Heritage Railways and net zero

An existential threat to steam heritage?

Bob Gwynne
Environmental and Sustainability Officer

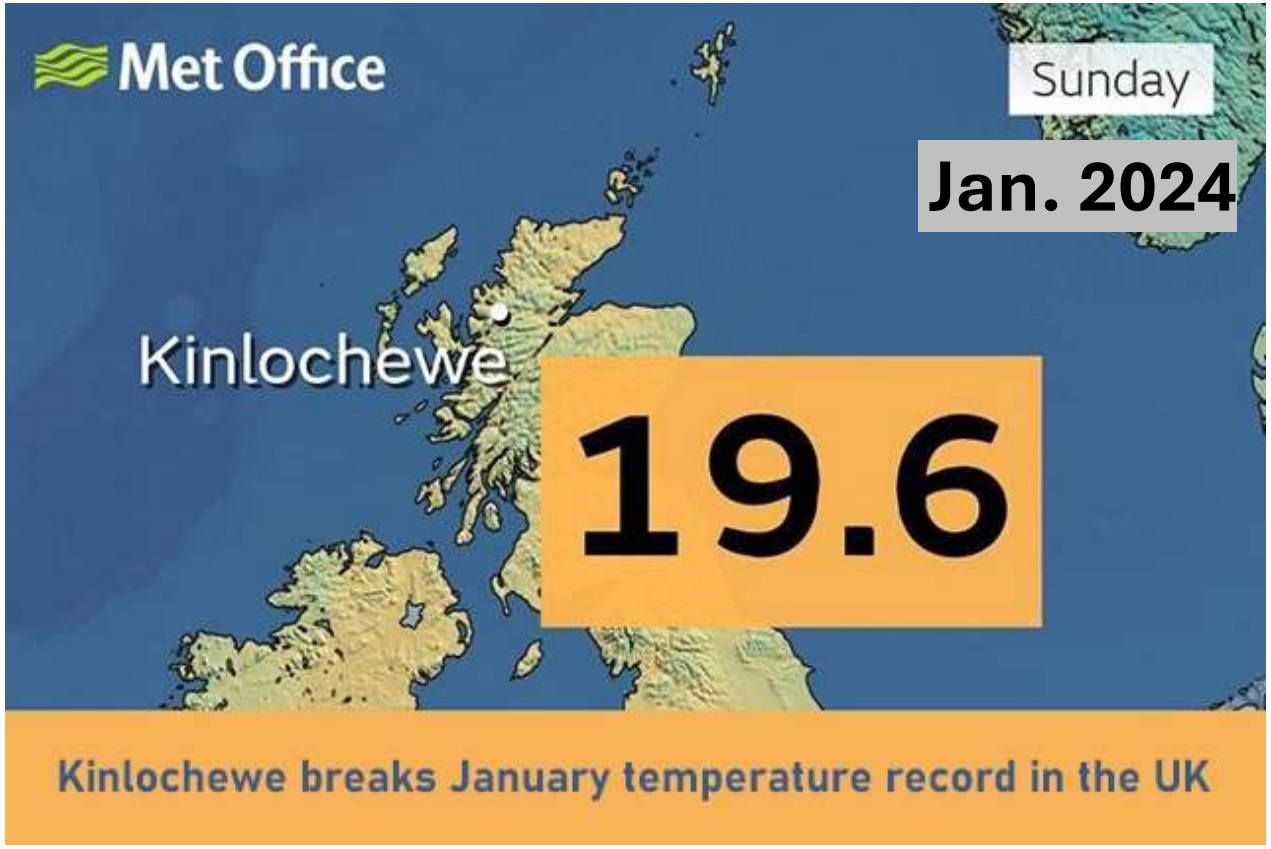
Llangollen Railway Trust

A PEST analysis of where we are now

Politics

GOV.UK

Existing policy - UK Government law 2019 – Net Zero greenhouse gas emissions by 2050



