

# AgricaptureCO2 Lancashire Biochar Project

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# Outline

- Background
- Lancashire's two pilot sites
- Challenges
- Next Steps
- Conclusion



# Introduction to Biochar

- Biochar is a charcoal-like material produced by heating organic matter in a low-oxygen environment.
- This process, known as pyrolysis, converts the organic matter into a stable form of carbon.



# Environmental Benefits

- Biochar has several environmental benefits:
  - Sequesters carbon
  - Improves nutrient availability in the soil
  - Remediate soil
  - Improves soil structure
  - Enhances water retention in soil
  - Water filtration
  - Improves microbial habitat



# Application in Local Authority Context

Local authorities can use biochar in various applications:

- Urban gardening and landscaping
- Waste management and recycling
- Soil remediation projects
- Climate change mitigation strategies
  - E.g., carbon offsetting



# LCC's AgricaptureCO2 Project

<https://agricaptureco2.eu/>



## Chisnall Hall

a former colliery reclaimed in the 1970s.



## Midgeland Farm

a capped former landfill site.



Environment Agency approved application of non-waste biochar to 3ha at each site @ 10T/ha/pa

3 annual applications 2022-2024

5ha to remain under existing agricultural management, 1ha at Chisnall to be tree planted.



# Regulatory Framework

## **Storing and spreading biochar to benefit land: LRWP 61**

- only spread up to 1 tonne of biochar per hectare over any 12 month period
- only spread biochar created from a defined list of feedstock materials
- store or spread the biochar at least 10 metres from any watercourse and 50 metres from any spring, well or borehole

## **EA Briefing note for permitting of bio-char proposals**

- Starting point is that the biochar will be a waste unless it can be demonstrated otherwise.
- Operators can self-assess end of waste status but are advised to use the Environment Agency's Definition of Waste (DoW) Service to obtain their opinion.

## **Product comparators for materials applied to land: non-waste biochar**

- A chemical analysis of 11 non-waste biochars to aid the determination of end of waste status.



2022



## Midgeland Farm



Midgeland delivery

Biochar 10-20mm fines size.



Soil sampling pre-application



# Midgeland Farm



Loading

Spreading



# Dust



# Post Application



**October 2022**



**April 2023**



## Chisnall Hall

630 tonnes PAS100 compost applied to 1ha woodland planting area.



