



WAVE Refrigeration



Sustainable Development Goals Q3 2020

SUSTAINABLE DEVELOPMENT GOALS



What are SDGs?

The Sustainable Development Goals are a universal call to action to end poverty, protect the planet and improve the lives and prospects of everyone, everywhere.

The 17 Goals were adopted by all UN Member States in 2015, as part of the 2030 Agenda for Sustainable Development which set out a 15-year plan to achieve the Goals.





WAVE's SDGs

WAVE's Sustainable Development Goals (SDGs) are based on the collection of 17 global goals set by the United Nations General Assembly. WAVE have committed to achieve the advancement of our own goals aligned to this initiative. The SDGs focus on environmental, socioeconomic and ethical issues currently experienced globally.

Our SDGs have been carefully considered and complement our industry leading culture that is based on organisational development and training, equality, diversity, and supporting our local communities.

Our SDGs also reflect our company vision: "WAVE promote sustainable engineering practices that protect our natural environment for present and future generations".

Some of our SDGs are very personal. This is because we are small business (albeit with a demonstratable global presence) that prides itself on maintaining a close family ethos. We are 100% confident in attaining our goals, and over time replacing those that have been achieved with new ones.

This document represents the 3rd update of SDGs from WAVE since we adopted the philosophy in October 2019.

About Us

Wheatlands Aire Valley Engineering Ltd. (WAVE) provide independent and impartial design and project support services, operating throughout the UK and beyond.



The Overview

SGDs are based on the following key areas; their importance is explained below.



Conserving the Environment

Protecting and conserving the environment is important to ensure the survival of certain species of plant and animals and to protect from further environmental damage.



Improving Health and Wellbeing

A focus on both physical and mental health is important for the employees at WAVE as well as those outside of the business.



Reducing Inequalities

The same opportunities and resources should be available to all and WAVE support this in every way possible.



Sustainably Consuming

The resources we use, where they are sourced and how we dispose of them is the most effective way of reducing our impact on the environment.



Supporting Quality Education

Education not only impacts a person's abilities but also their mindset. We do not stop learning after school, college or university.

What we have done so far...

WAVE has already supported an impressive number of projects for a small company, some of them are listed below. If you are interested by these, please feel free to read about more initiatives in detail in the downloads found in the SDG section of the WAVE website. <https://wave-refrigeration.com/wave-sdgs/>

- 🌀 **FareShare** – WAVE provided consultancy and project management services free of charge for the replacement of the charity FareShare's cold rooms, supporting the charity through reduced energy costs meaning more can be spent on ensuring food banks get what they need. The more efficient coldrooms also help to reduce the resultant overall energy consumption and the food waste from the food retail industry. "We believe that no good food should go to waste" - FareShare
- 🌀 **Jalanidhi Trivandrum Well Construction** – WAVE provided the full financial resources for the construction of a water well for a family in Trivandrum, India, improving health and wellbeing through clean water and sanitation.
- 🌀 **Keighley Cougars Cups** – WAVE purchased 20,000 reusable cups for Keighley Cougars, supporting a local sports team and reducing the production and waste of single-use plastics!
- 🌀 **Talk & Thrive** – WAVE provide financial support to the group which offers support to men who suffer with mental health and/or have been victims of abuse. The group is run by James Bailey's brother and two friends and the work they have done has gained local popularity which is great news as the message that "its okay to talk" must be spread wherever possible!
- 🌀 **Beach Clean** – WAVE have participated in our first beach clean at Blackpool Beach on Saturday 23rd November under the guidance of the Sea Life Centre.
- 🌀 **Woodland Trust** – WAVE offset carbon from car travel within the business by partnering with and donating money to the Woodland Trust.
- 🌀 **Primary School Books** – WAVE purchased KS2 and KS3 books for Glusburn Primary, this supported the school's reading scheme.
- 🌀 **Training and Equality** – Both younger and older members of the team at WAVE are encouraged to continuously challenge themselves through embarking on further training. The two youngest members of the team, Jack and Ellie recently gained their City & Guilds Level 2 Award in F-gas and ODS Regulations: Category IV! WAVE believe that training the younger generation is essential to a thriving industry.

