



Carbon Offsetting, Carbon Neutral, and Tree Planting: What You Need to Know

6th Feb 2025

Dr Craig Jones

www.circularecology.com

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- What is a carbon offset?
- How do carbon offset credits work?
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- Can they be used to support carbon neutrality statements?
- Are there any standards to support carbon-neutral statements?
- Tree planting
- Q&A

Circular Ecology – Introduction



Environmental consultancy, founded in 2013

Offer a range environmental services:

- Carbon Offsetting and Tree Planting
- Organisational Carbon Footprints, Scope 1, 2 & 3
- Product Carbon Footprints
- Whole-Life Embodied Carbon Assessments for Construction Projects
- Life Cycle Assessments (LCA)
- Net Zero Carbon Strategy
- Carbon Footprint Database (library) Development
- Verification and Peer Review
- Online E-Learning Training Courses



Our Mission Statement

***“Making a difference together
Towards a more sustainable future”***

Five Core Values:



Impactful



Community



Quality



Ethical



Continuous Improvement

Scaling Carbon Reduction Initiative (SCRI)

- Launch of our **Scaling Carbon Reductions Initiative (SCRI)**
 - A key part of our purpose is **to release impactful work, to enable scalable carbon reductions**
 - We will be diverting a specified amount from some of our sales into the SCRI
 - Funds will be used to **develop free carbon footprint data, tools and resources**
 - Publication of an annual impact report disclosing the amount raised and use of funds
 - <https://circularecology.com/scaling-carbon-reductions-initiative.html>



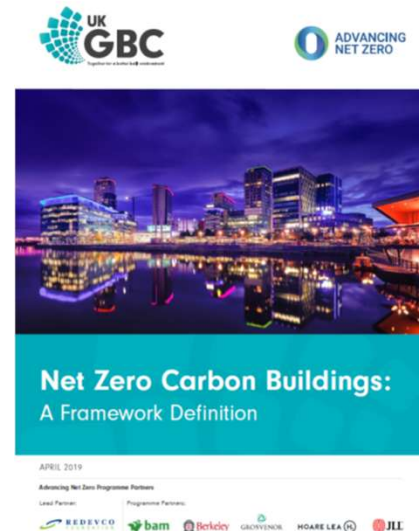
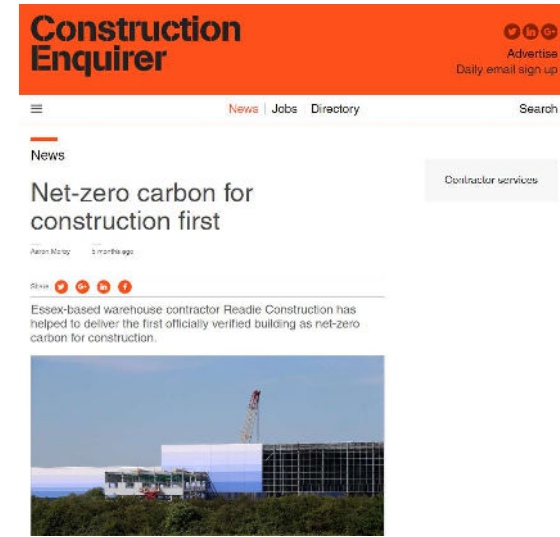
Scaling Carbon Reduction Initiative (SCRI)

Products that make a contribution to our **Scaling Carbon Reductions Initiative (SCRI)**

- **e-learning training courses** – 66.67% of ex. VAT sales diverted until June 25
 - Intro to carbon footprinting
 - Intro to Life Cycle Assessment
 - Intermediate embodied carbon in construction
 - [under development] Sustainability 101 training course
 - <https://circularecology.com/training.html>
- **Carbon offset credits** - £1 ex. VAT per tCO2e offset
 - <https://circularecology.com/product-category/carbon-offset>
- **Tree planting packs**
 - Recently added to our website online store
 - 25% diverted (exchange rate dependant)

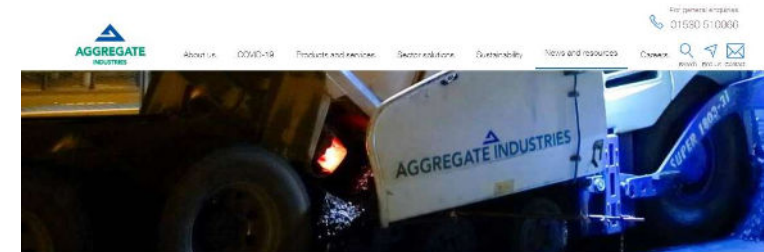
World's First UKGBC Net Zero Carbon Building

- **GLP Magnitude – Net Zero Carbon Construction**
 - **Logistics centre - 29,183 m² GIA**
 - **First building verified to UKGBC as Net Zero Construction (Embodied carbon)**
- **Circular Ecology:**
 - **Measured embodied carbon**
 - **Advised on carbon reduction**
 - **Took through the Net Zero Carbon verification process**
 - **Provided the carbon offsets - 11,735 tCO₂e**
- **Example news:**
 - <https://www.constructionenquirer.com/2020/08/25/net-zero-carbon-for-construction-first/>



UK's First Carbon Neutral Road

- **UK's First Carbon Neutral Road**
 - Circular Ecology provides carbon offsets to Aggregate Industries
 - Including for Highways England's A590 M6 J36 to Brettarg Holt resurfacing project
 - **First UK carbon neutral road**
 - **43% lower embodied carbon**
 - <https://www.aggregate.com/news-and-resources/press-releases/first-carbon-neutral-pavement-scheme>



The Extra Green Mile – Aggregate Industries Completes UK's First Carbon Neutral Pavement Scheme

Aggregate Industries > News & resources > Press releases > The Extra Green Mile – Aggregate Industries Completes UK's First Carbon Neutral Pavement Scheme

The contracting division of Aggregate Industries has made history by completing the UK's first carbon neutral pavement scheme as part of Highways England's A590 M6 J36 to Brettarg Holt resurfacing project.

Now complete, the road improvement project included full depth resurfacing of the dual carriageway between the M6 junction 36 and Brettarg Holt roundabout, along with the roundabout at junction 36. This forms part of the enhanced £81 million, 1,000 scheme designed to reduce carbon emissions to create safer, smoother journeys for road users on the vital route in Southern Cheshire.

