Climate Change Committee

The UK's independent adviser on tackling climate change

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Freedom of Information (FOI) Request
Received: 13th August 2021

Published: www.theccc.org.uk/about/transparency

Date: 08 September 2021
Ref: Sent by email from communications@theccc.org.uk

Your request:

The work in the sixth carbon budget on surface transport raises a methodological question about the allocation of carbon savings, that I would like to examine in more detail using the original data. In particular, I am looking to confirm the way in which the Commission's work attributes carbon savings to demand reduction and to the uptake of zero emission vehicles - as some carbon savings will be attributable to either and the published analysis does not make clear how this issue was handled. With that in mind, can I please request the following information:

1. Whatever calculations were used to attribute the overall carbon savings from surface transport in the balanced pathway model to specific interventions (see page 75 of the methodology document)

2. Whatever data or calculations were required to link these general categories of intervention (e.g. reducing demand for road transport) back to individual policies (e.g. increasing bus use). If savings were assessed only at an aggregate level, can I please have confirmation a) that this is the case and b) at what level of modelling the aggregation took place.

3. A detailed breakdown of the exploratory scenarios provided on pages 75-77 of the methodology document, at a level sufficient to identify the impacts from the individual policy interventions in each test (either as outputted from the model, or as articulated in the published document).

4. Breakdowns of the carbon savings in the sensitivity tests listen on pages 77-80 of the methodology document, by source

5. Information on any sensitivity tests carried out beyond those listed on pages 77-80 of the methodology document (or confirmation that no further tests were made).

CCC response:

Some of the carbon savings within our pathways could be attributable to either behavioural or technological actions. In our analysis, we account for the impacts of demand reduction/behaviour change before considering any technological deployment.

So, in effect, we calculate how much abatement demand reduction would deliver in our scenarios if everyone were to continue driving today's vehicles (rather than being able to switch to an electric car, for example). The impact of technological changes (e.g. the electrification of road transport) is then assessed subsequently. Therefore, in our assessment, each avoided journey continues to attract the same level of benefit, rather than this tailing off as vehicles are decarbonised. This reflects the value of demand reduction independent of technological progress.

1. We have attached a spreadsheet which shows how the carbon savings within our modelling are attributed to each source based on this methodology. This provides a more granular breakdown than was included in Figure 3.1.a of our Sixth Carbon Budget Advice Report. In particular, whereas the published version showed all behavioural abatement through a single wedge, the attached spreadsheet shows how this is broken down between the various sources of behaviour change that we considered within our modelling.

2. Our analysis of demand-side measures did not attempt to model the impact of specific policies, but rather assessed the potential for journeys to be reduced/consolidated/switched to alternative modes based on assumptions around which types of journey could change. The level of aggregation at which modelling took place was in line with the following categories:

    - Cars and vans – driving efficiency (comprising enhanced speed limit enforcement and use of gear-shift indicators)

    - HGVs – driving efficiency (comprising operator efficiency measures and eco-driving training)

    - Cars – lower travel demand (avoided journeys to, for example, to increased home-working and online shopping)

    - Cars – increased occupancy (including the impact of car-sharing schemes etc.)

    - Cars – modal shift to active travel (walking, cycling, and e-bikes)

    - Cars – modal shift to public transport (including the combination of public transport with walking/cycling)

    - Vans and HGVs – demand reduction (encompassing a variety of potential shifts and measures, including changes in usage, consolidation, logistics improvements, and modal shift to rail/e-cargo bikes)

    Our assumptions on what could occur in aggregate within each of these areas were based on a review of the relevant literature, including modelling by the Centre for Research into Energy Demand Solutions (CREDS) and the Centre for Sustainable Road Freight (CSRF). This methodology, and the supporting assumptions, are described within the Surface transport chapter of the Sixth Carbon Budget Methodology Report (p.48-54). The attached spreadsheet shows how much abatement is attributed to each of these categories.

3. The attached spreadsheet provides the same data for each of our four exploratory scenarios as for the Balanced Pathway. This includes a breakdown of carbon savings by source, as described above.

4. We have also attached a second spreadsheet showing the results from the three sensitivity tests that were described in the Methodology Report. These tests were performed by assessing the changes the caused on the total carbon savings within our Balanced Pathway, and therefore we do not hold granular breakdowns of the carbon savings by source in each test. Instead, we have provided within this spreadsheet the key changes in each test that drive the emissions changes that result. Specifically:

   - In the car ownership sensitivity, the key impact is on the number of cars on the road and the proportion of these that are battery-electric. If the lower levels of car ownership simply meet our existing central demand reduction assumptions (i.e. instead of demand reduction being realised through more cars each driving fewer kilometres, it is realised by fewer cars being operated but each continuing to drive further), then there will be no emissions impact beyond our Balanced Pathway. If, on the other hand, it is possible to reduce both car ownership and average car mileage, then there will be fewer overall kilometres driven than in our balanced pathway, and this additional demand reduction will result in further emissions reduction.

   - In the battery price sensitivity, lower reductions in battery prices leave EVs being more expensive to purchase, slowing their uptake. Therefore, there would be fewer sales of battery-electric vehicles, leaving more petrol and diesel vehicles in the fleet until later in the modelled time period. This would generate higher emissions than in our Balanced Pathway. This is particularly the case in a scenario in which the phase-out of new petrol and diesel sales fails to be effectively implemented.

   - In the fuel prices sensitivity, using the published low values for the LRVCs of petrol and diesel reduces the running cost saving offered by zero-emission vehicle options (across all vehicle segments). This slows the uptake of these technologies, but also makes driving more affordable for conventional vehicles, allowing these to increase their mileage. These impacts combine to drive the emissions increase in this sensitivity test.

   The factors described above are all broken out within this spreadsheet.

5. The three sensitivity tests described in the Methodology Report were the only detailed sensitivity tests that were performed.

If you are dissatisfied with the handling of your request, you have the right to ask for an internal review. If you are not content with the outcome of the review, you may apply directly to the Information Commissioner for a decision.

In keeping with our transparency policy, the information released to you will be published on www.theccc.org.uk. Please note that this publication will not include your personal data.

Kind regards,
Climate Change Committee