

Putting anaerobic digestion at the centre of commercial sustainability as part of the clean growth strategy

A Presentation and debate involving a range of speakers to provoke valuable understanding of how the future will evolve during the transition to the 2050 net zero carbon target

Panel

-
- **1. John Turvill:-First Estate Service**
Anaerobic Digestion lead at Ecotricity, farmer and property business owner
- **Jenny Phelps MBE:- FWAG South West,**
Agricultural Environmental Policy Innovator responsible for driving current Defra and Natural England thinking about the merits of herbal leys in agriculture and the Integrated Community Delivery Model.
- **Ian Wilkinson:- Cotswold Seeds**
Owner of Cotswold Seeds who have developed through significant trialling herbal ley mixtures to farm both the top soil and subsoil for ongoing multiple benefits to agriculture, its soil and the environment.
- **Wojtek Behnke:- First Estate Service**
Land Agent with European experience responsible for Aqualate Estate`
- **Fiona Sharman:- First Estate Service**
Master Planning lead at Indigo Landscape Architects Ltd with significant experience in gaining planning consent for renewable energy schemes nationally as a landscape and environment expert.

Jenny Phelps MBE

Farming and Communities

- Has there been a cultural disconnect between farmers/landowners and communities.?
- Do communities feel connected to, and value the farmed environment?
- Do people value their food, water, air and ecosystems enough?
- Are there ways communities could work with farmers to develop projects of for mutual and multiple benefit e.g. Flooding , business
- Is local knowledge being over looked in looking for solutions to problems?



Farming and Wildlife Advisory Group

FWAG South West :

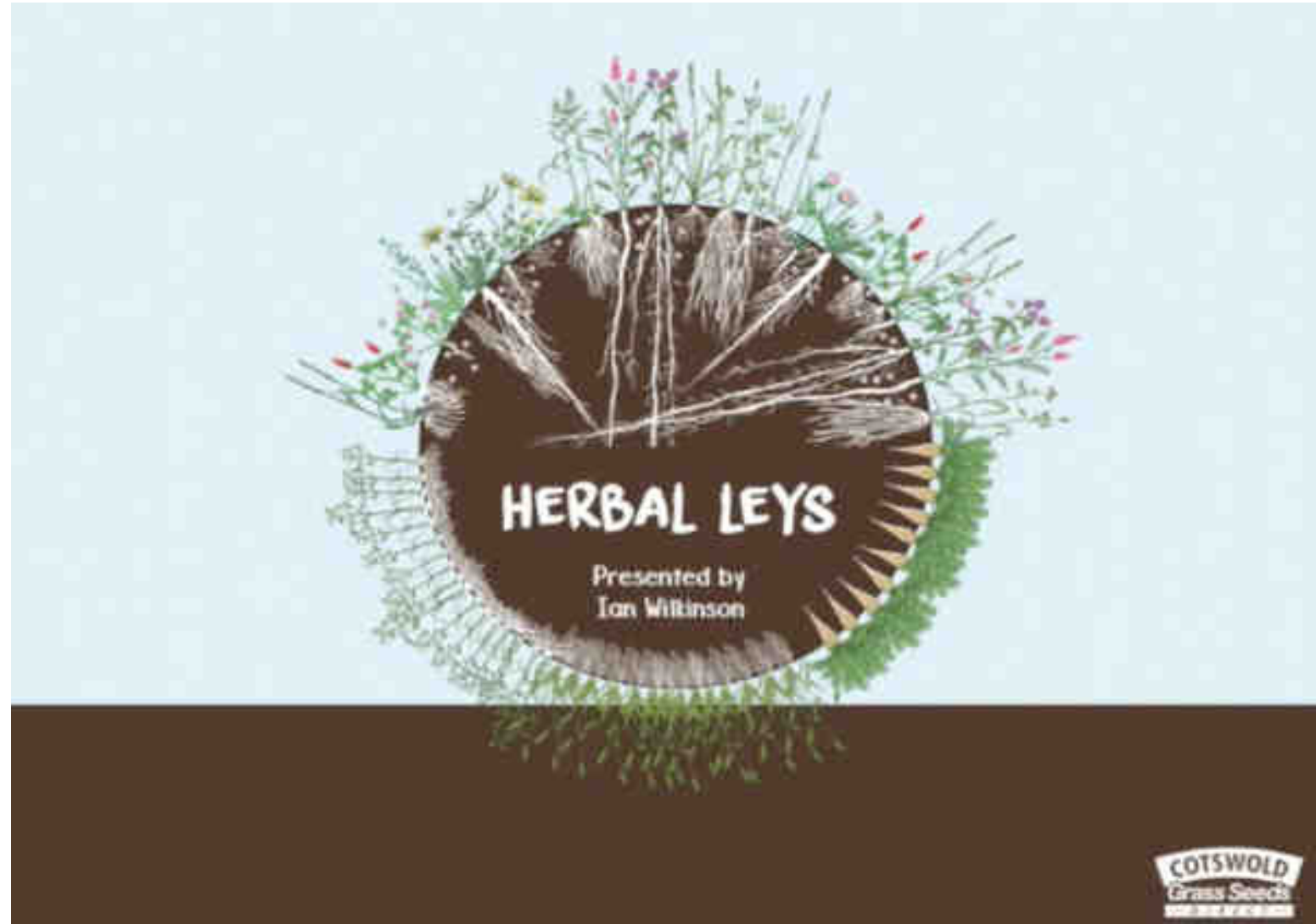
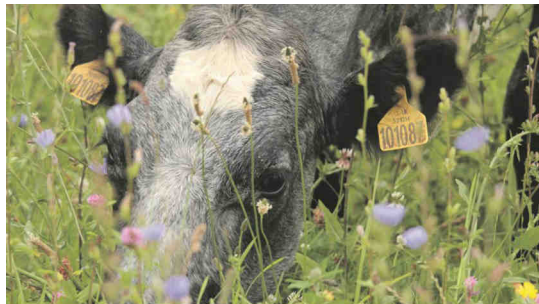
Hawkridge House, Summerfield Way, Chelston Business Park, Wellington TA21 8YA 01823 660684



