

# From rhetoric to reality

## Facing the challenges of climate change



Professor Kevin Anderson  
Tyndall Centre & University of Manchester

*Presentation at Stormont  
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# Presentation outline

- **Current aspirations and emission trends**
- **Why we should strive for 2°C**
- **The levels of mitigation required of Northern Ireland**
- **Behavioural and technical opportunities**
- **Summary & messages for policy makers**

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# The global context of Climate Change

## ... the IEA view

*“When I look at this [CO<sub>2</sub>] data, the trend is perfectly in line with a temperature increase of 6 degrees Celsius, which would have devastating consequences for the planet.”*

Fatih Birol - IEA chief economist

## ... and according to the World Bank, at just 4°C

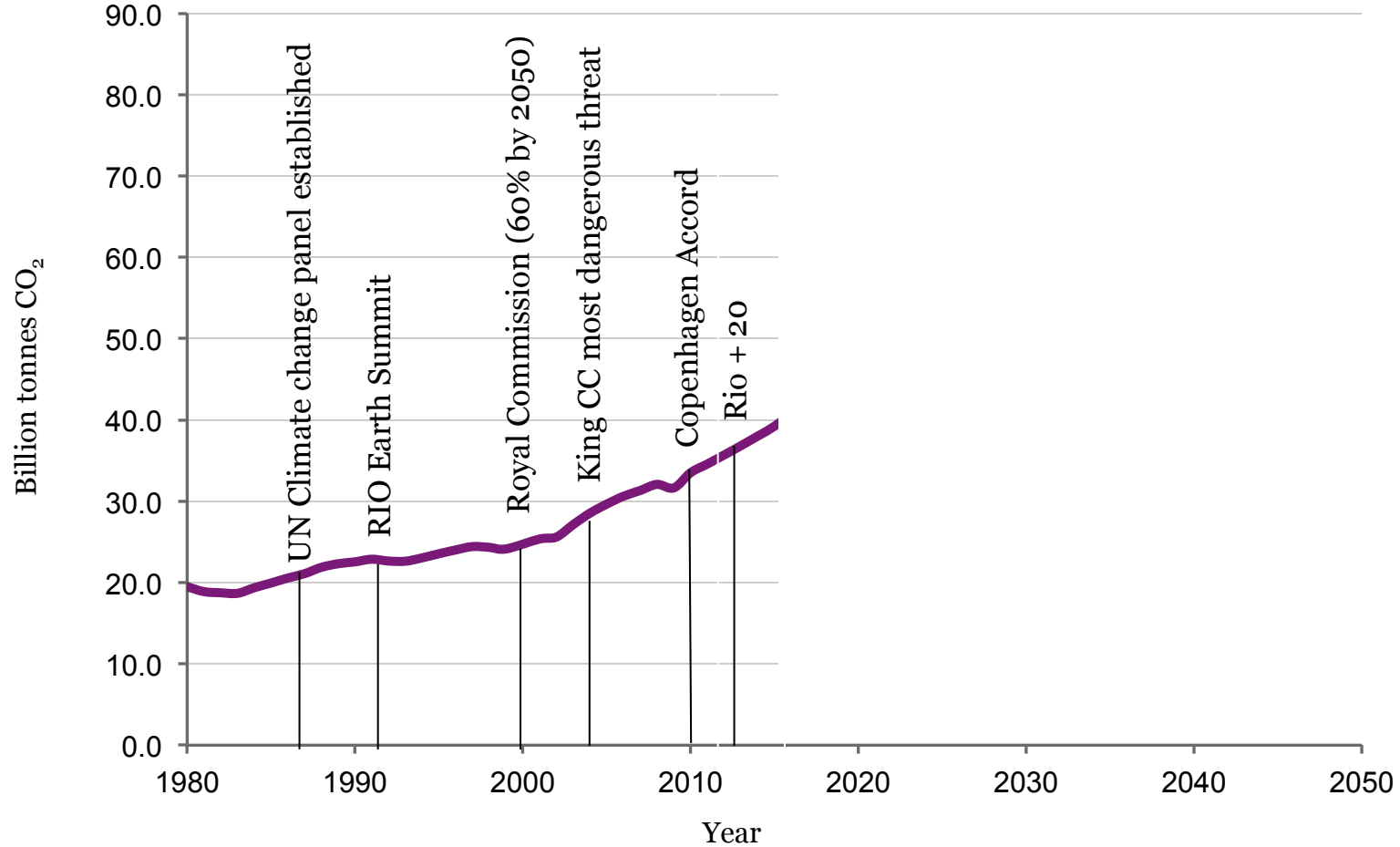
*"There will be water and food fights everywhere,"*

