

Richmond Heathrow Campaign



Managing Aviation Demand and Emissions

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Presentation to HCNF

Wednesday 28 July 2021

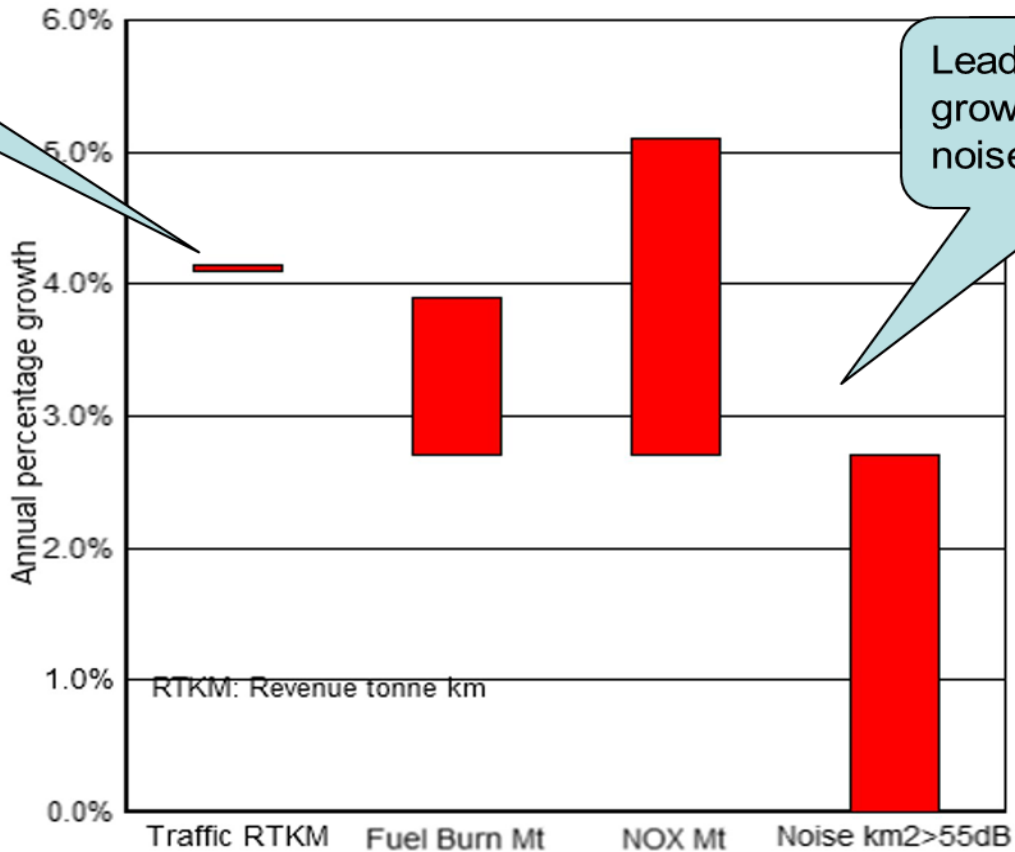
Topics

- Global and UK demand trends
- UK Aviation Carbon Budget
- Market Based Schemes (MBS)
- Published Carbon Reduction Scenarios
- Proposed Revision to Air Passenger Duty (APD)
- Proposed Airport Quota Scheme
- RHC Proposals for Achieving Aviation Net Zero Carbon

Global and UK demand trends

Global Trends in Aviation Growth and Emissions

2015 - 2045 (RHC - source ICAO 5/7/19)



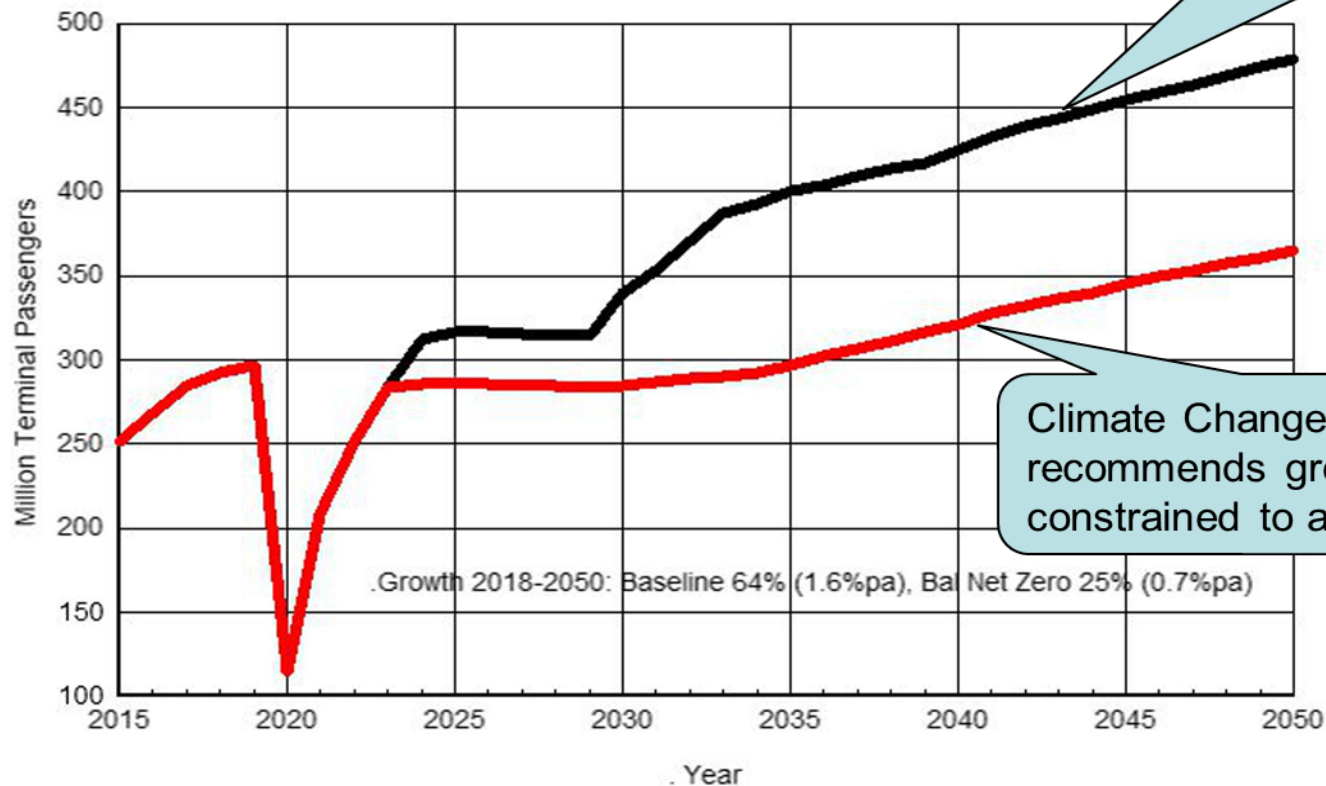
Unconstrained global growth is very high over 30 years

