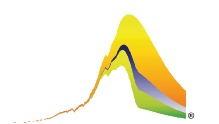
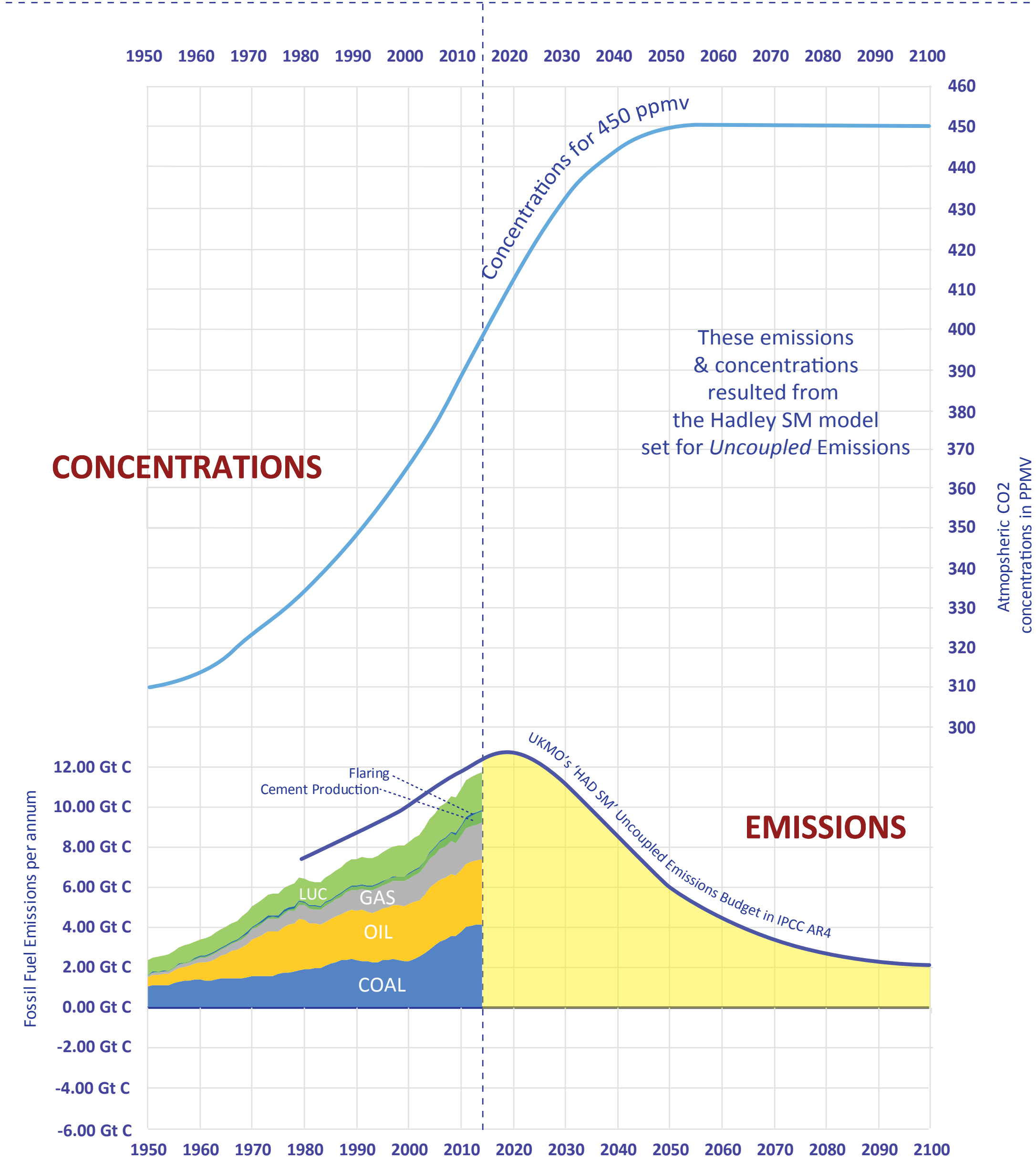


# IPCC FOURTH ASSESSEMENT (FAR) 2007 (UNCOUPLED)

‘PPMV’ here is a CO2 measurement, standing for ‘Parts Per Million by Volume’. One PPMV weights 2.13 Gt C.  
The FAR continued the record established since the SAR (1996) with the Special Report on Emission Scenarios (SRES).  
The ‘Uncoupled’ Emissions Scenario (below) projected a stable atmospheric CO2 concentration outcome of 450 PPMV by 2050.

On average over time since 1750, ‘the Fraction of Emissions Retained’ in the Atmosphere has been around 50%.  
The other ~50%, ‘the Fraction of Emissions Returned’, going to the land/ocean ‘Global Sinks’; (i.e. not back down the mine).

While emissions were projected as falling from 12.5 Gt C after 2020 towards 6 Gt C by 2050 & 2 Gt C by 2100,  
it was becoming clear that actual CO2 emissions from fossil fuel & forest burning to 2007 were below the SRES scenario.



