



Energy and CO₂ outlook

Jon Swain

NFU Energy

Energy and CO₂

12 months in 25 mins

Jonathan Swain

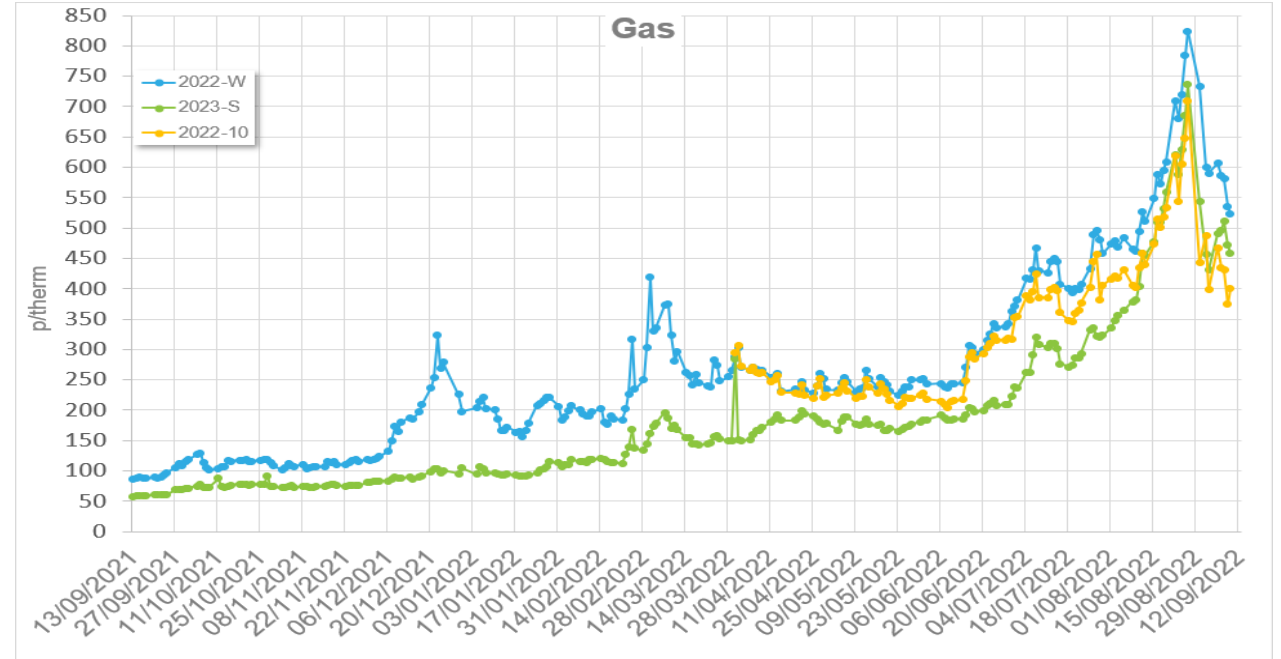
NFU Energy



HORTICULTURE

In this session...

- Energy - news and views
 - What's currently going on
 - What does this mean
 - Is gas CHP still the future?
- Carbon footprinting
 - Where are we
- CO₂ use and sources
- Growsave
- Energy policy



Energy market - last year

Energy Prices – a week in the life



Month	Buy Gas (p/therm) Working day	Sell Elec (£/MWh) Peak weekday
Oct-22	406.99 £	380.13
Nov-22	521.98 £	783.78
Dec-22	583.94 £	777.02
Jan-23	586.56 £	763.00
Feb-23	584.12 £	646.36
Mar-23	550.94 £	645.27

Friday

Month	Buy Gas (p/therm) Working day	Sell Elec (£/MWh) Peak weekday
Oct-22	↓ 372.99 £	↓ 325.46
Nov-22	↓ 468.74 £	↓ 610.93
Dec-22	↓ 532.37 £	↓ 592.49
Jan-23	↓ 544.91 £	↓ 602.68
Feb-23	↓ 543.88 £	↓ 517.15
Mar-23	↓ 513.49 £	↓ 516.11

