



The threat of rising transport carbon emissions to the Climate Change Act process *January 2019¹*

1. This briefing examines the prospects for reductions in transport carbon emissions - or alternatively increases - in the context of the Department for Transport's failure to provide policy frameworks and quantified pathways delivering the reductions required by the 2008 Climate Change Act. The absence of these frameworks and the delivery certainty they provide results in potential continuing absolute increases in total transport emissions (from surface transport, shipping *and* aviation) - which in 2017 are already **11% above 1990 levels** - that could take up **more than half the total UK carbon budget by 2030**, thus undermining the structural integrity of the CCA.

A) Introduction

2. In 2008 the Climate Change Act (CCA) established the process, underpinned by law, whereby each of 7 emissions sectors monitored by the Committee on Climate Change (CCC) should contribute to annual carbon reductions from their 1990 baseline towards the target established by the Act of at least -80% by 2050. Inevitably some have reduced farther and faster than others, but just one has decided essentially not to bother. Why that situation has not been the subject of greater scrutiny is the subject of this briefing. Despite the fact that it ought already to be quite clear that transport carbon emissions represent the greatest threat to continuing progress to overall UK decarbonisation - it's the largest emissions sector amongst the seven²; in the nearly 30 years since 1990 it's only reduced by 3%, even though this is measuring domestic (i.e. mostly road) transport *only*, so with both international aviation and shipping emissions (IAS) deliberately kept off-the-books and consequently unconstrained by CCA mechanisms - environmental campaigners, even those focused on transport, have not mounted an effective challenge to this situation. That absence of challenge must therefore be itself contributing to the developing transport carbon 'crisis'.

3. Transport policy audiences have been confronted with a quite straightforward set of tactics deployed by DfT (which must be deliberate, and not accidental) including:

- subdividing the reporting of total transport emissions into separate silos, which are then kept isolated from each other such that the true extent and ever rising proportion of total transport emissions within the UK carbon budget (UKCB) remains hidden from view. Currently domestic transport has just peaked from an upward curve³ and aviation emissions continue to rise.

- withholding the carbon reduction policy frameworks (CRPFs) without which individual government initiatives or apparent commitments/statements in fact have no force or certainty, and which also prevents other public authorities & businesses proceeding with their own independent carbon reducing actions. The absence of a functioning CRPF is an essential prerequisite for the DfT's failure to undertake the most essential function of such a framework: to interact the growth proposals they are promoting (e.g road traffic/aviation passenger demand, or road/airport capacity) with the environmental/carbon limits which have to be an essential component of a policy process: a 'limits' envelope which then acts dynamically to constrain the scale of attempted growth. This 'withholding of interaction' with carbon limits within a non-existent CRPF has certainly been *the* fundamental feature of DfT aviation policy for the last two decades. Linked to this is the DfT's ignoring of, or failure to incorporate the equivalent CCC framework, implying that 'it does not exist' so far as the DfT policymakers are concerned.

¹ This analysis was first circulated in January 2019 and then revised in April by an updating of its data series - see footnote 6.

² CCC 2018 Progress Report figure 2, p.17

³ In March 2019 the *Provisional Emissions* report then recorded a reduction of 3% in transport emissions (but NB *excluding* international aviation & shipping) for 2018 against 2017. Simultaneously the 1990 base year emissions were revised upwards from 122 to 128MtCO₂e GHGs, allowing the *Provisional* report to also record a 3% reduction since 1990. In their 2017 Progress Report CCC warned against rising transport emissions over the previous three successive years - see para.9 below

- the continuous postponement of actions, or manipulation of policy sequencing.
- the promotion of *increases* (not reductions) in demand, and therefore of emissions.

4. So campaigners have fallen victim to what amounts to a series of misdirection tricks of the sort undertaken by a stage illusionist. The actual absence of functioning policy frameworks for transport carbon reduction has gone unnoticed or unprotested. NGOs persist in separating 'surface transport carbon' from 'aviation carbon' in their analyses - not thinking in terms of total transport emissions - and thus effectively become complicit in the DfT stratagem.

5. Consequently, if we are to make progress with halting and then reversing the current rise in transport emissions, we first have to recognise that this will need to start with a critique and neutralising of these diversionary tactics. But since - so entrenched and so successful has the DfT carbon stratagem been - it could take a number of years for that dismantling to be fully accomplished, it also follows that that the securing of actual reductions across the totality of transport carbon will be delayed until after that is accomplished. It seems almost certain that this particular policy supertanker is going to take into the 2020s to be turned round, which should only emphasise the great urgency of prioritising action against total transport emissions *now*.

6. How, with the Climate Change Act in force for 10 years, can we have got ourselves into this state of risk, which has the potential to actually destabilise the CCA itself? Nor should we comfort ourselves by imagining that DfT will for some reason relent and change carbon policy direction of its own volition.⁴ Any apparently positive initiative is better interpreted as carefully planned disinformation; which is how for example the acceptance by DfT in December's Aviation Green Paper (AGP) of the so-called 2005-50 aviation target (cited in footnote 15) should be understood.

B) What is the size of total UK transport emissions?

7. The process of deconstructing the DfT's 'box of tricks' needs to start by establishing a single data series which aggregates all UK transport emissions, domestic and international, as covered and defined by the CCA. At the moment this series *does not exist*. Instead there are many different subsets used not just by the DfT, but also by CCC who are still working within a data analysis framework imposed by the failure of DfT to trigger CCA article 30 to formally incorporate international aviation and shipping emissions into the UKCB. This gives rise to typical statements (and therefore the popular understanding) that 'the transport sector now accounts for **24%** of the UK's emissions' *Clean Growth Strategy Oct 2017* or 'Transport continues to be the largest-emitting sector in the UK, accounting for **28%** of total GHG emissions compared with 27% in 2016' *CCC 2018 Progress report*. Both of these figures omit the emissions from international aviation and shipping. People consequently assume 'Well, transport is a quarter of the carbon budget. That's manageable'.

