

A ROUGH GUIDE TO

Net Carbon Zero Lifestyle



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Global Warming of 1.5°C

IPCC Special Report published October 2018



- 1.5°C rather than 2°C or higher
- Every bit of warming matters
- Every year matters
- Every choice matters

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PARIS2015
UN CLIMATE CHANGE CONFERENCE
COP21-CMP11

Different organisations propose different target dates to achieve **net carbon zero**



GOV.UK



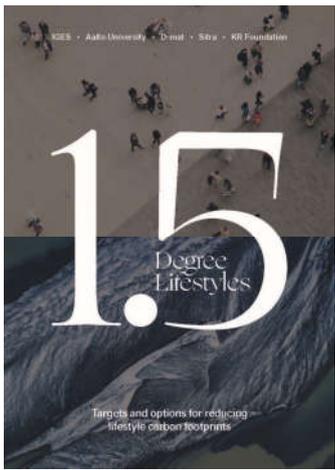
YOUTH
STRIKE
4CLIMATE



•The Paris Agreement 2C – 2060-30
•IPCC 1.5C report – 2050
•UK Climate Change Act -2050
•Youth Climate Strike – 2030
•Extinction Rebellion -2025

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Changes in lifestyles are not only inevitable, but would need to be radical, and start immediately



1.5 Degree Lifestyles
Targets and options for reducing lifestyle carbon footprints

3-2-1 tonnes per person by 2030-2040-2050 Globally, citizens and society need to aim for per-person consumption-based greenhouse gas emissions targets of 2.5 (tCO₂e) in 2030, 1.4 by 2040, and 0.7 by 2050 in order to keep global temperature rise to within **1.5 degrees**

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Demystifying carbon budgets



In this study, 'lifestyle carbon footprint' is defined as the Greenhouse gas emissions directly emitted and indirectly induced from household consumption, **excluding those induced by government consumption and capital formation**

72% of global emissions are related to households

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True Net Carbon Zero Nature's gift



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Negative emission technologies



Human carbon sinks affect the targets. The various reduction scenarios we studied indicate that the target levels of reductions are sensitive to whether negative emission technologies such as carbon capture and storage (CCS) and bioenergy with carbon capture and storage (BECCS) are used. If use of such technologies is considered over the long term, the upper limits of the proposed targets are slightly eased (i.e., slightly easier to achieve), for 2030, 2040 and 2050 (in parentheses): 2.5 (3.2), 1.4 (2.2), and 0.7 (1.5) tCO₂e, respectively. However, the actual availability, feasibility and costs of these technologies are uncertain, thus solely relying on its assumed extensive and broad-ranging roll-out is a risky societal decision.

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What is the current state of play in numbers?

- The average EU citizen emits 9 tonnes of carbon per year
- The average US citizen emits 17 tonnes
- The average Zimbabwean emits 1.6 tonnes per year
- The average Global citizen emits 5 tonnes per year
- A new car produces 8-50 tonnes of carbon, just in manufacture
- A return flight London to Hong Kong is an average of 4.5 tonnes
- A Business return flight London to Hong Kong is 10 tonnes
- Solar PV 4kW domestic array lasting 25-30 years is 5 tonnes

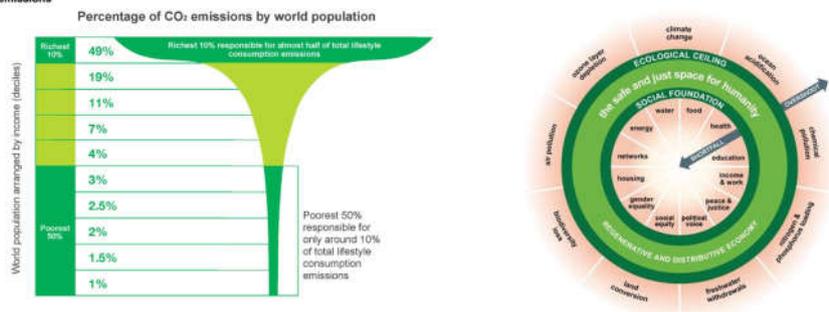
Our entire individual lifetime budget is 30 tonnes of carbon

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The richest global 10% account for over half of the emissions The richest 1% were responsible for 15 percent of emissions

You only have to be earning £27,000 per year to be in top richest global 10% . £110,000 per year to be in the top 15%

Figure 1: Global income deciles and associated lifestyle consumption emissions



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The Ticking Carbon Clock

At our current emission rates, we will hit 1.5C in just over seven years



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Rapid **Imperfect** Prototype