What's New Then?

Read on to find out what we have achieved since the last update!



Shirts for Carers!

Raising money for the NHS as we TRY to celebrate World Refrigeration Day!

To coincide with World Refrigeration Day, the team at WAVE were incredibly proud to have sponsored the Keighley Cougars with our logo included on their new team shirt that supports and thanks our NHS.

2020 has been an incredibly challenging year and for the team at WAVE there was no better way to celebrate World Refrigeration Day than to thank our fantastic NHS and all key workers who have worked tirelessly throughout the coronavirus pandemic.

The shirts also continue the multicoloured theme from the cougars pride game, which was also sponsored by WAVE!

All profits raised from the sales of these shirts are being donated to the NHS and WAVE are incredibly proud to have been able to play our part in supporting our wonderful National Health Service!

Here you can see the WAVE family sporting the new kit and celebrating World Refrigeration Day, whilst also respecting social distancing. Because nothing should get in the way of raising money for a great cause and celebrating the great industry in which we work!

Unfortunately the shirts did not arrive in time for Akhil and Gokul but they were still able to join us in celebrating the day.

The team at WAVE look forward to supporting World Refrigeration Day, local sports teams and other meaningful causes again in the future through other rewarding (and just as colourful) initiatives!

WAVE see the shirt sponsorship as a great way of displaying our support for the NHS, a healthy lifestyle and equality. The shirt is bright, colourful and also supports the reduction of all inequalities, just like our company! The support for Keighley Cougars promotes a healthy and active lifestyle and all profits go to a great cause, what could be better!



Office Heat Pump

Global Warming vs. Office Cooling

Due to the lack of central heating in the office when it was purchased, four electric convection heaters had to be used over the winter period of 2019-2020; with only one or two being used in periods of slightly higher external temperatures. This was a tough pill to swallow as the we were aware of their inefficiency and therefore the indirect impact on the environment due to energy usage. In addition to this, the office had no cooling system, resulting in some less than comfortable office temperatures in particular periods over the summer of 2019.

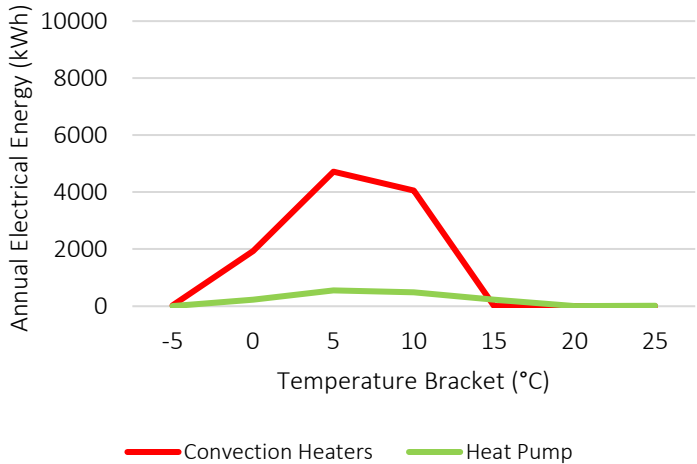
As refrigeration consultants, the solution to this problem was rather obvious to us and we decided that the installation of a compact Air Source Heat Pump was the most efficient and effective reaction.

Based on calculations derived from manufacturer data, the annual emission reduction equates to 2.6 tonnes of CO₂! This was calculated by finding the total annual day hours at different temperatures (based on Leeds data) subtracting weekend hours and multiplying this by the power consumption (in kW) of the heat pump or convection heater.

The most energy consumed for both was around the 5°C mark as this is a common daily temperature which also requires a significant heating input.

The calculations also include cooling provided by the unit. The comfort cooling doesn't greatly affect the overall power consumption of the unit but does boost employee morale in the office!

Energy Consumption of Convection Heaters vs Heat Pump



IIR Academic Paper on R454A

Embrace Change and Innovate!