Tuesday

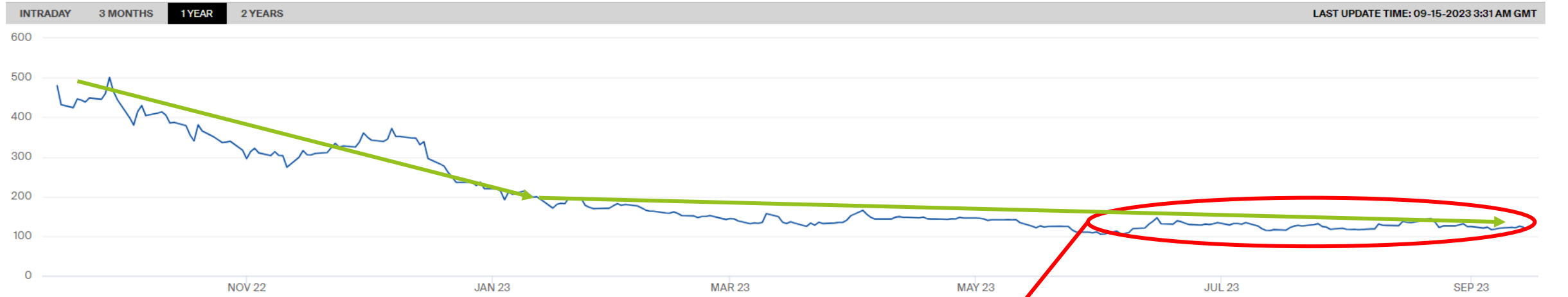
Month	Buy Gas (p/therm) Working day	Sell Elec (£/MWh) Peak weekday
Oct-22	↑ 463 £	↑ 389.13
Nov-22	↑ 573.03 £	↑ 798.74
Dec-22	↑ 660.99 £	↑ 776.30
Jan-23	↑ 666.8 £	↑ 761.07
Feb-23	↑ 668.78 £	↑ 671.21
Mar-23	↑ 642.83 £	↑ 669.97

Thursday

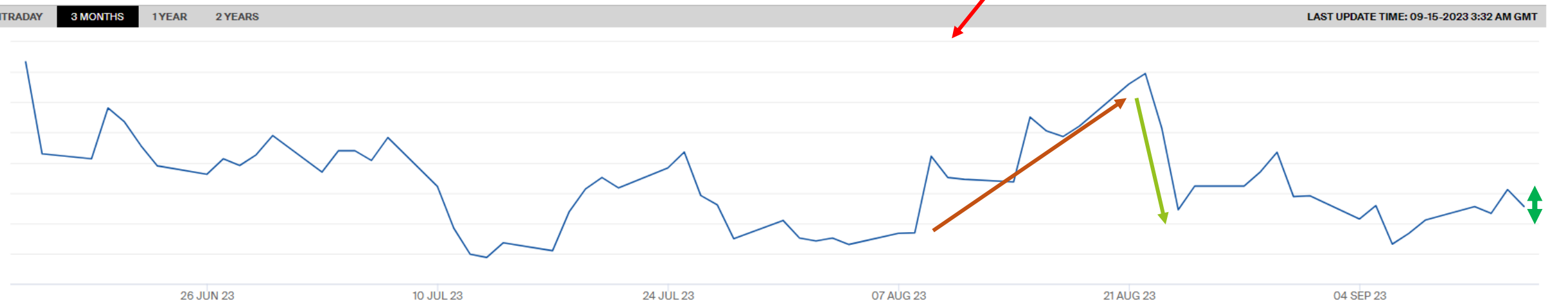
- Gas – 12% swing in 3 days
 - = 50p/therm change
- Elec – 20% swing in 3 days
 - =£124/MWh