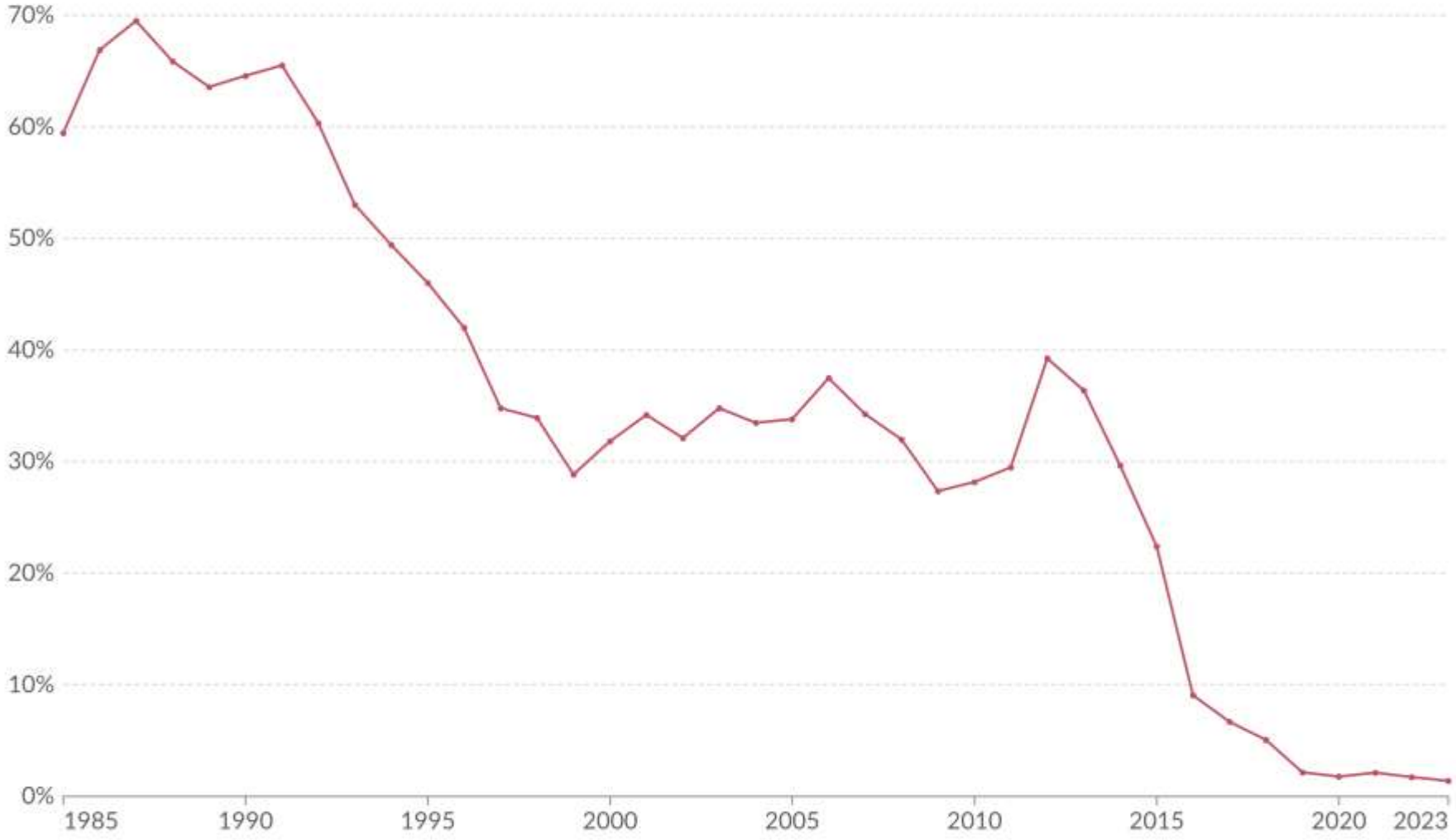
Jan 2024 “UK January daily max temperature record set today at **Kinlochewe** where the temperature reached 19.6C.” – Same Latitude as Riga or S. Alaska

Report 23 Oct. 2024
Average temperature at the Earth’s surface has risen by about 1.48°C since the pre-industrial period. We have just gone through the hottest summer since 1880.

The 7 warmest years on record have occurred between 2015 and 2021.

The death of coal power in the United Kingdom

Share of electricity production from coal.



Data source: Ember (2024); Energy Institute - Statistical Review of World Energy (2024)

Our World in Data. Aug.16. 2024

Steel & Coal

Steel decarbonization. Morfa coke plant closes (last in UK) - March 2024

(Picture is Scunthorpe – coke ovens closed in 2023). Port Talbot steelworks closed.

Cement & Coal

CN Construction News

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NEWS

Cement giant aims to bring UK's first net-zero plant online by 2027

06 APR 2022 | BY TIM CLARK

Coal is being phased out and replaced by various waste products including SIRF, chipped tyres, and sewage pellets

Will **Heritage Railways** soon be the only place in the UK where coal is burnt?

COAL

Coal used in the whole heritage sector, (not just trains) produces a carbon output similar to **300 single flights** across the Atlantic every year

(there are over 80,000 each year)

Chris Price GM NYMR 2023

York and North Yorkshire LEP plans to be a ‘carbon negative’ economy by 2040

NEWS

Heritage rail sector 'must become carbon neutral'

By Marcus Robertson
Founder and former owner of Steam Dreams

IT IS very positive news that, despite mine closures in the UK, the supply of steam coal looks assured for the foreseeable future. One dark cloud has lifted from our horizons – but, potentially, an even bigger related threat is not far away.

For a year, Covid-19 has largely swept away other items normally top of the media and national agenda. The eventual passing of Brexit attracted relatively little comment compared to the all-pervasive bitter national and international in-fighting that dominated the news from the referendum until March 2020.

