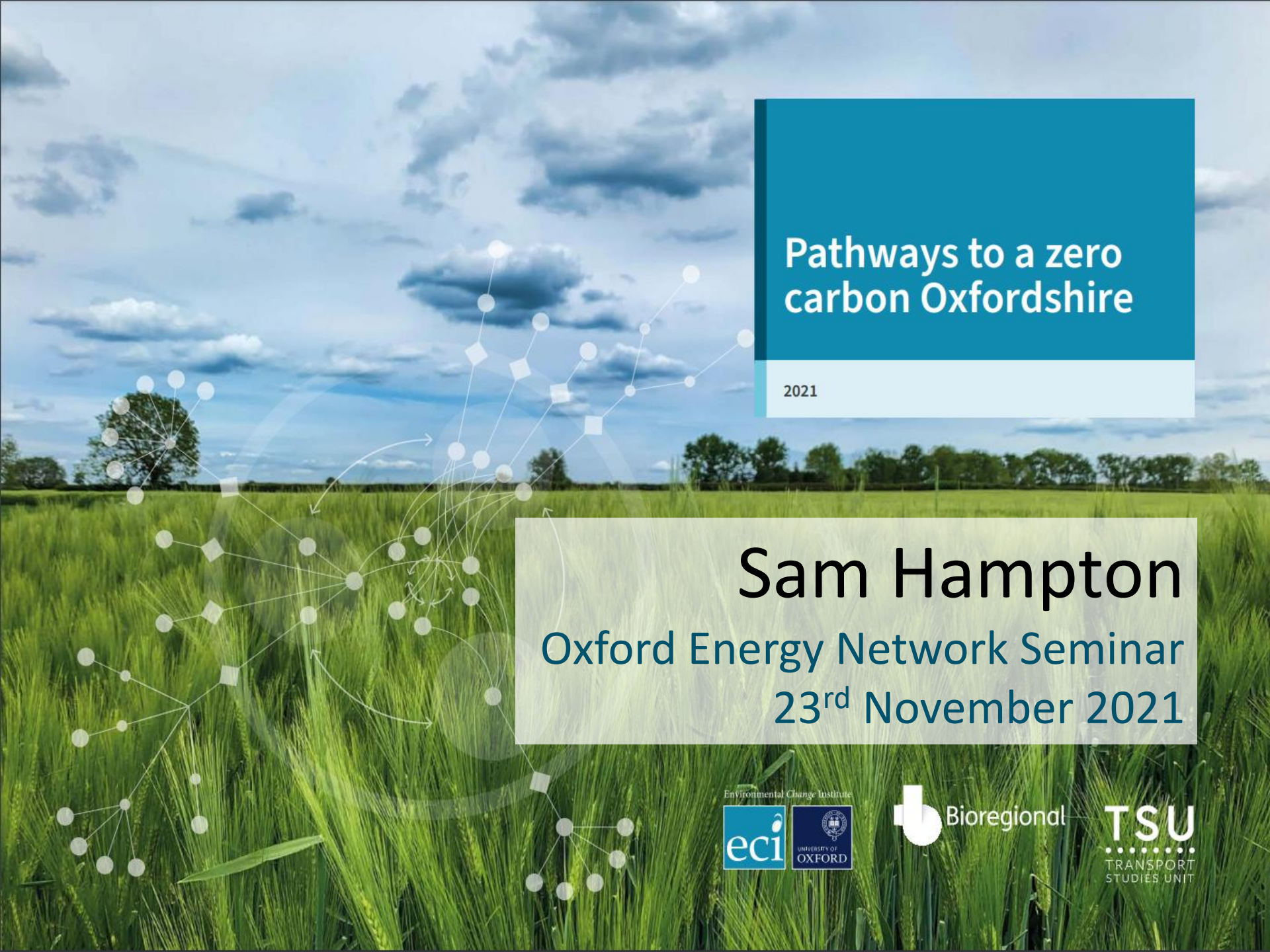