Energy Market - today

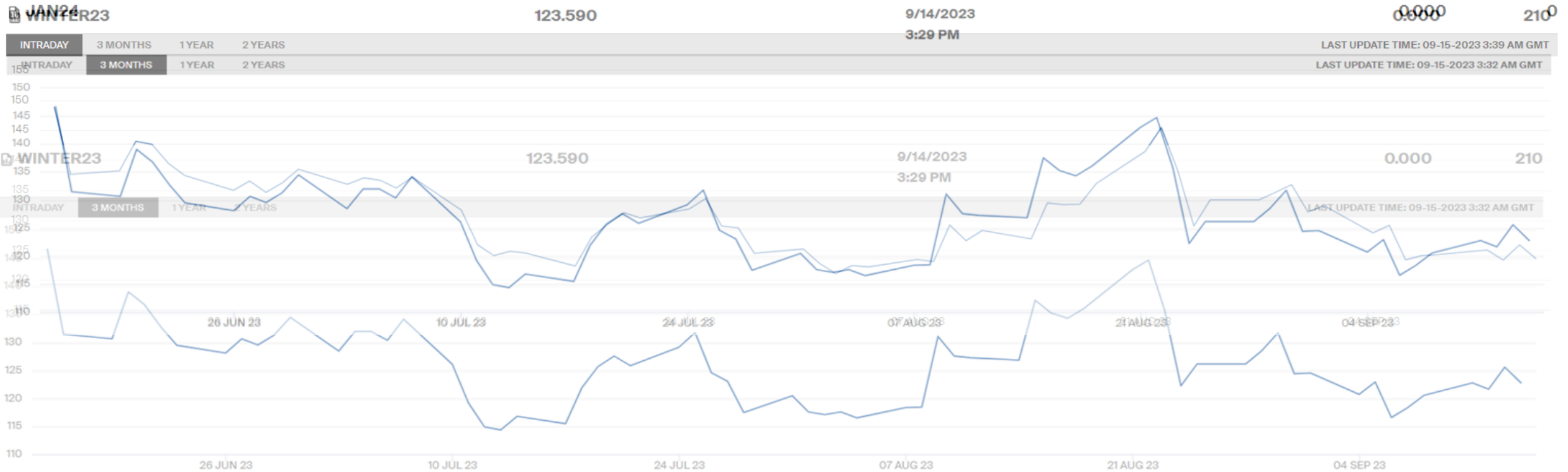
WINTER23 123.590 9/14/2023 3:29 PM 0.000 210



WINTER23 123.590 9/14/2023 3:29 PM 0.000 210



Electricity tracks the gas



- Elec @£120/MWh
- Gas @ 120p/therm
- Simple CHP spread = £13/MWhe.....before taxes, charges and O&M

Government Support for energy bills?

- Energy bills discount scheme
 - Baseline discount
 - Energy intensive industries discount
- Baseline discounts
 - Elec - £19.61/MWh after threshold of £302/MWh
 - Gas – 20p/therm after threshold 313p/therm
- EII discount
 - Better...
 -but horticulture not eligible

Winter Forecast...?

- Warmer autumn than average
- Relatively 'average' winter temps
- Gas storage high in Europe
- Australian LNG strikes
- Russia/Ukraine ...what war?!

Impacts

- Heat is more affordable but still high cost
- Risk premium on forward prices – DA often better value than fix forward
- For CHP
 - Falling prices = squeezed margin
 - Taxes and other charges are ‘fixed’
 - Opportunity for profit decreases
 - Elec sales (just) covers gas cost
- Need to maintain good heat efficiency
- Alternative heat sources?