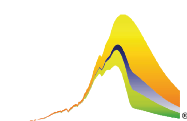
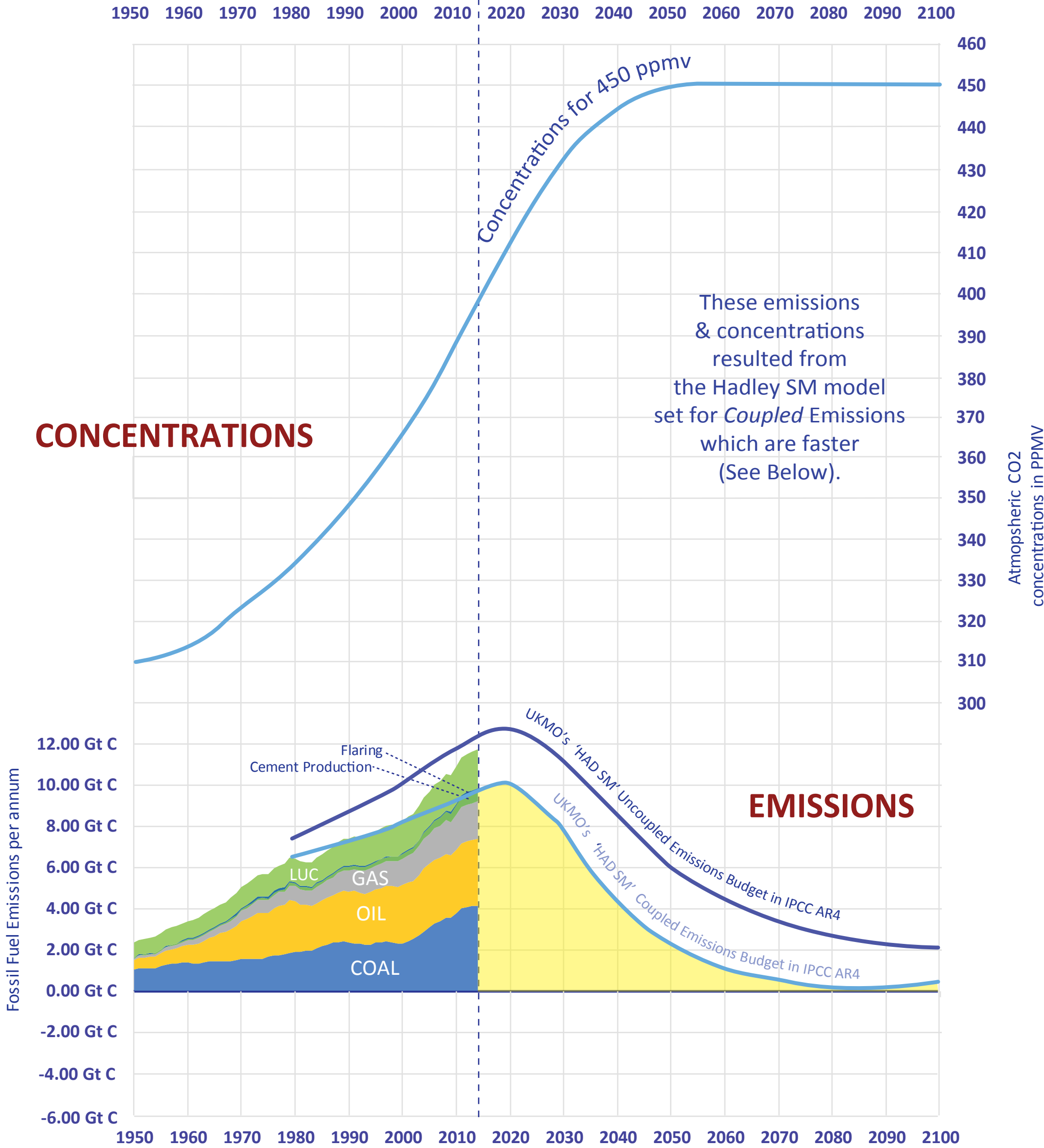
# IPCC FOURTH ASSESSEMENT (FAR) 2007 (COUPLED)

IPCC FAR also introduced the ‘Coupled’ Emissions Scenarios. the Had SM for 450 PPMV is shown below.

This also projected an Atmospheric CO2 concentration outcome of 450 PPMV. However the ‘Carbon-Coupled’ Emissions Scenario also shown below, was 30% less by weight than the ‘Uncoupled’ (568:830 Gt C 1980 to 2100).

‘Carbon Coupling’ was the first modelled representation of a significant ‘feedback-effect’ presented in IPCC in 15 years. Essentially this indicated that for a given concentration outcome, the emissions budget had to be significantly less.

There are many other interactive effects that were not modelled; e.g. Permafrost melt. Against this reduced ‘Emissions Budget’ it was already becoming clear that actual emissions from fossil fuel & forest burning were larger than the model-total shown.