8. The nearest the DfT got to revealing the aggregated extent of 'total transport emissions' (TTE) was in *Future of Aviation 2017/18* which reported that transport emissions made up **36%** of what appeared to be 'total UK emissions' in 2015, increasing to **40%** just one year later in 2016.⁵ The substantial discrepancy between these much higher numbers and the above 24/28%, and the fact that transport's share of something approximating to the UKCB had increased by 4% in just one year - reflecting the combined effect of an absolute increase in transport emissions *and* the required annual reduction in the overall carbon budget - ought to have alerted transport analysts to the need to investigate further, but it didn't.

9. To overcome this failure to aggregate the presentation of all transport carbon statistics - which has obscured the visibility of total transport emissions (TTE) to policy and decision makers alike - I've prepared a TTE data series that brings together all UK surface transport, plus aviation and

⁴ Or that Parliament and MPs will necessarily intervene to require transport carbon reduction. The lesson to be learned from the Heathrow 3rd runway decision is that, with even pro-climate MPs voting in support (so 45% of MPs who signed the Climate Coalition's Net Zero letter also voted for HR3; only 32% of signatories voted against *AR analysis*), the DfT with wider government and external support are very capable of creating an information and decision environment in which transport capacity expansion (and thus carbon *growth*) is still seen as a positive norm.

⁵ *Future of Aviation 2017 and 2018 editions, figures on page 61* In fact on further investigation this aggregated only the carbon dioxide elements of the transport component of the UK carbon budget, omitting the latter's methane/nitrous oxide/F gases segments which add an additional 19% to the size of the total CO₂e UKCB

shipping (both domestic and international) emissions.⁶ To make this presentation compatible with CCC analyses, domestic aviation and shipping emissions have been included alongside surface transport in a 'domestic transport' category. The **surface transport** component (by far the largest part of the 'domestic transport' column) represents the baseline that would occur *if* the various reduction measures identified in the Clean Growth Strategy, together with the additional policy gap calculated by CCC, were *not* implemented.⁷ At the moment CCC is forecasting that this transport *before measures* baseline continues to rise to 2030 (by contrast, all the other equivalent baselines for the other UKCB emissions sectors indicate a reduction.⁸) It was this uncompliant trend that must have prompted the clear warning of their *2017 Progress Report*: "Carbon dioxide emissions [from domestic transport] increased 0.9% from 2015 to 2016, the third successive year that emissions have risen. This trend **needs to be reversed, as a matter of urgency**, to deliver a reduction in emissions of **44% from 2016 to 2030.**" *p.110 my emphasis*. The CCC cost-effective path giving effect to this huge reduction ratchets down inexorably, year-on-year, from 121MtCO₂e in 2017, to 83Mt in 2025, reaching 68Mt in 2030.

10. The **aviation** component is different in two respects: DfT (or CCC) haven't prepared an annualised future emissions projection, but more importantly DfT haven't identified a programme of carbon reduction measures - just the opposite! In the table the intermediate years between 2020-2030 are therefore calculated on an assumed even annual increase; the rate of emissions increase steps up in 2026 when Heathrow R3 is forecast to open. The **shipping** component on the other hand is already reducing, within a stronger reduction framework.⁹

Total transport emissions 1990-2030 as a percentage of the UK carbon budget

<i>col.1</i>	<i>col.2</i>	<i>col.3</i>	<i>col.4</i>	<i>col.5</i>	<i>col.6</i>	<i>col.7</i>	<i>col.8</i>
	Domestic transport CO ₂ e Mt <i>unconstrained</i>	International Aviation CO ₂ e Mt	International Shipping CO ₂ e Mt	Total Transport emissions CO ₂ e Mt	% increase since 1990	TTE as % UKCB reduction	UKCB reduction trajectory
1990 <i>actual</i>	128	15.5	8.1	151.8			CO ₂ e Mt
2015 <i>actual</i>	124	33.5	8.1	165.1	8.9%		
2016 <i>actual</i>	126	33.7	8.6	168.2	10.8%	33.2%	507
2017 <i>actual</i>	126	35.0	7.8	168.7	11.2%	34.9%	483
2018	127	35.5	7.7	170.6	12.4%	36.1%	472
2019	129	36.0	7.5	172.9	13.9%	37.3%	463
2020	131	36.5	7.9	175.6	15.7%	38.8%	453
2021	132	36.9	7.9	176.5	16.3%	40.0%	442
2022	132	37.3	7.8	177.4	16.9%	41.3%	430
2023	133	37.8	7.8	178.4	17.6%	42.9%	416
2024	134	38.2	7.7	179.5	18.2%	44.4%	404
2025	134	38.6	7.7	180.4	18.9%	46.1%	391
2026	135	39.1	7.6	181.5	19.6%	47.7%	380
2027	135	39.5	7.6	182.5	20.3%	49.5%	369
2028	136	39.9	7.6	183.7	21.0%	51.4%	357
2029	137	40.4	7.5	184.8	21.8%	53.3%	347
2030	138	40.8	7.5	185.9	22.5%	55.5%	335
<i>Source</i>	[1]	[2]	[3]				[4]

⁶ I'm very grateful to Lisa Hopkinson of [Transport for Quality of Life](#) for having reviewed and revised the data series presented in this paper. Responsibility for the TTE data series concept remains with the author.

⁷ See CCC *An independent assessment of the Clean Growth Strategy* Technical annex – Transport figure 3, which identifies four emissions wedges ('lower risk policies', 'policies with the delivery risks', 'proposals & intentions', and 'policy gaps') between the rising BAU trendline and CCC's cost-effective path. In 2030 the last 3 wedges amount to 59MtCO₂e, almost the equal of that year's UKCB-compliant target emissions of 68Mt. Again NB these numbers *exclude* international aviation & shipping emissions.