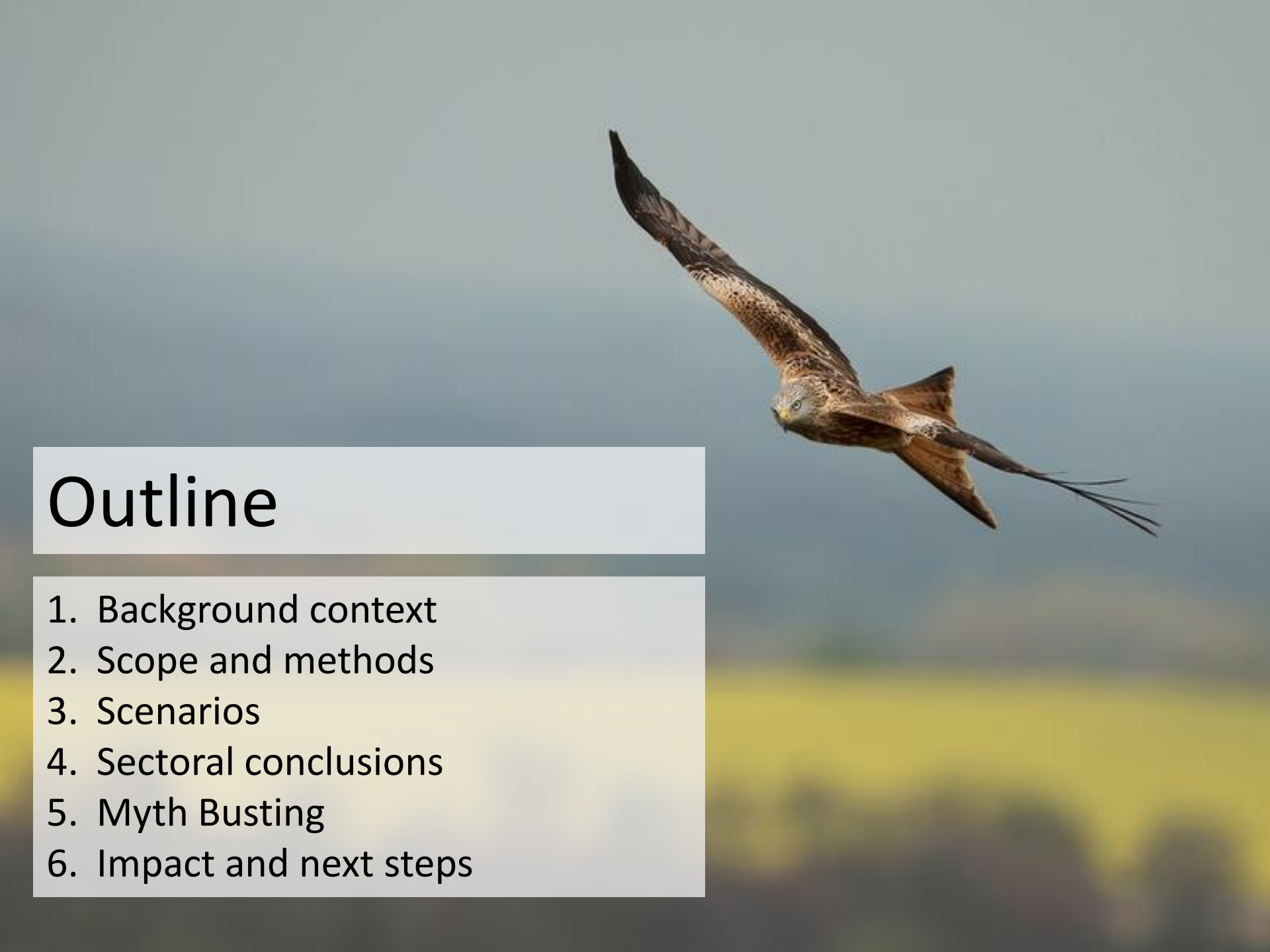