Heavily trafficked, the surface had come to the end of its life with deep rutting, potholes and uneven riding posing a real safety risk for drivers. However, Highways England's (H) objective was to ensure the new road was constructed to supply (and) with minimum disruption to customers and the local road network.



Press contacts

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First carbon neutral roadworks completed in UK

By Leila Steed | 26 January 2021
2 min read

Aggregates Industries recycles cold asphalt off site, to lay 1,000 tonnes of road per night



The UK's first carbon neutral pavement scheme used cold recycled asphalt mixed SuperLow asphalt, produced off site, to make a carbon neutral paving surface

The Contracting Services division of Aggregates Industries (AI) has completed work on the UK's first carbon neutral pavement scheme.

AI worked with principal contractor AE Yates and design company AMEY to deliver the A590 M6 J36 scheme for Highways England - the government company responsible for the operation, maintenance and improvement of the country's motorways and major A roads.

The project saw AI carry out resurfacing works to the A590 road and the roundabout at junction 36 on the M6 motorway to Brettarg Holt, which is located north of the city of Manchester.

AI removed the top 32cm (12.5in) of the existing pavement surface and used it to produce an ex situ cold recycled asphalt. This was then mixed with the

Most Read

- Electric crawler cranes new from Liebherr
- Hyundai Heavy closes in on Doosan Infracore acquisition
- Top 10 European construction companies 2019
- Global market rebound forecast for 2021
- Deutz and Deere in engine tie-up
- Hitachi expands Italian network



Introduction to Carbon Offsetting

What is a Carbon Offset?

- Carbon offsetting is a **mechanism to compensate for GHG emissions**
 - By funding carbon emission reductions that occur elsewhere
- Carbon offset credits are the currency (commodities) of carbon offsetting

1 carbon offset credit

=

An emission reduction of 1 tCO₂e

How Do Carbon Offset Credits Work?

- When someone wants to offset their emissions, they need to buy carbon offset credits
- **1 carbon offset credit = 1 tCO₂e**
- 1 carbon credit is the minimum volume (no part credits)

If someone wants to offset an annual footprint of 9.2 tCO₂e, they need to offset 10 tCO₂e to cover these emissions

Carbon Offset Verification Schemes

- Its important to use verified carbon offset credit schemes
- Companies can't just estimate or calculate carbon emissions from reduction activities and claim it as a carbon offset
- There are recognized carbon offset verification & certification schemes



How Do Carbon Offset Credits Work?

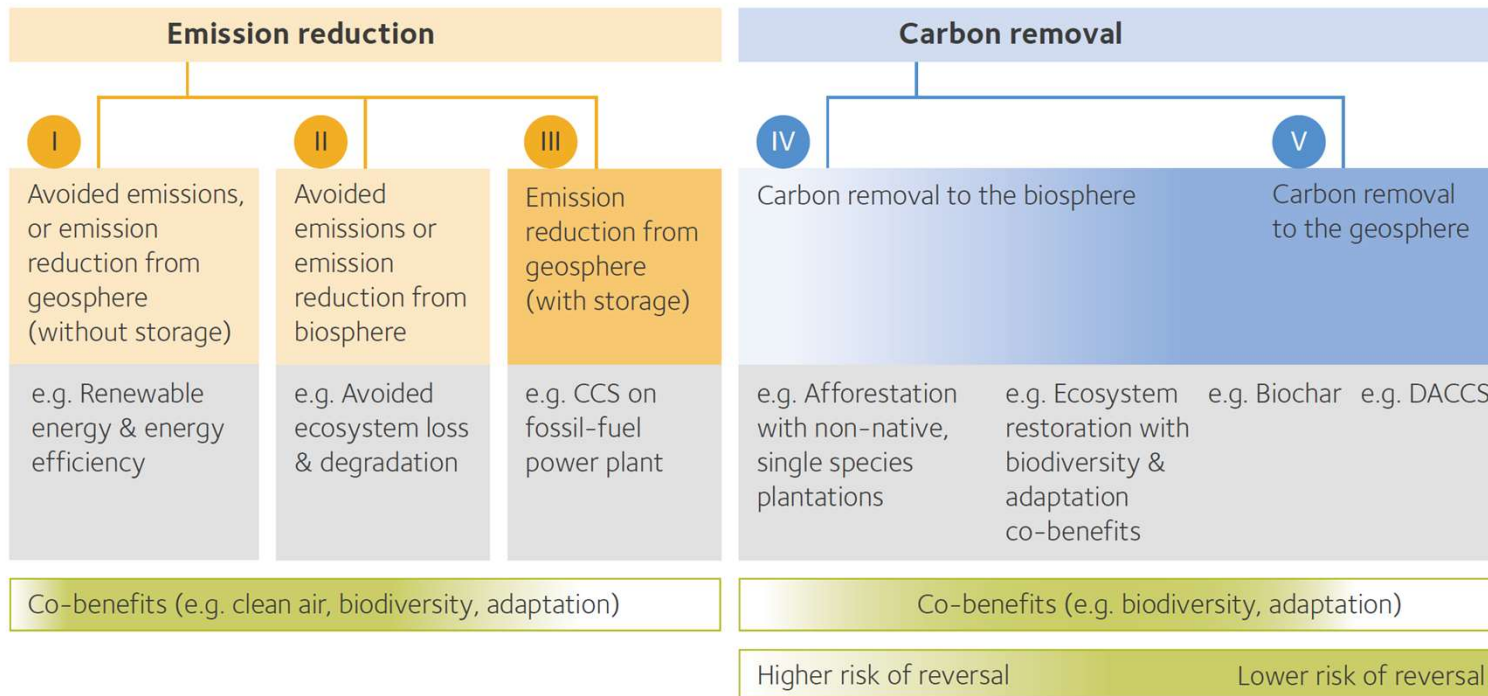
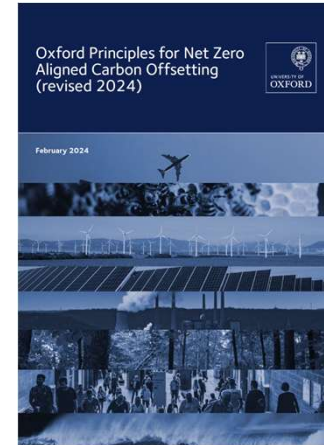
- Carbon offset verification & certification schemes **issue carbon offset credits for specific projects**
- Projects around the world apply to the carbon offset schemes, to have their **carbon emission reductions verified**
- Once the verification is complete, the offset scheme issues carbon offset credits for this project
 - **e.g. 1 tCO₂e, clean cookstove project, Kenya, 2023 vintage**
- Offset schemes have carbon offset registries to track and trace offsets

