

Legislation & Market Update

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Who is it?



over 1,400 local governments in 28 countries
have made climate emergency declarations

ASA



EUROPE'S LOWEST FARES, LOWEST EMISSIONS AIRLINE

Everybody knows that when you fly Ryanair you enjoy the lowest fares. But do you know you are travelling on the airline with Europe's lowest emissions as well?

While aviation is responsible for just 2% of carbon emissions, our industry is determined to play a leading role in reducing emissions. Aviation already pays significant environmental taxes – this year Ryanair will pay €930m in environmental taxes in Europe.

Ryanair has the lowest carbon emissions of any major airline – 65g CO₂ for every passenger kilometre flown. This is because we have the youngest fleet of aircraft (avg. age 6 years), the highest load factors (87% of seats filled) and newest most fuel efficient engines.

Ryanair is committed to cutting our carbon emissions further which is why we are investing over \$20 billion in new aircraft that will cut our carbon emissions by 10% by 2030 and lower noise emissions by a further 40%.

Many of our customers are now choosing to offset the carbon cost of their flight each time they book with us. We support them making that choice and we thank them for contributing to our 4 great environmental partners.

Find out more at www.ryanair.com/en/environment

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MORE CHOICE. LOW FARES. GREAT CARE.



Southwood Rewilding



Black Dam Planting



Climate campaigners win Heathrow expansion case

By Tom Espiner
Business reporter, BBC News

🕒 1 hour ago | 📰 3193

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Our Planet Matters



Controversial plans for a third runway at Heathrow Airport have been thrown into doubt after a court ruling.

Environmental Fines

- **2019 Environmental fines - £2.8m**
- Majority were **Enforcement Undertakings - £2.1m**
 - Voluntary donations instead of fines
- **Continued focus on waste crime**
 - 912 illegal waste sites closed down
 - 77 waste crime prosecutions (£440k fines and **8 prison sentences**)
- **Key case – Bob's Skips fined £25,000**
 - Hires waste vehicles
 - Failed to notice imposter or identify fake waste notes
 - Therefore fly tipping was considered to have occurred under his **duty of care**

Environmental Fines

- **Enforcement Undertaking** – money is voluntarily given to environmental schemes rather than given fine
 - United Utilities Water Limited – Discharging matter or effluent that is poisonous or injurious to fish, spawn, spawning areas or food of fish - **£264,000** to the Eden Rivers Trust
 - Wessex Water Services Limited – Operating without a permit - **£200,000** split between Severn Estuary Partnership and Cardiff University, Surfers Against Sewage, Somerset Catchment Partnership and Avon Wildlife Trust
 - Tarmac Aggregates Limited – failing to comply to permit - **£200,000** split between the Creswell Heritage Trust and the RSPB



Environmental Fines

- **Southern Water 2019 £126 million fine update:**
 - for “serious failures” in its sewage treatment works and for deliberately misreporting its performance
 - Southern Water will pay most of the Ofwat penalty – **£123m** – to customers as a rebate through their bills. **Every customer will receive £61, with £17 in 2020-21 and £11 in each of the following four years.**
 - As of October - Southern Water is also **subject to ongoing criminal investigations** by the Environment Agency.
 - **8 employees have been convicted of obstructing the collection of data** by the Environment Agency, which was investigating raw sewage spilled into rivers and on beaches in south-east England, although two of the convictions were overturned this year on appeal.



Any one for Energy Savings Opportunity Scheme Phase 3?



- Phase dates:
 - 6 December 2019 – 5 December 2023
- Qualification date:
 - 31 December 2022
- Qualification criteria:
 - >250 employees or
 - Turnover £44m and balance sheet £38m (now fixed in UK Sterling)
- Total energy consumption reference period:
 - 1 January 2022 – 5 December 2023
- Cedrec - currently believes is still in the cards



Streamlined Energy & Carbon Reporting (SECR) & Implications



- Reporting years starting from **1 April 2019**
- **Replacement of Mandatory Greenhouse Gas Reporting (MGHG)**
 - First reports must be published in 2020 within annual reports
 - LLPs (who are not required to publish an annual report) must prepare a new report called **“The Energy and Carbon Report”**.
- Company or LLP qualifies if satisfies **two or more** of the following requirements: (exempt if use <40MWh of energy)
 - **Turnover £36 million or more**
 - **Balance sheet total £18 million or more**
 - **Number of employees 250 or more**
- **No currently defined fines for SECR – yet ...**

Streamlined Energy and Carbon Reporting (SECR)