However, once the pandemic [illegible] and the remaining post-Brexit squalls die down, climate change will become

The visibility of coal smoke makes the heritage movement a prime target for environmental groups. GARETH EVANS

"What [illegible] is that steam is so evocative in terms of sight, sound, historical resonance, and general

2005 we began offsetting our carbon footprint and, along with Eurostar, we became one of the first trains

emissions can be done using a carbon offsetting organisation. This could easily be done, perhaps through the good offices of the Heritage Railway Association (HRA) and maybe involving Network Rail, without requiring massive bureaucratic effort from each part of the industry.

Looking further into the future, who's to say that within our very diverse and brilliant engineering ranks there isn't the potential inheritor of the genius mantle of Gresley, Bulleid, Stanier, or Churchward, who will design the first standard gauge locomotive to run on a fully-renewable fuel like biomass!

The steam movement can't hope that this goes away. So, as the Covid-19 crisis begins to slip into fish and chip wrapping territory, let's perpare for our next great endeavor – making UK

UK heritage rail sector uses 35,000 tons of steam coal a year or about a shipload

0.02% UK carbon emissions

an option currently, so we need to start thinking now.

The good news is there are very real solutions out there. It can be done relatively quickly and easily – and it needn't be expensive.

Approach

To protect its future, the steam movement should agree that we need to develop a well thought-out, proactive, industry-wide plan – not just on how to rebuff objections, but genuine practical plans to reduce and eventually reverse our carbon footprint and build a sustainable future.

This is entirely possible, but what won't work is hoping it will go away or that it doesn't matter. 'China's emissions dwarf the rest of the world'... no, that is not an answer. Saying that X or Y behave much worse than we do is not a reason for not doing what we can.

[illegible] must be done – at the very least to protect steam's reputation. However, I believe we should do this because it is right, and do so in the spirit of optimism and with a fervent, genuine willingness to preserve our planet. If we do so quickly, we will almost certainly engender enough goodwill to carry on with our passion that gives so much pleasure.

Consultation

Before we set up Steam Dreams, we talked to environmental consultants. The opinion back then in the 1990s was 'any train is better than any car'.

I doubt they would be so sanguine now. At the time it felt like a green light, and we opened up the regulator with our first train to Salisbury in 1999. A full 'Cathedrals Express' programme followed in 2000.

It soon became clear that climate change concerns were growing. In

Offsetting was achieved through tree planting and supporting renewable energy projects in Kenya, Sudan and India. Interestingly, the voluntary passenger contribution, around 1% of the ticket price, was initially taken up by fewer than 50% of passengers, but over the years it has become almost universal as passengers wanted to do their bit.

Steam Dreams' new owner, David Buck, has retained the carbon neutral programme and is going further. The company's new production kitchen is eschewing gas power, instead being fitted with solar panels and a wind turbine.

With more than 100 organisations involved in steam in the UK – whether heritage railways, locomotive owners or main line promoters – if we take action collectively, we can justify our continued existence and potentially do something amazing. Assessing

concerned about the future for steam locomotives and heritage railways which play such an important role in our history and tourist economy.

"With UK-mined coal likely to no longer be available after 2022 or possibly even sooner, this presents a significant problem. The immediate solution is to import, which is even more environmentally damaging than mining in the UK. We must look at new ways of operating steam locomotives while becoming greener and more sustainable.

"Network Rail is doing what it can in helping the HRA with an initiative to create biocoal suitable for steam engines. While this is still at the research and development stage, trials suggest biocoal may be suitable and achievable – hopefully made within the UK in due course.

"If we all work together, we can keep steam traction alive."

Book now for East Lancashire Railway summer *Flying Scotsman* trips

TICKETS have gone to sale for trips to be hauled by A3 No. 60103 *Flying Scotsman* on the East Lancashire Railway on August 29/30 and September 3-5.

Priced at £29.90 for an adult and £18.60 for a child, tickets and seats must be booked in advance, and are valid for one return journey between Bury and Rawtenstall on the train specified. Ticketholders who booked *Scotsman* for the cancelled Easter runs will be contacted directly and offered a priority transfer to the new dates.

The Summer Diesel Spectacular will be held on July 1-3 and the autumn diesel gala on September 17/18. Both events will also feature guest locomotives.

Marcus Robertson, Steam Dreams

Heritage Railway Magazine

2021

What do the ‘climate change activists’ say ?

Consider this website https://www.coalaction.org.uk/about-us/

Heritage railways

All carbon-intensive industries must rapidly innovate and adapt how they operate if we are to survive and thrive into the future. That includes heritage railways.

We trust this is a challenge heritage railways will rise to, because the price of continuing the status quo is higher than jobs and tourism—it’s literally lives, homes, and ecosystems. And that’s true whether the coal comes from Australia or the UK.

Website accessed June 2024

The Guardian view on heritage railways: where the British summertime gets steamy

Editorial

The 600 miles of touristic train track are a national speciality that could not function without volunteers

The railways will need to respond, like the rest of society, to environmental policies. The destructive impact of greenhouse gases is an obvious challenge to a sector that trades on an image of coal-powered transport viewed as a charming throwback.