Traceability

- Each carbon offset schemes has their own **carbon offset registry**
- These are **secure platforms that store all the details of carbon offset credits**
- Carbon offset credits are a tradable (virtual) commodity
- A carbon credit has a digital serial number, to identify it
- **Carbon offset credits are retired when being “consumed”**
- Once retired they can no longer be traded or used for any other purpose
- **Carbon offsets are retired on behalf of a beneficiary and a purpose**
 - For example, Company XYZ, organisational carbon footprint 2024

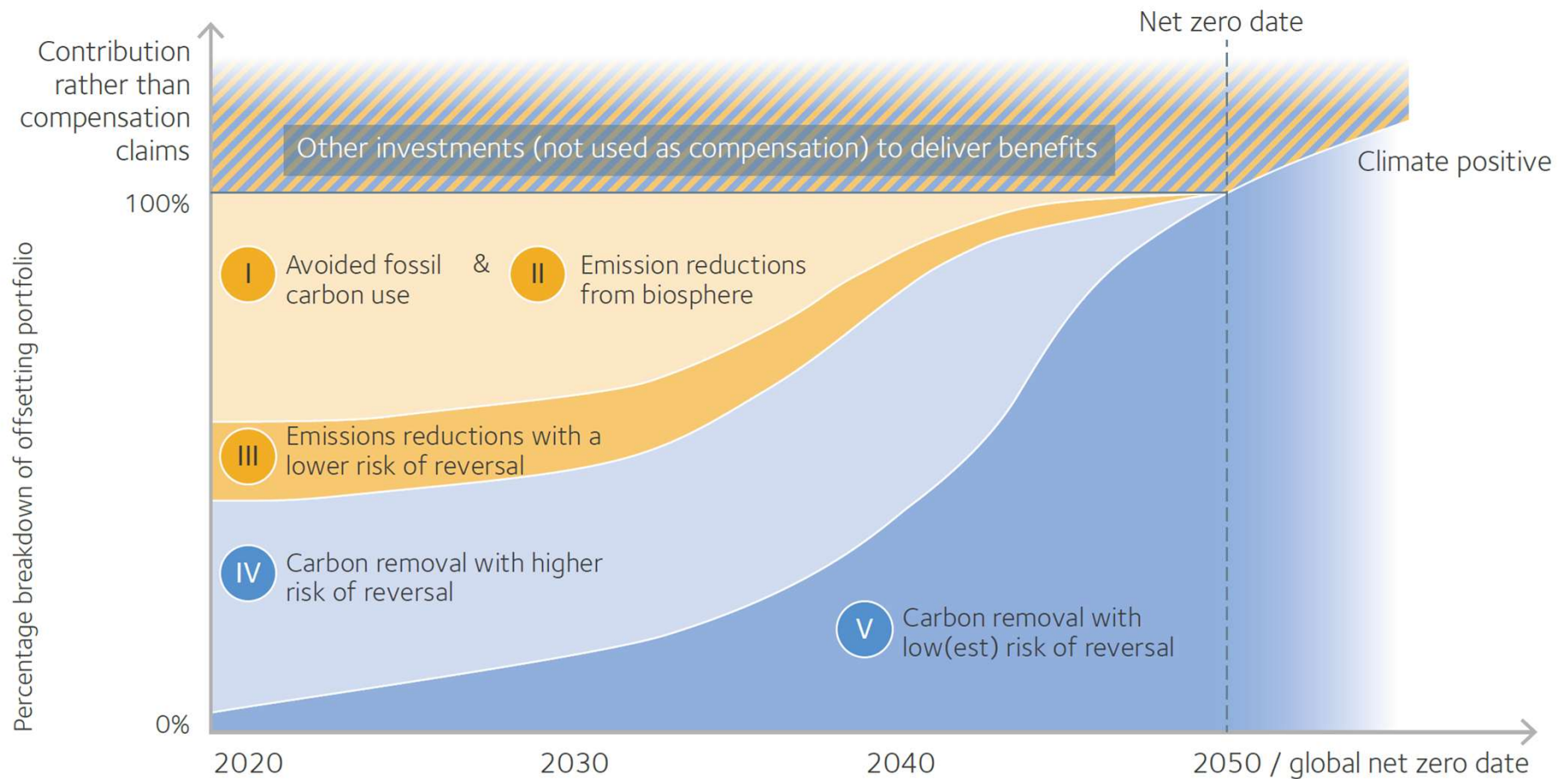
Best Practice Carbon Offsetting

- University of Oxford released Principles for Carbon Offsetting in 2020
 - Updated in 2024
- Two categories of emissions:



Best Practice Carbon Offsetting

- Over time expected to move to carbon removal offsets....



Our Approach

Carbon Offsetting

- **Verified carbon offsets** to businesses and consumers
- **Focussing on the wider benefits** of carbon offsets
- From **credible schemes**:
 - **Gold Standard**
 - **Verified Carbon Standard (VCS)**
 - **Plan Vivo**
- We do not use UN Clean Development Mechanism for business
- All offsets are retired on official registries
- Provide offsets for:
 - **Carbon Neutrality**
 - **Net Zero Carbon Buildings**



Beyond Carbon Offsetting

- Our approach was developed to provide more than just carbon offsets
- Buddied to the carbon offsets:
 - **1 to 4 trees planted for each 1 tCO₂**
 - Additional to the carbon offset
 - **Rounding off the environmental story,** beyond carbon offsetting
 - Creating wider socio-economic & environmental benefits
- We have **large social media networks**
 - 18,000 newsletter subscribers
 - 20,000 LinkedIn followers