# PAS100 Compost



# 2023



## Chisnall Hall





**Tree Planting at  
Chisnall Hall**





2024



Midgeland



Chisnall Hall



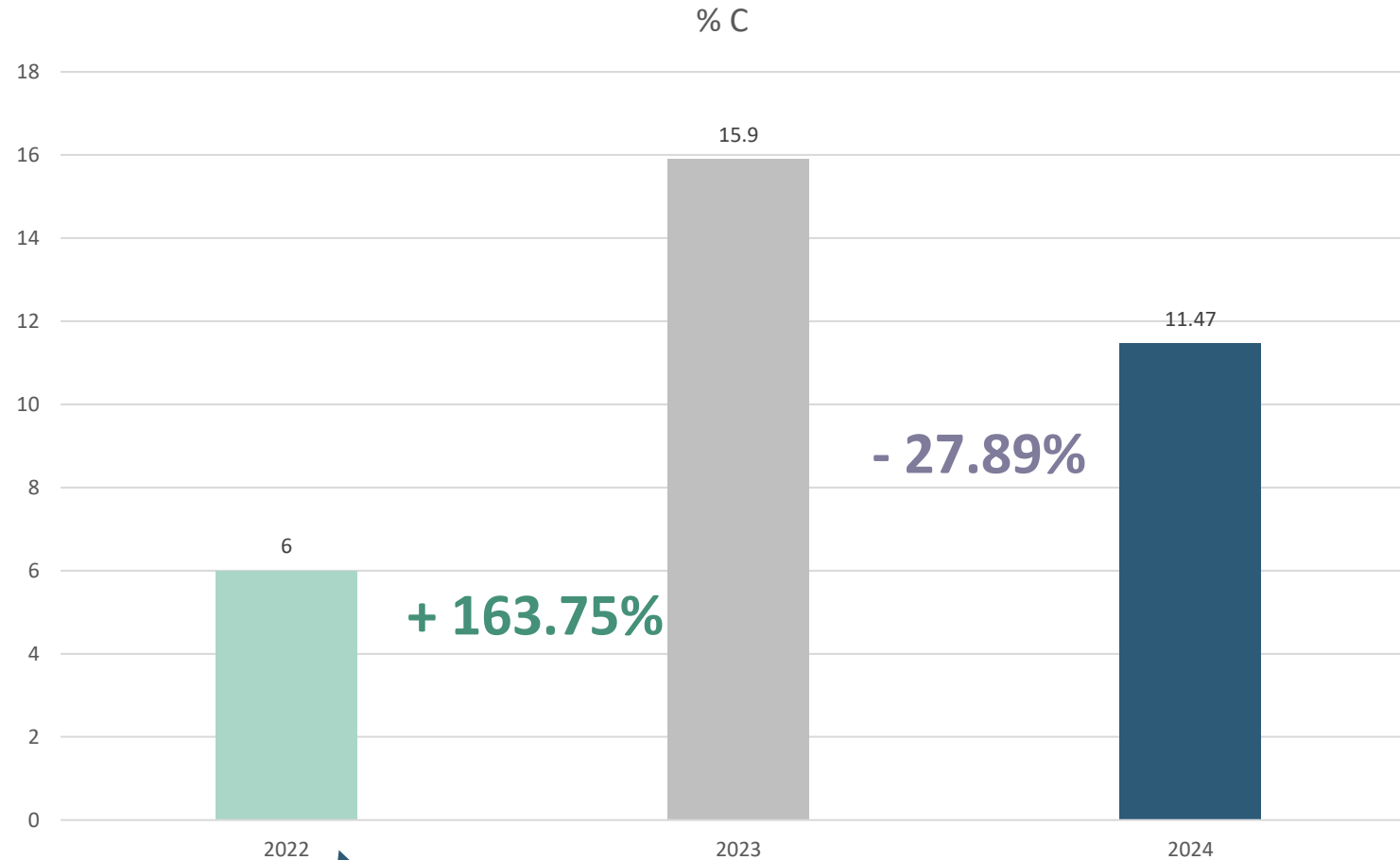
# Results

The working assumption is that 1tonne of biochar is equivalent to ~3tonnes of atmospheric CO<sub>2</sub>.

On that basis 110t of biochar at the two pilot sites have sequestered 330 tonnes of CO<sub>2</sub> since 2022