Leading to high growth in air and noise emissions

- Air and noise emissions depend on demand
- Mitigation choices compete, requiring trade-offs

UK PASSENGER DEMAND

Source: CCC 6th Carbon Budget (DfT) Dec 2020



Unconstrained UK growth to 2050 is far less than global: avg 1.6% vs ~4% pa

Climate Change Committee recommends growth constrained to avg 0.7% pa

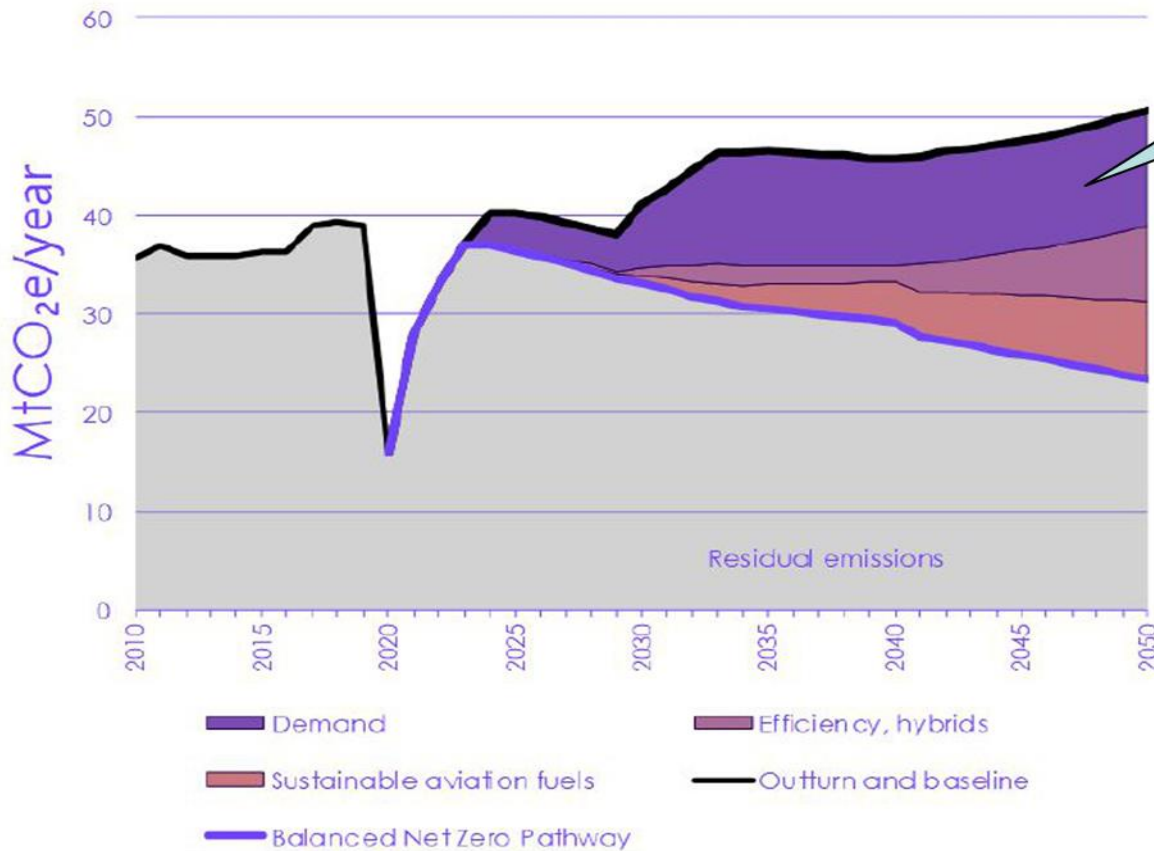
Baseline with expansion
478mppa

Balanced Net Zero no Exp
365 mppa

UK Aviation Carbon Budget

Aviation Net Zero Carbon 2050		
Balanced Net Zero no expansion		
		MTCO ₂ e
Unmitigated carbon (478 mppa)		51
Demand management		-12
Constrained demand (365mppa)		39
Efficiency & hybrids	-8	
Sustainable Aviation Fuels (SAFs)	-8	
		-16
		23
Removal of carbon from atmosphere		-23
Aviation Net Zero carbon		0
Source: CCC 6th Carbon Budget 2020		