- **Those already in MGHG reporting / FSTE main market**
 - Report their global greenhouse gas (GHG) emissions and an intensity ratio. (Scope 1 and 2 and business travel via rental and employee owned cars)
 - Report global energy use (energy, fuel and grey fleet)
 - Report energy efficiency action taken alongside the methodology used to calculate the new and existing disclosure requirements.
 - could potentially be moving towards reporting progress on ESOS or replacing ESOS
- **Other large entities / LLPs**
 - Report their UK energy use and associated greenhouse gas emissions for gas, electricity and transport fuel
 - Report an intensity ratio and information relating to energy efficiency action
- From year 2 , reporting must include the previous year's data
- Enforced by **The Conduct Committee of the Financial Reporting Council**

End of the Carbon Reduction Commitment (CRC)

- **Last phase ended April 2019**
 - Registry still open until March 2022
 - Accounts closed from April 2022
 - List of participants until 2025
- **Changes to CCL and CCA from April 2019 to compensate**

Fuel Type	Rate from 1 st Apr 19	Increase	CCA rate
Electricity	0.00847	+45%	93% (previously 90%)
Natural Gas	0.00339	+65%	78% (previously 65%)

- **UK Government Consultation on Carbon Tax**
 - Mostly for if no deal Brexit (and therefore not part of EU-ETS)

Environment Legislation

- **Changes to EU WEEE Open Scope**
 - Now changed from listing to what EEE is WEEE to only listing what is exempt – **‘it is in unless it’s out’**
 - **UK has yet to implement**

- **F-gas ban from Jan 2020**
 - Ban on **servicing** of HFC with GWP >2500 within 40tCO₂e annual systems

Refrigerant Gas	GWP	Kg needed to reach 40tCO ₂ e limit
R23	14,800	2.7 kg
R404A	3,922	10.2 kg
R422A (MO79)	3,143	12.7 kg
R422D (MO29)	2,729	14.7 kg
R428A (RS-52)	3,607	11.1 kg
R434A (RS-45)	3,245	12.3 kg
R507	3,985	10.0 kg
R508B	13,396	3.0 kg
MO89	3,805	10.5 kg

- Not too much changed has occurred as Government may have been distracted...