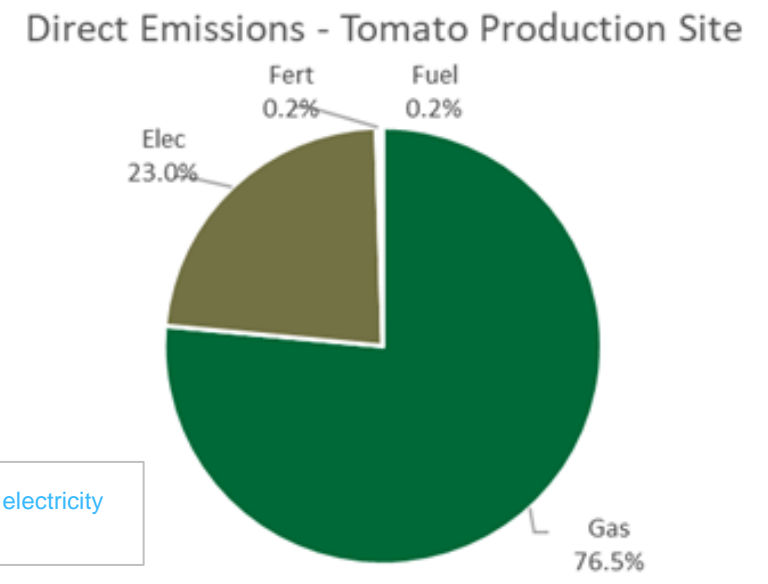
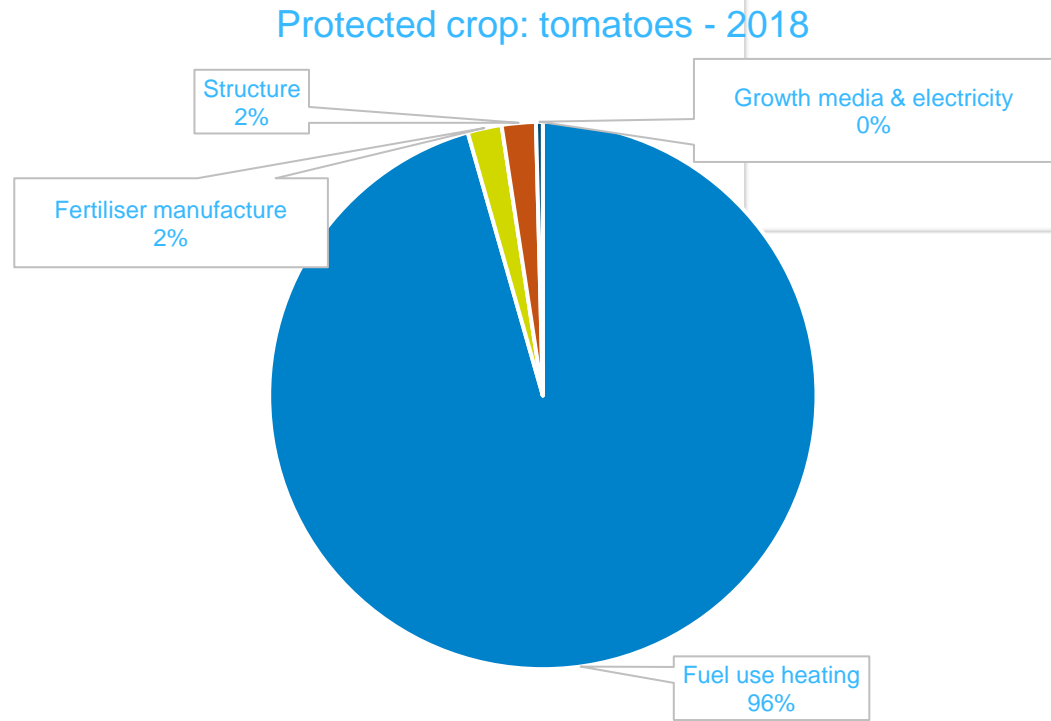
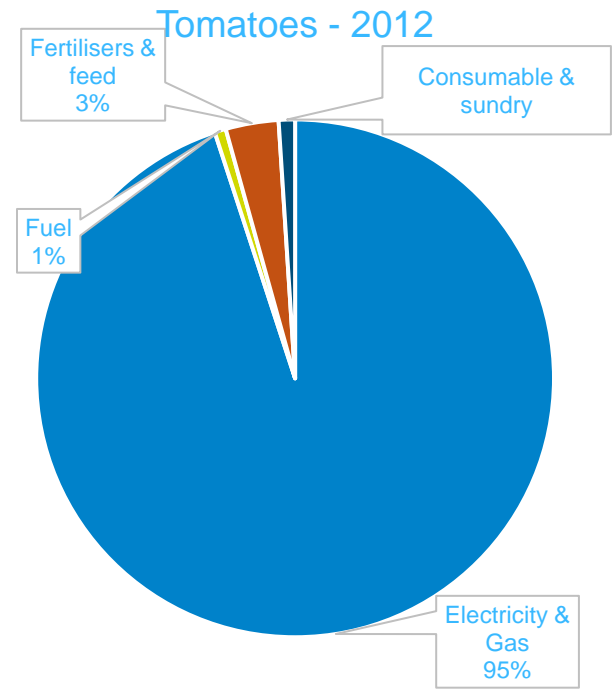
Energy Efficiency – the ‘go to’ solution?