The aim of this project is to attempt to live on one tonne of carbon per year from September 2019. This breaks down to a budget of 2.74kg of carbon emitted per day. I will record everything that I consume in a journal. This will include food, drink, transport, entertainment, shopping, data, showers, washing up, heating etc

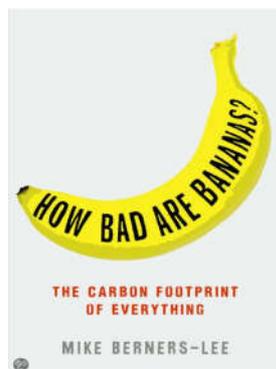


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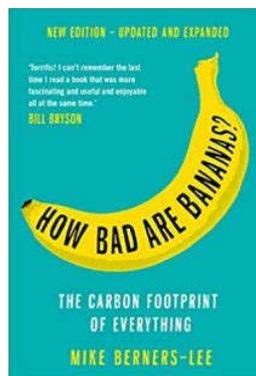
Everyone needs a handbook

'If we're serious about really addressing climate change, we need to become energy and carbon literate, and get to grips with the implications not only of our choices but also the bigger infrastructures which underpin the things we consume.' – Mike Berners-Lee

2010 version



2020 updated version



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What are the low carbon options and carbon freebies?

- Walking 0g per mile
- Cycling 3g per mile
- Growing your own food
- Gardening
- Buying seasonal locally produced food
- Cooking from fresh
- Idling
- Foraging
- Pre-used 2nd hand vintage
- Upcycling
- Swapping
- Sharing
- Community and local
- Socialising
- Meditation
- Enjoying nature
- Repairing
- Restoring
- Repurposing
- Resourcefulness
- Writing and reciting poetry
- Making acoustic music
- Dancing
- Yoga
- Imagination

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What are the surprisingly high carbon lifestyle choices on 2.7Kg per day?

- Mobile to mobile phone call - 57g per minute
- Public Transport - 80g per mile
- First hour of gas heating - 2.7Kg
- Streaming video - 132g per hour (on laptop)
- 1 egg - 340g
- Latte – 288g (oat milk)
552g (cow's milk)
110g (disposable cup)
- Long email with lots of attachments – 50g
- 10 inch Margherita pizza - 1.4Kg
- 10 inch Pepperoni pizza - 2.2 kg
- Cheese - 300g for 25g parmesan
- Rice - 4Kg per kilo
- Average 1 mile by car - 540g
- Hand washing up on an efficient gas boiler - 360g
- Non recyclable rubbish - 700g per kilo
- 1 recycled toilet roll - 450g
- Air freighted strawberries - 1.8Kg per punnet
- Load of laundry 30c dried on line – 330g
- Out of season hot-housed tomatoes

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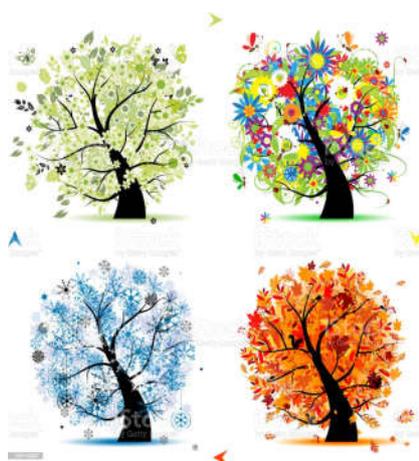
What does my average day look like in numbers?

- ["SATURDAY 13TH JUNE"](#)
- 2 x bananas – 160g
- Handful of cashew nuts – 32g
- 2 x coffee with milk – 100g
- Cycle 4 miles – 12g
- 2 glasses of red wine – 348g
- 1 x vegetable pasty – 150g
- 1 x spelt aubergine tart with tarragon – 150g
- 2 x tea with milk – 100g
- Lemon water – 50g
- Local seasonal punnet of strawberries – 150g
- Lettuce, olive oil, balsamic vinegar and 25g of parmesan – 450g
- 3 slices of bread with peanut butter – 250g
- Time online approximately 3 hours
- Data and servers – $3 \times 50 = 150g$
- Device laptop ipad or iPhone – $3 \times ?$
- Fridge – 64g
- Average water use – 38g



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The Four Seasons



- Autumn – abundance of locally produced food
- Winter – heating and added nutritional requirements
- Spring – Time to sow seeds and enjoy being outside again
- Summer – holidays and long distance travel