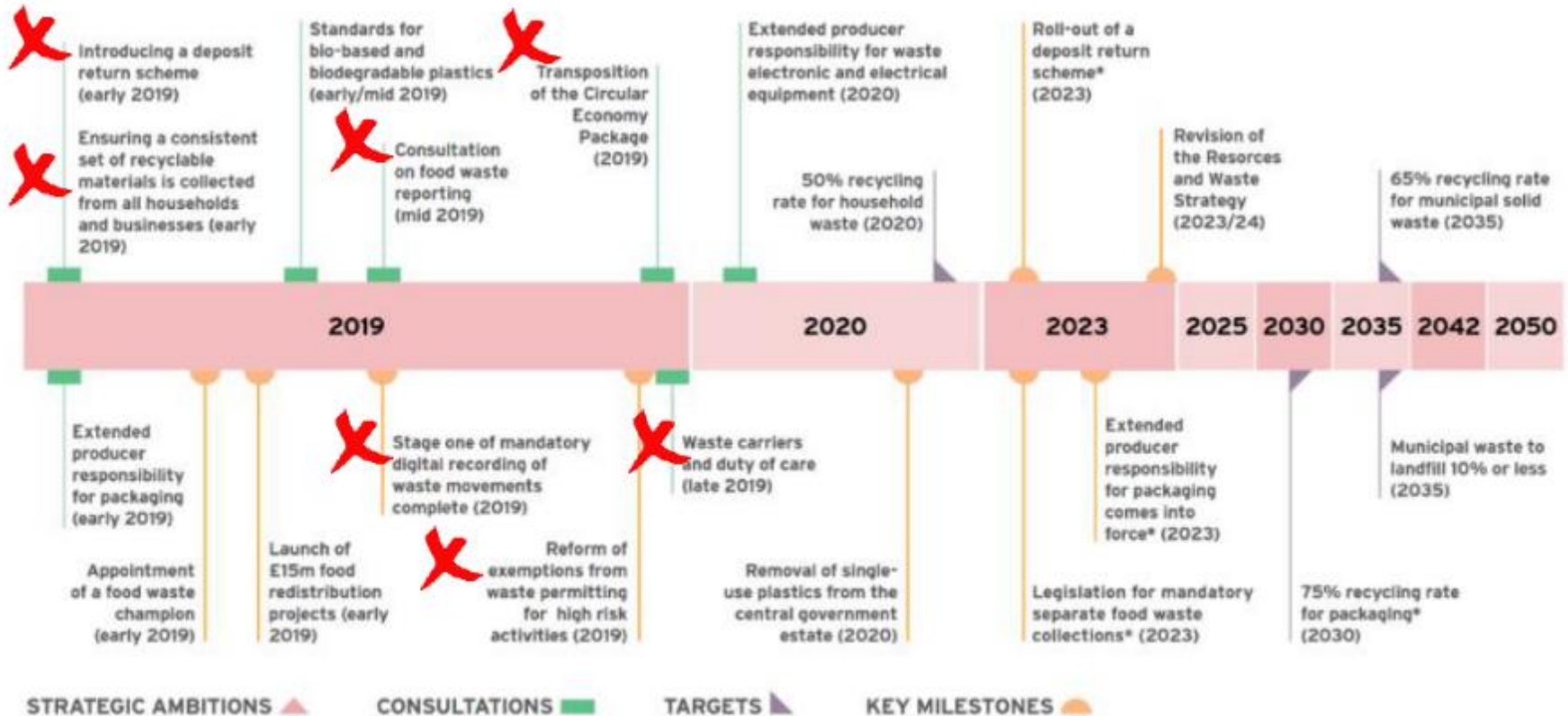
Brexit

- EU Withdrawal Act passed
- EU Withdrawal Agreement Bill passed
- UK will leave the EU on 31 January 2020:
 - Political institutions and contributory regime
- UK in “Implementation Phase” until 31 December 2020:
 - Agreed ongoing application of EU laws
 - Continuing commitment to implement Directives
 - Review based on “national interest”
- Any future dates in retained law will apply if in force on date of leaving, even if future date



Environmental Bill

- **Framework controls:**
 - Changes to waste management (Resource and Waste Strategy)
 - Legally binding targets for PM2.5 (Clean Air Strategy)
 - Requirements for net biodiversity gain
 - Sustainable water resources (25 Year Environment Plan commitments)
- **Status:**
 - **Draft from October 2019 'not reserved' (has to be processed again)**
 - Announced in Queen's Speech December 2019
- **None of the 2019 planned changes occurred!**



Packaging Waste Reform

- Extended producer responsibility to full net cost of household waste recovery costs
 - Producers: handle 50 tonnes of packaging materials or packaging in a calendar year
- Current scheme generates £70M pa for local authorities
- Proposal: increases significantly £500M - £1,000M
- Incentives for better design:
 - Driven by market fees (related to recyclability) **or** Deposit (producer) for recyclable / fee for non-recyclable

Packaging Waste Reform

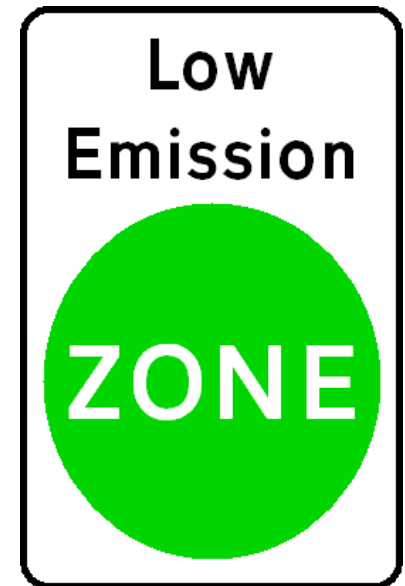
- UK Government 'planning' to create mandatory digital waste tracking regime
- Phase 2 of **Govtech Catalyst** challenge
- £1m seed funding issued to two selected prototype plans:
 - Anthesis: Use QR codes on mobile devices to record ID of consignments
 - Topolytics: data from range of apps and sensors (RFID) on waste containers or vehicles

Clean Air Strategy

- Policy objectives:
 - Extended control to businesses with 500 kW to 1 MW combustion plant controls
 - Aviation, maritime (by 2050) and rail (by 2040) diesel phase out planning
 - Household PM2.5 enforcement (**discussion on removal of coal burning fires**)
- Targets (2005 baseline):
 - PM10 and PM 2.5 target of 30% reduction by 2020 and 46% by 2030
 - Nox target 55% reduction by 2020 and 73% by 2030
 - SO₂ 59% reduction by 2020 and 88% by 2030
- Recent stats:
 - 160K UK deaths predicted due poor air quality over next decade
 - 17% increased chance of asthma from exposure at young age
 - 20% of PM2.5 pollution at roadside is from brake pads

Clean Air Strategy

- UK plan for roadside nitrogen dioxide reduction:
 - Clean Air Zones (local authorities)
 - Welsh Clean Air Zone
 - Scottish Low Emissions Zones
- Clean Air Zone:
 - Certain vehicles pay fees to drive within the zone
- Low Emissions Zones:
 - Certain vehicles can't drive there



Clean Air Strategy Being Rolled out in Big Cities

- **London**

- **ULEZ** - Central London from 8 April 2019
- **All inner London from 25 October 2021**
- Non-compliant below: Euro 4 Petrol (January 2006) / Euro 6 Diesel (September 2015)
- Cars / vans £12.50 per day
- Lorries / buses £100 per day