“promote and enhance the conservation of wildlife, the environment and the landscape in relation to modern agricultural needs.”

Ian Wilkinson

Cotswolds Seeds Ltd



Wojteke Behnke

Aqualate Estate



Aqualate Estate

Newport



- Aqualate Estate surrounds and protects a large mere which is recognised as an important SSSI and RAMSAR site , which is significantly affected by the quality of water feeding it.

Fiona Sharman

Master Planner at Indigo Landscape Architects



Indigo Landscape Architects

www.indigolandscapes.co.uk Salisbury SP1 2EN



INDIGO



The Targets

- Directing policy
 1. Clean Growth Strategy
 2. The 25 year environment plan
 3. The 2050 net zero carbon target
-

The policy influencers

- 1. Cross party developed policy
- 2. The Climate Change Committee
- 3. The Natural Capital Committee
- 4. Public consultation response.
- 5. Industry
- 6. General public

The policy influencers

- Dieter Helm
-



Making the World Listen

- Dr Gail Bradbrook
-



Expressing concern

- Greta Thunberg

-



The academic reference

- Vandana Shiva
-



The impact on all industry

- 1. We have to change energy use practice
- 2. We have to change transportation methods
- 3. We have to be conscious of embedded carbon
- 4. We have to care about product end of life impact

What it all means

-
- 1. We have to change everything we do
- 2. We cant go back
- 3. We have to be more efficient
- 4. We have innovate
- 5. We have to find ways to innovate
- 6. We have to support our case
- 7. We have to create evidence for purposeful appreciation

We have to change everything we do

- 1. We have to avoid fossil fuel consumption
- 2. We have to reduce crude oil refining
- 3. We have to recreate crude oil products from renewable and sustainable materials utilising renewable power in the production process.
- 4. The changes apply to all industry production and consumption.
- 5. The sectors most requiring change are
 - a) Transport
 - b) Energy generation
 - c) Food production
 - d) Construction

We cant go back



We have to be more efficient

- 1. avoid the use of energy
- 2. avoid the waste of energy
- 3. avoid the waste of food
- 4. we have to protect the environment

We have to innovate a) food production

- 1. We have to look at our food production system and develop methods to maintain and increase production with out the support of fossil fuel derived inputs
- 2. We have to stay with in the ecosystem
- 3. Be productive and protect the ecosystem
- 4. We have to be able to support our case against current vested interest claims
- 5. We have to protect the environment