Figure 3.7.a Sources of abatement in the Balanced Net Zero Pathway for the aviation sector



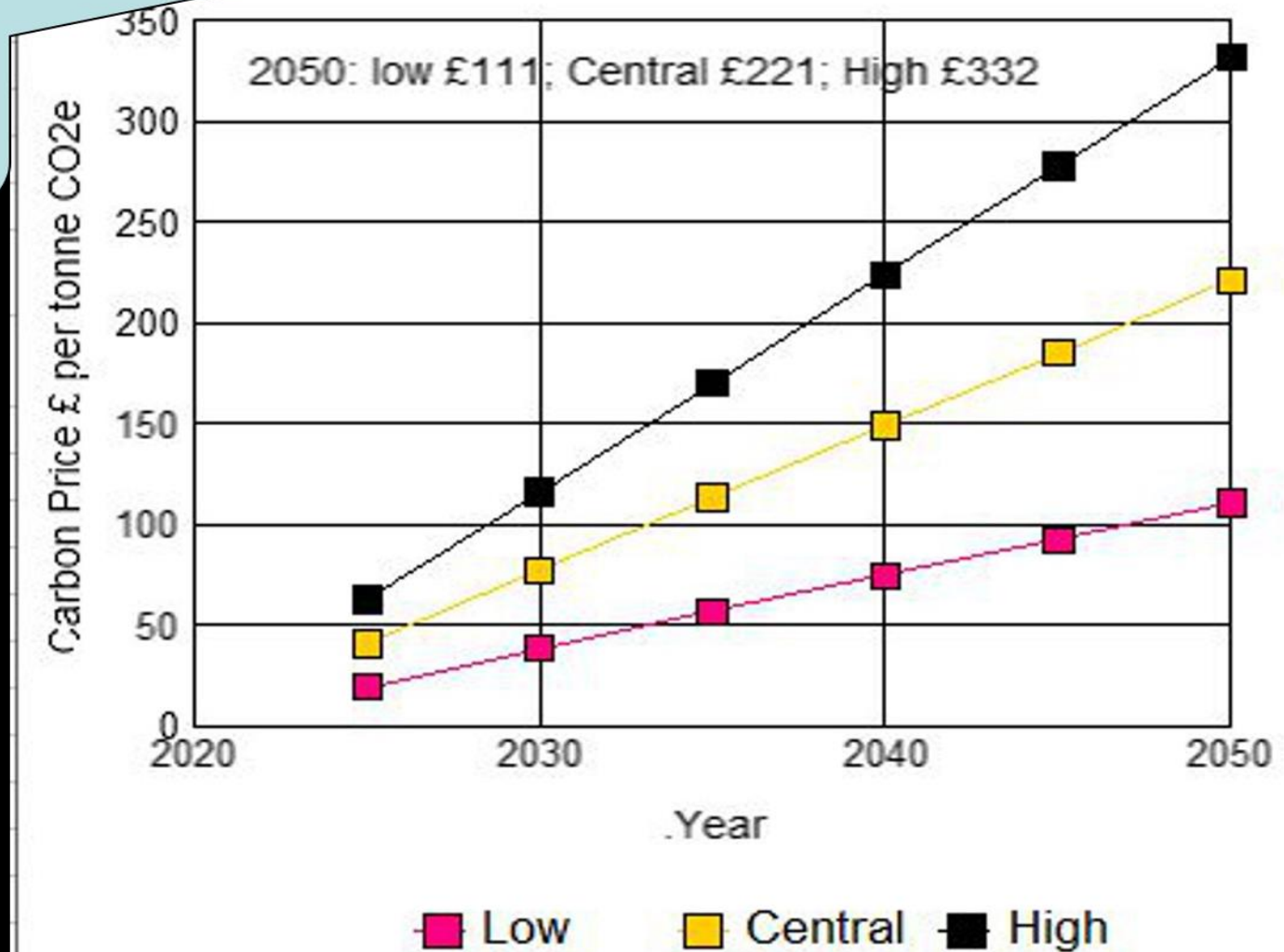
Demand management is a major part of the Net Zero pathway

Source: BEIS (2020) Provisional UK greenhouse gas emissions national statistics 2019; CCC analysis.

Market Based Schemes (MBS)