- **Bristol (needs government approval)**

- Commercial vehicle **clean air zone** from March 2021:
- Proposal for £9/100 (Bus/HGV) p/d charge
- Non-compliant below: Euro 4 Petrol (January 2006) / Euro 6 Diesel (September 2015)
- Additional private diesel ban (**7am to 3pm daily**):
- Subject to fine (proposal £60 - £120 > 4 days payment)
- Car scrappage scheme
- A number plate recognition system, similar to the one used to police London's congestion charge will be used

Clean air strategies also proposed in Birmingham, Belfast, Cardiff, Tyneside, Greater Manchester and Sheffield

Upcoming EU Directives

- **Landfill Directive:**
 - Part of Circular Economy package
 - Strengthen targets on landfill restriction
 - Maximum 10% landfill by 2035 (currently at 24.4%)
 - No recycling waste to landfill by 2030
- **Energy Efficiency Directive:**
 - Provision of charging points for EVs
 - 10 spaces = 1 charging point
 - Ducting infrastructure for 1 in 5 future install
 - Existing > 20 spaces = 1 charging point by 2025



Airlines - CORSIA

- **Carbon Offsetting Scheme for International Aviation**
- Aims for carbon neutral **growth** from 2020.
- CORSIA's obligations have already started. As of 1 January 2019, all carriers (with emissions greater than 10,000 tCO₂e) are required to report their emissions on an annual basis.
- It is anticipated that CORSIA will mitigate around **2.5 billion tonnes of CO₂e** between 2021 and 2035.
- During the **initial phases**, CORSIA will **only apply to international flights between states that have volunteered to take part**, meaning that international flights to and from states that have not volunteered will be exempt.
- During the **mandatory stage**, which begins in **2027**, CORSIA **will cover all international flights** (including those travelling to or from states that had not volunteered for the early phases).



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MORE CHOICE. LOW FARES. GREAT CARE.

first choice, reNature, woodland, Ryanair



Flight carbon footprint calculator

You can enter details for up to 3 flight itineraries

☒ Return trip ☐ One-way flight

From:

To:

Via (optional):

Class:

Trips:

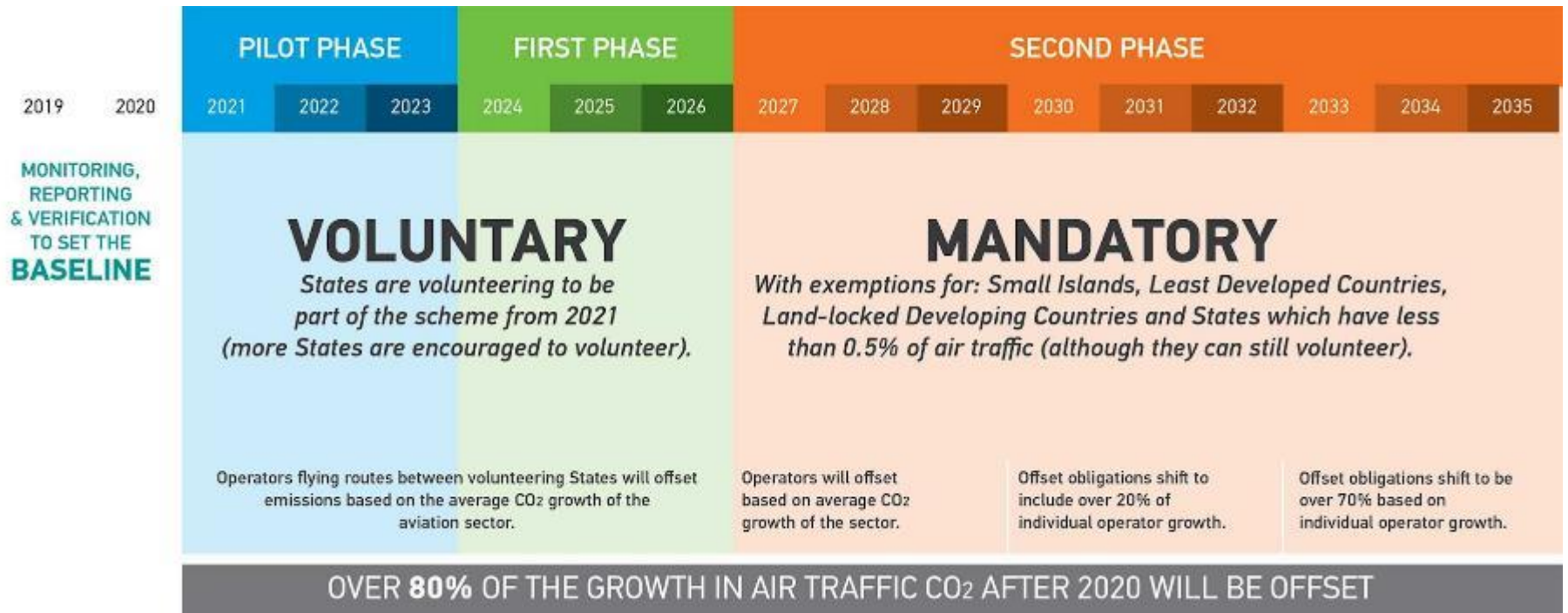
☒ Tick to include radiative forcing [what's this?](#)