Sam Hampton

Oxford Energy Network Seminar

23rd November 2021

Environmental Change Institute
eci
University of Oxford
Bioregional
TSU
Transport Studies Unit

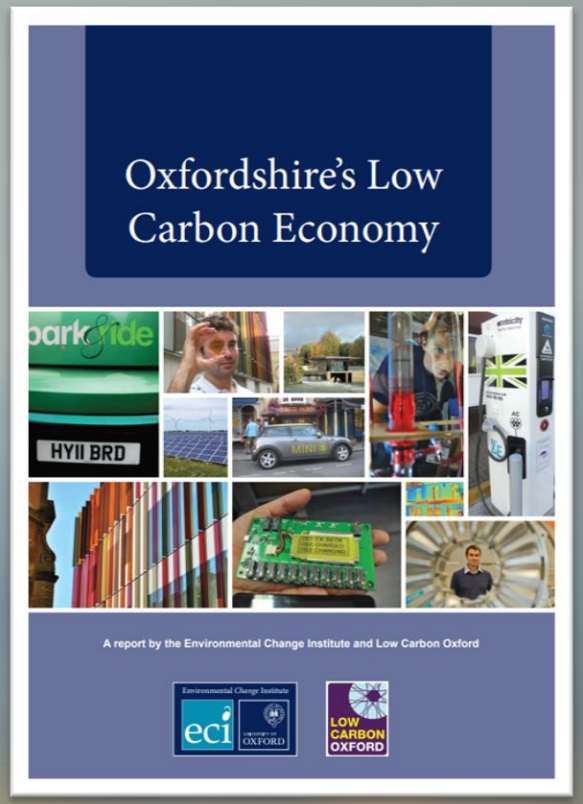


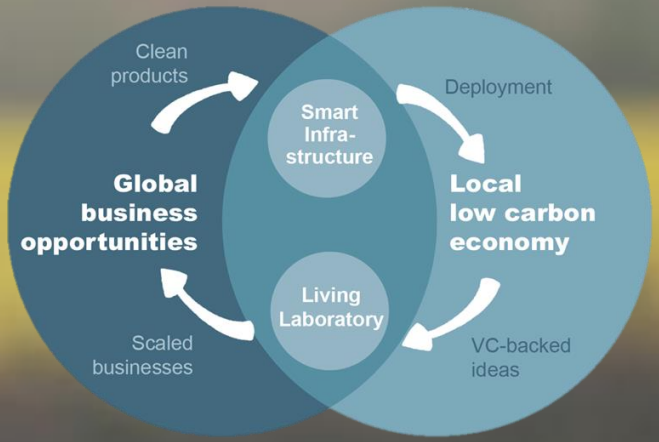
Outline

1. Background context
2. Scope and methods
3. Scenarios
4. Sectoral conclusions
5. Myth Busting
6. Impact and next steps

Where did we start?
The “2014 Report”

- Low carbon a major sector of the Oxon economy, £1.15 bn/year and 8,800 jobs.
- £100m/year investment needed to 2030 in clean energy, and in decarbonising buildings and transport.
- Potential improvements in quality of life.
- Synergies between local action and global business opportunities.





What's changed since 2014?

- The scale of international and national ambition, in particular net zero by 2050
- From low carbon to zero carbon
- Public opinion on climate change
- COP26
- Local authorities' climate emergency declarations and net-zero targets
- 50% reduction by 2030

What does this ambition mean in practice?

- Large increases in local renewable electricity generation
- Major renovation of most of our existing buildings
- Increases in the use of public transport, cycling and walking
- Replacing all fossil-fuel boilers
- Replacing all petrol and diesel vehicles
- Difficult decisions on land use priorities between development, food, energy and nature
- Social and technical innovation to make all this happen

Author team

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Land use: Alison Smith

Funders and Steering Group Members:

OxLEP driving economic growth

Oxford City Council

Cherwell District Council North Oxfordshire

low carbon hub

Oxford Brookes University

Oxfordshire County Council

Greater South East Energy Hub

Scottish & Southern Electricity Networks

Vale of White Horse District Council

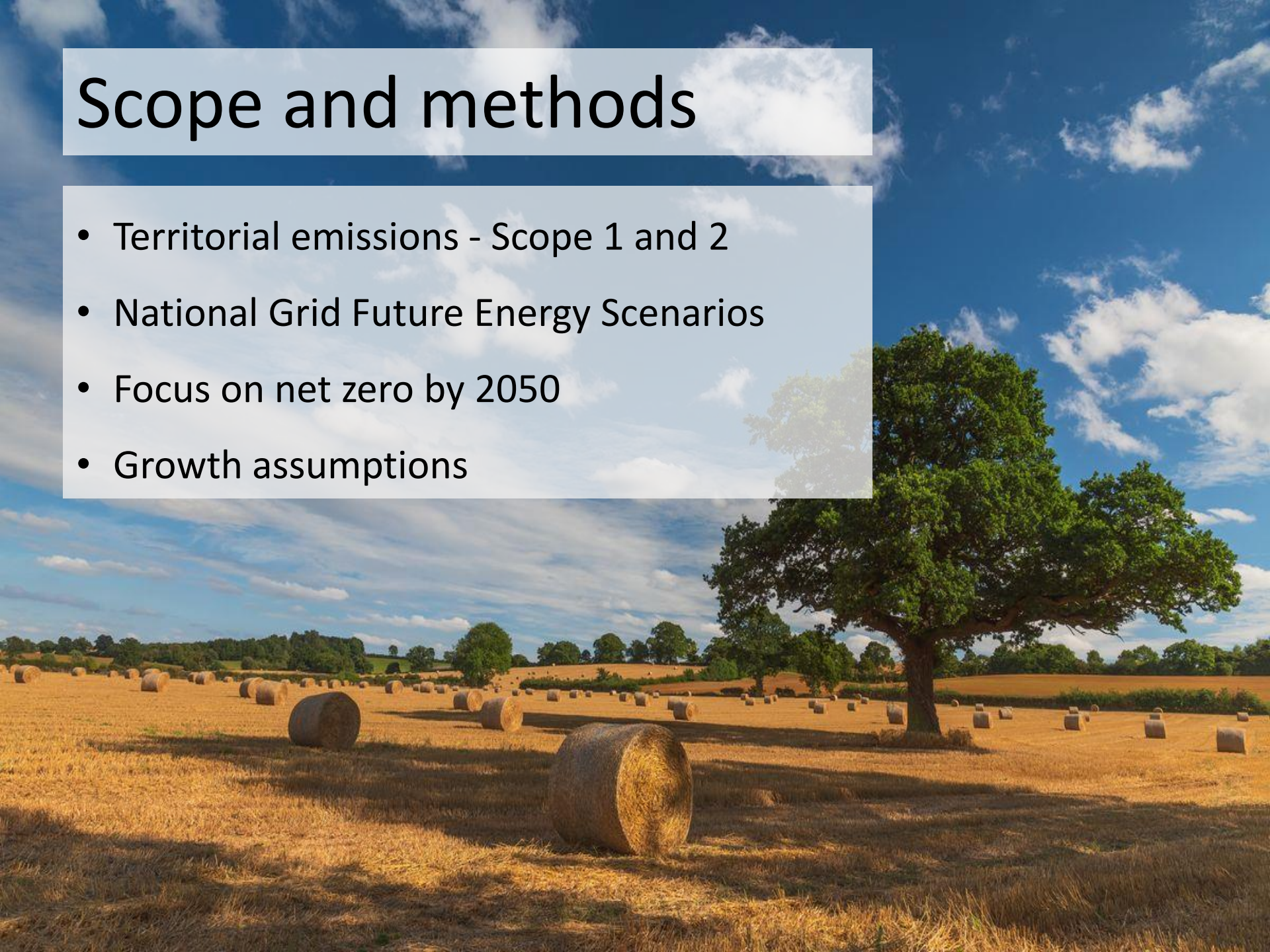