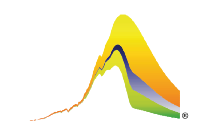
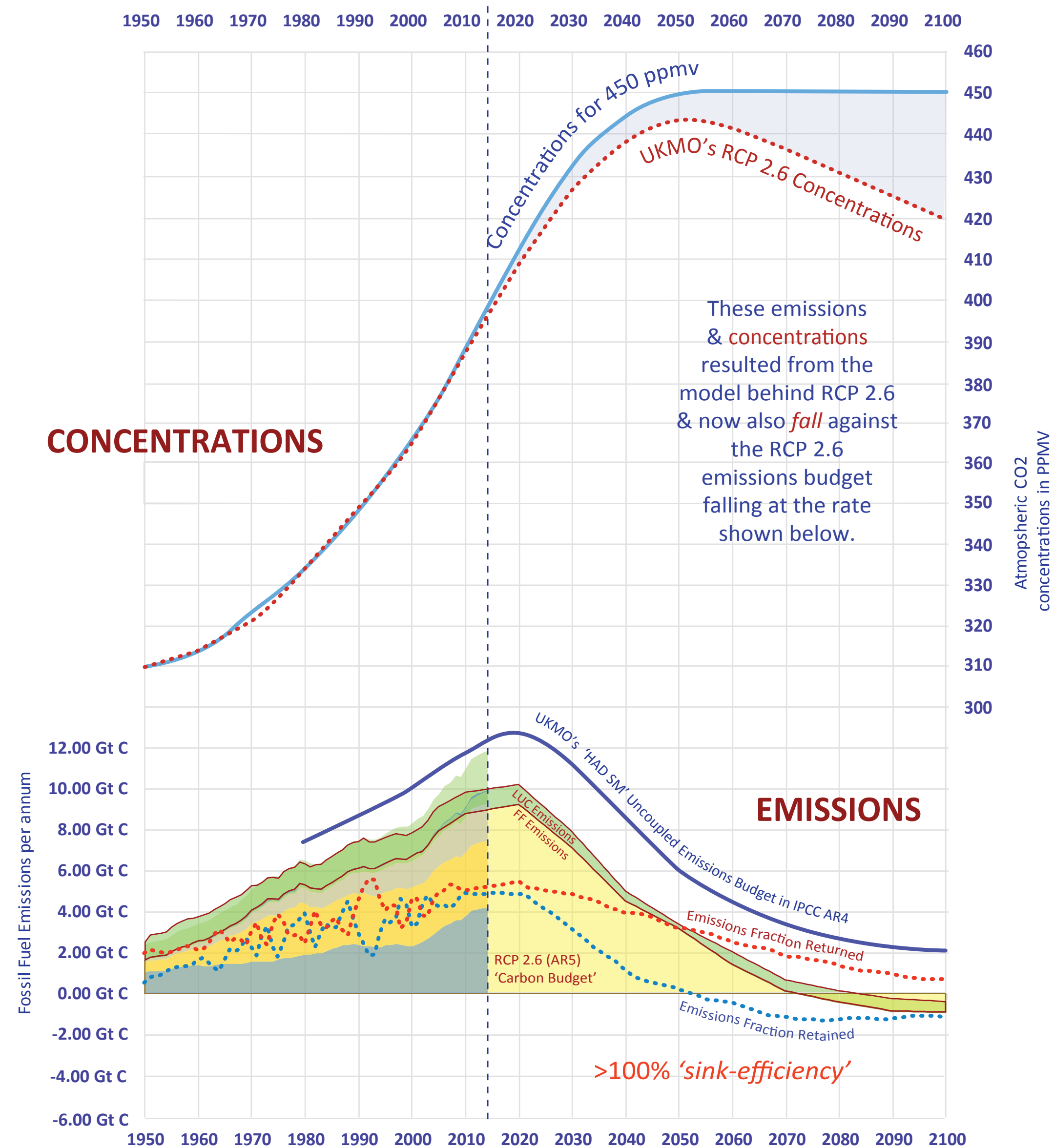
## Representative Concentration Pathways (RCPs); RCP 2.6 'throws a curve'.

In 2010 UKMO led the RCP 2.6 Scenario with >100% 'sink-efficiency' into the IPCC in preparation for AR5. '2.6' projected an atmospheric CO<sub>2</sub> concentration path rising to 442 PPMV by 2050, but then falling to 420 PPMV by 2100. Overall, it had the same budget weight as Had SM Coupled (AR4) but emissions were 'negative' after 2080 in this 'scenario' (pale yellow below). In 15 years, 'Carbon Coupling' was the first & only modelled representation & of just one 'feedback-effect' presented in IPCC.

As RCP 2.6, budget emissions fell & went negative, concentrations rose but then also fell at the rates shown below.

The RCP 2.6 'curve' was showing from 2050 onwards concentrations started falling as the Emissions Fraction Retained was smaller & the Emission Fraction Returned was larger than the budget from 2050 i.e. sinks had become >100% of sources.

All RCPs in IPCC AR5 knowingly ignored all other self-reinforcing (+ interacting) feedback effects eg Arctic & Permafrost melt.