Calculate & Add To Footprint

Total Flights Footprint = 2.63 tonnes of CO₂e **Offset Now**

2.63 tonnes: Economy class direct return flight from LHR to LAX [\[remove\]](#)

Airlines - CORSIA



Electric Vehicles - It's Happening

- ULEVs through salary sacrifice are exempt from income tax and NI. Money can also be saved through the OLEV grant and as of April 2020, EVs are **exempt from Benefit in Kind (BIK) tax**.
- **Benefit in Kind** are benefits which employees or directors receive from their employment but which are not included in their salary cheque or wages.
- In 2019 **10% of new car sales** were EV or hybrid vehicles, **Dec 2019 it was 15%**



Retail Packaging

- **ASDA is trialling refillable stations**

- Starts in May
- At the Leeds branch will have refill stations for own brand rice and pasta, as well as Kellogg's cereals and PG Tips.
- loose produce such as cucumbers or mushrooms will be available without any plastic packaging
- Will also house a “naked florist”
- Follows on from Waitrose’s refills for wine, beer, cleaning materials, and loose fruit and vegetables free from packaging across four stores after a trial at its Botley Road shop in Oxford – now being tested across 3 other stores.



Resources

- List of Enforcement Undertakings accepted by the Environment Agency:
<https://www.gov.uk/government/publications/the-environment-agencys-use-of-civil-sanctions/enforcement-undertakings-accepted-by-the-environment-agency>
- CORSIA fact sheet:
<https://www.iata.org/contentassets/fb745460050c48089597a3ef1b9fe7a8/corsia-fact-sheet.pdf>
- <https://www.climateemergency.uk/blog/map-of-local-council-declarations/>
- <https://www.goultralow.com/ev-charging-point-map/>
- <https://www.carbonfootprint.com/secr.html#>



While the world will need to reach net zero, those of us who can afford to move faster and go further should do so. That's why today we are announcing an ambitious goal and a new plan to reduce and ultimately remove Microsoft's carbon footprint.

By 2030 Microsoft will be carbon negative, and by 2050 Microsoft will remove from the environment all the carbon the company has emitted either directly or by electrical consumption since it was founded in 1975.



What is Carbon Offsetting?

- **Carbon offsetting** = financially supporting carbon reduction projects around the world that reduce greenhouse gas emissions

Other Terms you may have heard

- **Carbon Neutral** = Carbon Offsetting to balance out / compensate for all your emissions
- **Net Zero Carbon** = same as Carbon Neutral
- **Carbon Negative (or Positive)** = Offsetting more emissions than you produce
- **Zero Carbon** = reducing your emissions to zero (without the need to offset)

Offsetting is...



... a mechanism to enable you to contribute to global Climate Change Solutions

Renewable Energy – Wind Power



Gold Standard[®]
Climate Security & Sustainable Development

Renewable – Small Hydropower



Renewable – Geothermal Power



**Verified Carbon
Standard**

Renewable - Solar Power



Reducing Deforestation (REDD)



**Verified Carbon
Standard**

Landfill Gas - Methane Capture



Gold Standard®
Climate Security & Sustainable Development

Energy Efficiency – Efficient Cookstoves



Gold Standard®
Climate Security & Sustainable Development

Energy Efficiency – Solar Cookers



**Verified Carbon
Standard**

Energy Efficiency & Clean Drinking Water



Gold Standard®
Climate Security & Sustainable Development

Test of a good Carbon Offsetting Project

- Emission Reductions need to:
 - Be **Additional** (to business as usual – require additional funding to happen)
 - Be **Measurable**
 - Be **Verifiable**
 - Be **Permanent**
 - **Avoid leakage** (stopping emissions being moved to another place)
 - **Avoid double counting**

Leading Offset Project Standards

- Provide Methodologies for projects to follow
- Validation process
- Ongoing Verification (by independent verifiers)
- Issuance of Carbon Credits
 - 1 Carbon Credit = 1 tonne of CO₂e saved



Documentation for projects

- Registration Documents
 - Project Description Document (PDD)
 - Validation Documents
- Credit Issuance Document
 - Verification Documents
 - Monitoring Report
 - Issuance Deeds

Carbon Registries

- Registry accounts to hold issued carbon credits
- Allow transition of ownership (e.g. Project developer to Carbon Offset Provider)
- Allow credits to be retired /cancelled (e.g. on behalf of the end customer)
- Allow transparency (publicly viewable)
- Audit trail (showing retirement, serial numbers, verification documentation etc.)