We have to innovate b) our energy usage

- 1. Renewable power is destined to come from Wind and Solar
- 2. Base load supply will be supported with storage.
- 3. Power usage will need to be flexible for cost efficiency
- 4. Base load generation from renewables consumption will need to be flexible with usage options
- 5. Local grids will need to be sophisticated and flexible
- 6. Community projects will need to support flexible use
- 7. We have to protect the environment

We have to innovate c) fuels and storage

- 1. We have to develop and apply new and existing renewable fuels
- 2. We have to protect the environment

We have to find ways to innovate

- 1. Innovation is possible and research confirms it
- 2. innovation draw backs highlight the excess of energy demand
- 3. The excess of energy demand has to be supported from limited and expensive renewable power.
- 4. Renewable power generation will be supported by renewable use application
- 5. Food production in protected growing establishments
- 6. Food processing using renewable power
- 7. Food delivery using renewable power
-
-
-

We have to innovate (cont)

- 8. We have to bio-refine using renewable power
- 9. We have to protect the environment

We support our case

- 1. Economics currently doubt full
- 2. Subsidies ?
- 3. Grants
- 4. Innovation funding
- 5. We have to protect the environment
-

We have to create evidence for purposeful appreciation

- 1. Working examples
- 2. Field scale representations and working examples from R&D
- 3. We have to promote the clean growth strategy through implementation
- 4. We have to protect the environment
-

Solutions!!!!!!!!!!!!!!

- 1. We have to look at the intelligence of the balanced world's ecosystem
- 2. We must learn from the ecosystem
- 3. We must promote and produce from within the ecosystem
- 4. We must protect the environment

Anaerobic Digestion in its ideal form

- 1. Ideally we should have a world without food waste
- 2. We should identify the true value of biogas
- 3. We should use anaerobic digestion as a vehicle of multiple purpose
- 4. We should use anaerobic digestion to justify material practice change in society
- 5. We should control anaerobic digestion to be productive within the ecosystem and to protect and support the ecosystem
- 6. We ensure that anaerobic digestion is a long-term infrastructure

The short term hurdles

- 1. Public acceptance
- 2. Acceptable public impact
- 3. Economic justification
- 4. The energy grid
- 5. Planning laws
-

The ideal anaerobic digestion project

- 1. Everybody wants it
- 2. It delivers massive carbon reduction
- 3. It creates local employment
- 4. It creates sustainable enterprises
- 5. It rebuilds and justifies local communities
- 6. It rebuilds the environment of the ecosystem
- 7. It protects the ecosystem
- 8. It's true value as infrastructure is measured by the profit and returns from the down stream benefits.

Everybody want's it

- Getting through public acceptance via lobbying with qualified information
- Making sure that it is in the right place.
- Gaining support in the locality
- Achieving LA and County buy in
- Creating the reasons why it is wanted.
- Securing LA and County master planning support

It delivers massive carbon savings

- Providing a closed carbon circle independent of fossil carbon
- Inputs are produced from recycled nutrient contributed growth with annual savings in fossil carbon due to no Urea and Ammonium Nitrate use
- Using herbal leys and grass as feedstock provides a partial annual carbon sink
- Able to reduce the need to refine crude oil
- Able to reduce the carbon footprint of agriculture

It creates local employment

- It supports employment in agriculture
- Creates employment on site
- Creates other opportunities for employment with down stream product use and product conversion
-

It creates sustainable enterprises

- If the energy is used for local benefit the users claim will be 100% renewably energised. This is a major component of a sustainable enterprise.
- If the gas is used for further refinery process which uses renewable energy for power then the production claim will be near to 100% net zero fossil carbon. These will then be sustainable product enterprises
- If the digestate is refined and used for sophisticated food growing process alongside renewable energy powering the claim will be for sustainable net zero carbon food production

It rebuilds and justifies local communities

- Ideally new AD should be located in the countryside
- It is the new form of influencing enterprise in the countryside
- It provides local service support and becomes the nucleus for justified new community and extended community development.
- The reason to stay in rural areas for young people

It rebuilds the environment of the ecosystem

- The majority of the ecosystem is damaged by the erosion of the soil due to intensive chemical farming.
- Growing herbal leys and returning the digestate to the growing area, over a period of time will repair the soil ecosystem to the benefit of all of the ecosystem participants and beneficiaries
- It values what is taken out of the soil and returns it responsibly
- Growing herbal leys as arable break crops will also repair soil structure and texture
- The deep rooted species in the herbal ley mixture farm the subsoil and increase water penetration and trace element uptake to the benefit of the topsoil and its dependants.