⁸ CCC [CGS Independent Assessment](#) Scroll down for the technical annexes for other emissions segments

⁹ CCC *2018 Progress Report*: "In April 2018 the IMO took a major step forward by adopting a strategy for reducing GHG emissions from shipping. The strategy sets a long-term target to reduce emissions by at least 50% by 2050. ... The IMO agreement ... is consistent with the Committee's 2050 planning assumption, and the basis upon which the fifth carbon budget was set. ... The Committee continues to recommend that Government should now include these emissions within carbon budgets." *p.172-3pdf*

1	Charts and data annex to CCC review of CGS table 3, addition of rows 9-13 and adjusted to take account of 2019 stats Link bit.ly/2rhXoVf
2	DfT aviation forecasts 2017 Tables 69 and 70, LHR to NWR, assuming HR3 2026 opening year but adjusted for 2019 GHG stats actual data for IA only Link bit.ly/2ZGjPAq
3	CCC 5th carbon budget technical annex for max scenario, adjusted for IS only, and for actual data from 2019 stats. Data for 2020,2025, 2030 only with linear extrapolation
4	CCC cost effective path to 2050 plus allowance of 41Mt/y for IAS.
	Charts and data annex to overall Review of CGS table 1.1 Link bit.ly/2rhXoVf

11. The significance of *col.5*, which simply adds together the three previously separated data series, is that it reveals for the first time:

- a starting position in 2016 where TTE are 16Mt and **11% higher than the 1990 base year**.
- a 'without measures' TTE baseline that then increases still further by another 18Mt between 2016-2030, so that **by 2030 it is 22.5% above 1990** *col.6*.
- But because the total UK carbon budget is reducing usually by 10+MtCO₂e every year *col.8*, the rising **TTE baseline takes up an ever larger proportion of the total UK carbon budget, rising from 33% of 2016 to 55.5% in 2030** *col.7*
- From this the cumulatively erosion of the UKCB resulting from continually increasing TTE can be calculated. Measured as an amount additional to 1990 base year emissions (above 152Mt) this aggregates to **390MtCO₂e for the period 2016-30** - more than a single year's total UKCB for every year after 2025. However this is to underestimate that cumulative impact, because the principle of the Climate Change Act is that TTE should have been attempting to reduce to *below* 1990 levels in the decade since 2008. Over the last 5 years before 2030 TTE would amount to nearly 1 gigatonne CO₂e (0.9Gt).

12. Thus, in little more than a decade, rising BAU total transport emissions could take up more than half the UK carbon budget, with corrosive cumulative consequences - an analysis which surely must be entirely well-known inside the Department for Transport. Their response, of course, would be 'Ah, but this is *before* carbon reduction policy measures come to be implemented'¹⁰; and then there will be the additional positive reductions arising from exogenous efficiency and technology changes. But that ought to immediately prompt the next question: 'Well, where *are* the carbon reduction frameworks and pathways proposing and then implementing those policy measures?' - something we address in section C) below. CCC has identified the huge extent of the policy gap affecting surface transport (see footnote 7), and for aviation the DfT policy framework is not carbon reducing but carbon *increasing*.

13. There are two simple observations to be made here: how is it possible that a data series of such critical importance is not available anywhere, and thus informing a policy debate, let alone action?; and what are the implications for the stability of the overall UK carbon budget (and therefore the CCA itself, and its mechanisms) of transport emissions increasing within little more than a decade to 56% of its total? Both of these points represent a massive failure in the carbon policy process.

14. And then it gets worse because:

- Even the CCC's current treatment of aviation emissions seem to permit an exceedance of their 37.5MtCO₂e planning assumption every year up until 2050, thus further reducing the finite UKCB. All the potential emissions above 37.5Mt are at the moment omitted from their modelling of the depletion of the total UK carbon budget. That was explicitly the approach of the Airports

¹⁰ What should we make of the most recent BEIS emissions projections [[Link bit.ly/2V7kBbg](http://bit.ly/2V7kBbg)], which have domestic transport (so excluding IAS) starting from a 1990 level of 128MtCO₂e, reducing to 124Mt in 2017, and continuing down to 116Mt in 2020, 109Mt in 2025, and 105Mt in 2030? It's true that the reduction to 120Mt in 2018 is confirmed by the recent provisional emissions [[Link bit.ly/2U8NONH](http://bit.ly/2U8NONH)] return showing a reduction of 4% over the previous year. In the twelve years 2018-30 the projection then forecasts another 12.5% reduction, and 18% below 1990. So by 2035 (when the projections end) the reduction since 1990 is still only 20%.

Commission, upon which DfT rely¹¹.

- This is all before the anticipated tightening of the overall UKCB, both after and (potentially) before 2030 in the forthcoming CCC Net Zero report, and within that the allowances for both surface and aviation emissions.¹²

C) The 'Case of the Missing Policy Frameworks'

15. Whilst 'withholding the numbers' is a very effective ploy, the DfT's failure to actually provide functioning carbon reduction policy frameworks (CRPFs) at all is an even greater masterstroke. It's understandable, particularly in the context of the CCA, that people will simply assume that a government department will automatically have established a *de facto* CRPF - which it then proceeds dutifully to implement - consisting in essence of just two elements: **i)** the establishment of a quantified emissions reduction trajectory or pathway, which is necessarily compliant with the CCC analysis and advice, and a public commitment to meet its annual targets; and **ii)** a set of credible and enacted policy interventions which are then sequentially implemented at the right tempo (combined with the maintenance of consistency across associated parallel frameworks to ensure that the CRPF itself is not undermined).