‘The Guardian’ editorial 27.8.2024

Energybuild

Front page of website for UK's last major coal producer – **Aberpergwyn colliery** licenced to 2039 for coal extraction

Derby City Council

Aims to be ‘Net Zero’ by 2035

“Our Climate Change Action Plan shows our actions to become net zero by 2035. This means that by 2035, we will have reduced our greenhouse gas emissions and have steps in place to remove any remaining emissions from the atmosphere”.

29% of all Derby’s greenhouse gas emissions resulting from transport

The policy then lists the usual- decarbonizing travel, energy efficiency (300 homes so far) and planting 12,126 trees (!)

Other councils with ‘carbon neutral’ plans who lease their land to a heritage railway

Dorset County Council
Carbon Neutral by 2040

Swanage Railway - landlord

Somerset County Council
Carbon neutral by 2030

West Somerset Railway - landlord

Charnwood Borough Council
Carbon neutral by 2030

Great Central Railway - landlord

Cyngor
sir ddinbych
denbighshire
County Council

Landlord to Llangollen Railway Trust

Carbon neutral by 2030 ?

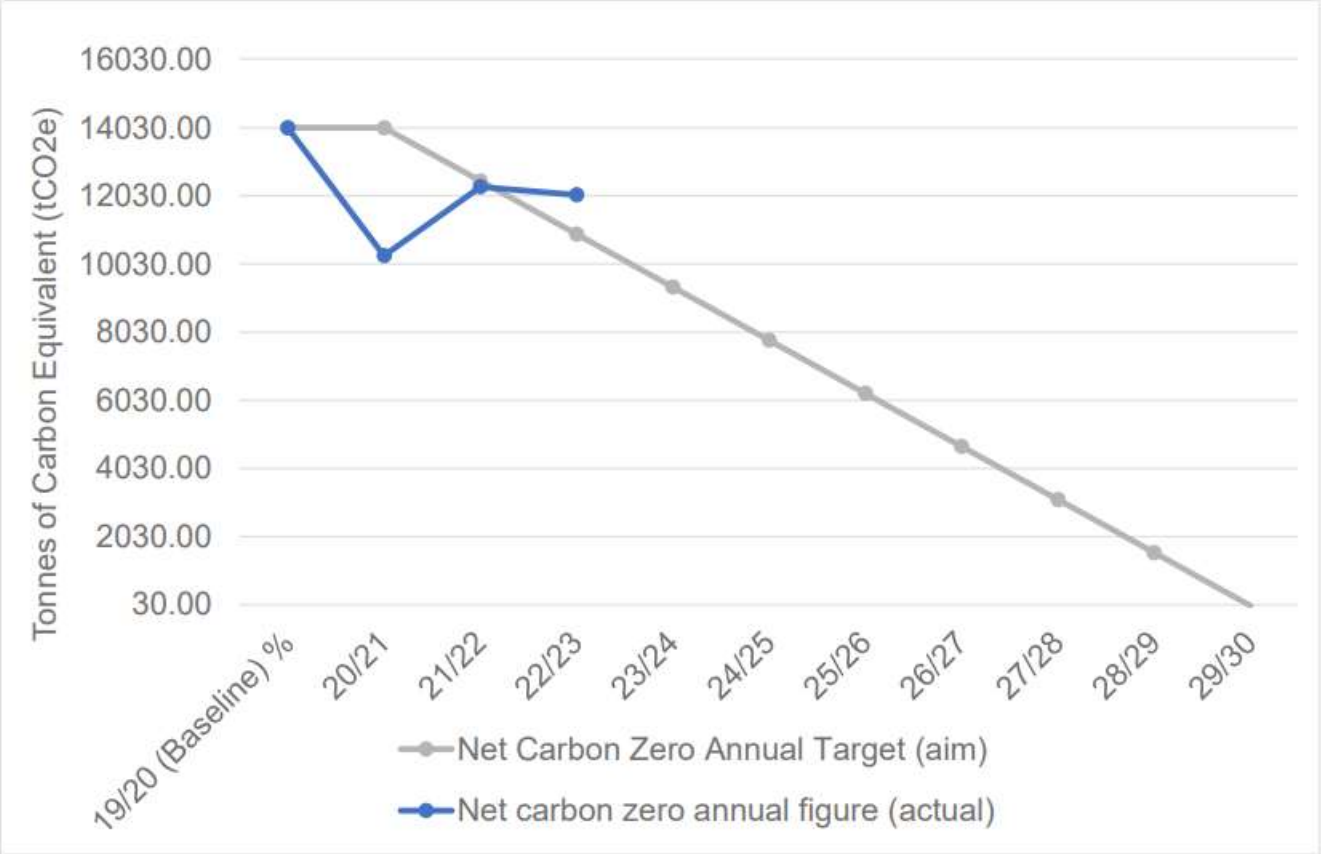
Carbon emissions

The Environment (Wales) Act 2016 (Amendment of 2050 Emissions Target) Regulations 2021 has set an amended target of reducing carbon emissions in Wales to net zero by 2050.