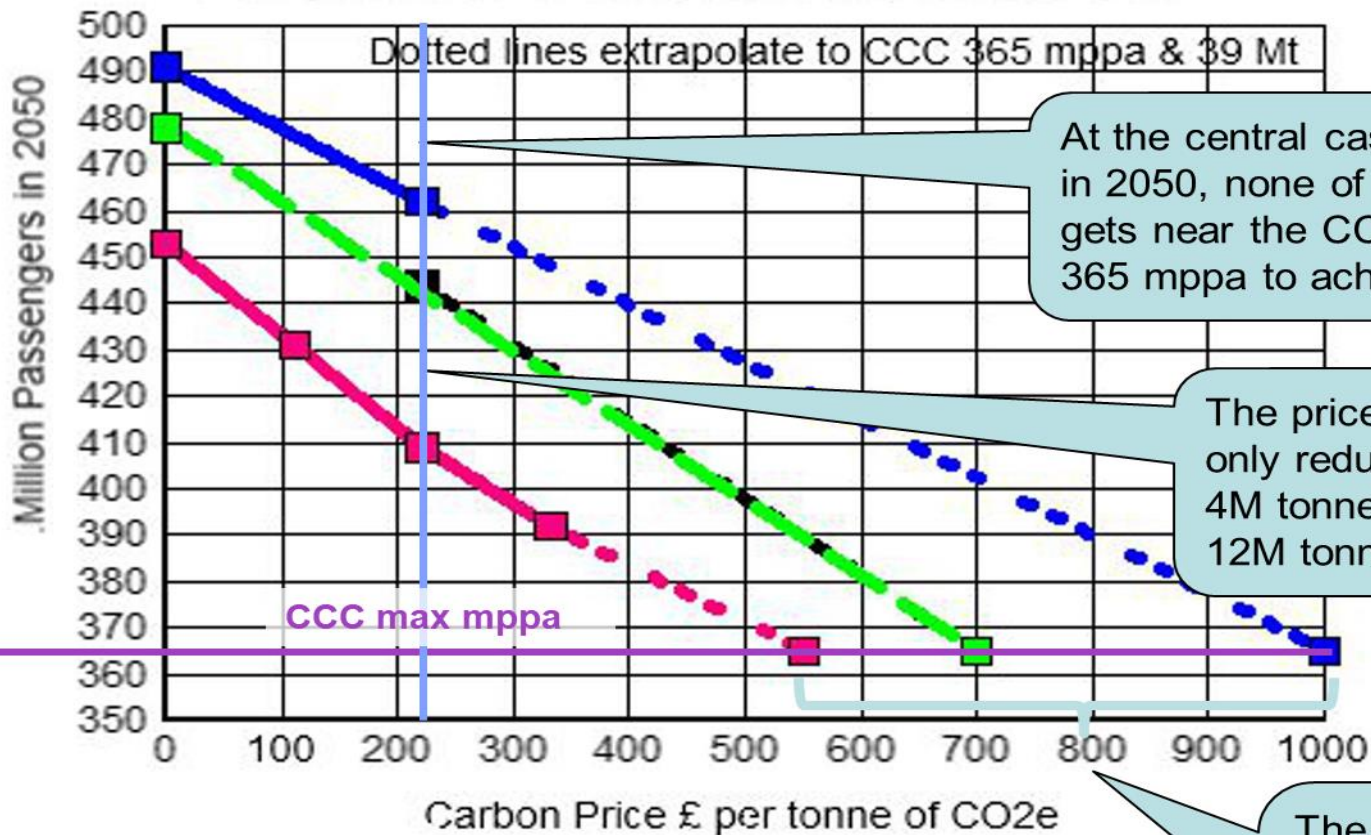
Carbon Price DfT Projections 2017

Used by
Market Based
Schemes,
e.g. UK ETS
to trade in
Carbon Credits



Indicative Demand Sensitivity to Carbon Price in 2050

Source: RHC from DfT, CCC & Sustainable Aviation Data



At the central case of £221/tonne in 2050, none of the scenarios gets near the CCC maximum of 365 mppa to achieve Net Zero

The price of £221/tonne only reduces Carbon by 4M tonnes out of 12M tonnes needed

The Carbon price required to get to 365 mppa means that demand management by MBS alone cannot achieve Net Zero

Indicative Demand Management by Carbon Pricing
Required Price to Achieve CCC's 365 mppa and 39 MtCO₂e in 2050

Year 2050		Dft 2017 & Jet Zero July 2021*	DfT Better Use 2018	CCC 6th Crbon Budget 2020	Sustainable Aviation 2020
Unconstrained Growth 2018-2050	%	60%	64%	64%	70%
Unconstrained Pasengers 2050	mppa	453	478	478	491
Constrained Passengers	mppa	365	365	365	365
Required Carbon Price	£/tonne CO ₂ e	550	700	700	1000

Airline Revenue pre carbon cost	①	£bn	39.1	39.1	39.1	39.1
Carbon Cost	②	£bn	21.5	27.3	27.3	39.0
Carbon cost % Rev		%	55%	70%	70%	100%
Avg Full One Way Sigle Ticket Price	③	£	166	182	182	214