16. But campaigners simply haven't gone through the process of checking that the **DfT does actually have its CRPFs in place**. As an exercise, do the check yourself, by applying tests **i-ii** to whatever you regard as the relevant DfT documents, and also CCC ones: is there a DfT surface transport CRPF? (answer: No); is there an aviation CRPF? (answer: No); is there a total transport emissions CRPF? (answer: No). For surface transport CCC has modelled a reduction trajectory, but the significant point is that DfT haven't even acknowledged that trajectory, let alone adopted it.¹³

17. The absence of these essential carbon reduction policy frameworks has of course to be carefully disguised and that has involved the DfT engaging in the extensive deployment of deceptive language and policy statements (or other simulations) that have lulled campaigners, and other policymakers into not noticing the CRPFs' absence. Here are just some examples:

- In June 2018 CCC noted that - in the context of the previous year's progress report which recommended that a 44% reduction in surface transport carbon by 2030¹⁴ - "Publication of the Government's zero emission road transport strategy has been delayed. This strategy will set out the Government's planned decarbonisation pathway in road transport by 2050 ..." p.176 When the strategy was published just a few days later it was titled *The Road to Zero*, which appeared superficially to reference the request for a 'decarbonisation pathway' for road transport. But this was the only thing it *didn't* contain; in fact the title was a misdirecting reference instead to a zero emissions vehicles industrial strategy, which is what the report amounted to. Whilst it was good that Lord Deben himself was able to respond that 'The Committee had hoped for a ground-breaking strategy to tackle emissions from transport - now the most polluting sector of the UK economy. *Road to Zero* has not risen to the task', nowhere in the CCC's list of six areas in which the strategy fell short was mentioned the absence of a quantified carbon reduction pathway which would respond to its 44% reduction recommendation in its *2017 Progress Report*.

- A single sentence in *Future of Aviation 2017* - "Aviation's share in total UK emissions has been steadily increasing as emissions from other sectors have fallen, but significant progress has been made over recent years in tackling the sector's climate change impacts" 7.36 - contained two

¹¹ "It therefore follows that emissions can, and do, exceed 37.5MtCO₂ prior to 2050.' Airports Commission *2013 Interim Report* Technical Appendix para.5.4 Quoted in ARF *Is the Airports Commission Report compliant with a Committee on Climate Change emissions framework?* Link bit.ly/2ZKeKY5

¹² David S Lee's report (part of the AGP consultation) about the potential impact of Paris seems promising: "Aviation is a sector that is widely recognized to be difficult to decarbonize because of its high dependence on liquid fossil fuels, so achieving a 1.5°C target will become irreconcilable with any continued fossil fuel usage by aviation at some point around the middle of the present century in the absence of further measures. ... Since aviation's current goals are inconsistent with the Paris Agreement, in the absence of additional measures, then more ambitious goals should be set." *International aviation and the Paris Agreement temperature goals*

¹³ CCC CGS technical annex spreadsheet [Link bit.ly/2ISMvkk] tab 3

¹⁴ "Carbon dioxide emissions increased 0.9% from 2015 to 2016, the third successive year that emissions have risen. This trend needs to be reversed, as a matter of urgency, to deliver a reduction in emissions of 44% from 2016 to 2030. This will require a major increase in the uptake of electric vehicles, improved efficiency of conventional vehicles, increased biofuels use and measures to moderate road travel demand across all modes." *2017 Progress* p.110

misrepresentations: aviation's share of the UKCB had increased not just because emissions from other sectors had fallen, but also because aviation's own emissions were increasing absolutely; whilst the claim that 'significant progress' had been made in tackling its carbon impacts is essentially false. Equally dubious was the statement in *Future of Aviation 2018 p.60* that the UKCB 2050 target 'does not include emissions from international aviation'.

- A classic example of the semantic ambiguity that DfT are prepared to deploy was contained in a principal claim of draft NPS for Heathrow 3rd runway that "expansion via a Northwest Runway at Heathrow Airport ... *can* be delivered within the UK's carbon obligations." *DNPS paragraph 3.66 my emphasis* The significance of this statement relied upon its selection of the word 'can' rather than 'will'. 'Can be delivered' refers only to a *potential* outcome which the Airports Commission had demonstrated theoretically in its scenario modelling: in other words, that it was possible to construct a modelled outcome in which, under particular circumstances, a carbon limit *could* be met; whereas what mattered for the purposes of NPS is whether the proposal **will** be delivered within the UK's carbon obligations', implying a government commitment to actually deliver on that statement. That in turn would have to be part of an effective aviation CRPF, but of course this was also completely absent from the NPS.

- Aviation campaigners have differed over whether tactically to accept the '2005-50 planning assumption' set out first within the CCC's 2009 aviation report. But what remained unnoticed was that in DfT policy frameworks post 2010, '2005-50' had never actually been accepted by the government itself, which meant - when combined with the failure to activate article 30 of the CCA in 2012 (bringing IAS formally within the UKCB) - that there could not effectively be a policy framework for aviation carbon reduction in the absence of these two cornerstones. What is significant about the newly published Aviation Green Paper is that it does, for the very first time, accept '2005-50'¹⁵, which should therefore prompt the question: why tactically has DfT chosen to do so now? - see paragraph 21 below.

- The text of the DfT's proposal to make maximum use of existing runways¹⁶ is characterised by the same calculated policy uncertainty we've noted before: "On balance, therefore, it is likely that these or other measures would be available to meet the [CCC's carbon] planning assumption under this policy. ... As a result of the consultation and further analysis to ensure future carbon emissions can be managed, government believes there is a case for airports making best of their existing runways across the whole of the UK." *paras 1.21/1.25* - which are statements empty of substantive content.¹⁷ But this statement also includes a double bluff, because it's only if you notice footnote 8 that you see that the 'measures' that have been examined "would be implemented alongside the carbon price". Except that, at the moment, there is no mechanism in place within an aviation CRPF by which the carbon price would cease to be used solely as a modelling tool and actually applied in the real world - in order to constrain demand.

