A Jobs-led Climate Transition Plan for Surrey

Jonathan Essex
Peter Sims
Planning to meet the Climate & Biodiversity Challenge
Surrey University research published today argues for UK zero carbon target far sooner. By 2025 or 2030 at the very latest.

He says that for a "linear pathway the target would have to be 2035" or higher.

CUSP @CUSP_uk
Zero Carbon Sooner—The case for an early zero carbon target for the UK | New CUSP Paper by @ProfTimJackson >> cusp.ac.uk/themes/aetw/ze... #ZeroCarbonSooner #NetZero cc #TRansitRM
What does facing up to Climate Reality Look like?

What does failure look like?
Time to walk the talk.

For hope to exceed fear we must scale up action
Fossil Fuel Growth Engine

General Mode

- Declining unit costs of products
- Increasing labour productivity
- Lower unit price of intermediates
- Increased consumer demand for intermediates (due to price elasticity)
- Substitution of cheap fossil fuels and other intermediates for labour
Fossil Fuel Growth Engine

Consumer Model

Look honey, I bought something today!

Oh darling, I’m so proud of you!
Not just fossil fuels: enough infrastructure already?

Figure 10: Growth Projection against Post-Growth Reality: UK car use has peaked. Source: Goodwin (2012).
Just Transition

ONE MILLION CLIMATE JOBS
Tackling the environmental and economic crisis
CLIMATE SUMMIT

WHAT IF IT'S A BIG HOAX AND WE CREATE A BETTER WORLD FOR NOTHING?

- Energy Independence
- Preserve Rainforests
- Sustainability
- Green Jobs
- Livable Cities
- Renewables
- Clean Water, Air
- Healthy Children
- Etc. Etc.
We need: shift to a zero carbon, zero waste, organic farming and sustainable rural economy.

So we must link climate, planning and economics.

To plan what is needed we to consider how many jobs are required, doing what, and where across the UK.
Focus on new jobs to create the foundation for local green economies

<table>
<thead>
<tr>
<th>Area of economy</th>
<th>Key features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td>Renewable-Powered</td>
</tr>
<tr>
<td>Transport</td>
<td>Sustainable, Localised</td>
</tr>
<tr>
<td>Buildings</td>
<td>Retrofitted</td>
</tr>
<tr>
<td>Waste and Resources</td>
<td>Circular Economy</td>
</tr>
<tr>
<td>Farming and Land Use:</td>
<td>Agroecological, Planned</td>
</tr>
</tbody>
</table>
Stop carbon ‘lock-in’

Source: SEI, 2016:
Plan-led, Transition and Future Jobs

Green Region (+City)
Job-led Plans
- Resource needs
- Infrastructure needs
- Service needs

Plan-led

Reduce Climate/Wider Env. Impact
- Renewable energy supply
- Retrofit buildings
- Different infrastructure

TRANSITION JOBS

Change Economic Development
- ‘just transition’ of existing industry
- New green enterprises, including transport, circular economy, rural, waste, energy

FUTURE JOBS

Sustainable Communities
- Strong localised economy
- Long-term jobs
What would that mean for Surrey?

Carbon emissions from Transport in Surrey: 2005 to 2015
(Source: UK local authority and regional carbon dioxide emissions national statistics)

What would that mean for Surrey?