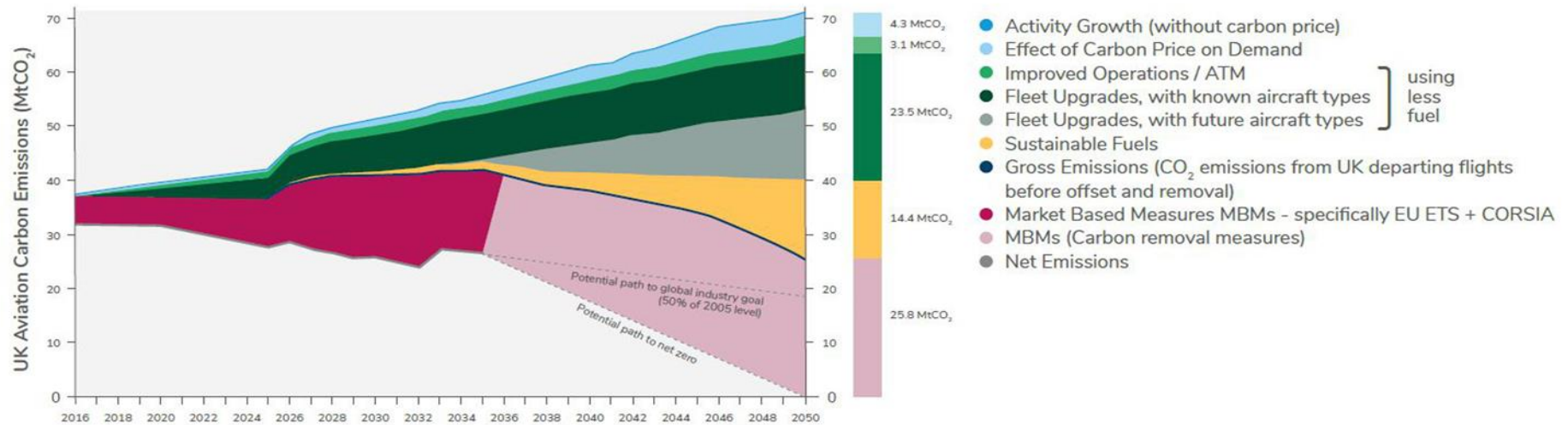
- ① Airline revenue = pre-carbon ticket price of £107* x 365 mppa
- ② Carbon cost = carbon price x 39 M tonnes of carbon
- ③ (Airline revenue pre carbon + carbon cost) / 365 mppa