18. These various examples should not be taken as isolated examples; instead they're essential to the DfT's carbon policy practice. The wider point is the need to recognise that all the DfT's big policy statements (such as the Heathrow NPS, the *Future of aviation*, the current aviation green paper, *Road to Zero*, etc) are 'mirage' strategies - luring the unwary into a time-wasting trek to the top of the sand dune, only for a claim or apparent commitment to disappear into nothing - which cannot be taken at face value but instead require systematic decoding to try and arrive at an accurate interpretation of what they actually mean for carbon reduction. The absence of the CRPFs also means that all subsidiary levels of transport policy making (regional and local) do not,

¹⁵ "The government proposes therefore, to continue using the CCC advice and leave 'headroom' for international aviation when setting carbon budgets so that the economy as a whole is on a trajectory to meeting the 2050 Climate Change Act target (including international aviation). To set a clear level of ambition for the sector, the government proposes to: **accept the CCC's recommendation that emissions from UK-departing flights should be at or below 2005 levels in 2050.**" 3.87 Also note the attempted misrepresentation of the origins of CCC's planning assumption - here described as *their* recommendation - which was in fact imposed on CCC in 2009 by the then Labour government. It's accepted that its source then was the industry body *Sustainable Aviation*, and has no scientific basis.

¹⁶ DfT *Making best use of existing runways* June 2018 This was published just 3 weeks before the Parliamentary vote to approve the Heathrow 3rd runway national policy statement, presumably so that DfT could maintain that MPs were aware of these still further expansion proposals when they voted.

¹⁷ And there's also a lot of invalidating small print: 'There is significant uncertainty over the likely future cost of these measures and their impact on carbon so this policy mix is presented to illustrate the type of abatement action that could be taken. It should not be interpreted as a statement of future carbon policy which will be considered through the development of the Aviation Strategy. Other measures are likely to be available and may turn out to be more cost effective or have greater abatement potential.'" *Best use 1.20*

with very few exceptions, include let alone prioritise carbon reduction¹⁸; and that campaigning carbon reduction initiatives - such as the frequent-flier levy - cannot hope to gain momentum, since DfT has removed in advance the framework within which they could be seen as candidate solutions.

D) The purposes of policy procrastination

19. For the last decade the long-term DfT strategy in relation to aviation carbon has been to marginalise or ignore the framework for managing and reducing IAS established by the CCA in 2008 (see sections 10, 30 and 35 of the Act), and instead have sought to advance a policy preference for responding to aviation's climate impacts via an international framework (ICAO is nominally a UN body, but in fact dominated by airlines), thus offshoring our aviation emissions beyond UK accountability. And so the 2012 deadline set by CCA article 30 was carefully sidestepped, on the pretext that there was uncertainty over the future of the EU ETS¹⁹, latterly substituted by the potential development of the CORSIA. Of course that approach can continue indefinitely. (The same continual deferment has been applied to the treatment of aviation's non-CO2 impacts.²⁰)

20. In the end, this could only ever amount to 'playing for time' - because there would come a moment or situation when, within the CCA framework, aviation's actual or perceived pressurising of the rest of the UKCB would become more obvious to a wider set of policymakers; and probably, with the likely tightening of the whole UKCB to Net Zero, that time is now.²¹ The DfT must have judged that a decade's delay would nonetheless be beneficial in allowing the expansion of air services, passenger numbers and airport capacity in the meantime, which is what has happened. In the case of road transport, as the data series table shows, emissions in 2018 are essentially the same as in 1990, following a similar pattern of reduction procrastination, even despite the fact that these are clearly within the CCA framework. Policy mechanisms were available but deliberately set aside for electoral reasons.²²

21. So where, taking the Aviation Green Paper (AGP) currently out for consultation as a more detailed case study, do we find ourselves after that decade of delay since 2008?:

- From the start it maintains the longstanding DfT intended landgrab of a huge proportion of the 2050 UKCB: 'This means that aviation could represent 25% of the UK's greenhouse gas emissions by 2050' *para.3.77*; accompanied by the usual deployment of deceptive language, in this case a claim of 'decoupling': 'The government recognises the UK aviation industry's success in taking steps to de-couple the growth in emissions from the continued demand for air services. Between 2010 and 2016, international ATMs within the UK grew by 20%, but international GHG emissions increased by only 7%.' *3.78* So a carbon *increase* of 7% (as a result of a passenger increase of 23%) in just 6 years is duly normalised as a 'success'. Bold as brass, as ever!

- As before the 'Corsia' route is preferred²³, but it is the case that the language used in the references to the CCA (*3.85/.87*) has shifted slightly. Whilst it continues to inaccurately refer to

¹⁸ As an unlikely development that ran counter to this approach, northern transport campaigners were able to impose a CCC-compliant carbon reduction pathway on the Transport for the North new transport strategy approved in February 2019. See Local Transport Today 766 *If climate change targets can be enforced in the North, then why not everywhere?* [Link](#)

¹⁹ "Due to the degree of uncertainty over the future shape of international agreements affecting international aviation, in particular aviation's treatment within EU-ETS, we are deferring a firm decision on whether to include international aviation and shipping emissions within the net carbon account at this time." DECC December 2012

²⁰ Unfortunately David S Lee's report published as part of the Aviation Green Paper consultation continues to leave these impacts beyond the scope of a CPRF, noting that "Aviation has a number of non-CO2 impacts that significantly increase its contribution to warming over and above that from its CO2 emissions" but then neutralising it with "Many improvements have been made to the science [about non CO2 impacts] over the last 5 years ... Nonetheless the uncertainties remain large ..."