Creating Socio-Economic & Environmental Value from Carbon Offsets

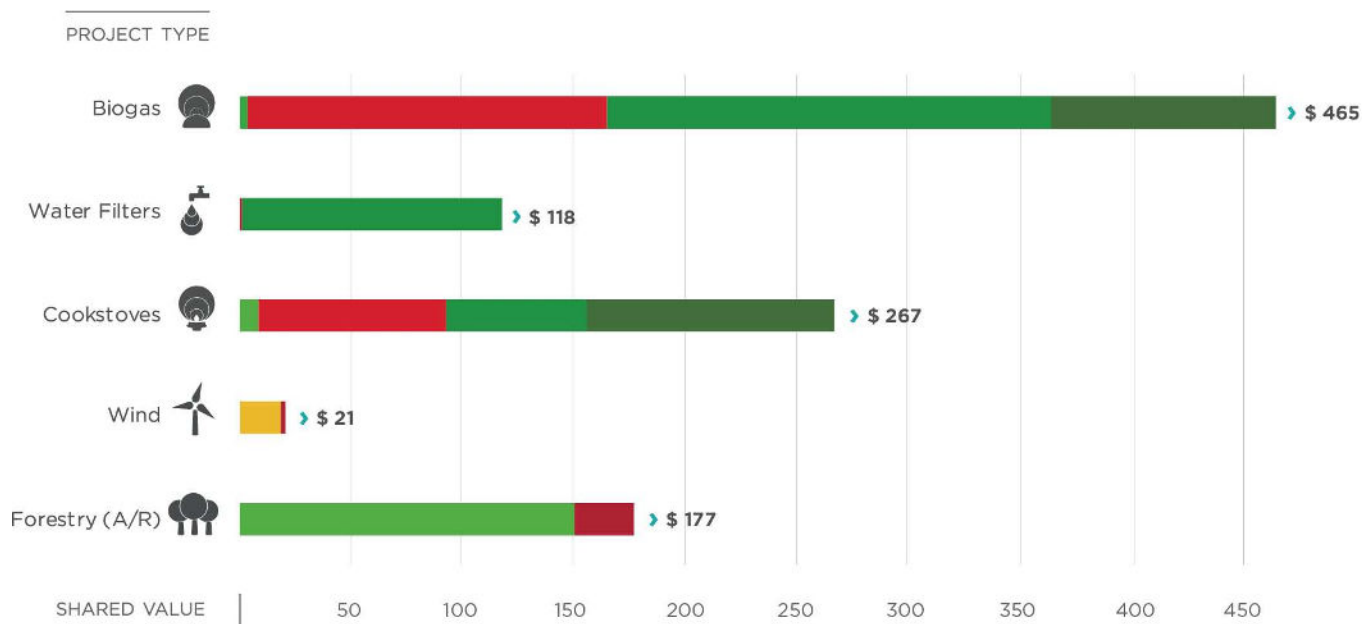
UN Sustainable Development Goals

- Carbon offsets now alignment with benefits against the UN Sustainable Development Goals



Wider Benefits of Offsetting

- There are many **wider environmental, social, economic & environmental benefits of carbon offset projects**
- These **can paint a positive narrative, to balance out the perception of using carbon offset credits**
- The Gold Standard have estimated the **wider socio-economic-environmental benefits** of their offsets, **aligned with the UN Sustainable Development Goals...**



Gold Standard
Climate Security & Sustainable Development



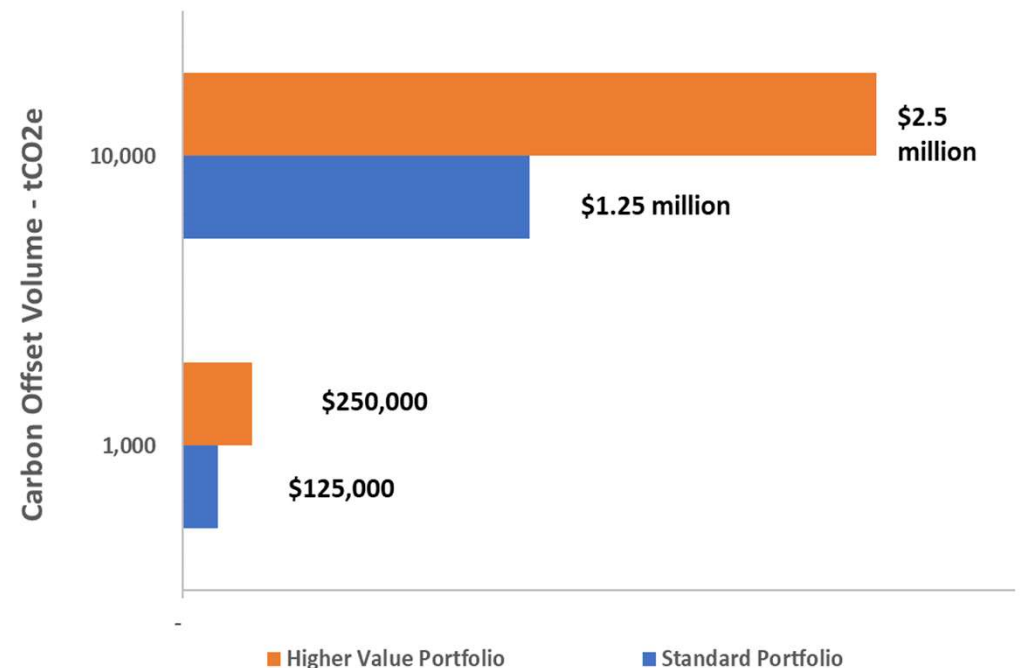
[Source: The Gold Standard]

Socio-Economic & Environmental Portfolio

Overview:

- For example, wider socio-economic & environmental benefit created:
 - 1,000 tCO₂e
 - \$125,000 (standard)
 - \$250,000 (higher)
 - 10,000 tCO₂e
 - \$1.25+ million (standard)
 - \$2.5+ million (higher)
- Amplifying socio-economic & environmental value

Carbon Offsets - Creating Socio-Economic & Environmental Benefits



Offset Projects

Portfolio: Gold Standard Biogas

Project Overview:

- Biogas are estimated to have the highest wider socio-economic-environmental benefits
- \$465 wider benefit per 1 tCO₂e
- Benefits for UN Sustainable Development Goals:



BIOGAS

VALUE
CREATED



Carbon credits issued

Social cost of carbon for the value of the CO₂e saved

Social cost of carbon for black carbon + organic carbon

Decrease in deforestation

Financial savings from reduced fuel use + increased job opportunities

Reduced respiratory illnesses + death



Gold Standard Biogas - Cambodia

- Highest socio-economic-environmental benefits
 - **\$465 societal benefit per 1 tCO₂e**
- Biogas kitchen **air pollution reduced with 88%** (Particulate Matter, **PM 2.5**)
- **\$143 per year saving** on cooking fuels per household
- **Over 90,000 direct beneficiaries**
- On average **5 tCO₂ reduced per digester per year**
- **117 minutes daily time saving** per household
- **Over 250,000 tonnes of wood saved**
- **21,000 households use bio-slurry as fertilizer**



Gold Standard[®]

Climate Security & Sustainable Development

UN Sustainable Development Goal Benefits:

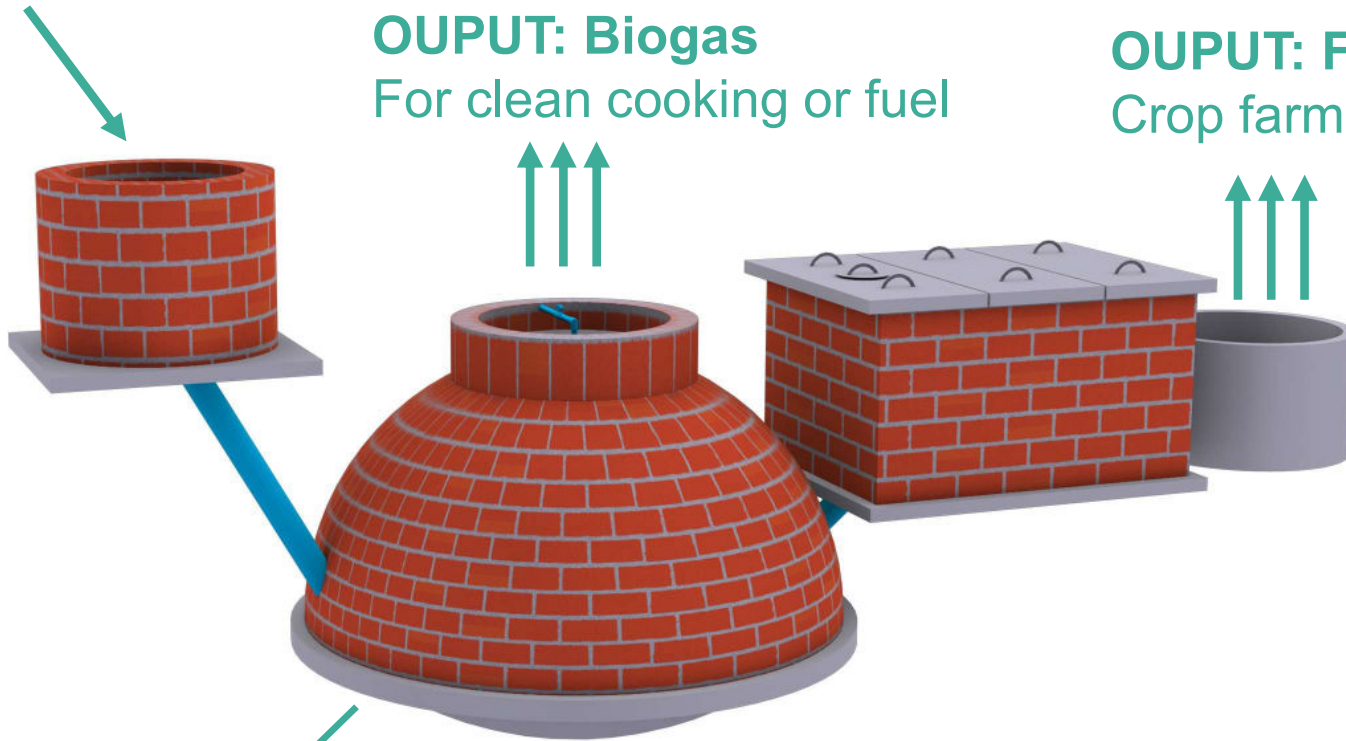


Video: <https://www.youtube.com/watch?v=nsOclQeC1EE>



Gold Standard Biogas - Cambodia

INPUT: Farm Manure
From Pigs & Cows



OUTPUT: Biogas
For clean cooking or fuel

OUTPUT: Fertiliser
Crop farming

Anaerobic Digestion Chamber

Gender Equality Certified - Gold Standard Lango Safe Water

- **First project to be certified under the Gold Standard's Gender Equality Framework**
- Access to safe water is a major challenge and **required the water to be boiled using firewood** which contributes to deforestation
- Creates a burden for women and children who typically collect the water and firewood
- **Estimated that nearly 208 hours saved per year per household** (26 working days per year)
- **40,000 individuals** now enjoy clean water access, reducing the incidence of waterborne illness
- Reported incidents of domestic violence related to water collection **have dropped to zero compared to 35% prior**



UN Sustainable Development Goal Benefits:



CommuniTree - Nicaragua

Project Overview:

- **Agroforestry, Afforestation & Reforestation**
- CommuniTree Carbon Program uses reforestation to **create long-term income opportunities for smallholder farmers**
- **Improving livelihoods in the poorest parts of the world, who are the most vulnerable to the effects of climate change**
 - Farmers typically **earn less than \$2 a day**



UN Sustainable Development Goal Benefits:



CommuniTree - Nicaragua

“This forest is the inheritance for my grandchildren. The trees will provide the wood for their future homes and protect our community’s water supply for years to come.”