The implementation of the F-gas regulations is the largest legislative challenge currently facing the refrigeration industry. As the regulation is based on the direct emissions of Fluorinated gases, such as HFCs, the response of a vast proportion of the industry has been a straight forward one, to change the refrigerant used to R744 (CO₂) as it has a low GWP (Global Warming Potential). This means it has less of an effect on the environment when leaked. One disadvantage of R744 is that it must be operated at much higher pressures than the HFC refrigerants it replaces and therefore increases indirect emissions.

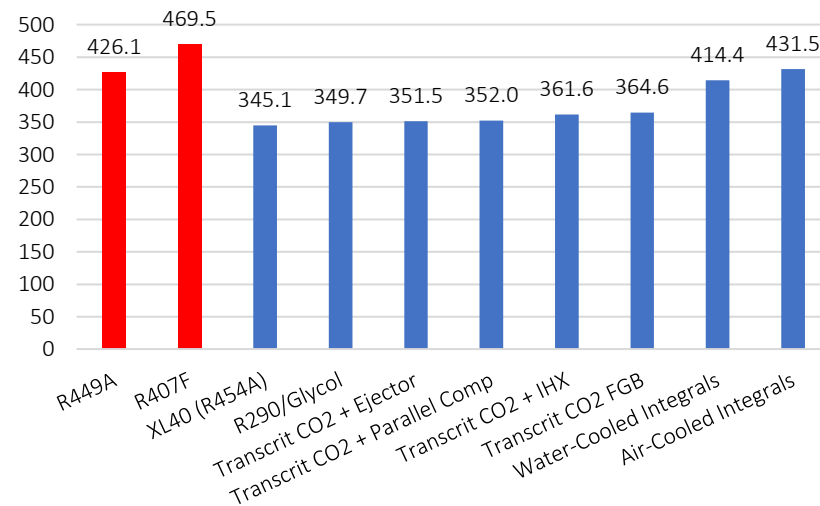
At WAVE we believe in innovation and being unbiased; we have already worked extensively on reviewing R744 technology and believe it definitely has its place in the future of refrigeration. We also believe that there is often more than one answer to a problem. Innovation is key to solving problems such as anthropogenic climate change; an obstacle for innovation is thinking in line with everyone else.

With a view to tackling the impact of the refrigeration industry on the environment, WAVE, and other organisations such as ASDA, tested the suitability of HFO refrigerants. R454A is a HFO that behaves much like the HFC refrigerants it replaces, but has a heavily reduced GWP. The refrigerant was found to perform almost as efficiently as its HFC predecessors.

To demonstrate the suitability of the refrigerant, an academic paper was produced by WAVE (Nabil Cook and Sam Cameron) and ASDA (Brian Churchyard) to assess “**The Environmental Impact and Performance of HFO R454A in Retail Supermarkets**”. This took into account the direct and indirect emissions from a group of the latest refrigeration technologies. The paper found that, of the viable options new technologies, R454A had the lowest emissions over a 10 year period, showing that innovative thinking pays off.

Nabil even presented the paper to an international audience for the IIR Rankine 2020 conference!

10-yr Emissions
(TonnesCO₂e)



Cycle to Work

Flatten the carbon incline

To reduce the carbon emissions of a 51km trip 2 to 3 times a week, one WAVE team member has started cycling into work. The option of a normal bike would have been too draining, especially before a day of work in the office. The use of an E bike seemed like the best option and would encourage more trips to be done by bike, instead of giving in and using the car!

The direct and indirect carbon emission savings from using an E bike were calculated based on an average of 2.5 round trips each week, equating to 6630km commuted per year. Using a car has the obvious drawback of the emissions resulting from the burning of fuel. To be completely fair, the indirect emissions resulting from using the E bike must also be taken into account. Using the E bike does not directly emit any environmentally harmful gases; however, the impact that results from using mains fed electricity to charge the bike does. Calculations were based on the worst E bike range and UK DBEIS data on emissions per kWh mains electricity used.