The clean growth strategy and impact

- 1. Agriculture has to reduce its carbon footprint by 100 % by 2050
- 2. Energy and fuel has to be entirely renewable or excused by carbon sequestration by 2050
- 3. Industry has to reduce its operating carbon footprint by 100% by 2050 through carbon net zero inputs , renewable power and renewable transportation
- 4. Oil refining must be reduced to net zero impact by carbon sequestration and carbon sequestration capture and confinement

Clean Growth Strategy impact on Agriculture

- 1. renewable fertilizers can only be used
- 2. renewable power and fuels will be the motive power
- 3. Enteric ruminant production must be reduced to levels where grass feeding is the only support.
- 4. Processing and transport should be all from renewable sources
- 5. Clean air policy rules will not be necessary
-

Clean Growth Strategy Energy and Fuels

- The electric grid fragility and re-enforcement
- Increased demand for energy
- Renewables only
- Phase out coal, gas and ??????????
- Utilise Hydrogen from renewable sources
- Fossil fuel power generators will have to pay the infrastructure strike price

Clean Growth Strategy Industry impact

- Industry has to reduce its operating carbon footprint by 100% by 2050 through carbon net zero inputs , renewable power and renewable transportation
- Energy costs will rise
- Input products will have to be carbon audited
- Industry will have to pay for and charge for carbon strike price impact

Clean Growth Strategy impact on oil refining

- Oil refining must be reduced to net zero impact by carbon sequestration and carbon sequestration capture and confinement
- The carbon confinement and sequestration charges will have to be component to product pricing under polluter pays policy to achieve 100 % net zero carbon emission by 2050.

Clean Growth Strategy on CO2 emissions

- Fossil fuel derived CO2 will by necessity be required to be confined or offset.
- The policy believes that it is possible to confine large amounts of CO2 into the capped empty oil wells in the North Sea
- There will be a need for new infrastructure to be developed.
- This will take time and the needs to reduce fossil carbon affect are now

In the meantime all of this is going to hurt

- Agriculture will cut back with reduced yields for crops and reduced numbers of livestock able to be supported.
- Industry will suffer with increased product cost against a not so controlled import market (particularly from the USA)
- Energy generators will be forced to increase prices to pay for CO2 infrastructure levies
- Cost of living will accelerate
- Wages will spiral
- Inflation will be very evident
-

The adaption :Agriculture and Industry

- Agriculture will find its product at true value for the first time in 50 years
- Agriculture will be able to adjust its style and behaviour in a sustainable way through innovation
- Polluter pays levies will impact all industry production and negatively impact the value of less green imports.
- Industry will grow a new wing taking the form of sequestration technology and be able to lead the world because it can be accurate in its carbon claims.
- The UK is lucky to have empty capped oil wells. They may be more valuable than full ones.
-

Adaption: Energy

- Renewable power generation and storage will have the advantage of not needing to pay a strike price or levy and therefore as the polluter pays policy transitions there will not be the need for support or subsidy to justify development.
- Localised generation and usage will be more justified
- A redesign of our industrial areas will be inevitable
-

The perfect AD solution will be possible

- Crop and crop byproduct, and animal waste digestion
- Producing biomethane
- Generating renewable power or and heat
- Or producing syngas for reforming and renewable organic chemical and product manufacture
- With digestate refining for sophisticated net zero carbon food production
- Supporting peripheral enterprises in the food/ beverage sector and light industrial manufacture and waste product recycling and reforming
-

In conclusion : commercially

- We should view the clean growth strategy and the 2050 net zero carbon target as a green light for the AD industry.
- The green light will be weak as the policy applies because of lack of subsidy and reasonable production returns
- The 2050 target however will drive a penalty for polluters which will justify renewable infrastructure development with out direct or subsidised support.
- Industry contributing and associated with the delivery , operation and outputs from the renewable infrastructure will be commercially advantaged.

In Conclusion : Environmentally

- Agriculture will not be dependant on thrashing the land for every ounce
- The land will recover , the soil ecosystem will repair , wild life and nature will exist in harmony with agriculture
- Our food will become healthier and the human race which is so dependant on the ecosystem will also become physically and mentally healthier.
- Therefore AD in the right context will be the centre of environmental repair.