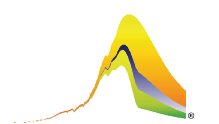
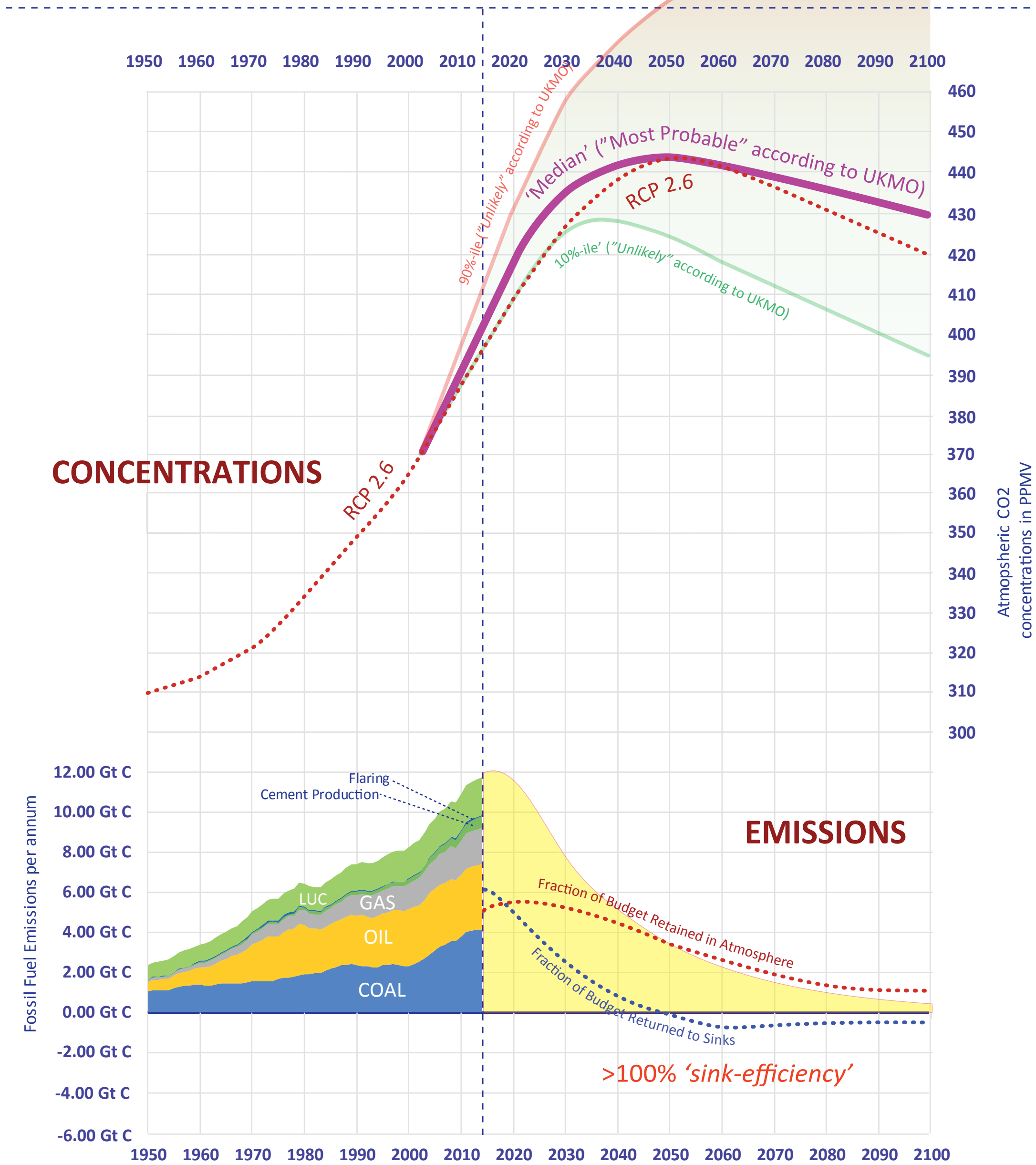


Reflecting the ‘*curve*’, enter the ‘*Globally Exemplary*’ UK Climate Climate Act

In 2008 the UK Government passed the UK Climate Act. Its ‘Global Carbon Budget’ (2016 4% Low) is shown in yellow below.  
A projection of all fossil fuel and forests burned between 2008 and 2100, from 2014 to 2100 (shown) it weighed 342 Gt C.  
UKMO’s stated ‘*most probable*’ PPMV curve was ‘Median’ (Purple) as the 10 & 90 Percentiles were ‘*unlikely*’.

‘Median’ showed concentrations falling after 2050 as the budget *Fraction Retained* (Red) rose above the budget after 2050  
& the *Fractioned Returned* (Blue) fell below ‘0’ after 2050 i.e. post-2050 sinks were removing more than was being emitted.