* DFT Estimate 2016

Published Carbon Reduction Scenarios

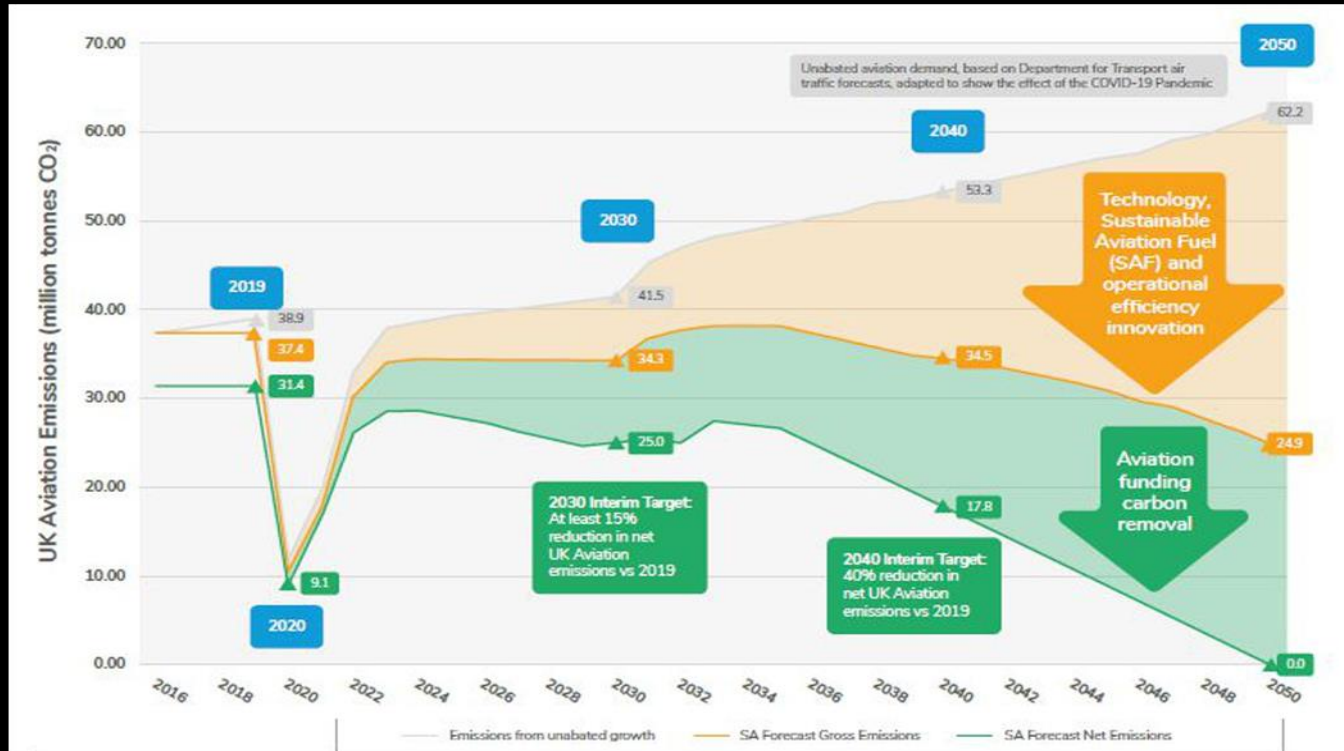
Sustainable Aviation 2020

Decarbonisation Road-Map for UK Aviation



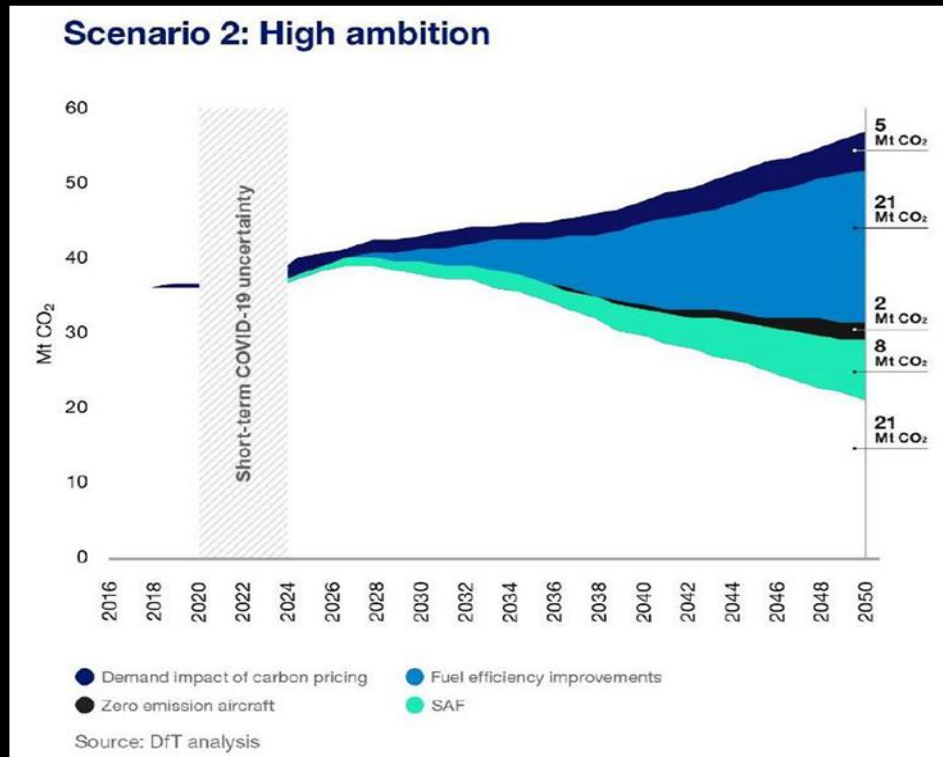
Estimate for 2050 (Mt Carbon)	S.A.	CCC
Unconstrained Carbon	71	51
Demand Management	-4	-12
Efficiency, Hybrids, SAFs	-41	-16
Optimistic?	26	23

Sustainable Aviation - July 2021 update



Estimate for 2050 (Mt Carbon)	S.A.	CCC
Unconstrained Carbon	66	51
Demand Management	-4	-12
Efficiency, Hybrids, SAFs	<u>-37</u>	<u>-16</u>
Optimistic?	25	23

DfT Jet Zero - July 2021

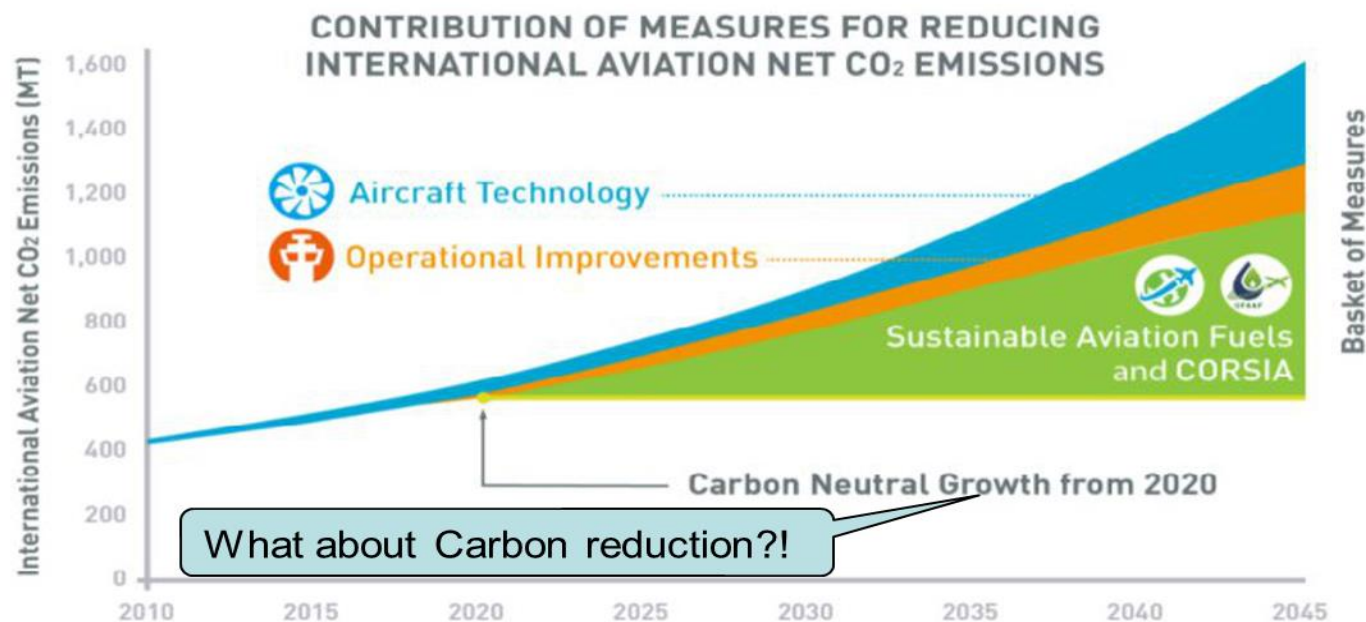


Estimate for 2050 (Mt Carbon)	Jet Zero	CCC
Unconstrained Carbon	57	51
Demand Management	-5	-12
Efficiency, Hybrids, SAFs	-31	-16
	21	23

Optimistic?