²¹ *Guardian 25th April 2019* "The UK is breaching the Paris agreement on climate change by excluding international aviation and shipping figures from carbon budgets, according to a leading NGO. Andrew Murphy, of the Transport & Environment NGO said ... "If you look at the UK Climate Change Act both international shipping and aviation emissions are kept off the five-year carbon budgets. We believe the Paris agreement is clear that IAS should be included in national climate targets." [Link bit.ly/2VocfuV](http://bit.ly/2VocfuV)

²² *UK fuel duty freeze caused release of extra 4.5 million tonnes of CO2 June 2018* [Link bit.ly/2Wjl1rp](http://bit.ly/2Wjl1rp)

²³ " ... the government recognises that international action is the first priority for tackling international aviation emissions." *3.82*; and see *3.88*

what it calls CCC 'advice' to leave headroom for aviation in the UKCB (whereas, as BEIS *Clean Growth Strategy* p.143 accurately records, the CCA 'states that in setting carbon budgets, the Government must take these emissions into account'), it does openly acknowledge that the UK wide trajectory to 'the 2050 Climate Change Act target' should include aviation. This means that aviation should be more visibly pressurised if/when that target is tightened to Net Zero shortly.

- But alongside this are apparently contradictory statements relating to the CCC's 37.5MtCO₂e planning assumption: on the one hand there's the acceptance of '2005-50' (see footnote 15), which must establish a 37.5Mt limit even if the number itself is not quoted in the text; but on the other hand a rejection of 'sector specific emissions reduction targets', where 37.5Mt surely must be acting as some kind of 'target'.²⁴ As a further variant on what *might* be a government position, the BEIS's CGS technical annex stated in October 2017 that 'The Government has not reached a final view on the appropriate level of aviation emissions in 2050'. Nonetheless the apparent adoption in the AGP of the 37.5Mt limit does seem to be stepping back from the possible challenge to it in favour of a higher threshold of 44MtCO₂e²⁵; and also undercuts the higher projections (incorporating HR3) of 39.9 MtCO₂ in the DfT 2017 Forecasts *table 70*. But overall this uncertainty and absence of clarity around the status of 37.5 is another typical characteristic of the DfT policy practice, guilefully spreading a smokescreen across the period of the current AGP consultation.

- One of the consequences of the deliberate withholding of an aviation CRPF is that a commitment to actually implement a specific set of intervention measures (required to deliver whatever has been set as the framework's 'target') is also absent from the AGP, with activity assigned instead to voluntary initiatives by the industry itself, or pushed back into the future, as can be seen in this language: "The government will *expect* a strengthening of existing good practice and the development and adoption of new technologies and measures *from industry* to show demonstrable progress to reducing emissions. This will be required to demonstrate that applications for future growth can be taken forward in line with the UK's climate change commitments. If progress is too slow, the government *may* need to consider further intervention *at a later date*." *AGP 3.93 our emphasis* This cannot be the certainty required from a CRPF e.g what can 'if progress is too slow' actually mean in the absence of a previously adopted trajectory?

E) Deliberate promotion of carbon growth

22. In relation to aviation, we've already noted that DfT have made a spurious claim of emissions decoupling (which is only relative, rather than absolute); and of course it's a core concept for UK decarbonisation, with both CCC *Progress 2017* and the government CGS leading with a graph demonstrating an absolute decoupling between economic growth and carbon reduction.²⁶ However it's not sufficient for the decoupling to be absolute rather than just relative; in addition the emissions reduction proposed or achieved also has to be at least as rapid as the rate of decarbonisation required by the CCC trajectory.

23. This is the circumstance demonstrated in the new September 2018 road traffic forecasts which show in the Reference scenario (for England & Wales) a 17% increase in road traffic volumes between 2015-30 combining with a 17% decrease in carbon emissions (and incidentally a 61% reduction in NO_x). This is absolute decoupling but not to the extent required by the CCC surface transport trajectory, which is a reduction of 43%.²⁷ Scenario 7 *Shift to zero emission vehicles* projected a carbon reduction of 36% by 2030 - so approaching the CCC requirement - if

²⁴ "In order to implement the government's long term vision for addressing UK aviation emissions, the government will maintain its current policy not to mandate sector specific emissions reduction targets to ensure reductions are made wherever it is most cost effective across the economy." 3.86 This is sourced back to the CGS but a first search of that report reveals no such statement tied directly to aviation (and no reference to 'sector specific' targets generally).

²⁵ 'This scenario ['carbon traded' 44MtCO₂e in 2050, utilising international abatement] for gross UK aviation emissions above the CCC planning assumption provides a useful basis for a sensitivity test. Our [BEIS?] analysis shows that it is possible to meet the 2050 target under the Climate Change Act domestically if aviation emissions are 44 MtCO₂e - this is the case for our three pathways to 2050. Further action could be taken after the fifth carbon budget in order to offset these higher aviation emissions through action elsewhere in the UK. The action taken in the remaining UK sectors depends on the wider pathway to 2050." *CGS p.153*

²⁶ BEIS *Clean Growth Strategy* October 2017 figure 1; CCC *2018 Progress Report* figure 1

²⁷ From 120 to 68MtCO₂e - CCC Transport data annex to Review of CGS [[Link bit.ly/2ISMvkk](http://bit.ly/2ISMvkk)] tab 3 row 12 'cost effective path'

ZEVs secure around 30% share of the fleet mileage *RTF report figure 19* but then the DfT's *Road to Zero* strategy contained no commitment to achieve that (because it omitted any reference to it).²⁸

24. If the DfT's actual policy stance relating to road carbon is just carefully shrouded in ambiguity, that for aviation carbon is more blatant. The months since the approval of HR3 have seen successive initiatives all pointing in the direction of still further capacity expansion, which must (all things being equal) resulting an emissions *increase*: the consultation in favour of maximum use of all existing runways (June)²⁹; the floating in November of the need for a possible new runway additional to HR3, after 2030 - in order to respond to 'capacity constraints'³⁰, which apparently definitely require a policy response, whereas 'environmental constraints' do not - later confirmed in AGP 3.13; finally an intention to seek to raise the current ATM limit at Heathrow by another 25,000 (January 2019)³¹.