This ‘*sink-efficiency*’ of greater than 100% *midway during a fossil fuel contraction-event* seemed ‘heroic’, because of the major issue of all the ‘*omitted feedbacks*’ (which the UKMO itself admitted). *This became a primary matter of concern.*

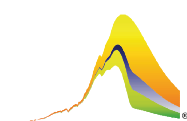
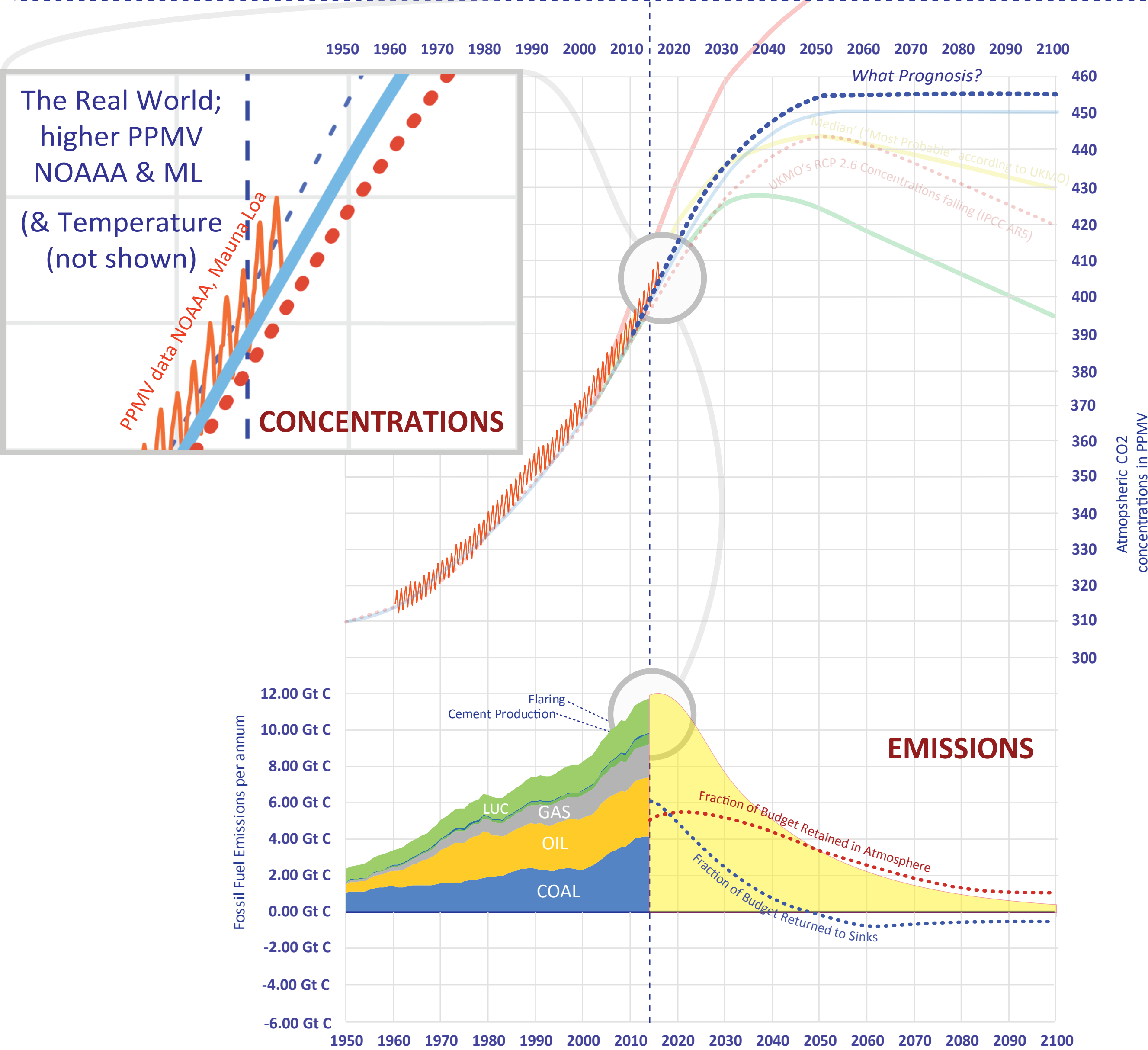


# UK Climate Act, RCP 2.6, the Real World & the *Paris Agreement*?

UKMO already knew in 2010, that Real World emissions exceeded their RCP 2.6 scenario in that year.  
Strangely eliminating all mention of the RCP scenario for **1.5°C**, 2010 was the date that UKMO led the RCPs & in particular this RCP 2.6 scenario, into the preparations for IPCC AR5, knowing in 2010 this would only be published in 2015.

But by 2015 it had become clear that real world CO2 emissions & concentrations exceeded the values ‘modelled’ in IPCC AR4, the UKCA, the RCP 2.6 scenario in IPCC AR5. *This affects the prognosis of the rates of change we face.*

2015 was the year of the ‘Paris Climate Agreement’ and this specified the urgent need for an overall limit in global temperature rise of **‘1.5°C or well below 2.00°C’**.