<table>
<thead>
<tr>
<th></th>
<th>PV</th>
<th>Onshore Wind</th>
<th>Hydro</th>
<th>AD, Sewage and Landfill gas</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epsom and Ewell</td>
<td>1.4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1.4</td>
</tr>
<tr>
<td>Guildford</td>
<td>5.4</td>
<td>0.002</td>
<td>0.04</td>
<td>1.5</td>
<td>7.0</td>
</tr>
<tr>
<td>Mole Valley</td>
<td>4.1</td>
<td>-</td>
<td>-</td>
<td>1.0</td>
<td>5.1</td>
</tr>
<tr>
<td>Reigate and Banstead</td>
<td>5.2</td>
<td>-</td>
<td>-</td>
<td>4.9</td>
<td>10.2</td>
</tr>
<tr>
<td>Runnymede</td>
<td>2.3</td>
<td>-</td>
<td>-</td>
<td>8.7</td>
<td>10.9</td>
</tr>
<tr>
<td>Spelthorne</td>
<td>1.6</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1.6</td>
</tr>
<tr>
<td>Surrey Heath</td>
<td>2.7</td>
<td>-</td>
<td>-</td>
<td>0.9</td>
<td>3.6</td>
</tr>
<tr>
<td>Tandridge</td>
<td>4.1</td>
<td>-</td>
<td>0.06</td>
<td>2.4</td>
<td>6.5</td>
</tr>
<tr>
<td>Waverley</td>
<td>8.4</td>
<td>-</td>
<td>0.01</td>
<td>4.7</td>
<td>13.1</td>
</tr>
<tr>
<td>Woking</td>
<td>4.8</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>40</td>
<td>0</td>
<td>0</td>
<td>24</td>
<td>64</td>
</tr>
</tbody>
</table>
What’s needed locally?

- Renewable Energy – significant investment
- Building Retrofit (Homes) – significant investment
- Sustainable Transport – major transformation
- Reuse & Recycling – significant investment
- Rural Economy – also flood resilience, sustainability
- Transition Estimate = lots of jobs +
- Long Term Estimate = similar in scale, in different sectors
Climate Jobs Modeling
New climate jobs - where?

By population ➔ buildings, recycling, transport

By land area ➔ food, forestry, renewables
(need grid connections)
Methodology

➡ Government & EU Statistics
➡ Conservative Estimates
➡ Proven Technologies
➡ Infrastructure/Activity Change Based Job Metrics
Test – on a small island

Isle of Wight
Transition to 2030
1,700 new jobs

Long-term (2030+)
2,000 new jobs

A Green Transition for the Isle of Wight

A Sustainable Local Economic Strategy realised through more Green Enterprises and Employment

Jonathan Essex
Peter Sims
March 2017
Prove for Local Enterprise Area

Sheffield City Region

Transition to 2030
21,500 new jobs

Long-term (2030+)
18,900 new jobs
2018: Climate Jobs Map for UK

Demonstrate jobs-led potential to strengthen climate targets
2. A Plan for Climate Jobs

What will these jobs look like?
Where will these be?
Sectors

- Energy (Includes offshore)
- Building Retrofit (Homes)
- Transport
- Reuse & Recycling
- Landuse, Food and Farming

Transition Estimate = 907,000 Jobs
Long Term Estimate = 455,000 Jobs
Renewable Energy Generation

- Install wind / solar / tidal
- Maintain installations
- Upgrade grid
- Storage & demand management
Additional Energy Transition Jobs

- Offshore Wind — 252,000
- Onshore Wind — 45,000
- Large Scale PV installation — 9,870
- AD/Biogas/Geothermal/Hydro
- Coal Power Electricity Generation, 50% Oil and Gas Power - Total Jobs lost = > 3,000 Jobs across UK
The Built Environment

➡️ Energy retrofit - street by street
➡️ Install energy efficiency & renewable energy
➡️ Retrain construction workers
➡️ Better maintenance

http://chalecommunityproject.com
Additional Building Retrofit Jobs

- GSHP
- Solar Thermal
- Solar PV — Small Scale
- Insulation
- Long Term Maintenance
Better Transport

- Car share schemes
- Increase public transport
- Improving cycling/walking routes and facilities
- Preventative road maintenance
Change in Transport Jobs (Long-Term)

- Bus Drivers => 89,500 Jobs
- Bus Maintenance => 23,500 Jobs
- Electric Vehicles Maintenance Jobs => 67,400 Jobs
- Petrol/Diesel Vehicles Maintenance Jobs Lost => -173,000 Jobs
- Railways => 115,000 additional jobs
Reuse & Recycling

➡ Repair workshops

➡ Deconstruction rather than demolition

➡ Sorting and reclaiming materials

➡ Totals compensated for jobs lots in landfill & incineration

https://www.habitat.org/restores/
Additional Reuse & Recycling Jobs

➡ Current Recycling Rate (average municipal) 45%

➡ Target Recycling Rate 90%

➡ 106,600 Jobs

➡ Reuse more labour intensive
Food, Land Management & Forestry

➡ Active woodland management
➡ Smallholders
➡ Farm workers & fruit growers
➡ Localised supply chain and processing businesses