25. These four proposals reveal the core mindset of the DfT policymakers and what is their real but covert carbon policy framework for aviation: to continue to seek *additional* increments in aviation carbon, notwithstanding that i) those emissions are already at +122% *above* 1990, and ii) that this is contrary to the direction of travel required by the UKCB trajectory. It's a particular example of moral hazard, where the DfT is deliberately incurring increased climate risk (as a result of the freedom to act without constraint in the absence of an aviation CRPF), and because they know that it is *other* sectors, industries or communities who will have to pay the penalty.

26. Our footnote 12 quotes the conclusion from Prof David Lee's report *International aviation and the Paris Agreement temperature goals* (part of the AGP consultation) that 'Since aviation's current goals are inconsistent with the Paris Agreement, in the absence of additional measures, then more ambitious goals should be set'. The rationale for his conclusion is that present aviation trends will contribute to an earlier exhaustion of the global carbon budget. This takes us into a different discussion, about the wisdom of a DfT aviation carbon policy stance that encourages early exhaustion of a reserved UK aviation emissions allowance, rather than 'early frugality' in order to retain a greater proportion of that allowance for use for whatever purposes in a later part of the reduction period. Rational considerations would suggest that it's quite unwise to pursue an 'early exhaustion' stance, but the logic of that assessment has so far not surfaced in the DfT policy-making.

F) How to challenge the threat of rising total transport emissions to the CCA?

27. From before the advent of the CCA, and then over its first decade, the DfT has been able very easily to ignore any pressures - coming from whatever direction; even a fundamental law - to reduce transport carbon, by means of deploying some quite straightforward disinformation tricks and policy practices: playing 'separate and bury' with the emissions data; simply failing to provide functioning carbon reduction policy frameworks, without which superficial statements made in policy documents or individual emissions reductions proposals *cannot* however turn into implemented commitments; using delay and dissimulation to evade or postpone engagement with the actual task of carbon reduction; promoting the *opposite* of carbon reduction (= expansion) when the practice elsewhere across government, mostly, is to fall into line with a reducing UK carbon budget.

28. Because campaigning organisations haven't noticed, then analysed, these submerged activities - but continue to engage instead with the surface illusion - it needs to be recognised that their challenges to DfT on the totality of transport carbon have unfortunately been ineffective. The consequences of this failure now confront us:

- the **DfT stratagem of deliberately failing to reduce - even to increase - transport carbon emissions remains intact and will continue to succeed unless and until it's dismantled.** Their deliberate failure to provide, let alone commit to, carbon reduction pathways for surface transport and AIS, or to explicitly adopt pathways and targets recommended by the CCC, means that all other policy actors and the general public have no certainty that the DfT will

²⁸ Instead 'We want to see at least 50%, and as many as 70%, of new car sales and up to 40% of new van sales being ultra low [so not zero] emission by 2030.'

²⁹ See the extended discussion between paras 1.11-21, and in particular table 4.

³⁰ www.janesairport360.com/article/10973/dft-warns-of-capacity-constraints-even-with-heathrow-third-runway

³¹ www.bbc.co.uk/news/uk-england-london-46794108

actually even adhere to the government's quite inadequate projections for (just surface) carbon reductions to 2035, let alone contribute proportionately to the 80+% or NZ target.

- **total transport emissions** (properly aggregating surface, aviation and shipping), already 11% above 1990 and 35% of the UK carbon budget, **are forecast to rise to 46% by 2025, and then 55.5% by 2030, when they will be 22.5% above 1990** – unless carbon reduction policy frameworks and pathways are established by DfT and government, followed by the devising and actual implementation of programmes of measures giving effect to them, within the time span of little more than a decade. At the moment none of those CRPFs are in place.

29. Realistically it has to be concluded that reversing this trend is an extremely daunting prospect, requiring strongly co-ordinated action: first across environment and transport NGOs, and then by academia, transport policy professionals, members of Parliament, and beyond. Where should that work start? The analysis of this briefing depends on its innovation of the 'total transport emissions' data series - available at the moment neither from government or CCC - so the first task has to be to secure greater awareness and then use of it across widening circles of policy & decision makers, and transport commentators. Then we need to overcome layers of basic ignorance about how carbon budgets come to be eroded, and how they should be protected – e.g distinguishing between those emissions sectors that are compliant with the targets and spirit of the overall UKCB reduction pathway, and those that are not; and increasing awareness of the interaction between an individual sector's carbon forward projection and the inescapable annual ratchet-down of the total carbon budget - and **this can only be achieved by deploying a communications programme to increase the understanding of those audiences**. Only when armed with that information will those policy/decision-makers be able to take that challenge to the DfT themselves.

30. Next we need **a more detailed assessment of the scale of the threat to the Climate Change Act mechanism** implied by the right-hand columns of the data table, which shows unconstrained TTE increasing from 35% of the UKCB now to 56% in 2030. The starting hypothesis for that assessment could be that if a single emissions sector is: i) still *above* the 1990 base year; ii) is projecting a *continuing potential rise* (e.g because of unmanaged risks) rather than secured reduction; and iii) is *taking up more than 50% of the total carbon budget* (of course, that could be a lower percentage: 40%, or 30%, etc) - then **that must pose a structural threat to both the UKCB and CCA as a whole**, because e.g all the other emissions sectors would not be able to reduce further and sufficiently fast in compensation, or that if that single sector is continuing to rise even in 2030 then it's visibly or deliberately undermining the purpose of the Act. Because both the scale of TTE has not been quantified, and its rising proportion of the UKCB projected, such an assessment doesn't seem to be available anywhere in the literature. This is the situation *before* the potential of target tightening before & after 2030 that may emerge from CCC's *Net Zero* report, which will only exacerbate these problems still further.