In 2017, the Cabinet Secretary for Environment and Rural Affairs declared an ambition for the public sector in Wales to be carbon neutral by 2030.

Every local authority will have its own 'net zero carbon' target...

Chart 5: Denbighshire Net Carbon Zero Annual Progress up to 2022/23

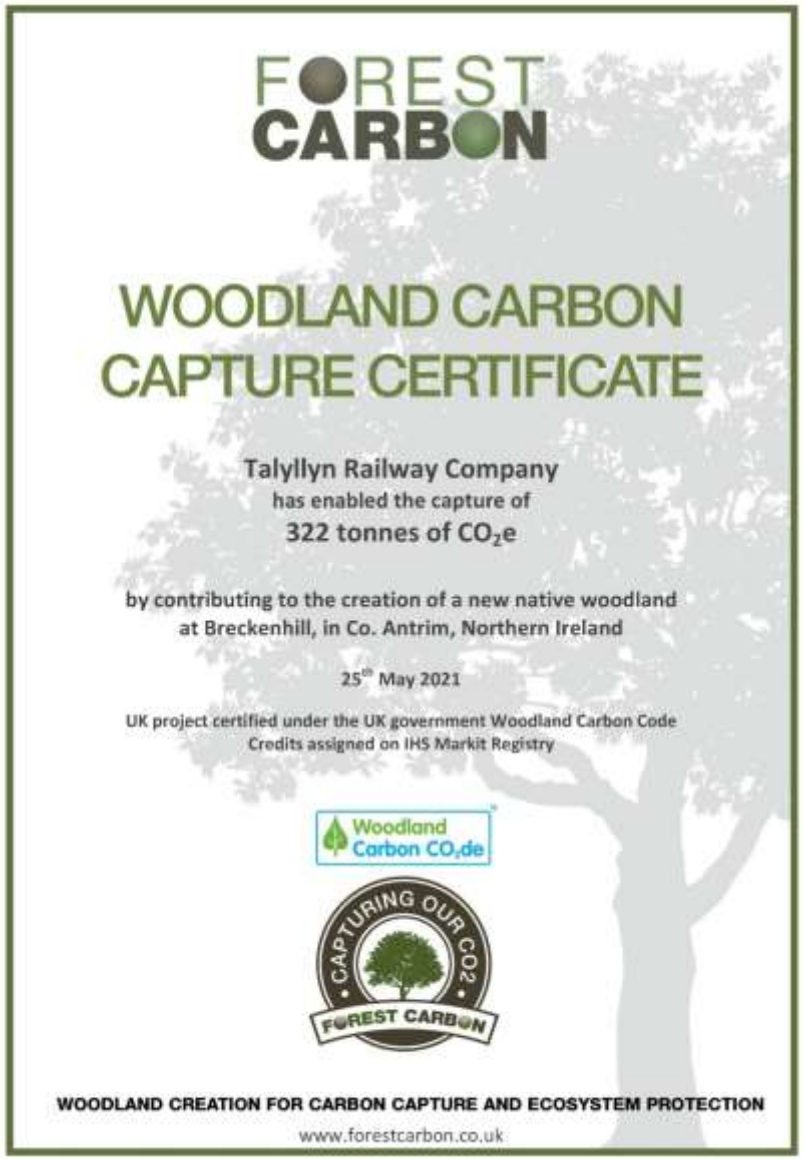


Does not mention tourism

Carbon specific KPI in contracts with suppliers to monitor carbon reduction

RHEILFFORDD TALYLLYN RAILWAY

Environmental Policy



FOREST CARBON

WOODLAND CARBON CAPTURE CERTIFICATE

Talyllyn Railway Company
has enabled the capture of
322 tonnes of CO_2e

by contributing to the creation of a new native woodland
at Breckenhill, in Co. Antrim, Northern Ireland

25th May 2021

UK project certified under the UK government Woodland Carbon Code
Credits assigned on IHS Markit Registry

Woodland Carbon CO_2de

CAPTURING OUR CO2 FOREST CARBON

WOODLAND CREATION FOR CARBON CAPTURE AND ECOSYSTEM PROTECTION

www.forestcarbon.co.uk

Policy from 2021 – the first heritage line leading the field?

Economics

HERITAGE RAILWAY ASSOCIATION

- The heritage rail sector contributes more than **£600m a year** to the UK economy and **employees 4,000** people. (UK Tourism is 8.9% UK GDP - WTTC 2022)
- Alongside the support of more than **22,000** volunteers
- Heritage rail generates **13 million visits a year** and is vital for the **tourism economy** of areas throughout the UK; towns like Porthmadog, Swanage, Bridgnorth and Pickering all depend upon their railway as an anchor for their visitor offer.