In the meantime, companies with the wherewithal need to be looking for ways they can improve energy efficiency and increase direct energy generation

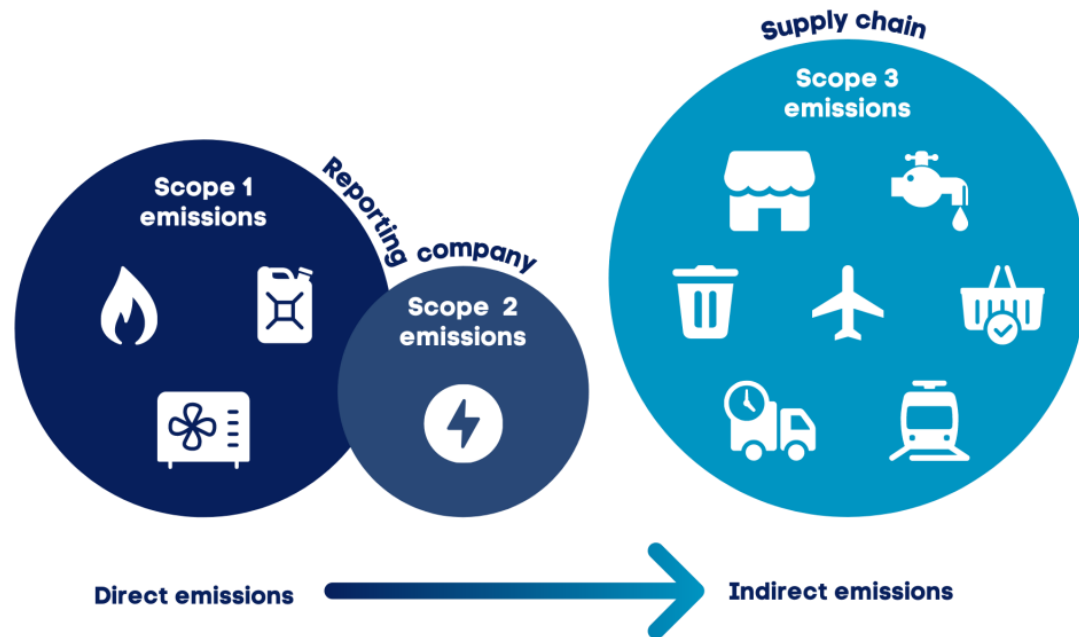
- Insulation
 - Side wall screening / Double/triple screens
 - Heating system components
- Semi closed + air movement
- Turn down / Turn off / Control
 - Maintenance
- Growing strategy adaptation
- Reducing energy use reduces carbon footprint



Carbon footprint – energy dominance



Carbon footprint - Terminology



- **Scope 1:** Direct emissions from owned or controlled sources.
- **Scope 2:** Indirect emissions from the generation of purchased energy for own use.
- **Scope 3:** All indirect emissions (not included in Scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions.

Scope 1+2

And

Scope 3

- Protected horticulture is almost opposite general agriculture
- Easy to tackle (conceptually)
- Mostly:
 - Gas for heating (alternatives need CO₂ supply)
 - Elec (balance depends on lighting)
 - Fertiliser

- Growing media, pesticides, materials (plastic films, packaging etc.), water use, waste handling,
- Opportunities here e.g.
 - More sustainable growing media
 - Recycling water and materials
 - **Use of CO₂**



UK Research
and Innovation

Area of investment and support

Smart sustainable plastic packaging

Carbon footprint - Status

- Bespoke calculations best method for accuracy
- No widespread engagement from consumers?
- Requests for Scope 3 increasing but,
- Less emphasis by customers in last 12 months
 - Cost of living
 - Cost of energy
 - Business protection



Liquid CO₂

- The market has been 'broken' in 2022/23
- Supply chain improvements:
 - New sources commissioning in winter 2023 to autumn 2024
 - Market fixed by end 2024?
 - Still all food grade
- Price = £280 - £350/tonne + (if you can get it)