ICAO Corsia Scheme – Carbon neutral growth (Global international flights)

The Figure below illustrates the contribution of different measures for reducing international aviation CO₂ emissions.



Proposed Revision to Air Passenger Duty (APD)

2019 Estimate	Current APD Rates		
	LHR	Other	Total
	£ mill	£ mill	£ mill
Terminating			
Long-haul B	1,299	766	2,066
Short-haul A	175	945	1,120
Domestic	29	385	415
	1,503	2,097	3,600
I-I Transfers	Exempt		
Long-haul B	607	94	701
Short-haul A	55	8	63
Domestic	0	0	0
	662	102	764
Total			
Long-haul B	1,906	860	2,767
Short-haul A	230	954	1,184
Domestic	29	385	415
	2,165	2,199	4,365

APD was established in 1994 as a surrogate for fuel duty and VAT on air fares.

Compared to other sectors, Aviation is significantly under-taxed

APD raises £3.6 Bn per year.

RHC estimates the unjustified under-taxing as £12.2 Bn in 2019.

2050 Estimate	RHC Proposed Full & Fair Rates		
	LHR	Other	Total
	£ mill	£ mill	£ mill
Terminating			
Long-haul B	5,793	3,417	9,211
Short-haul A	777	4,198	4,975
Domestic	129	1,712	1,841
	6,700	9,327	16,027
I-I Transfers	Exemption removed		
Long-haul B	2,707	418	3,125
Short-haul A	244	38	281
Domestic	0	0	0
	2,951	456	3,407
Total			
Long-haul B	8,500	3,836	12,336
Short-haul A	1,021	4,236	5,256
Domestic	129	1,712	1,841
	9,650	9,783	19,434

RHC estimates that the removal of exemptions for fuel duty and VAT and for I-I transfers would result in APD of £19.4 Bn in 2050 for the CCC 365 mppa