Gen Z and Millennials' spending power is growing

Shoppers aged under 40 are becoming an increasingly powerful force in the economy.

Currently, **Gen Z** and **Millennials** account for 25 per cent of the UK's total retail spend.

However, that's predicted to grow to 39 per cent by 2030 as more Gen Z (currently aged 9-24) enter the workforce.

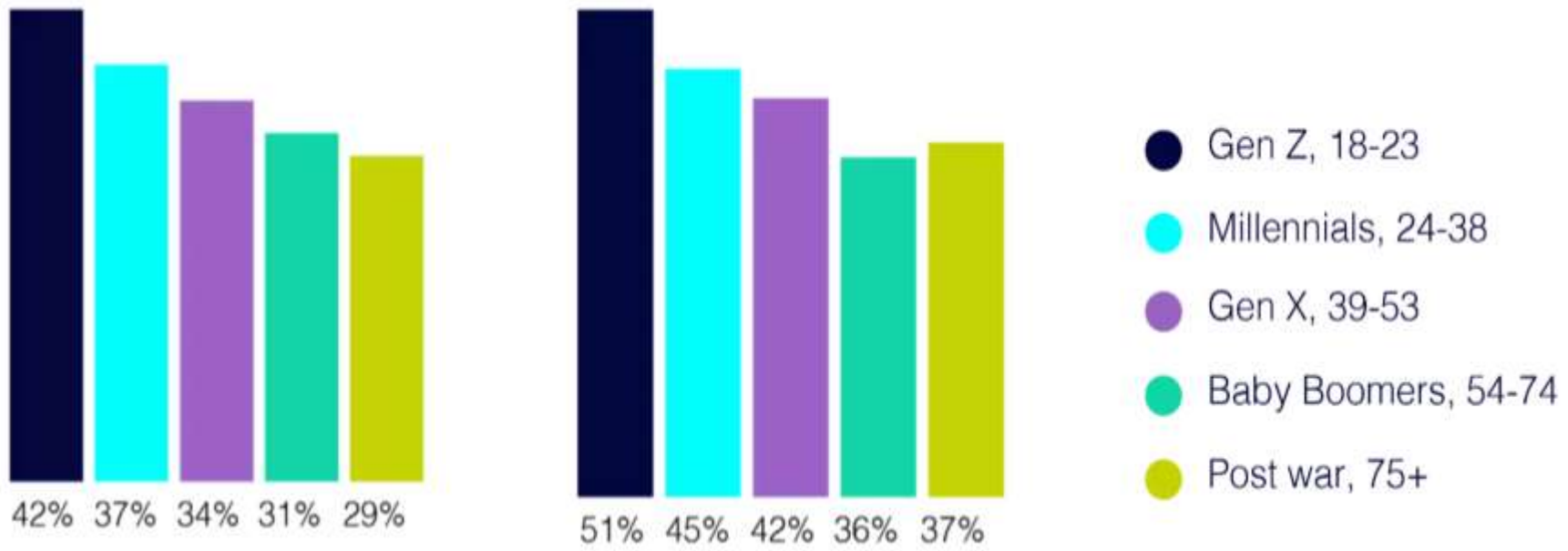
Report 2024

clearpay

Image left is 2012 – the children pictured are now *past* voting age

Concerned about the climate

Willing to make the change



Research with 3,004 UK adults to discover what they think about the UK's net zero goal. Millennials are the largest population group in the UK 14.4 million

Capita

You may think steam is important, but does anyone else?

“Nostalgia ain’t what it used to be” Peter De Vries (1959) **KWVR 2023**

Technical

CPL
FUELLING THE FUTURE

CPL

Europe's largest manufacturer of solid fuel briquettes, pioneering the use of bio inclusion.

Oil and Coal Product Manufacturing · Immingham Dock, England · 2K followers · 201-500 employees