Alternatives – process emissions

- Entering liquid market @ £250 to £850/tonne



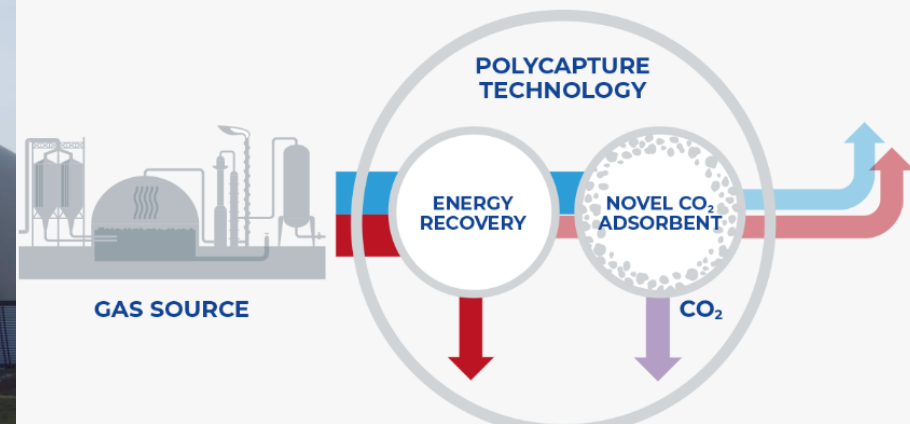
- OpEx - £20/tonne



HOME TECHNOLOGY APPLICATIONS PURCHASE ABOUT NEWS CONTACT

THE SOLUTION

PolyCapture offers a highly selective, low cost, and low energy solution for CO₂ capture and purification. Our Pressure Swing Adsorption system can provide > 95% purity CO₂ with a very low cost of operation, utilising small quantities of energy.



- Cost - £???./tonne

What about DAC?



- OpEx = £140 to £450/tonne
- Capex...??!



Your Answer to a **reliable CO₂ supply.**

Skyltree: Atmospheric CO₂ - reimagined

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About GrowSave

GrowSave is a knowledge exchange programme helping both farmers and growers save energy



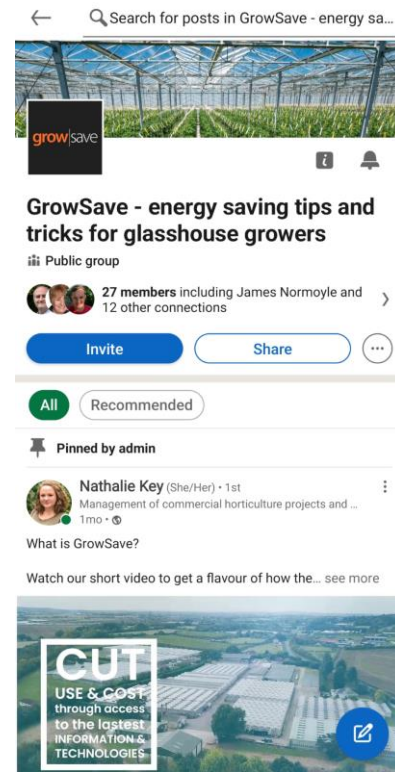
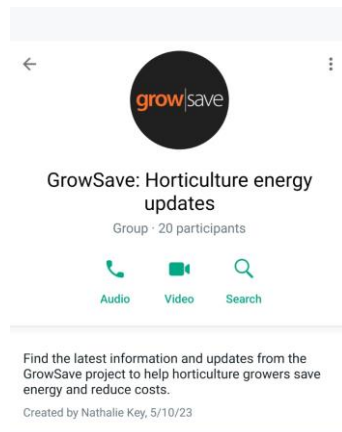
Growsave update

Delivery

- Energy efficiency training courses
- Tech updates on CO₂
- Market updates

www.growsave.co.uk

Also on:



Will GrowSave continue?

- Funding ends Aug 2024
- Where do we go from here?

Energy Policy etc

- CCA/CCL
 - Extension, consultation, opened to new entrants, proposed targets challenged....waiting....
- IETF
 - Consultation, response...waiting...
- DEFRA FIF
 - Proposed inclusion of solar PV support...announcement soon
- UK ETS - Consultation, response received
 - Review of 20MWth limits,
 - Inclusion of emissions from EfW,
 - Exploration of tradeable GGR (negative emissions markets)

Questions?