# Results – Chisnall Woodland

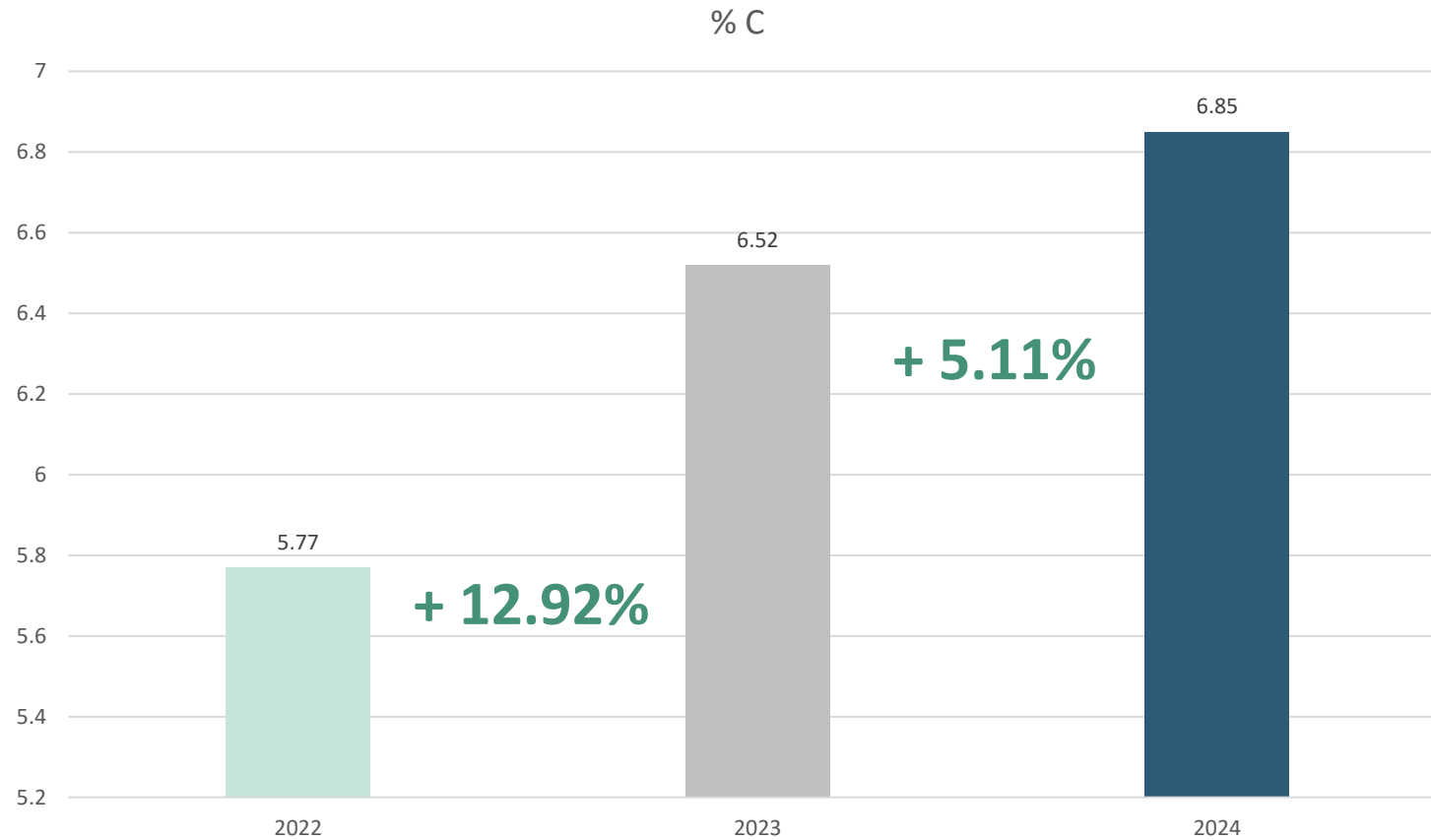


**+ 91.17%**  
2022-24



PAS 100 Compost Applied

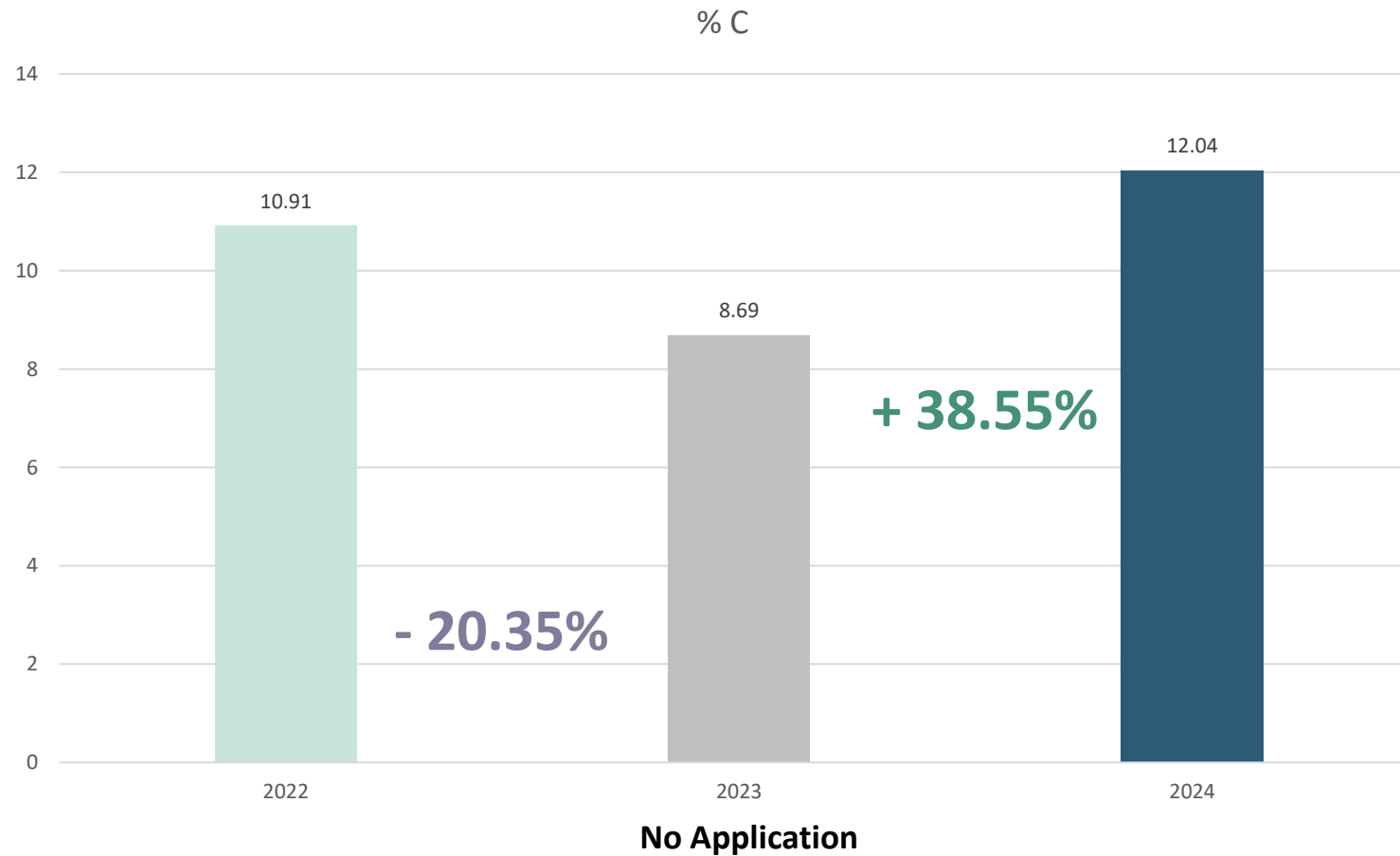
# Results – Chisnall Main Field



**+ 18.72%**  
2022-24



# Results- Midgeland



# What Does This Tell Us?

- The application of biochar does increase the % total carbon
- But, a biochar application rate of 10 t/ha is equivalent to 1 kg/m<sup>2</sup>. At this loading rate, it is likely that soil carbon stocks will only be increased by  $\leq 1\%$ .
- So, it is likely that other factors, e.g., management, are responsible for the significant variation in results.
- Biochar and net zero?



# Challenges

- Weather!!
- Coordination
- Legislation
- Feedstock
- Learning about a 'new' technology



# Next Steps

- Lancashire feedstock
  - Ash die back
  - Highway verges
- Application to more land
  - Agricultural
  - Recreational: sport pitches, golf courses, parks etc.
- Carbon credits



# Questions...

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