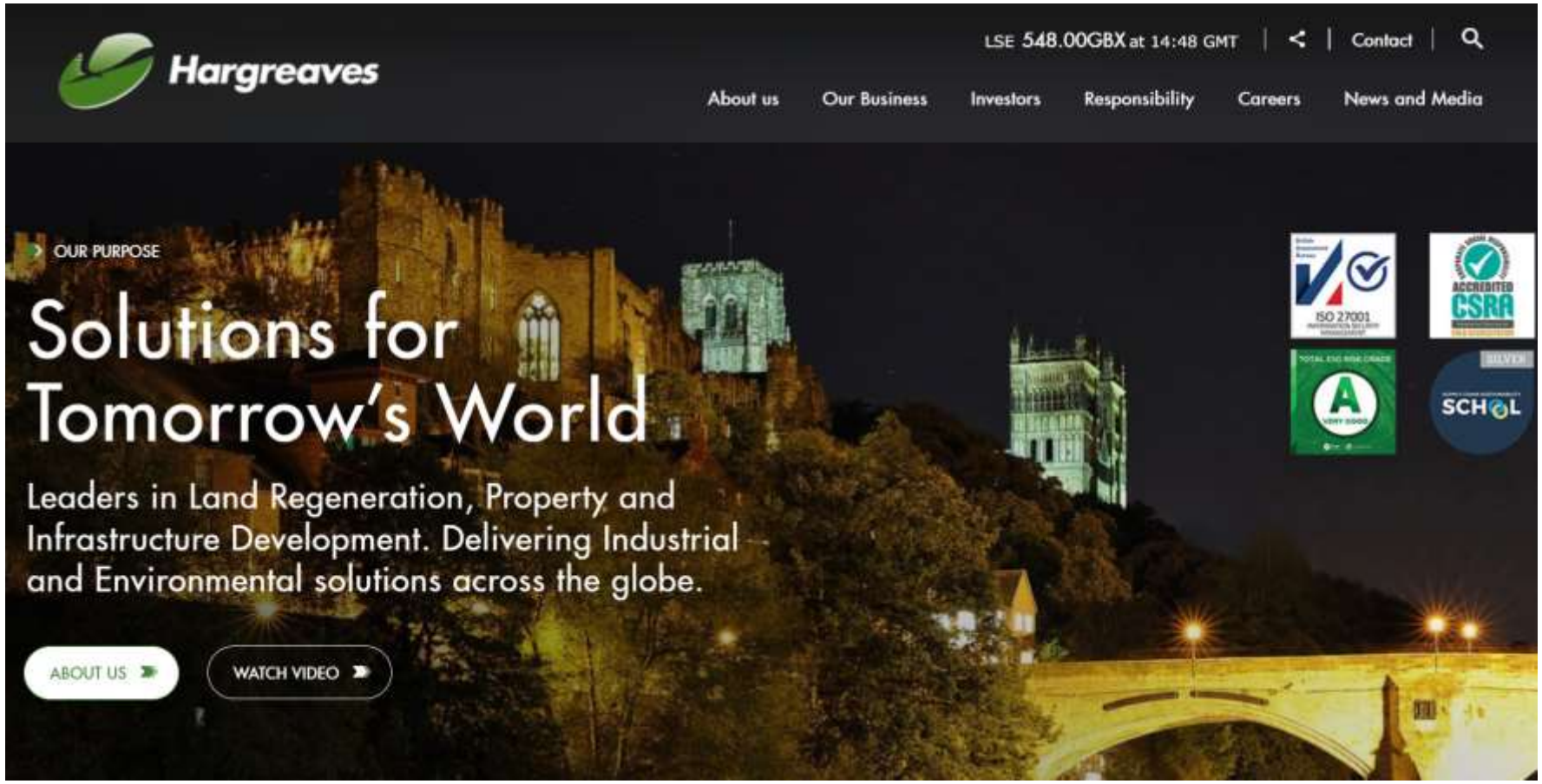
Report of 2022

CARBON CREDITS .com

5. Coal Products Limited (CPL) – "Bio-waste to biochar (B to B) via Hydrothermal Carbonization and Post-Carbonization".

Project funding: £4,997,822.00.

This biochar project will provide the possibility of turning biowaste into biochar in an optimized process design and large-scale production. Biowaste has high potential to improve the supply of raw materials for biochar production. Biochar can make a big contribution to the UK goal of removing 35M tons of carbon/year by 2050.



Buy anthracite from Aberpergwyn - they also sell imported coal...

1:40 Gradient with Arigna Fuels 'Harvest Flame'
Trials at Stradbally Railway, Eire, Sept.2022. They have used it ever since.
Stradbally is about one mile and <u>has no continuous brake</u>

Advanced Steam Traction Trust

HERITAGE RAILWAY ASSOCIATION

<u>UK trials of alternatives to coal</u>

Including 18/19 June 2024

‘Harvest Flame’

a carbon neutral coal substitute

Oil

Oil does not need to be a fossil fuel.

NYMR
WD ’Dame Vera Lynn’ conversion happening now.

S160
No. 2253 ‘Omaha’
Ready in 2025

LNER steam
...burns red diesel

P

Political support for the continuing use of coal for heritage operations is doubtful. The colliery proposal at Whitehaven was quashed by the High Court (2024)
The HRA lobby to retain the mine at Ffos-y-fran (2022) went nowhere

E

Economics – power stations and steel works in the UK no longer use coal.
Cement production needs pulverised coal. Cement Industry target is carbon free by 2050
UK steam locomotives are designed for lump coal.