South Oxfordshire District Council

OSI Oxford Sciences Innovation

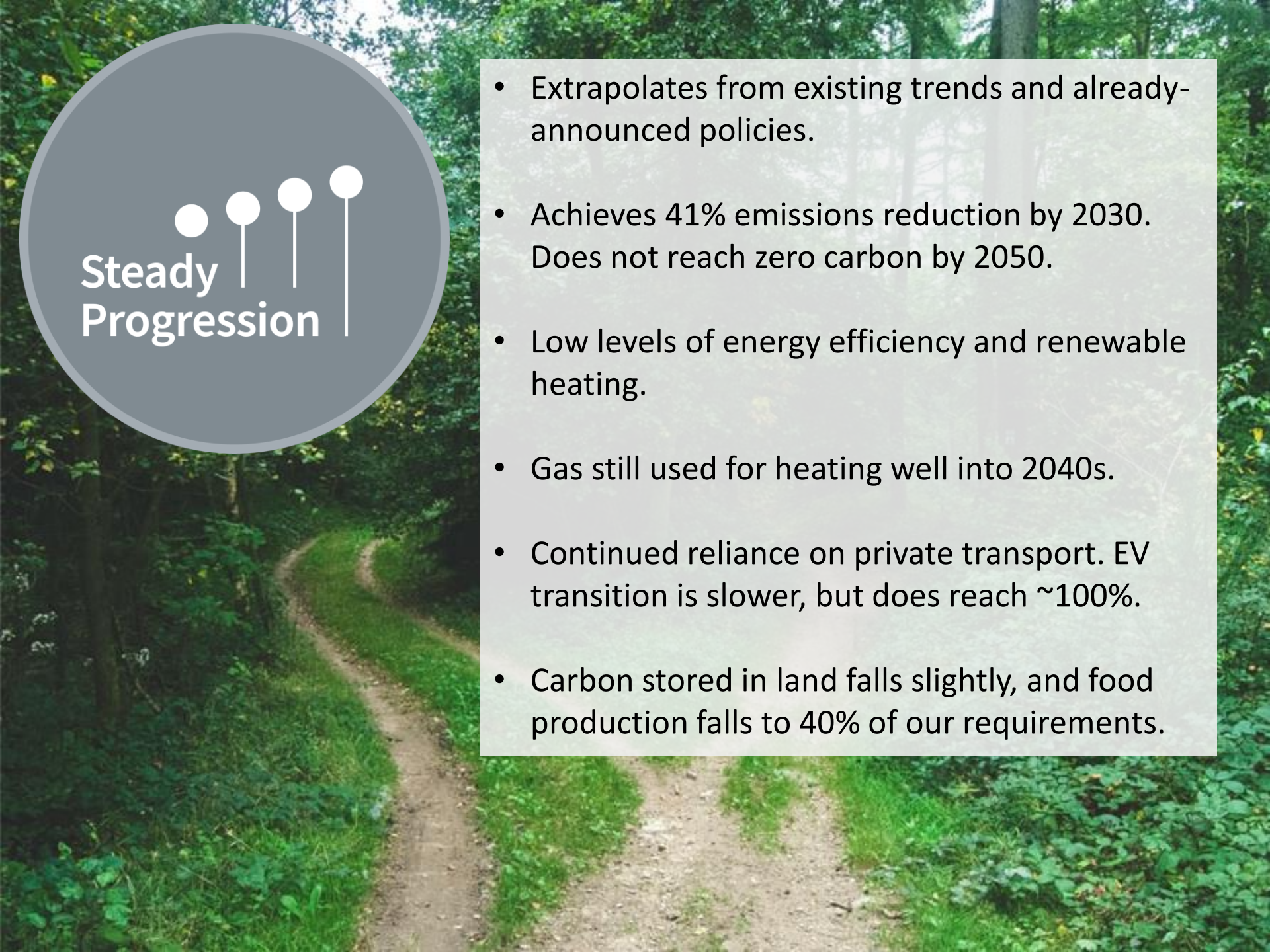
West Oxfordshire District Council

Scope and methods

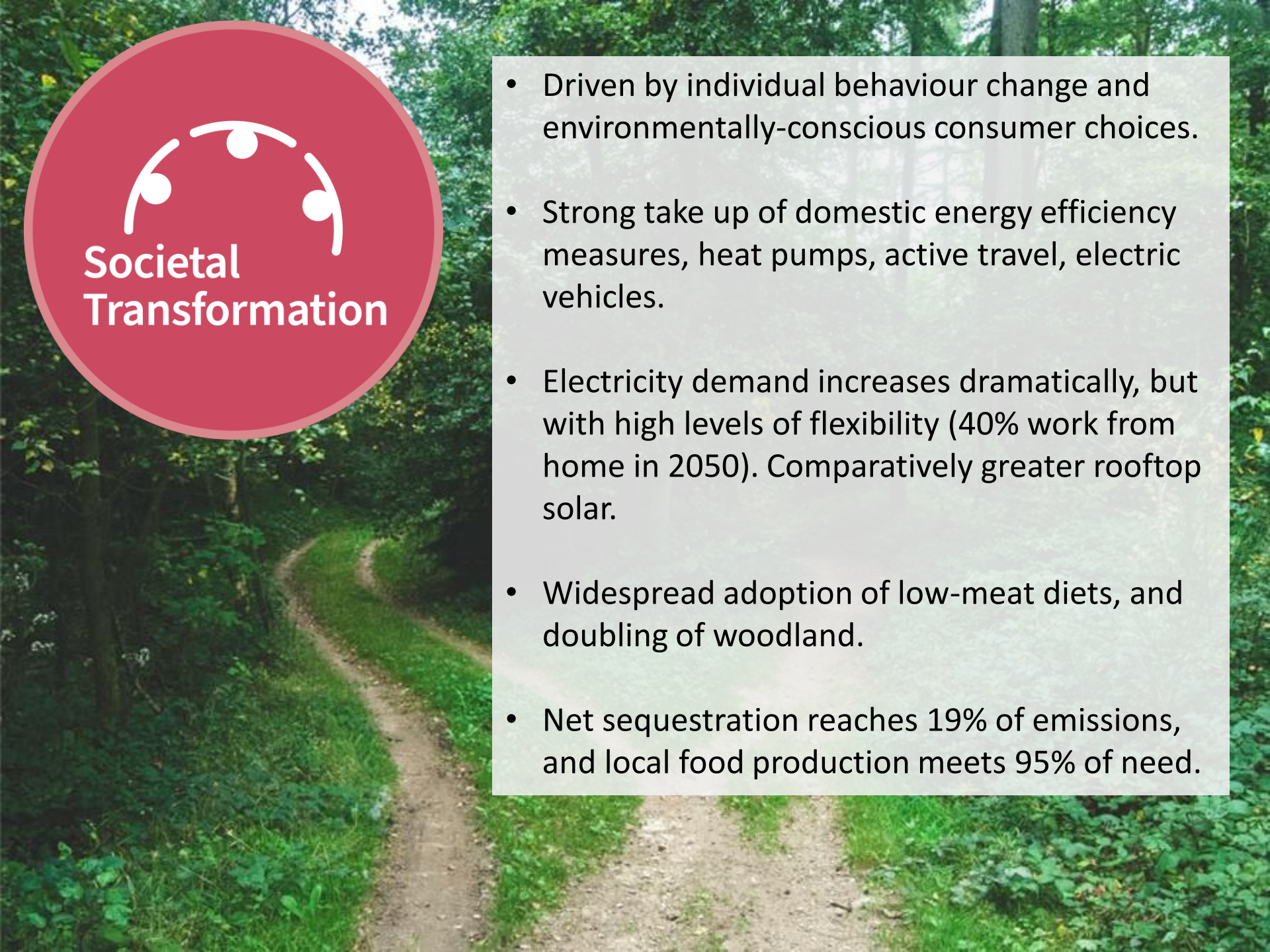
- Territorial emissions - Scope 1 and 2
- National Grid Future Energy Scenarios
- Focus on net zero by 2050
- Growth assumptions