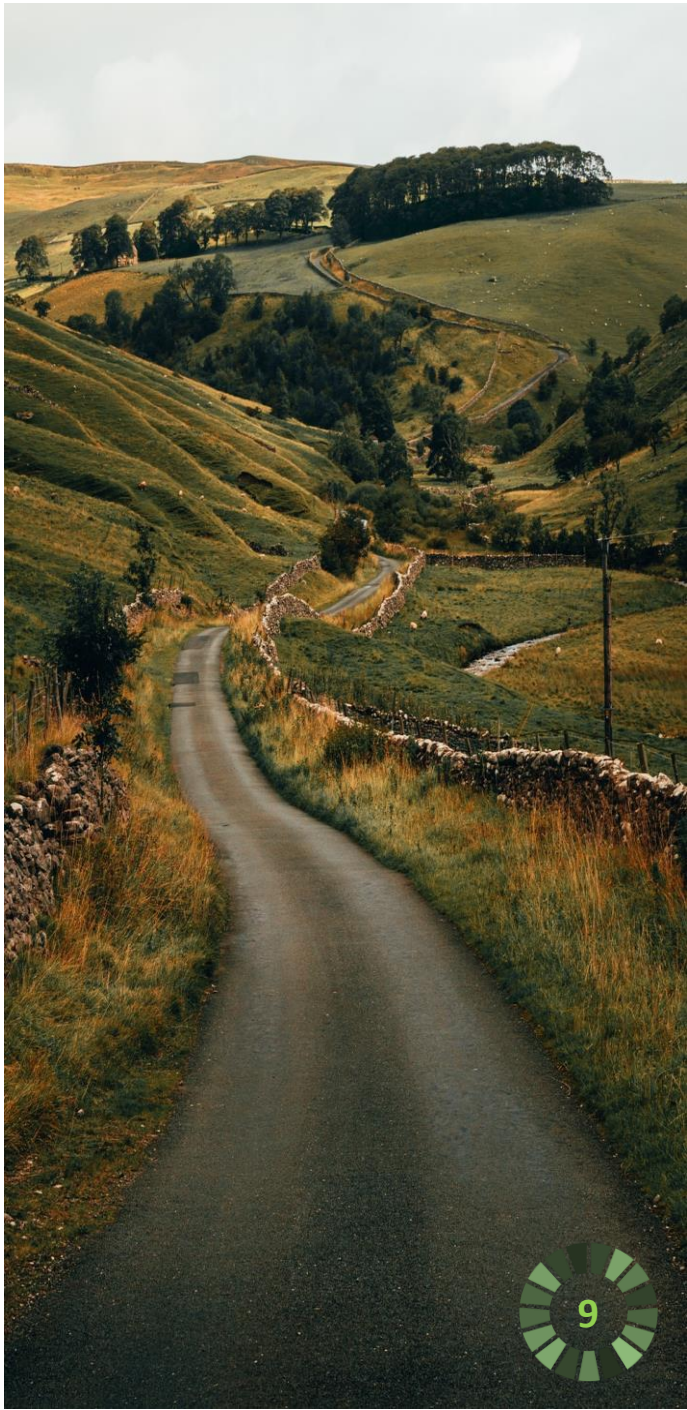
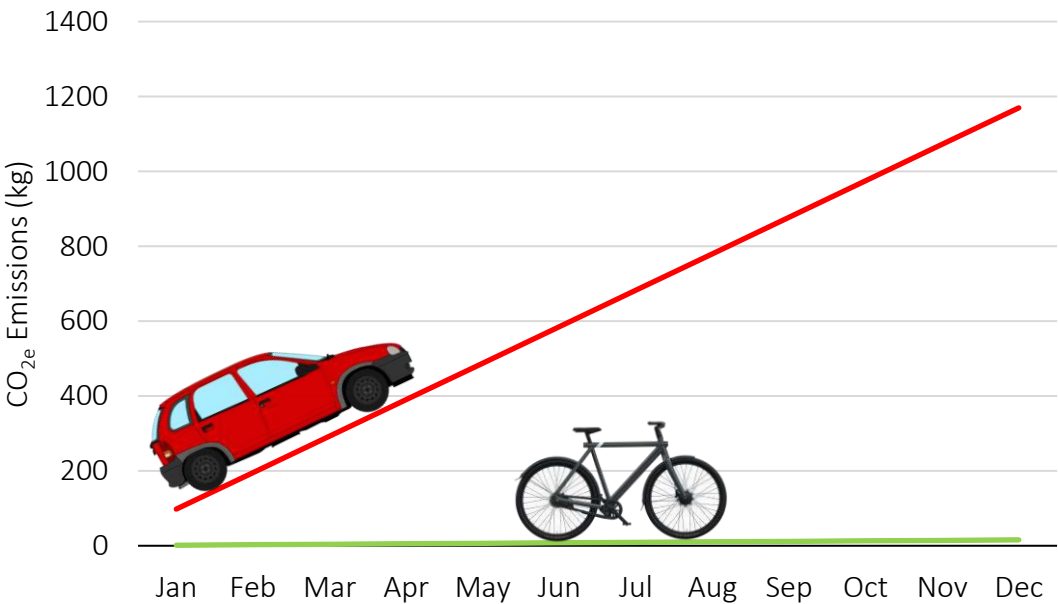
Even when these worst case scenarios are considered, using the E bike saves 961kg, nearly a tonne, of CO₂ per year!