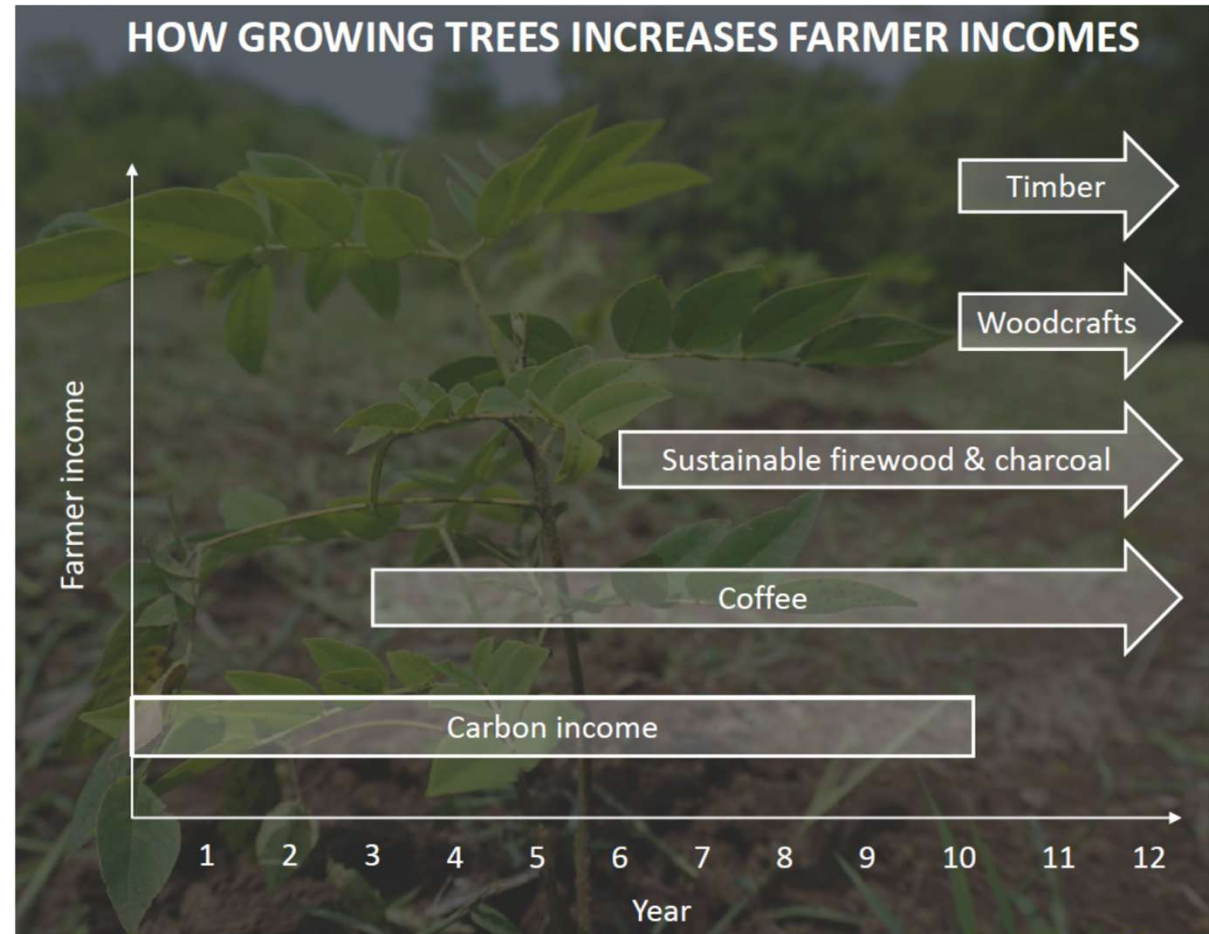
Roumaldo Benavidez

One of the 1,000 CommuniTree farmers

Trees are more **resilient to droughts and flooding** than traditional agricultural crops so their **livelihoods are partially hedged against the risk of extreme weather events caused by climate change**

Building circular forest enterprises

- Tree farming
- Growing coffee alongside trees
- Producing high value wood products



CommuniTree - Nicaragua

Project Benefits:

- **Works with local farmers, to build forest enterprises**, through creating and selling products from the forest they grow, such as high value wood products, biochar and sustainable grown coffee
- **Creates thousands of local jobs annually** for non-land owning farmers, **representing some of the poorest and most vulnerable communities**
- **12,000+ educational workshops delivered annually**, teaching families and communities sustainable farming practices, climate change, local environmental laws
- **Working with over 800 female farmers**, who would otherwise have challenges seeking financing and resources
- **Over 25 million native trees planted**
- **Over 130 native tree species recoded**, balancing the forest ecosystem and wildlife habitats






Videos: <https://youtu.be/GvN127ze1JY>

<https://youtu.be/mSZQMStMmc8>

Other Offset Projects

- **We have an online store page**, which information on other **carbon offset projects**
<https://circularecology.com/product-category/carbon-offset>
- We are **working on automating carbon offset certificates**, for now customers can email us to request a certificate for their order
- **For larger volumes, we encourage people to contact us for bulk pricing (500 tCO₂e +)**

Showing 1–12 of 14 results Default sorting ▾

 <p>CARBON OFFSETS General Offset Portfolio £10.00</p>	 <p>CARBON OFFSETS Gold Standard Portfolio – Renewable Energy £8.00</p>	 <p>CARBON OFFSETS CommuniTree Forestry Project Nicaragua £18.00</p>
 <p>CARBON OFFSETS Gold Standard Biodigesters and Clean Cookstoves Project Cambodia £19.00</p>	 <p>CARBON OFFSETS Gold Standard Biogas and Clean Cookstoves Project Kenya £19.75</p>	 <p>CARBON OFFSETS Gold Standard Biogas Digesters Project Indonesia £19.00</p>

