish we have on the menu in the whisky distillery restaurant.

Reforestation Efforts

We have joined nature development programs to plant more trees at our land, helping to restore natural habitats and sequester more carbon.



6. Community and Local Impact

Supporting the local community is at the heart of our business.

Local Employment

We are proud to contribute to local employment, with 85% of our workforce coming from within 50 kilometers of the distillery.

Charitable Initiatives

A portion of our revenue is directed towards local environmental conservation projects and community charities. We also sponsor various local cultural events and educational programs on sustainability.



7. Future Goals

Looking forward, we are committed to further reducing our environmental impact. Is there actually anything to improve at Bus Whisky in terms of sustainability? We certainly do! We still have plenty of ambitions. Coming soon, the following improvements are on the agenda:

1) An ecological food web.

To what extent is it possible to use "waste streams" of water within Bus Whisky as input for an ecological food web which as output can produce food for human consumption? We will build a demo project for this purpose. Components within this demo:

- Ecological water purification for water quality of trout pond;
- Conversion of excess nutrients to water insects as food input for the trout from the other connected ponds;
- Explore possible farm contribution to achieving Framework Directive Water targets;
- Deploying ecologically ordered water as soil quality reinforcement for the food forest and vineyard;
- Test set-up: processing effluent from the Whisky Distillery and conversion to high quality water and the potential exploration of a bioreactor.

2) An algae reactor

We want to capture the CO₂ released during fermentation to feed an algae reactor. After the brewing process (mashing), yeast cells convert the sugars in the brew into alcohol and CO₂. This is a crucial step in the process that we need to get to alcohol. So we cannot and do not want to reduce these emissions, but what is perfectly possible is to capture the CO₂ and put it to alternative use. We are fascinated by a brewery in Australia that uses it to feed an algae reactor, so we thought that would be nice. We ourselves were already building a tea plantation and we could blow the CO₂ between the tea plants so we could market that as CO tea. Anyway, maybe we'll do a little bit of both. We do love an experiment. Are you a student who would be interested in doing an internship or thesis on this? Let us know

4) Growing our own yeast

Distilleries growing their own yeast can select and cultivate specific strains that are well-suited to their local environment or the sustainability goals of the distillery. By selecting robust yeast strains, distilleries may create a more natural and eco-friendly process.

Overall, growing our own yeast aligns with the goals of reducing waste, improving resource efficiency, and minimizing environmental impact—all of which are hallmarks of sustainable whisky production.

Growing yeast in-house reduces dependency on large-scale yeast production, which can have a significant ecological footprint. Commercial yeast production often involves the heavy use of industrial facilities that can strain local ecosystems. Producing yeast on a smaller scale within the distillery minimizes such impacts.



5) Zero Landfill

Most our waste was diverted from landfills. Our goal is to increase this to 100% by 2026.

6) B corp certified

Bus is aiming at B Corp certification. This means that a company meets high standards of social and environmental performance, transparency, and accountability. Companies that are B Corp certified commit to a holistic approach where they aim to have a positive impact on all stakeholders, including employees, customers, communities, and the environment, rather than focusing solely on profit.

The certification is awarded by the nonprofit organization B Lab, which assesses companies in five key areas: environment, workers, community, customers, and governance. A B Corp certified company has demonstrated that it integrates sustainability and social responsibility into its core operations. It is a mark of trust that signifies the company is committed to high ethical standards and sustainable practices.

7) Bee friendly gift with each bottle

We're going to help our natural environment by promoting the sowing of little pieces of wildflower meadows to help our bees, butterflies and other pollinators, by adding a gift set to each bottle.

8) Engaging partners and suppliers

We will engage our partners and suppliers to the full extent of our sustainability ambitions. Think transporters, the malting plant, the glass factory, the contract worker, the cork manufacturer, the barrel makers, the packaging manufacturer, etc. First we will put our own footprint in order and the next step is to also involve partners and suppliers in the coming years in order to reduce our footprint earlier in the chain. Are you a student who would like to do an internship or graduation project for this? Let us know!

And of course we are open to even better, more beautiful or other (experimental) ideas to make Bus Whisky even more sustainable.

Do you have a great suggestion, would you like to do an internship or are you looking for a sustainable graduation project? Please let us know via sustainability@buswhisky.com