Pathways to Zero Carbon

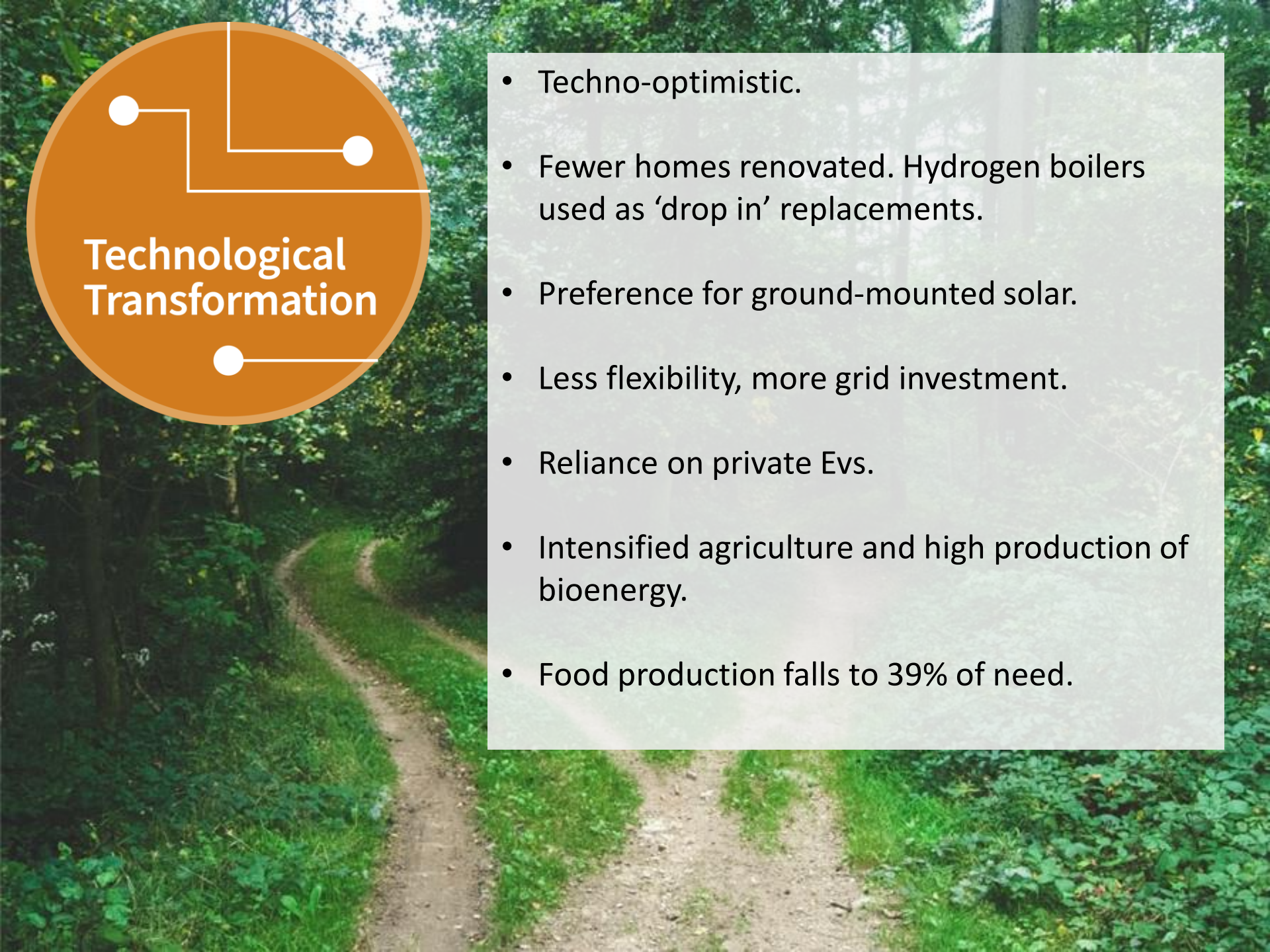


- Extrapolates from existing trends and already-announced policies.
- Achieves 41% emissions reduction by 2030. Does not reach zero carbon by 2050.
- Low levels of energy efficiency and renewable heating.
- Gas still used for heating well into 2040s.
- Continued reliance on private transport. EV transition is slower, but does reach ~100%.
- Carbon stored in land falls slightly, and food production falls to 40% of our requirements.



Societal Transformation

- Driven by individual behaviour change and environmentally-conscious consumer choices.
- Strong take up of domestic energy efficiency measures, heat pumps, active travel, electric vehicles.
- Electricity demand increases dramatically, but with high levels of flexibility (40% work from home in 2050). Comparatively greater rooftop solar.
- Widespread adoption of low-meat diets, and doubling of woodland.
- Net sequestration reaches 19% of emissions, and local food production meets 95% of need.



Technological Transformation

- Techno-optimistic.
- Fewer homes renovated. Hydrogen boilers used as ‘drop in’ replacements.
- Preference for ground-mounted solar.
- Less flexibility, more grid investment.
- Reliance on private Evs.
- Intensified agriculture and high production of bioenergy.
- Food production falls to 39% of need.