In addition to this, another WAVE member has started cycling to work, with a 10km round trip and the use of a normal bike rather than an E bike, this employee saves a further 209kg of CO₂ per year!

This takes the total CO₂ saved per year to 1170kg, well over a tonne of CO₂ saved by switching to cycling.

Cycling improves the physical wellbeing of the employees involved and the reduced particulates improves the wellbeing of pedestrians! As well as this there is the obvious benefit to the environment as there are reduced emissions, reducing the overall anthropogenic impact on the environment.

Emissions of Bikes vs. Cars Over 1 Year



Global Shapers

Gokul shows initiative with his Go-getter's attitude



Born out of the World Economic Forum, the Global Shapers Community is a network of inspiring young people under the age of 30 working together to address local, regional and global challenges. With more than 9,000 members, the Global Shapers Community spans 428 city-based hubs in 148 countries.

With the largest youth population in history, there is an unprecedented opportunity for young people to take an active role in shaping the future. This generation has inherited enormous global challenges, but has the ability to confront the status quo and offer youth-led solutions for change.

Gokul is a member of the WAVE Trivandrum team and has recently passed selection and interviews to become the youngest member of the Trivandrum Global Shapers Hub, which in of itself is impressive! Gokul takes time out of his free time to help plan the next poverty-fighting projects with the Trivandrum Hub. This shows his commitment and dedication to what is a great cause – helping the less fortunate!

The Trivandrum Hub is a relatively new hub but has big ideas for after coronavirus related restrictions are lifted. They are utilising this time to think of ways that they can address the needs of their community by attending webinars and online discussions. Gokul has stated that this will predominantly be driven towards the elimination of poverty in the community and the hub is also starting a blood donation campaign in the area.

As the Global Shapers Community is present worldwide, it may even encourage other young members of WAVE to get involved. All members of WAVE are proud of Gokul for taking the initiative and making the effort to become a member! We would still like to believe the core values and culture of the company instilled upon Gokul has indirectly affected this but nevertheless, this one is all you Gokul!



**GOKUL
DIVAKARAN**

By profession, Gokul is a Design Engineer at WAVE Refrigeration in Trivandrum. He holds a Bachelor's Degree in Mechanical Engineering from University of Kerala. He has been working in Bangalore until recently and had a chance to visit UK. This trip changed him and it brought out a passion to contribute to his society.

Youngest hub member at Trivandrum, Global Shapers is his first step towards fulfilling his passion. He aims to work for the betterment of the community and the city. Gokul is born and brought up in Trivandrum. He loves to spend his leisure time reading novels, listening to music and watching movies.

SHAPERS OF TVM



Tag Rugby Kit

Helping sports teams grab the funding they need!