Vermont Valley Community Farm LLC
Community / Other

- Trainers
- Volunteer coordinators
- Workplace mentors
- Innovation & startup support
- Support workers

Ryde Community Pool - watersidepool.co.uk/index.html
Population Density Map
Climate Jobs Summary: 'United Kingdom'

This document summarises jobs estimates for United Kingdom from Green House Think Tank’s Climate Jobs Project modelling (v2019a) done on behalf of the Green European Foundation. This work can be found at greenhousethinktank.org/climate-jobs/. The modelling was done for each NUTS (Nomenclature of Territorial Units for Statistics) 2016 level 3 area in the UK using Eurostat and the UK Office of National Statistics (ONS) data and published job metrics. The most recently published statistics are taken where possible but due to gaps and time lag in what statistics authorities publish, the data use to represent now (2019) may be a few years older. All jobs estimates are in full time equivalents and negative numbers indicate jobs lost.

NUTS regions are a hierarchical geographic code system created by the EU for the consistent collection and collation of statistics across Europe. The first two letters signify the country, the next the NUTS1 region, and the last two numbers of the NUTS 2 & 3 regions respectively. The NUTS 3 areas are generally smaller than English Counties but bigger than districts, NUTS 2 areas generally cover large cities or a few counties and NUTS 1 represent regions.

The table below summaries background statistics for the United Kingdom area. The breakdown of the modelling results by sector, which add up to these jobs totals, is shown below. The full explanation of the transition proposed, the methodology used and references are in 'Unlocking the Job Potential of Zero Carbon', published in December 2018\(^1\).

<table>
<thead>
<tr>
<th>NUTS Code</th>
<th>Population / Pop per Hectare</th>
<th>Area</th>
<th>Total Net Jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2019</td>
<td>2030</td>
<td>hectares</td>
</tr>
<tr>
<td>UK</td>
<td>66,100,000 / 2.7</td>
<td>70,900,000 / 2.9</td>
<td>24,900,000</td>
</tr>
</tbody>
</table>

2030 has been taken as the date when greenhouse gas emissions need to be reduced to net zero (at the latest). Setting such a target is consistent with the UK using no more than its fair share of the global carbon budget and limiting the risk of exceeding a global warming to 1.5\(^\circ\)C. This end date is also consistent with Zero Carbon Sooner paper published by Tim Jackson\(^2\) and most climate emergency declarations by local council areas across the UK.

Reuse & Recycling

The table below shows how many jobs are created and lost due to an increase in the recycling rate for three waste categories. The modelling uses recycling as a proxy for the reuse, repair and deconstruction jobs which will need to be created over the transition. The latter are likely to be more labour intensive and less energy intensive than recycling, so creating more jobs than estimated.

<table>
<thead>
<tr>
<th>Category</th>
<th>Recycling Rate</th>
<th>Additional Tonnes</th>
<th>New Jobs</th>
<th>Jobs lost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Municipal solid waste</td>
<td>45%</td>
<td>90%</td>
<td>27,700,000</td>
<td>37,200</td>
</tr>
<tr>
<td>Commercial and industrial</td>
<td>45%</td>
<td>90%</td>
<td>23,200,000</td>
<td>15,600</td>
</tr>
<tr>
<td>Construction and demolition</td>
<td>45%</td>
<td>90%</td>
<td>120,000,000</td>
<td>53,800</td>
</tr>
</tbody>
</table>

\(^a\) Landfill and incineration jobs are lost as waste disposal reduces (alongside the creation of new reuse and recycling jobs).