Quality Assurance Standard (QAS) for carbon offsetting



- The Quality Assurance Standard (QAS) is a comprehensive independent audit system.
- QAS-approved products are checked against a 40 point checklist to ensure they meet the very highest standards in the world.
- Carbon Footprint Ltd was one of the first companies to achieve QAS Approved carbon offsets
- <https://qasaudit.com/>



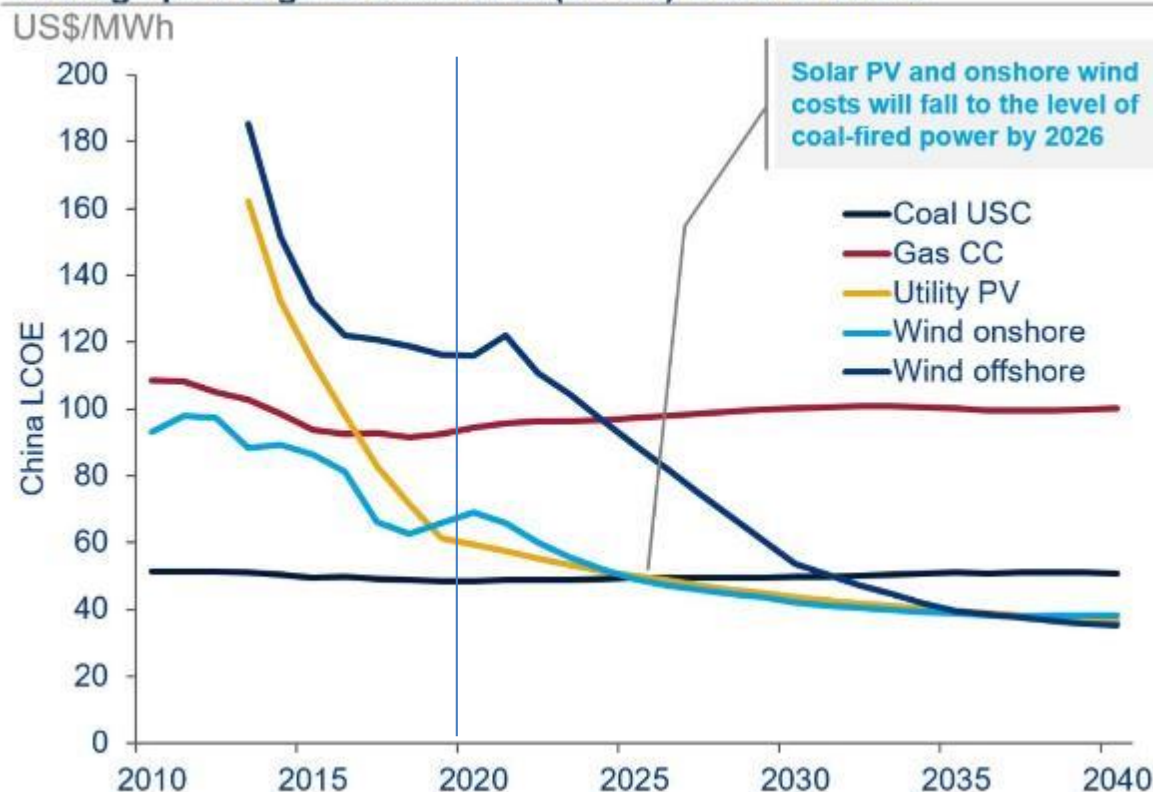
Funding and costs of projects

- Not all projects cost the same amount of money per tonne of CO₂
- Costs also vary from one country to another
- Different project technologies have very different financial models
 - Efficient Cookstoves are sometimes provided to homes for free and other times for a nominal cost to the household
 - Limited additional funding for Land Fill Gas projects or Reducing Deforestation Projects
 - Wind Farm may also generate funds from selling energy back onto the grid

Is renewable energy cheaper than fossil fuel energy now?



Average power generation cost (LCOE) trend in China



Source: Wood Mackenzie

Ref: Wood Mackenzie, August 2019

Summary : <https://www.greentechmedia.com/articles/read/chinas-renewables-cost-to-fall-below-coal-power-by-2026>

What about tree planting?



Why Tree Planting is often the offset project people first considered...



- Tree planting is great
 - It can be done locally
 - Improves air quality
 - Engage stakeholders (get them involved in planting)
 - Provides habitats and corridors for wildlife
 - It is visible
 - Beautifies the local area
 - Investment into the local area
- What can be wrong with tree planting?



Trees sometimes come under criticism for carbon offsetting...