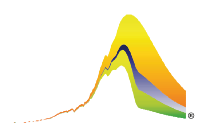
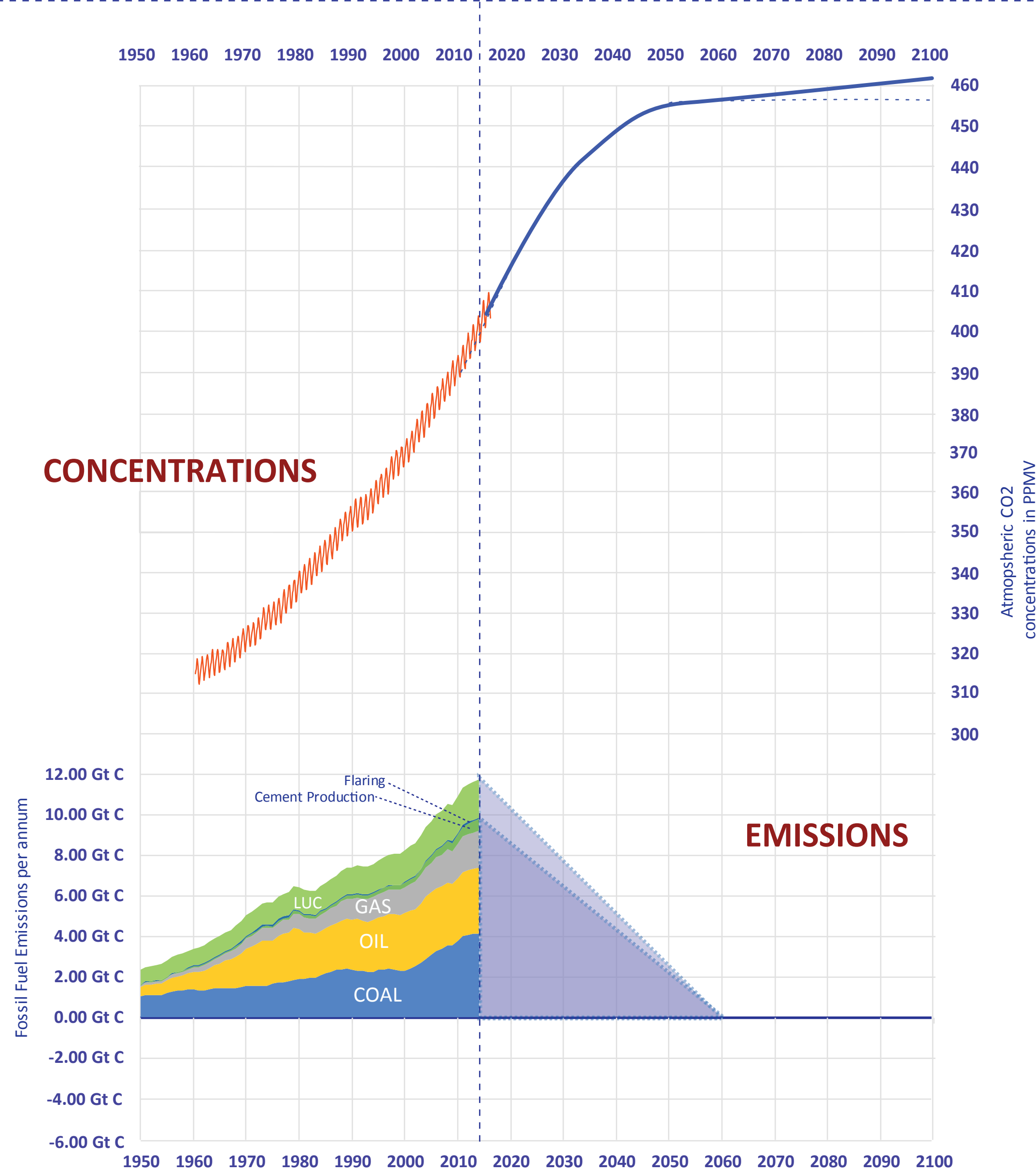


# The UK Climate Change Committee proposes zero UK emissions by 2060

UK Climate Change Committee already knew in 2010, that concentrations & temperature were rising faster than the scenarios. Consequently, they proposed to zero emissions in the UK by 2060. However, as the UK Climate Change Act had been based on equal per capita emissions globally by 2050, essentially it was an invitation to the rest of the world to follow pro rata.

This ignored the asymetrical history of CO2 emissions since 1750, where accumulated gross & per capita emissions from the UK & the USA, are the highest in the world: - [www.gci.org.uk/images/Accumulated\\_Percapita\\_Emissions\\_1750\\_2013.pdf](http://www.gci.org.uk/images/Accumulated_Percapita_Emissions_1750_2013.pdf)

Crucially, it also ignored that it was an invitation to the world to follow an example that would still lead to concentrations staying high enough to trigger a global temperature rise of 'well over 2.00°C' on the basis of continuing inequity & extinction.

