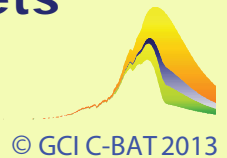


UK Climate Act [UKCA] needs to be strengthened in the light of IPCC AR5 WG1 carbon budgets

All Party Parliamentary Group on Climate Change review UKCA 27/11/13



The global carbon-budget remaining in the UKMO's **UK Climate Act** [UKCA - 2008] weighs 395 Gt C between the years 2010 and 2110 going to zero by around 2100.

This carbon-budget assumes too much fossil fuel use and so weighs too much.

Moreover, with this global carbon budget, the UKCA gave 56% odds against keeping within two degrees Celsius Global Temperature rise. *These odds are too low for 2°C.*

Furthermore, in this calculation, the UKMO/UKCA entirely omits the positive feedback effects engendered by the emissions of CO₂ and CH₄ from melting permafrost during this period. *UKMO lying to Parliament about these omissions is indefensible.*

These are strong reasons why the budget in the UKCA needs to be strengthened. As it stands, the UKCA is [in the words of James Hansen to EAC in June], *"too weak."*

The UKCA needs to budget carbon globally reducing at least to zero by 2060.

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This view of the UKCA carbon budget is corroborated by **IPCC AR5 WG 1**.

Published in September 2013, IPCC AR5 WG1 does, for the first time in twenty years, state a global emissions budgeting requirement to keep within the two degrees Celsius Global Temperature rise agreed politically at COP15 in 2009.

The view stated in IPCC AR5 was that the global carbon budget [past and present and future all told] must not exceed 1,000 Gt C.

There was some uncertainty over the weight already emitted. Consequently, the three positions published showed variously that UKCA was either: -

**[A] TWICE TOO LARGE**  
**[if 616 Gt C already emitted]**

Greater than 100% Emissions cuts needed globally by 2060  
[NB IPCC omits positive feedback effects from melting permafrost in this].

**[B] A THIRD TOO LARGE**  
**[if 531 Gt C already emitted]**

Up to 100% Emissions cuts needed globally by 2060  
[NB IPCC omits positive feedback effects from melting permafrost in this].

**[C] JUST ABOUT RIGHT**  
**[if 446 Gt C already emitted]**

Nearly 100% Emissions cuts needed globally by 2110  
[NB IPCC omits positive feedback effects from melting permafrost in this].

See Carbon Budget Analysis Tool [CBAT] here: -  
<http://www.gci.org.uk/cbat-domains/Domains.swf>

IPCC AR5 WG1 'Carbon Budgeting' for a maximum of two degrees Celsius states: -

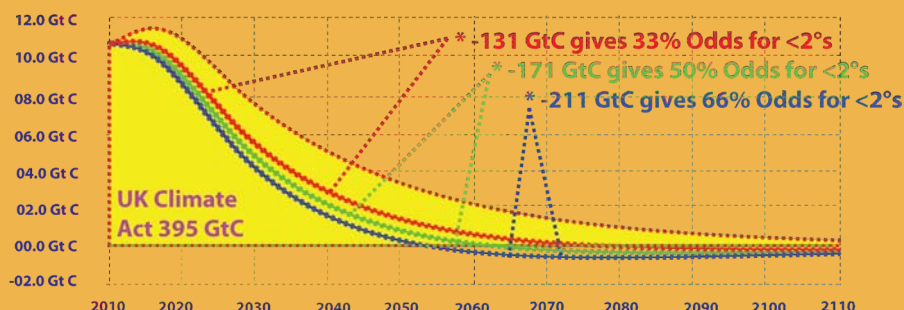
- the total emitted must not exceed 1,000 Billion Tonnes Carbon [1,000 Gt C]
- the total already emitted is estimated at 616 Gt C, or 513 Gt C, or 446 Gt C

As AR5 WG1 sets the odds for 2°C for each at 33%, or 50%, or 66%, results show UKCA [395 Gt C 2010-2110] against IPCC's remaining Carbon-Budget as follows: -

### [A] TWICE TOO LARGE [if 616 Gt C already]

Greater than 100% Emissions cuts needed globally by 2060 [NB IPCC omits positive feedback effects from melting permafrost in this calculation].