- They take a long time to grow and sequester carbon
- They may fail
- They have a limited life (many trees species have a life expectancy of <60 years) – so what happens at the end of the life of the tree?
- How can you guarantee the tree / woodland will be there for thousands of years (ideally forever)?
- Difficult to measure the amount of carbon actually sequestered
- Hard to verify & guarantee the permanent carbon benefits



There is another issue... it needs a lot of space

Q. How big would a woodland need to be to sequester the whole of Basingstoke & Deane's carbon footprint?



The above map shows the area of Basingstoke & Deane (about 630km²)

Answer...

- About double the whole area of all of Basingstoke & Deane



X 2

We should still plant trees though ...

- Plant trees locally and support internationally verified carbon offsetting projects as well
 - Climate Change can only be mitigated with a Globally focused effort and Globally focused solutions



Don't forget

Offsetting is just part of the toolset in tackling climate change

We also need to:

1. Reduce our emissions as much as possible
2. Support “Local” Renewable energy
 - Switch to a green tariff
 - Generate your own (install some Solar PV panels)

Offsetting vs Reduction

- **Carbon Offsetting**

- Accounts for all your emissions
- Allows you to support global climate change solutions
- Quick
- Relatively cheap - but no direct financial return
- Strong marketing advantage – allowing Net Zero Carbon claims
- Additional costs relating to emissions – often creates more appetite to reduce emissions faster as well

- **Carbon Reduction**

- Ignores emissions already caused
- Reduces your contribution to the climate change problem
- Slow
- Requires more investment, but will should give a financial return from energy savings
- Strong marketing advantage if you can show significant success in reducing emissions

Carbon Offsetting + Carbon Reduction



Both solutions go hand in hand



Climate Change needs Rapid Global Solutions

- You can be part of the solution
- Reducing your energy use and carbon emission is a good thing to do
 - However, reducing by a few % a year is not fast enough
- More and more organisations are becoming Carbon Neutral / Net Zero Carbon
- Companies, Councils, Countries and Continents are setting Net Zero Carbon Targets

Your business can do this too

And you need to do it Now!

Questions?



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Ecophon Carbon Footprint

Peter Hibbett – EHS Manager



Stakeholder requirements

- Green Build credentials
- Environmental credentials ISO14001:2015
- Safety credentials
- LCA or CTC (ISO14044) Life Cycle Assessment, Cradle to Cradle
- EPD (ISO14025, 14040) Environmental Product Declaration
- Sustainable resourcing (BES 6001)
- Equal Opportunities
- Fairness, Inclusion and Respect

How this helps our company.

ISO 14064

Carbon footprint verification, to allow offset of company's CO2 footprint for the offices and external sales.

ISO14001 showing ongoing improvements, (even if it shows reevaluation to higher amounts shows improved reporting).

Energy - reduction helps drive plans for reduction or alternative supplies, helps with understanding different usage (lighting, heating, computers etc) and how to reduce these and give a sustainable and monetary substantiation. Less maintenance visits and working at height

Water - Wrap standard is basic but helps understand water usage/leakage.

Fuel - Vehicles starts people looking at the type of company car or delivery vehicles of the future ,driving courses

Waste - carriers and recycling improvements, (bailing machine, segregation)

Product - shows any problems in supply chain for sustainability, paths for improvement

Alternative transport – flights, train, grey fleet, WebEx

ISO 14064 Carbon Footprint Offsetting

- Neutralising our impact from the offices and the salespeople.
- Stakeholder involvement with planting at schools
- Sending a clear message of our intentions
- 5 years 631 tonnes CO2 Offset - reduced from 227 tonne to 93 (including Green energy)