31. The **exclusion of IAS but particularly aviation emissions from the formal UK carbon budget** at the moment is the other 'root of the problem'. To establish the prospects for their inclusion we need to first look at DfT's policy response in relation to the shipping component, because in November 2015 CCC were sufficiently confident to recommend that international shipping emissions be formally included within the UKCB³², enlarging the total recommended UKCB by 40MtCO_{2e} to 1,765Mt. But when the government subsequently adopted CB5 in July 2016 it was only at 1,725Mt, so either CCC lost the argument for inclusion or DfT were determined not to concede it³³. This outcome was not mentioned in CCC *2017 Progress* report, and so in *2018 Progress* CCC gave another 'reminder':³⁴ What this must tell us is that, if DfT are

³² CCC *5th Carbon Budget* report p.119

³³ The public explanation is in *Government Response to Energy and Climate Change Committee Report on Setting the fifth carbon budget* HC 518 July 2016: '... not the appropriate time for the inclusion of international shipping emissions in carbon budgets. ... could be seen as the UK taking unilateral policy action on this issue, which could undermine our ability to achieve a global solution within the IMO - our preferred approach to dealing with these emissions.'

³⁴ "In its advice to Government on the fifth carbon budget the Committee recommended that international shipping emissions now be included within carbon budgets. The IMO agreement on a 2050 target for international shipping is consistent with the Committee's 2050 planning assumption, and the basis upon which the fifth carbon budget was set. It therefore reinforces the case that there is no longer any reason to exclude these emissions from carbon budgets. The Committee continues to recommend that Government should now include these emissions within carbon budgets." p.173

quite prepared to procrastinate for three years over 40Mt (across a 5 year carbon budget) even though international shipping emissions are already on the way down³⁵, we can only imagine what difficulty they will find with the additional 200+Mt of aviation emissions across CB6, with their annual total still on the way up because of the addition of HR3 from 2026 onwards. The significance of the shipping emissions decision is that it illustrates the DfT's preparedness to ignore or flout a recommendation of the CCC.

32. The DfT first dodged the inclusion of aviation emissions under CCA s.30 in 2012, and then continue to do so for the next 6 years. But an additional hurdle in recent years has been that CCC themselves have not been recommending inclusion: 'On international aviation, we recommend that it is not included at this stage; we will provide further advice following decisions expected at ICAO in 2016, and recommend that the Government revisit inclusion at that point.'³⁶ Their more recent pronouncement in *Progress 2018* at first appeared to be a little more helpful³⁷ but were then progressively watered down³⁸.

33. Technically, how can the formal inclusion of aviation emissions within the UKCB be triggered, and why does it matter that this is achieved? CCC officers have advised as follows in relation to the provisions of the CCA:

"Section 35. This applies if no regulations under Section 30 have been made. It says that when the CCC advises on the level of a new carbon budget (i.e. every 5 years from 2010), it must also advise on whether IAS emissions should be included within carbon budgets.

"Amending the 2050 target and existing carbon budgets. Sections 2(2) and 6(2) make provision for amending the 2050 target and/or carbon budgets if there have been 'significant developments in European or international law or policy'. The government must seek the advice of the CCC before using the powers under these sections.

"... the powers for the SoS to subsequently include IAS emissions remain. There are probably two formal routes for this, which are through sections 35 or 2(2) and 6(2). To some extent these overlap, because a positive case to include IAS emissions under section 35 is likely to require the significant change in circumstances as referred to in sections 2 and 6. Therefore ... the main mechanism for reviewing inclusion of IAS is likely to continue to be through the 5-yearly carbon budget process."³⁹

34. Assuming a similar timetable to its work on CB5, CCC should be recommending the 6th carbon budget to government at the end of 2020, and therefore as it prepares to publish its Net Zero report, and related specific guidance on aviation, the test that should be applied to these is whether they are mapping out a smooth policy trajectory for IAS inclusion that connects up with the proposed 6th carbon budget CCC will be recommending in due course. If their advice in May 2019 indicates that a CB6 report could recommend this, then that creates a positive campaigning landscape over the next 2 years. If on the other hand it does not (e.g suggesting that aviation emissions should continue to be formally excluded for whatever reason) then the UK's ability to tackle the threat of TTE would potentially be undermined all the way to 2038 (the end year for CB6). Again the scale of this risk - which has not been identified - is just extraordinary.

35. So, when both of those CCC publications becomes available, this briefing will be revised to reflect on whichever of those outcomes, and what they represent for the prospects for campaigning against ever rising total transport carbon emissions across 2019 and 2020.

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³⁵ CCC 2018 Progress fig 5.7 p159

³⁶ CCC 5th Carbon Budget report November 2015 p.119

³⁷ "The Government is planning to publish a new Aviation Strategy in the first half of 2019, including their long-term approach to climate change. The Committee will set out an assessment of what this strategy should involve around Spring 2019. This will include consideration of the potential to reduce aviation emissions over the period to 2050 and beyond, and the overall policy approach the Government should pursue (including whether the ICAO CORSIA scheme is an appropriate mechanism for formally including international aviation emissions within carbon budgets)."

³⁸ E.g Deben letter to Secretary of State for Transport 12th February 2019. After publication of the CCC's Net Zero report "we will write to you directly to set out the implications for the Aviation Strategy." This will be a contribution to the consultation on the Aviation Green Paper.

³⁹ CCC correspondence with author 4th December 2018