\(^1\) Download at: gef.eu/publication/unlocking-the-potential-of-zero-carbon/

\(^2\) www.cusp.ac.uk/themes/aetw/zero-carbon-sooner/
Climate Jobs Summary: 'NORTH EAST (ENGLAND)'

This document summarises jobs estimates for NORTH EAST (ENGLAND) from Green House Think Tank’s Climate Jobs Project modelling (v2019a) done on behalf of the Green European Foundation. This work can be found at greenhousethinktank.org/climate-jobs/. The modelling was done for each NUTS (Nomenclature of Territorial Units for Statistics) 2016 level 3 area in the UK using Eurostat and the UK Office of National Statistics (ONS) data and published job metrics. The most recently published statistics are taken where possible but due to gaps and time lag in what statistics authorities publish, the data use to represent now (2019) may be a few years older. All jobs estimates are in full time equivalents and negative numbers indicate jobs lost.

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The table below summaries background statistics for the NORTH EAST (ENGLAND) area. The breakdown of the modelling results by sector, which add up to these jobs totals, is shown below. The full explanation of the transition proposed, the methodology used and references are in 'Unlocking the Job Potential of Zero Carbon', published in December 2018.

<table>
<thead>
<tr>
<th>Population / Pop per Hectare</th>
<th>Area</th>
<th>Total Net Jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NUTS Code</td>
<td>2019</td>
</tr>
<tr>
<td></td>
<td>UKC</td>
<td>2,650,000 / 3.1</td>
</tr>
</tbody>
</table>

2030 has been taken as the date when greenhouse gas emissions need to be reduced to net zero (at the
Climate Jobs Summary: 'Tees Valley and Durham’

This document summarises jobs estimates for Tees Valley and Durham from Green House Think Tank’s Climate Jobs Project modelling (v2019a) done on behalf of the Green European Foundation. This work can be found at greenhousethinktank.org/climate-jobs/. The modelling was done for each NUTS (Nomenclature of Territorial Units for Statistics) 2016 level 3 area in the UK using Eurostat and the UK Office of National Statistics (ONS) data and published job metrics. The most recently published statistics are taken where possible but due to gaps and time lag in what statistics authorities publish, the data used to represent now (2019) may be a few years older. All jobs estimates are in full time equivalents and negative numbers indicate jobs lost.

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The table below summaries background statistics for the Tees Valley and Durham area. The breakdown of the modelling results by sector, which add up to these jobs totals, is shown below. The full explanation of the transition proposed, the methodology used and references are in 'Unlocking the Job Potential of Zero Carbon', published in December 2018\(^1\).

<table>
<thead>
<tr>
<th>NUTS Code</th>
<th>Population / Pop per Hectare</th>
<th>Area</th>
<th>Total Net Jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>UKC1</td>
<td>1,200,000 / 3.9</td>
<td>305,000</td>
<td>10,300</td>
</tr>
<tr>
<td></td>
<td>1,240,000 / 4.1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2030 has been taken as the date when greenhouse gas emissions need to be reduced to net zero (at the...
Climate Jobs Summary: ’Hartlepool and Stockton-on-Tees’

This document summarises jobs estimates for Hartlepool and Stockton-on-Tees from Green House Think Tank’s Climate Jobs Project modelling (v2019a) done on behalf of the Green European Foundation. This work can be found at greenhousethinktank.org/climate-jobs/. The modelling was done for each NUTS (Nomenclature of Territorial Units for Statistics) 2016 level 3 area in the UK using Eurostat and the UK Office of National Statistics (ONS) data and published job metrics. The most recently published statistics are taken where possible but due to gaps and time lag in what statistics authorities publish, the data used to represent now (2019) may be a few years older. All jobs estimates are in full time equivalents and negative numbers indicate jobs lost.

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The table below summaries background statistics for the Hartlepool and Stockton-on-Tees area. The breakdown of the modelling results by sector, which add up to these jobs totals, is shown below. The full explanation of the transition proposed, the methodology used and references are in ’Unlocking the Job Potential of Zero Carbon’, published in December 2018.

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2019</td>
<td>2030</td>
<td>hectares</td>
</tr>
<tr>
<td>UKC11</td>
<td>291,000 / 9.5</td>
<td>304,000 / 9.9</td>
<td>30,800</td>
</tr>
</tbody>
</table>
Conclusion

A 3 million jobs-led transition
-> 1 million green economy foundation
-> 1 million just transition
-> 1 million local resilient economies

Transition to a different economics
-> Re-grounded
-> Re-balanced
-> Relocalised