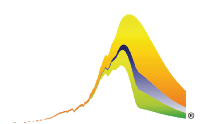
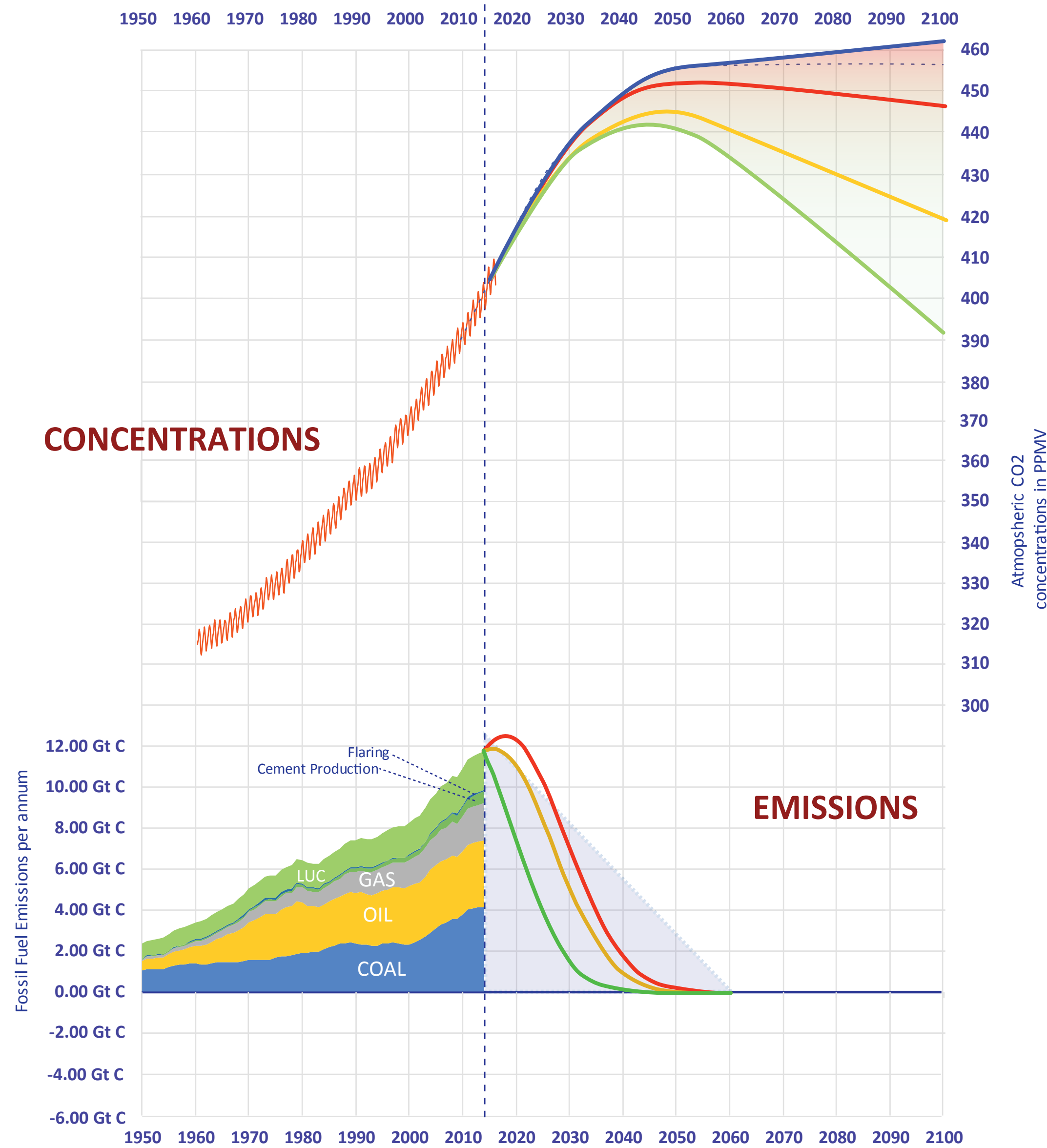


## Enter Plan B

So, in response to the 'Paris Agreement', in 2015 Plan B was launched arguing for a strict & literal interpretation of the targets, where global carbon budgeting consistent with Paris temperature limits & the rising risks was clearly confronted, with the **Green Amber & Red** carbon budgets (based on the appearance of data in IPCC AR5 Synthesis Report) as laid out below.

The 'Paris Agreement' specified the urgent need for an overall limit in global temperature rise of '*1.5°C or well below 2.00°C*'. The Plan B budgets laid out below are described as "*scientifically credible for the 1,5°Target*" by Richard Betts of the UKMO.

Sadly, it is obvious that the 'global leadership' claimed by the UK Government with its 'exemplary global carbon budget' (blue triangle) is bogus, as it keeps the world as a whole on a course to exceeding the 2.0°C limit.