Oxfordshire Leading the Way

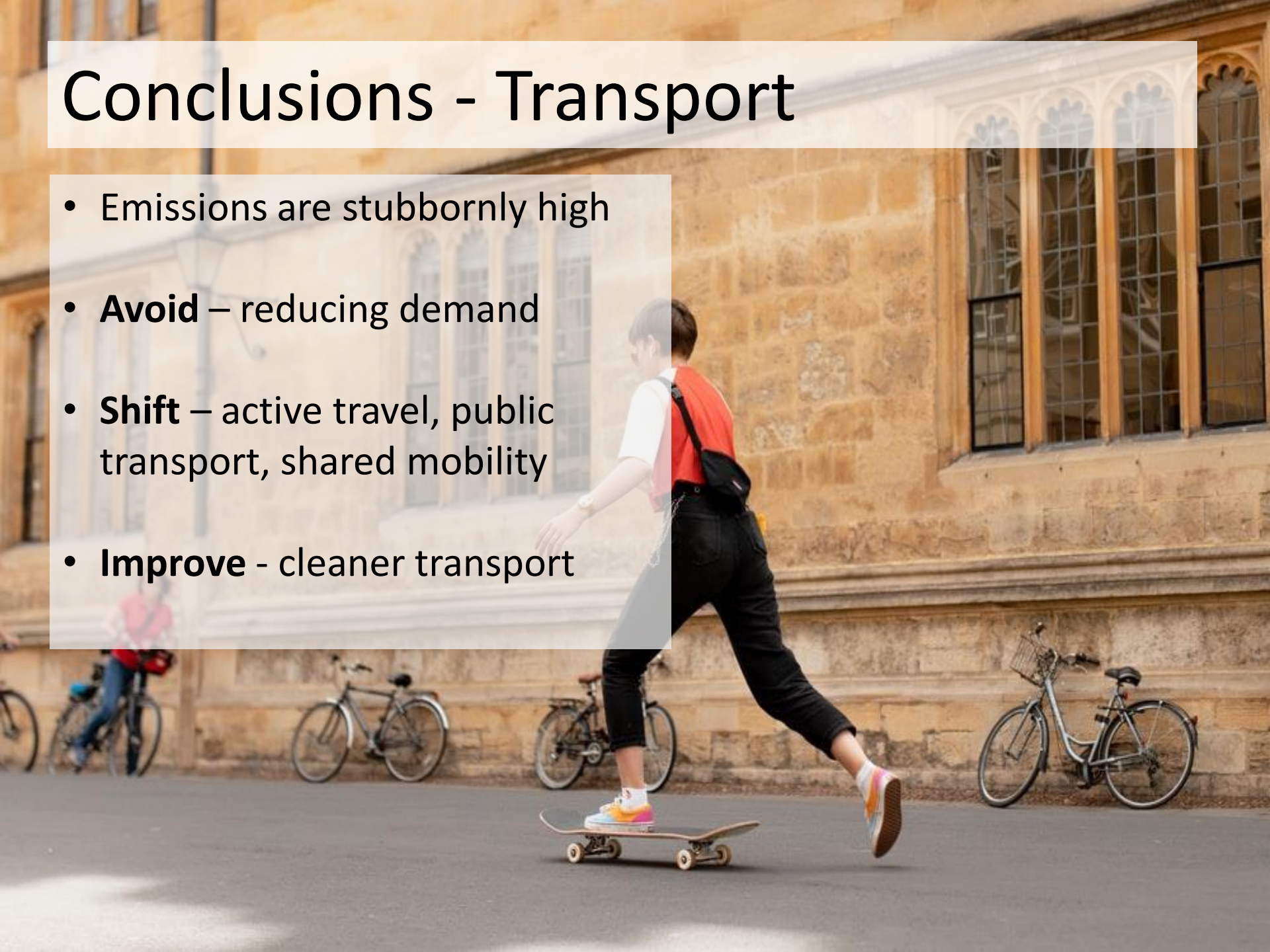
- Strong public and local policy support. Highly ambitious.
- High levels of:
  - Retrofit
  - Heat pumps
  - User flexibility
  - Bioenergy for CCS
  - Active travel, shared mobility and LTNs
- Solar capacity increases x10 = 1% of land. Renewable generation meets 52% of demand.
- Fall in overall travel demand including private vehicle numbers.
- Food production falls to 55% of needs.