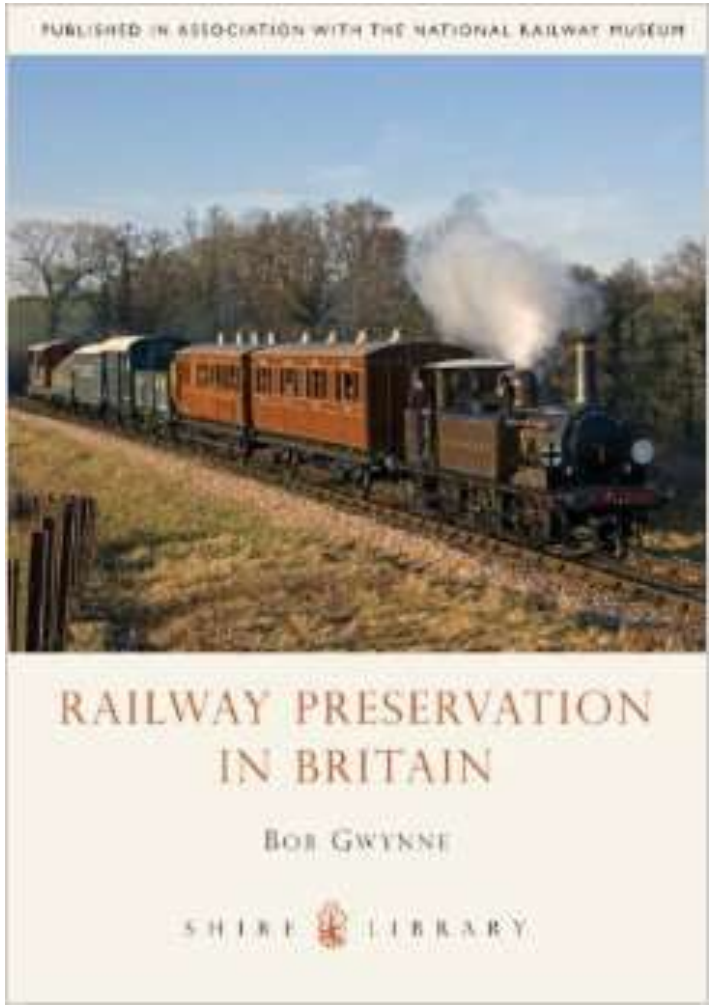
S

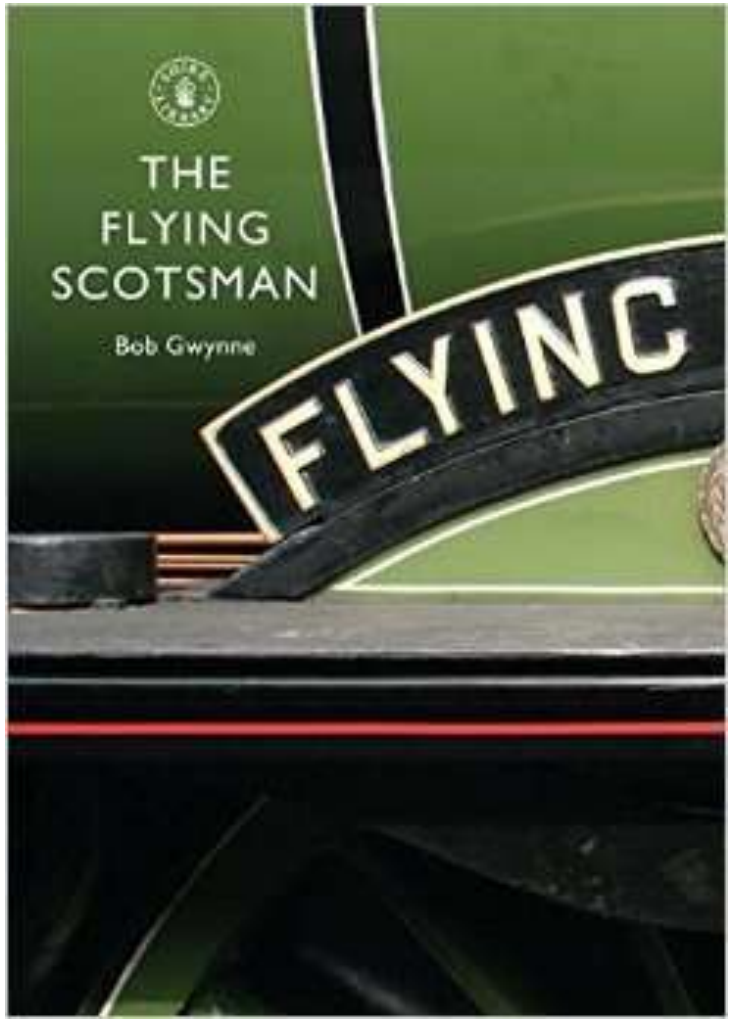
The lobby against using coal is growing. The most economically active section of the population will soon be millennials, and *almost* a majority of these support change to deliver carbon reduction goals

T

“The power of an engine lay in its capacity to boil water” – GNR CME Henry Ivatt. Steam locomotives can use means *other* than burning coal to work well and have done all over the world.

***Where there's a will, there's a way* – or this scene ends**





Thanks for listening.....