WAVE are proud to announce that we are the first kit sponsor of the tag rugby team Velcrocity! Velcrocity Tag Rugby Club formed in 2019 and competes in the Try Tag Rugby leagues in Yorkshire, as well as tournaments throughout the UK.

The club were tournament tag champions in Coventry, Manchester and Yorkshire last season, with 11 of the squad representing Yorkshire in the UK Tag Nationals in September. Seven of those made up the mixed open team, who made it all the way to the final in London. Eight of the Velcrocity players were also selected for the Great Britain training squad.

WAVE have provided full funding for Velcrocity's tournament/competition kit; this should allow the team to continue dominating the tag rugby scene!

The team is a mixed team of both female and male players, promoting equality both in and out of sport; something that is very important to us at WAVE.

WAVE see this sponsorship as another way of demonstrating that we are supporting our SDGs for Good Health and Well-Being as well as Gender Equality.



Beach Clean

Brighten the beach, enlighten our minds.

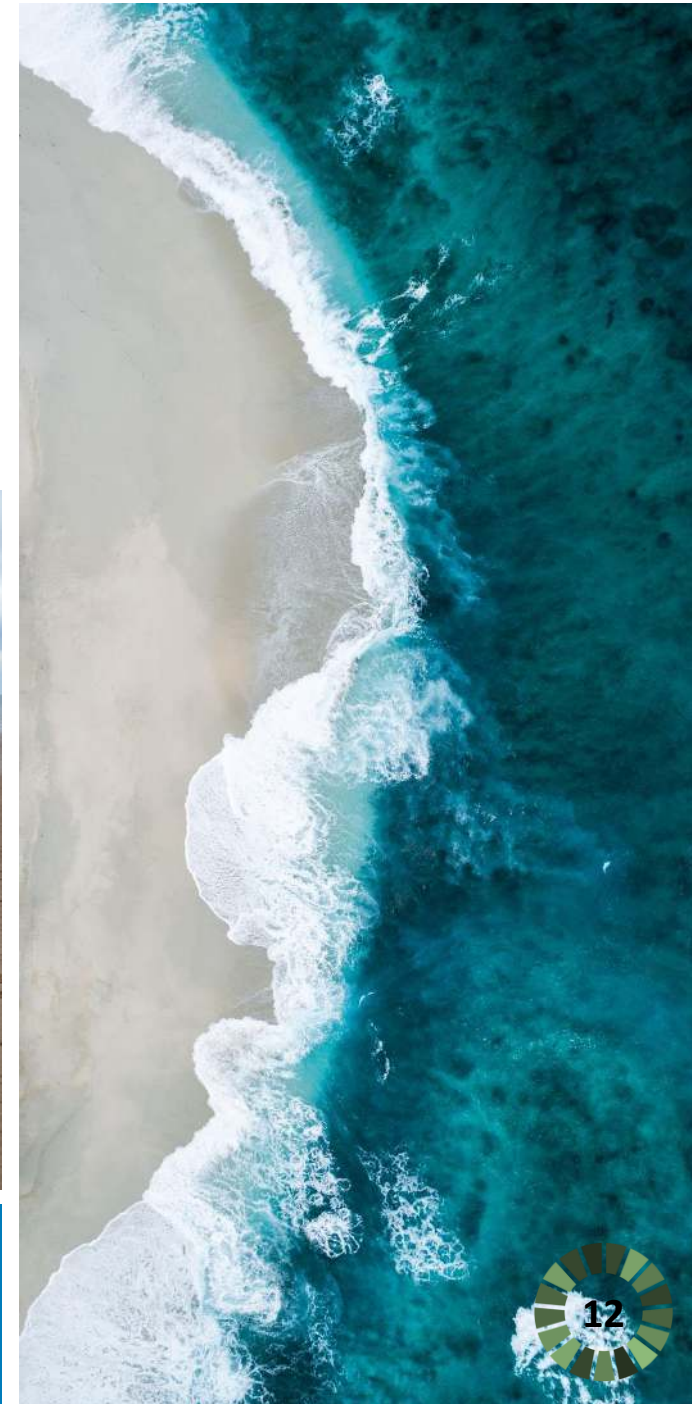
As part of our aim to protect marine wildlife and educate ourselves on the importance of keeping our beaches clean, we will be participating in another beach clean on Blackpool Beach, organised by Blackpool Sea Life Centre.