scope1		2008	2009	2010	2011	2012	2013	2014	2015	2015	2016	2016	2017	2017	2018	2018	2019	2019
scope2	co2 per car	4.45	3.75	2.98	2.92	2.88	3.39	3.28	4.92	0.00	3.72	0.00	3.70	0	3.321594	0	2.90407	0
scope3	qty company cars	22	21	24	24	24	29	30	30	30	30	30	29	29	29	29	29	29
cars	co2	97.8	78.79	71.57	70	69	98.3	98.3	147.63	0	111.55	0.00	107.25	0	96.33	0	84.22	0
flights	co2	4	2	1	3	3	8	20	20	0	13.63	0.00	10.03	0	8.03	0	8	0
electricity	per Kwh	122.65	140.01	128.01	77.83	71.43	72.25	63.48	54.77	0.00	48.64	0.00	39.27	0.00	32.38	0.00	32.06999	0.00
electric TD		10.6	10.6	10.6	10.6	5.91	6.18	5.55	4.52	0.00	4.40	0.00	3.67	0.00	2.76	0.00	2.733772	0.00
Water		0.3	0.3	0.3	0.3	0.33746	0.14482	0.11386	0.103888	0	0.15	0.00	0.19	0	0.405748	0	0.147576	0
water Treatment		0.7	0.7	0.7	0.7	0.65982	0.38316	0.22263	0.203125	0	0.26	0.00	0.38	0	0.793332	0	0.288545	0
	total	236.1	232.4	212.2	162.4	150.3	185.3	187.7	227.2	0.0	178.64	0.0	160.8	0.0	142.4	0.0	127.5	0.0
Green energy									167.9		125.60		117.9		107.2		92.7	
Refridgerant								0.01	0	0	0	0	0	0	1.67	0	1.4616	0
Waste WEEE											0	0	0	0	0	0	0	0
Waste Refuse	commercial/industrial										0	0	0	0	0	0	0	0
Waste Refuse	Food										0	0	0	0	0	0	0	0
Waste Metal											0	0	0	0	0	0	0	0
Waste plastic											0	0	0	0	0	0	0	0
waste Paper									0	0	0	0	0	0	0	0	0	0
Waste refuse	garden								0	0	0	0	0	0	0	0	0	0
c02	packaging	115	121	52	60	116	115	120	196	196	146.00	146.00	155.60	155.60	152.09	152.09	153.21	
packaging waste	Valpak/SG	-115	-121	-52	-60	-116	-115	-120	-196	-196	-146	-146	-155.6	-155.60	-152.09	-152.09	-153.21	
large/med	offset trees	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.40	-1.4	-1.40	-1.4	-1.40
paper recycle	shred It	-5.21	-3.15	-6.9	-6	-3.75	-4.35	-6.525	-21.855	-21.855	-5.724	-5.724	-9.774	-9.77	-9.774	-9.77	-4.35	-4.35
plastic	GHS	0	-2.5	-3	-3.5	-2.5	-2	-2	-2	-2	-2	-2	-0.4	-0.40	-0.4	-0.40	-0.3	-0.30
cardboard	GHS	0	-2.1	-2.5	-2.5	-2.1	-2	-2	-2.0	-2.0	-2.0	-2.0	-0.2	-0.20	-0.2	-0.20	-0.2	-0.20
co2	train ASM											0	0	0	0	0	0	0

Lighting an Example of Energy reduction

Started in 2013 with lighting 27500 watts

2019= 13000 watts pay back around 19 months

This year replacing 90% of remainder = 5500 watts Lighting

location	light type	line tube	LV down	Lavanda	rapido tub	strip light 54	strip light 36	strip light 35	down light 21	emergenc	coffers	d/light twin	led d/light	led strip light 54	led d/light	down light 21	LED Dot & Sq	LED cnr meet	led lamp pos	led wh LV down	LED wh dots/square	LED highbay	led floods	led wh flood	
warehouse						3														5	16	11		2	
Whoffice 66m2 2 floor				4																					
Gym 33m2		7		2																					
Toilets 23m2										16															
IT store 35m2														6											
mock up/marketing area 300m2						24																			
conference 320m2		13		32									3												
main office			9		2			19	79			3			8		8	8	21						
carpark																									
external bld										21			5							12				6	
										21		3	5							12				6	
wattage	55w	36w	50w	4 x 18w	4 x 18w t8	58w t8	36w t8	35w t5	1 x 26w	26w	46x36wt5	2 x 26w	26W	10	10	8	37w	10w/ 20w	30w	8w	5	16	11	6	
																								2	
total wattage	715	576	1600	432	144	1566	0	665	2470	546	1610	70	78	60	80	64	296	280	330	40	128	1375	180	300	
watt saving vs LED	682.5	538	1504	417	139	1053	0	323	1815	357	1556	-20													
yearly saving approx	£246	£193	£543	£151	£50	£380	£0	£117	£583	£129	£562	-£7													
	2.5	2.5	3	2.5	2.5	19	18	18	9	9	18	18													
led lamps wattage	32.5	40	96	15	5	513	0	342	855	189	54	90													
lamp price 2014	?	£24.99	£7.99	£19.99	£19.99	£32.49	£24.99	£24.99	£12.00	£19.99	£24.99	£12.00													
total	?	£399.84	£255.68	£479.76	£159.92	£877.23	£0.00	£474.81	£1,140.00	£419.79	£899.64	£120.00													
Lamp Price 2015																									
fittings change 2015																									
total 2015		£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00													
fittings change 2014		£274.00	£284.00	£18.00	£127.00	£127.00	£120.00	£120.00	£120.00	£60.00	£56.00	?	£60.00								£1,768.00				
total		£3,562	£4,544	£576	£782	£254	£3,240	£0	£2,280	£5,700	£1,176	£300					£0								
2017 use SLCC housing LED led lamp																									
previous lighting installation																									
present wattage hourly (if all lights are on)																									
possible LED wattage																									
cost for replacing with LED lamps																									
cost for replacing all fittings with LED																									

2013
2016 redu