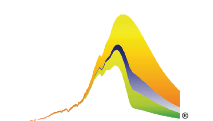
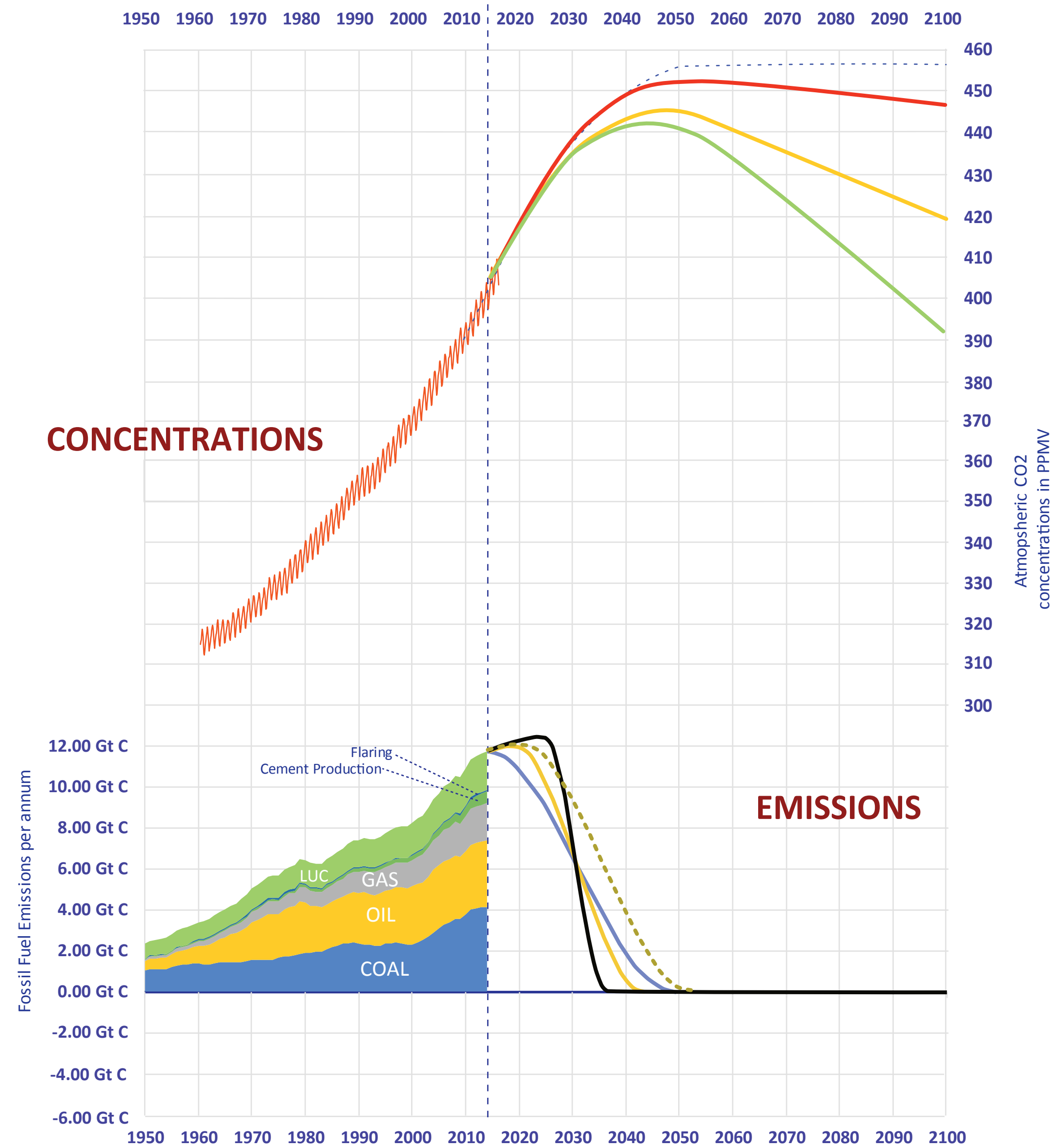
## Plan B was answered by Potsdam Climate Institute in 'Nature'

In Nature Magazine (29 06 2017) Christina Figueres, John Schellnhuber and colleagues published an article entitled *'Three years to Safeguard Our Climate'*. They abandoned RCP 2.6 & adopted the 'Carbon Crunch' budgets shown below. At 163 Gt C & 218 Gt C (dotted) these intersperse the Plan B budgets for 117 Gt C, 198 Gt C and 240 Gt C (prev slide).

This was co-authored by a range of eminent authors and supported by many: -

[https://www.nature.com/polopoly\\_fs/1.222011/menu/main/topColumns/topLeftColumn/pdf/546593a.pdf](https://www.nature.com/polopoly_fs/1.222011/menu/main/topColumns/topLeftColumn/pdf/546593a.pdf)

This was further evidence of support for Plan B due to the accelerating rates of climate change we face and the urgent need for an overall limit in global temperature rise of *'1.5°C or well below 2.00°C'* as in the Paris Agreement.





## The 'Emissions GAP' Report from UNEP (2017)

This Report acknowledges the urgency of the situation we are now in.  
However, keeping hope alive, its prognosis relies on unproven '*negative emissions*' technologies  
and at a scale that is desirable but doesn't seem really feasible.

That said, it is of significance that the switch away from 'emissions' (SRES), to 'concentrations' (RCPs all the way up to 8.5),  
now seems to be shifting to 'negative emissions' & away from 'concentrations', to the extent they are barely now mentioned.

Does this recognize the effective impossibility of modelling rising emissions:concentrations, when faced with an accelerating  
global temperature rise, due to multiple interactive feedback effects simply triggered by rising CO<sub>2</sub> emissions & concentrations?