Conclusions - Innovation

- A local strength
- Opportunity for clean economic growth and job creation
- Transition must be inclusive
- Imperative that COVID-19 recovery is linked with climate action
- Significant investment needed

Conclusions - Transport

- Emissions are stubbornly high
- **Avoid** – reducing demand
- **Shift** – active travel, public transport, shared mobility
- **Improve** - cleaner transport



Conclusions - Buildings and Heat

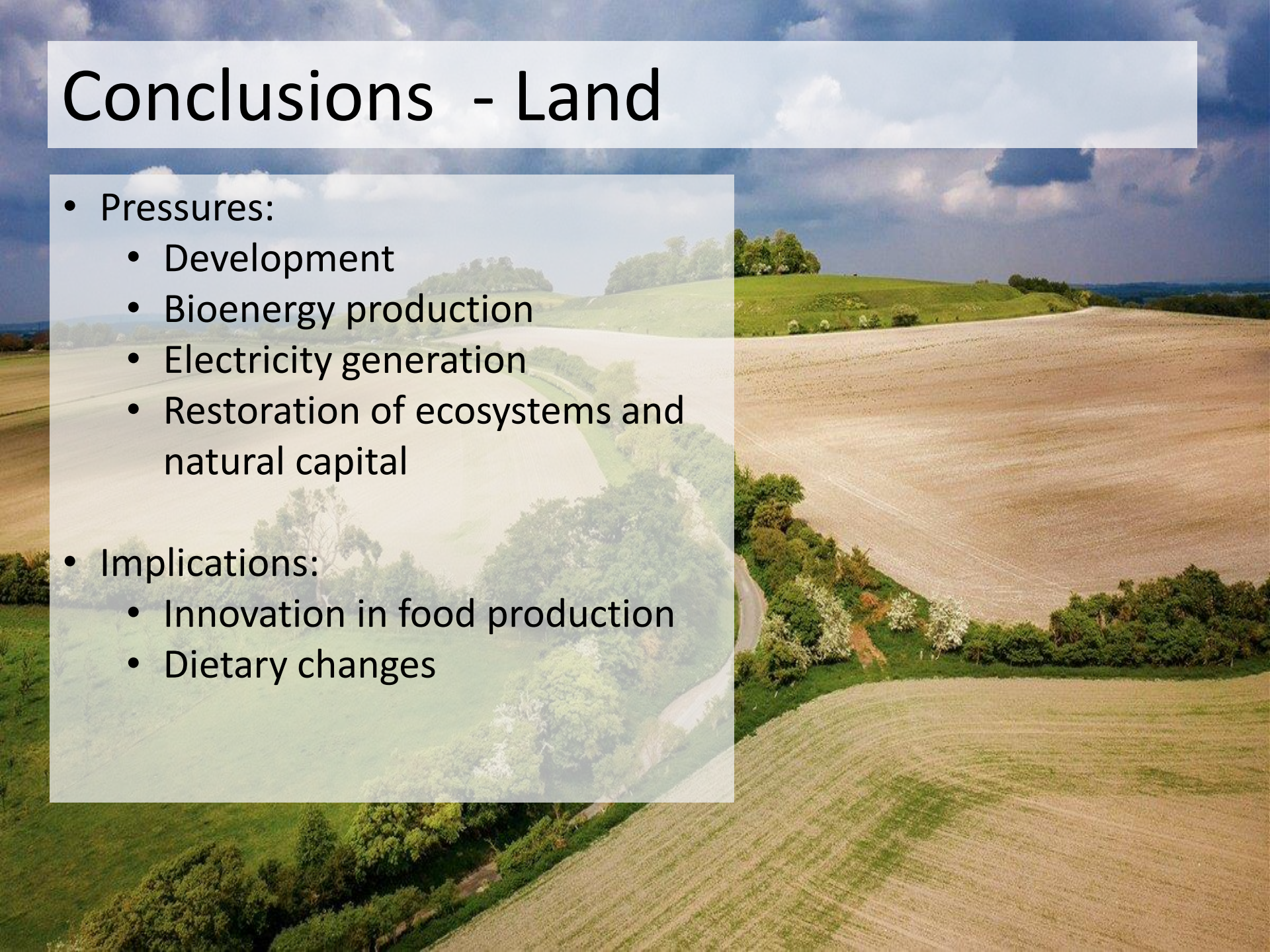
- Slow progress
- Major programme of retrofit
- Gas boiler phase out
- Scaling heat pump installations
- Strict requirements for new homes and developments

Conclusions - Energy

- Extensive solar deployment
- Increases in electricity demand require grid reinforcement and flexibility
- Data at the ‘grid edge’

Conclusions - Land

- Pressures:
  - Development
  - Bioenergy production
  - Electricity generation
  - Restoration of ecosystems and natural capital
- Implications:
  - Innovation in food production
  - Dietary changes



Myth Busting

"We should plant trees to offset our emissions"

"We need a more skilled & qualified workforce"

"Electric vehicles are coming to save us"

"Net-zero can be achieved by 2030"

"Fossil fuels are needed for economic growth"

"It all comes down to individual behaviours"

Reflections

- High ambition from local stakeholders
- Dependent on national policy in many areas
- Change is urgent, and should not be underestimated

Impact and next steps

- Warmly welcomed by local authorities and ‘FOP’
- Delivery ‘roadmap’ being developed
- Criticised for not going further on:
  - Curtailing development
  - Cars and congestion
  - Scope 3 inc embodied emissions
  - Food


Thank you
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