Compared to the previous beach clean, the weather prior to the clean has been much warmer, we are therefore expecting to find a much larger volume of litter as a result of more people using the beach. This may make the clean more strenuous, but at least it ensures we are making the largest impact possible!

The importance of beach cleans is not only to improve safety and protect wildlife local to that beach, the plastic waste found on the beaches can travel thousands of miles in the ocean and impact wildlife habitats all over the planet!

Beach cleans are also an important educational opportunity for all ages, seeing the waste first hand shows what could end up in the stomachs or around the necks of wildlife all over the world. This has a profound impact on everyone involved.

The inclusion of younger members of the WAVE family is also crucial to the ensuring the understanding of the human impact on the planet is carried forward to future generations.



Ecosia Search Engine

Perhaps the easiest way to make an impact!

Perhaps the easiest and cheapest way to make a meaningful impact to fighting climate change is to switch to using the search engine Ecosia. Ecosia is free to use, safe to use and just as effective as any other search engine; the only difference is that Ecosia uses 80% or more of their profits to plant trees across the world.

Every search that is made using Ecosia generates ad revenue for the company by showing adverts at the top of the page, this is how other search engines also generate income. Ecosia uses this revenue for planting trees in areas that need them, this includes reforestation projects to battle climate change and protect endangered species in Brazil, Indonesia, Morocco and many other countries. Ecosia also partner with other initiatives, such as Trees for the Future, that reduce poverty by restoring local farming communities in countries such as Senegal and Peru.

Ecosia state that, as an average, 45 searches provide the funding for them to plant one tree. Although we do not count this as offsetting our carbon, it does make a significant impact to mitigating climate change. WAVE's searches have already planted over 100 trees, those trees will sequester around 45 tonnes of CO₂ over their lifetime!

When all members of the WAVE team use Ecosia, this number will grow quickly and more trees will be planted, a great result for very little effort. If everyone started using Ecosia, the resulting number of trees would make a serious impact to global climate change, Ecosia have planted over 101 million trees from the searches of over 15 million users!



Where to next?

How are we planning on improving further in the future?

We feel that there should be an equal focus on all goals surrounding the SDG call to action. We will ensure that we do what is possible to consistently work towards all goals! Below are some examples of what we can do to add to our SDGs soon.

- 🌀 Donate further money to the Woodland Trust to plant more trees, offsetting the business mileage again!
- 🌀 Donate food or money to food banks through the Trussell Trust www.trusselltrust.org in the UK or donate to Akshaya Pātra www.akshayapatra.org to help food programs in India.
- 🌀 Purchase Oxfam Charity Gift Cards for employee birthdays, gifting items to people that need them.
- 🌀 Make shoeboxes filled with gifts for the Samaritans Christmas shoebox appeal <https://www.samaritans-purse.org.uk/what-we-do/operation-christmas-child/what-goes-in-my-shoebox/>.
- 🌀 Use further sustainable resources in the office: compostable coffee pods, alternative milk, encourage a meat and/or dairy free day each week, eco-friendly kettle and use an environmentally friendly toilet paper.
- 🌀 Purchase reusable cups for the Project Managers to use whilst on the road.
- 🌀 Improve the garden space outside the office with the inclusion of plants, seating, shelter and possibly even a green wall.
- 🌀 Twin our toilet – through <https://www.toilettwinning.org/> we can donate £60 to twin our toilet, we help fund a project in a poor community that will enable families to build a basic toilet, have access to clean water and learn about hygiene – a vital combination that saves lives.
- 🌀 Walk a predetermined number of steps or distance as a challenge; set up a just giving page for donations to a local charity or group.
- 🌀 Complete the B Impact Assessment and work towards becoming a B certified company.

No Goal Left Behind!