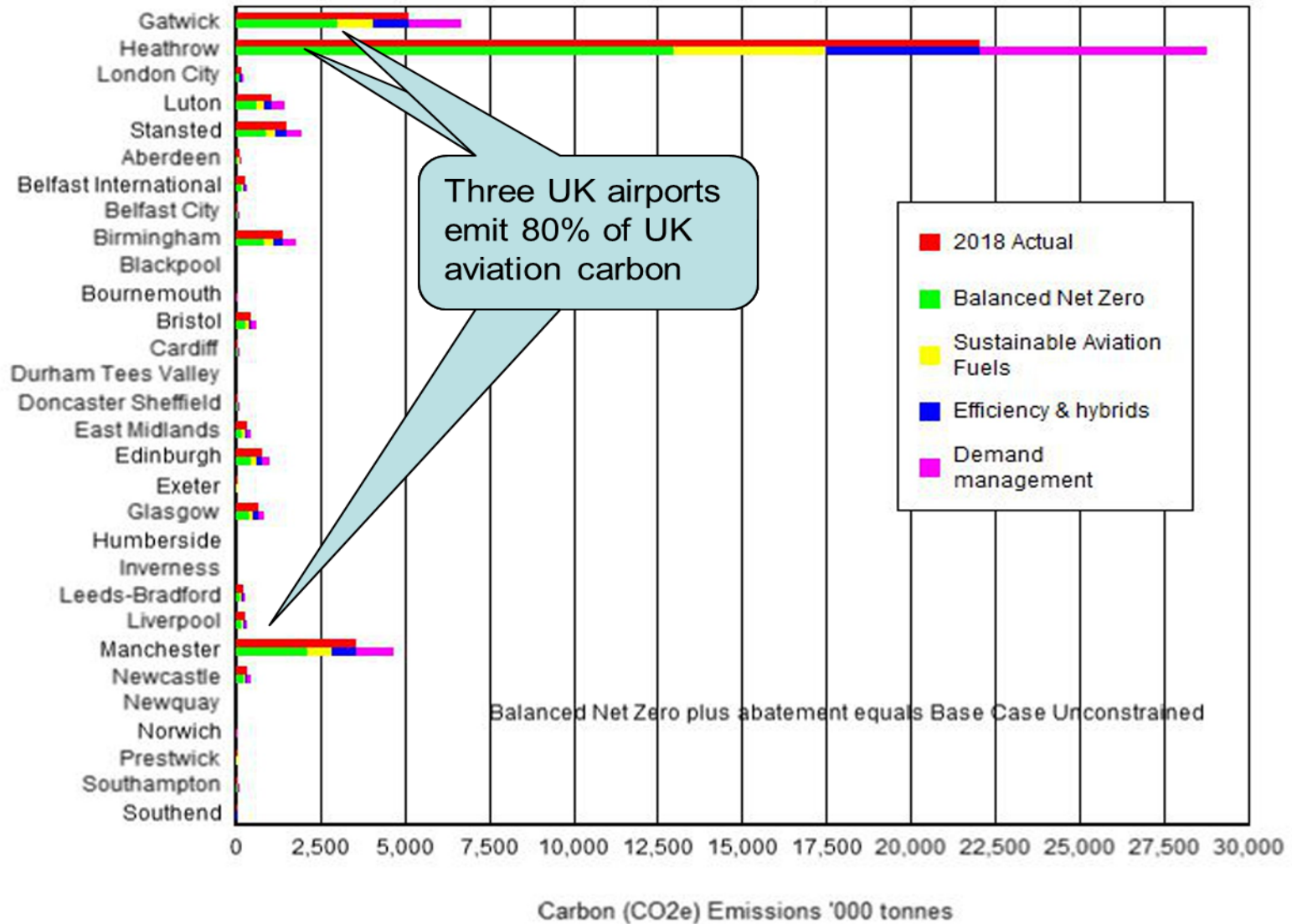
Proposed Airport Quota Scheme

RHC Proposed Airport Quota Scheme

	Carbon CO2e		'000 tonnes			Net Zero	
	2018	2050					
	Actual	Base Case	Demand	Efficiency	Fuels		
Gatwick	5,111	6,684	-1,573	-1,048	-1,048	3,014	
Heathrow	22,022	28,798	-6,776	-4,517	-4,517	12,987	
London City	180	236	-56	-37	-37	106	
Luton	1,095	1,432	-337	-225	-225	646	
Stansted	1,498	1,959	-461	-307	-307	884	
Aberdeen	136	178	-42	-28	-28	80	
Belfast International	263	344	-81	-54	-54	155	
Belfast City	90	118	-28	-18	-18	53	
Birmingham	1,392	1,820	-428	-285	-285	821	
Blackpool	0	0	0	0	0	0	
Bournemouth	39	51	-12	-8	-8	23	
Bristol	475	621	-146	-97	-97	280	
Cardiff	92	120	-28	-19	-19	54	
Durham Tees Valley	7	10	-2	-1	-1	4	
Doncaster Sheffield	91	120	-28	-19	-19	54	
East Midlands	335	438	-103	-69	-69	198	
Edinburgh	772	1,009	-237	-158	-158	455	
Exeter	51	67	-16	-10	-10	30	
Glasgow	660	864	-203	-135	-135	389	
Humberside	7	9	-2	-1	-1	4	
Inverness	30	40	-9	-6	-6	18	
Leeds-Bradford	209	273	-64	-43	-43	123	
Liverpool	268	350	-82	-55	-55	158	
Manchester	3,589	4,693	-1,104	-736	-736	2,116	
Newcastle	356	466	-110	-73	-73	210	
Newquay	10	13	-3	-2	-2	6	
Norwich	38	50	-12	-8	-8	22	
Prestwick	61	79	-19	-12	-12	36	
Southampton	79	104	-24	-16	-16	47	
Southend	42	55	-13	-9	-9	25	
CCC 6th Carbon Budget	39,000	51,000	-12,000	-8,000	-8,000	23,000	

Prepared by RHC: CCC totals allocated to airports pro-rata to 2018

Airport Carbon (CO2e) Emissions & Abatement 2050



RHC Proposals for Achieving Aviation Net Zero Carbon

Richmond Heathrow Campaign Proposal for Achieving Aviation Net Zero Carbon (MtCO2)

Year 2050	APD	MBS	GGR	Quota Scheme	Total Abatement
Primary responsibility	National MtCO2	National MtCO2	National MtCO2	Airports MtCO2	Carbon Budget MtCO2
<i>Note</i>	1	2	3	4 & 5	6
Unmitigated carbon (478 mppa)					51
Demand management	-8	-4			-12
Constrained demand (365mppa)					39
Efficiency & hybrids				-8	-8
Sustainable Aviation Fuels (SAFs)				-8	-8
					23
Removal of carbon from atmosphere (GGR)			-23		-23
Aviation Net Zero carbon	-8	-4	-23	-16	0
Contingency for Demand and GGR				-4	-4
				-20	-4
Notes:					
1. Full & Fair Air Passenger Duty					
2. Market Based Scheme assuming carbon price of £221/tonne CO2e in 2050					
3. Green House Gas Removal processes (still in early technological stages of development)					
4. Efficiency improvements from airframe design, propulsion and operations.(Airport Action Plans)					
5. e.g. Bio fuels					
6. CCC 6th Carbon Budget					

RHC Proposal for Achieving Aviation Net Zero Carbon (£)

Year 2050		Ticket Price £	Airline Revenue (4) £bn
	<i>Note</i>		
Ticket price/revenue pre- carbon & APD	1	107	39
Full & Fair Air Passenger Duty APD	2	52	19
Market Based Scheme (Environment levy)	3	25	9
Ticket price/revenue including APD & Env. levy		184	67
Notes:			
1. Average Full One Way Single Ticket Price			
2. General tax to fund Govt. fiscal needs			
3. Environment levy, e.g. cap & trade or CORSIA			
4. Airline Revenue based on 365 mppa in 2050			

Summary - where we are

1. No one has presented a realistic process for achieving the CCC targets and in a timely manner
2. No one initiative will achieve Net Zero Carbon
 - a. Carbon pricing on its own will not sufficiently reduce demand
 - b. Full and fair APD on its own will also not sufficiently reduce demand

RHC Recommendations

1. Use a combination of:
 - a. Carbon pricing e.g. 4M tonne reduction
 - b. Full & Fair APD e.g. 8M tonne reduction
 - c. Airport Quota Scheme with Action Plans to manage efficiency, hybrids and sustainable aviation fuels e.g. 16M tonne plus contingency e.g. 4M tonne
2. Urgent action to convert ambitions into strategy, policy and targets with a timetable, including introduction of Full & Fair APD between 2026 and 2030 and early adoption of an Airport Quota Scheme.
3. UK robust carbon reduction pathways should not be distracted by international measures.
4. Integration of demand, carbon, air pollution and noise decisions.

Richmond Heathrow Campaign



QUESTIONS?