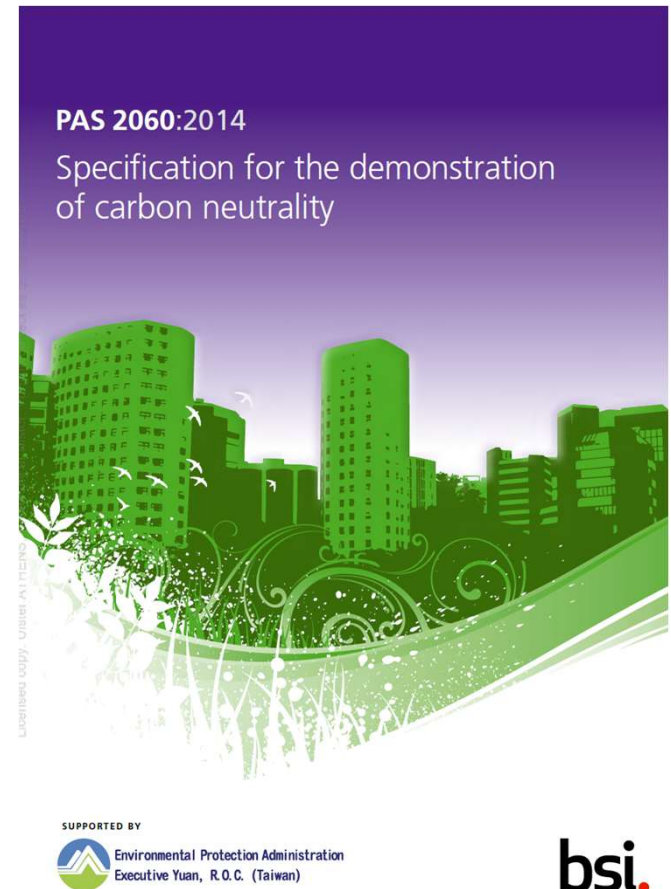
Carbon Neutral

What is Carbon Neutral?

- Carbon neutral is a concept of **mitigating or balancing your carbon emissions**, to be neutral
- For example:
 - Company XYZ released 1,000 tCO₂e emissions from their operations in 2024
 - They can offset at least 1,000 tCO₂e to become carbon neutral
- It's important to make sure that any carbon neutral statements are **aligned with best practices**
 - **Measurement** according to accepted **carbon footprint standards**
 - **Best practice carbon offsetting**
 - **Reduce emissions first**, before offsetting
 - **Commit to reducing your future emissions**

Carbon Neutral Standards

- **PAS 2060:2014 was the first standard on carbon neutrality**
- It set the foundation for **best practice carbon neutrality statements**
- Had high levels of corporate **commitment for reduction**
- And high levels of **public disclosure**, including full disclosure on carbon offsetting
- However, it has **now been superseded by ISO 14068-1:2023**

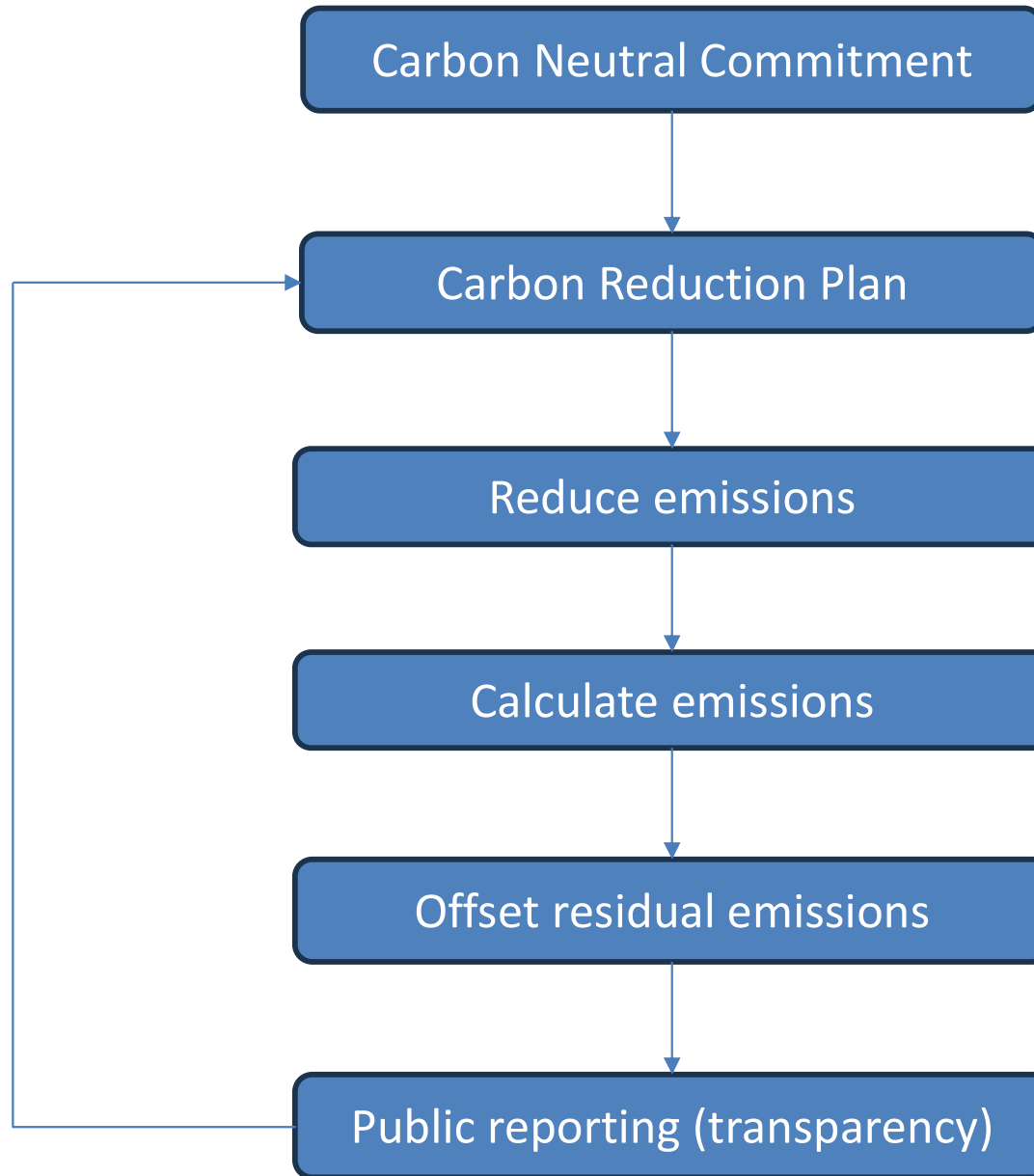


Carbon Neutral – ISO 14068-1

- ISO 14068-1:2023 sets the modern standard for carbon neutrality
- Builds upon PAS 2060
- With increased alignment to carbon footprint standards
 - ISO 14064 for organisational footprints
 - ISO 14067 for products
- Stronger requirements on carbon management plans over a timeline, to reduce down to residual emissions