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Heating and hot water



- We need to rapidly decarbonise 25 million UK homes
- The biggest infrastructure project ever undertaken on UK soil

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A fun challenge



- An 0.9 kW electric radiator which is on for 5 hours a day uses $0.9\text{kW} \times 5 = 4.5\text{kWh}$ Our current UK electric grid is 340g CO₂e per unit of energy (1kWh) What is the carbon cost per hour of using the electric radiator?
- The carbon of UK electric grid has dropped from 600g CO₂e in 2010 to 340g CO₂e in 2020 How much carbon savings made on One hour of electric radiator use?
- And if it dropped to Iceland's electric grid of 9g per unit of energy?
- Go around your home and work out the other electric devices. And of course work out how many hours you use them.
- *Rated power for an incandescent lamp or electric heater is equal to the actual power, but for an electronic device, rated power is 2-3X bigger than actual*
- *A heat pump system would consume $\sim 1/3$ as much electric energy as an electric radiator to deliver the same amount of heat to the interior of the building.*
- *A fridge isn't on full power the whole time so difficult to calculate.*

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Transport options

- Walking – 0g per mile (I will be calculating food consumed separately)
- [Cycling – 3g per mile](#) (I will be calculating food consumed separately)
- Electric bike – 3g per mile
- [Cycling Taxi – 36g per mile](#)
- Average London underground – 68g per mile (Mike Berners-Lee)
- Average London bus journey – 46g per mile (Mike Berners- Lee)
- Electric bus 90 seater completely full - 6g per mile
- Intercity Standard class rail – 80g per mile (Mike Berners-Lee)
- [Shared e-scooter app – 202g per mile](#)
- Average car journey – 530g per mile (Mike Berners-Lee)
- Rush hour or congested car journey – 2.2kg per mile (Mike Berners-Lee)
- Electric car – 180g per mile
- Average electric car – 11 tonnes
- New SUV - 25 tonnes of embedded carbon (Mike Berners-Lee)
- Return flight London to Glasgow – 500Kg (Mike Berners-Lee)
- Return flight to Hong Kong economy – 3.4 tonnes (Mike Berners-Lee)
- Business class – 10 tonnes

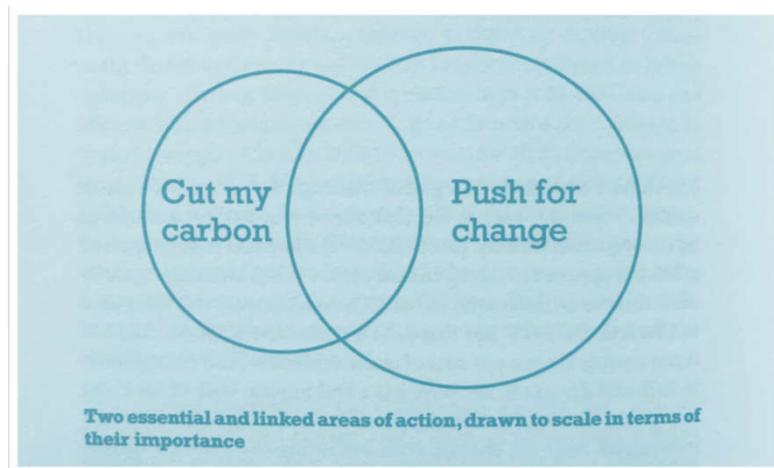
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Longer distance travel and adventure



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Individual behaviour creates social norms
Social norms change systems



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Walk the Talk

I am campaigner, activist, artist, sometimes politician and citizen. A carbon footprint (cut my carbon) and a carbon handprint (push for change) make total sense when you realise social change is built on a foundation of individual practice



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What can I do?



- Try living on net carbon zero budget just for a day
- What are the difficult areas?
- How can we prepare in our homes, communities and schools?



- Contact local councillors or MPs
- Discuss /share knowledge and creative solutions with your family and friends workplaces, community, schools, colleges, councillors, MPs.

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Sources

- One Tonne of Carbon per Year – This is what net carbon zero looks like
<https://rosalindreadhead.wordpress.com/>
- Mike Berners-Lee 'How Bad are Bananas? The Carbon Footprint of Everything'
- 1.5 Degree Lifestyles -
<https://www.aalto.fi/en/departement-of-design/15-degree-lifestyles>
- <https://www.treehugger.com/get-ready-lifestyle-could-you-4856379>

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