**If 616 Gt C already emitted, IPCC AR5 shows UK Climate Act: -**

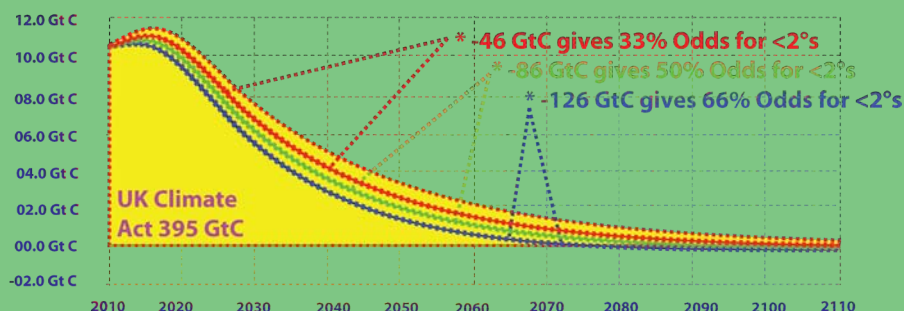


| IPCC AR5 Odds for 2° C | Cumulative 1800 to 'Future' | + Non-CO2 Forcings in RCP 2.6 | Emitted Already [Contentious] | Final Residual Balance | UKCA 395 GtC Reduce UKCA by . . . |
|------------------------|-----------------------------|-------------------------------|-------------------------------|------------------------|-----------------------------------|
| 33%                    | 1,560 Gt C                  | 880 Gt C                      | 616 Gt C                      | 264 Gt C               | 131 Gt C                          |
| 50%                    | 1,210 Gt C                  | 840 Gt C                      | 616 Gt C                      | 224 Gt C               | 171 Gt C                          |
| 66%                    | 1,000 Gt C                  | 800 Gt C                      | 616 Gt C                      | 184 Gt C               | 211 Gt C                          |

### [B] A THIRD TOO LARGE [if 531 Gt C already]

Up to 100% Emissions cuts needed globally by 2060 [NB IPCC omits positive feedback effects from melting permafrost in this calculation].

**If 531 Gt C already emitted, IPCC AR5 shows UK Climate Act: -**

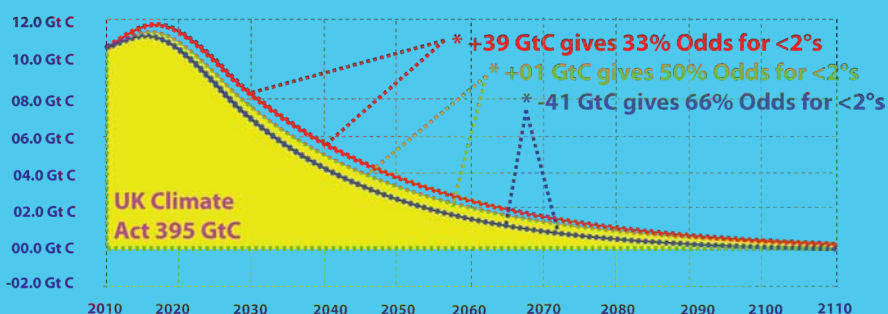


| IPCC AR5 Odds for 2° C | Cumulative 1800 to 'Future' | + Non-CO2 Forcings in RCP 2.6 | Emitted Already [Contentious] | Final Residual Balance | UKCA 395 GtC Reduce UKCA by . . . |
|------------------------|-----------------------------|-------------------------------|-------------------------------|------------------------|-----------------------------------|
| 33%                    | 1,560 Gt C                  | 880 Gt C                      | 531 Gt C                      | 349 Gt C               | 46 Gt C                           |
| 50%                    | 1,210 Gt C                  | 840 Gt C                      | 531 Gt C                      | 309 Gt C               | 86 Gt C                           |
| 66%                    | 1,000 Gt C                  | 800 Gt C                      | 531 Gt C                      | 269 Gt C               | 126 Gt C                          |

### [C] JUST ABOUT RIGHT [if 446 Gt C already]

Nearly 100% Emissions cuts needed globally by 2110 [NB IPCC omits positive feedback effects from melting permafrost in this calculation].

**If 446 Gt C already emitted, IPCC AR5 shows UK Climate Act: -**



| IPCC AR5 Odds for 2° C | Cumulative 1800 to 'Future' | + Non-CO2 Forcings in RCP 2.6 | Emitted Already [Contentious] | Final Residual Balance | UKCA 395 GtC Reduce UKCA by . . . |
|------------------------|-----------------------------|-------------------------------|-------------------------------|------------------------|-----------------------------------|
| 33%                    | 1,560 Gt C                  | 880 Gt C                      | 446 Gt C                      | 434 Gt C               | -39 Gt C                          |
| 50%                    | 1,210 Gt C                  | 840 Gt C                      | 446 Gt C                      | 394 Gt C               | 1 Gt C                            |
| 66%                    | 1,000 Gt C                  | 800 Gt C                      | 446 Gt C                      | 354 Gt C               | 41 Gt C                           |