Carbon Neutral Process - Best Practice



Carbon Neutral

- **Carbon neutral is achieved through carbon offsetting**
- If going carbon neutral, it's **important to adhere to best practices**
 - Measurement in line with carbon footprint standards
 - **Offsetting best practices**
- It's also important to **reduce your emissions before offsetting**
- And making sure you are **committed to reducing your future emissions**
- **Adherence with ISO 14068-1 is recommended** for modern carbon neutral statements

Tree Planting

Embedding Tree Planting Across Our Core Services

- **Tree planting as a core initiative:**
- Tree planting is embedded in all our activities at Circular Ecology, including:
 - **Consultancy projects**
 - **Carbon offsetting**
(4 trees planted per tonne of CO2e offset)
 - **E-learning and training courses**
 - **We plant a tree for every new customer**
- **Scaling Carbon Reductions Initiative (SCRI):**
 - **25%** from our tree planting sales is diverted into the SCRI to help fund the development of free resources and tools



Tree Planting with Eden: People+Planet

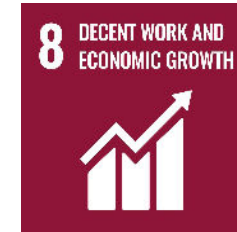
- Circular Ecology are proudly a **Forest Partner** (second-highest tier) of the non-profit organisation [Eden: People+Planet](#) (formerly *Eden Reforestation Projects*), a leader in large-scale global reforestation
- By 2023, Eden had planted over **500 million trees**, employing locals in Madagascar, Mozambique, Nepal, Haiti, and beyond
- Eden aims to:
 - **Improve livelihoods**
 - **Reduce extreme poverty**
 - **Restore healthy forests**
- By employing local people to plant millions of trees every year



Tree Planting: Alignment With UN SDGs

Tree planting activities align with the following United Nations Sustainable Development Goals (UN SDGs):

- **UN SDG 1 – No Poverty**
- **UN SDG 2 – Zero Hunger**
- **UN SDG 3 – Good Health and Well-Being**
- **UN SDG 5 – Gender Equality**
- **UN SDG 8 – Decent Work and Economic Growth**
- **UN SDG 10 – Reduced Inequalities**
- **UN SDG 13 – Climate Action**
- **UN SDG 14 – Life Below Water**
- **UN SDG 15 – Life on Land**
- **UN SDG 17 – Partnerships for the Goals**



Benefits of Tree Planting

- **The role of trees in climate action:**
 - Trees sequester CO₂ as they grow, contributing to long-term reductions in atmospheric carbon
 - Forests absorb around **7.6 billion metric tonnes of CO₂ annually**, playing a key role in climate change mitigation (*NASA, 2021*)
 - Trees **improve soil health and water** regulation
 - They can reduce urban heat islands by lowering city temperatures by up to **12°C** (*New Scientist, 2021*)
 - Find out more: <https://circularecology.com/tree-planting.html>



Future Carbon Storage Potential of the Tree Planting

Some of the trees planted are mangrove trees. Mangrove trees are particularly beneficial to the environment as **they have been found to store 2-4 times the carbon** of mature tropical forests (Fatoyinbo et al, 2017).

Eden has established that the average amount of CO₂ absorbed by a mangrove forest is **308 kgCO₂ per tree**. With an average grow life of 25 years, this works out to **12.3 kgCO₂ per tree per year** (Donato et al, 2011).

Mangroves have an extensive root system that allows them to thrive in muddy coastal areas. Additionally, they are cost effective to grow and maintain so are more likely to survive once planted. Mangrove forests also encourage biodiversity (Komiya et al, 2008).

[A Video About Eden](#)

Benefits of Mangrove Trees

2-4

More carbon stored than mature tropical forests

12.3

kgCO₂e stored per tree per year

308

kgCO₂e per tree over 25-year life



Eden Reforestation Projects



New Tree Planting 'Products' Now Available

- We offer tree planting options through [our online store](#)
- **How it Works:**
 1. Choose the number of trees and place an order
 2. Eden: People+Planet plants the trees in regions affected by deforestation, in collaboration with local communities
 3. *(Optional)* email us for a digital Tree Planting Certificate
 4. 25% of tree sales through our store is allocated to our SCRI to fund free resources, tools, and data for emissions reductions

Online Store / Tree Planting

Showing all 5 results

Default sorting

Product Categories

Carbon Offsets (14)

Tree Planting (5)

Video Training Packages (4) ^

Businesses

Non-profits



TREE PLANTING
Plant 1,000+ Trees



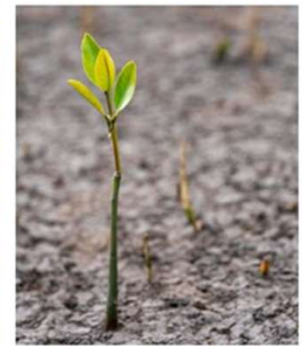
TREE PLANTING
Plant 100 Trees



TREE PLANTING
Plant 250 Trees



TREE PLANTING
Plant 500 Trees



TREE PLANTING
Tree Planting, Per Tree

Celebrating 750,000 Trees Planted

- We have facilitated the planting of **over 750,000 trees** through our partnership with **Eden: People+Planet**
- Our website now offers tree planting for **£1 ex. VAT per tree**
- **25%** of tree planting sales diverted to our **SCRI fund**
- Our next goal: **1 million trees planted**



Summary

Summary

- **Carbon offsetting is a process to mitigate carbon emissions elsewhere**
- **It's recommended to adhere to best practices**
 - **Reduce emissions first**
 - **Measurement inline with carbon footprint standards**
 - **Best practice offsetting**
 - **Carbon management plan for future emission reductions**
- **Carbon neutrality best practice defined by ISO 14068-1:2023**
- **We recently added tree planting to our online store**
- **We are diverting funds from all carbon offsets and tree planting to funding of free carbon footprint data and tools**
 - **ICE Database updates (free embodied carbon database for materials)**

Next Webinars

- We are planning a **webinar series across 2025**
- Next 2 webinars:
 - **Whole Life Embodied Carbon Assessment of Buildings & Construction** – Thur 27th Feb
 - **Organisational Carbon Footprinting** – March
- **Keep an eye on our networks** for more information
 - Website - circularecology.com
 - LinkedIn - linkedin.com/company/circular-ecology

Thank you for watching

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<https://circularecology.com/newsletter.html>