Jim Yong Kim – WB president

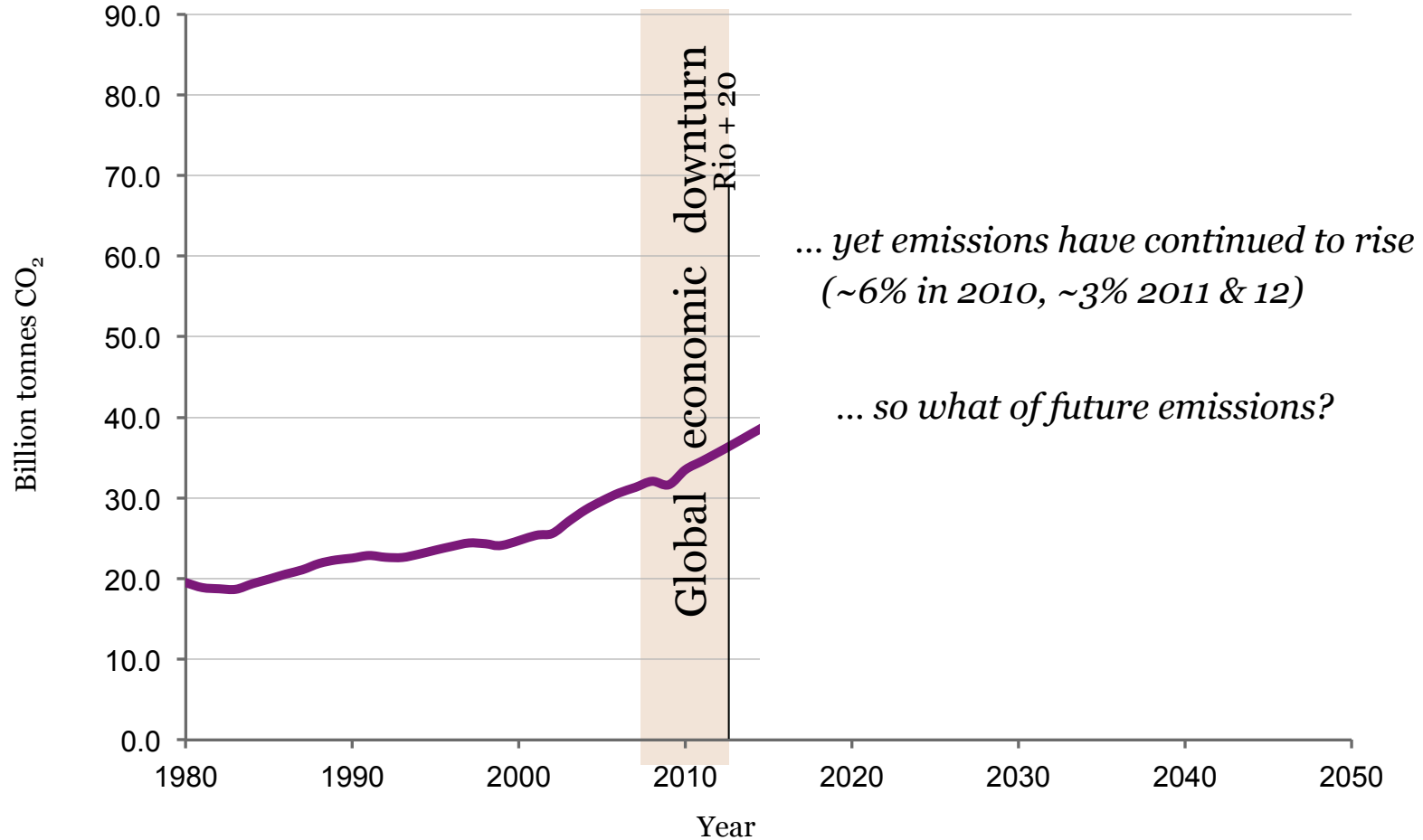
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**... how are emissions changing  
& where are they heading**

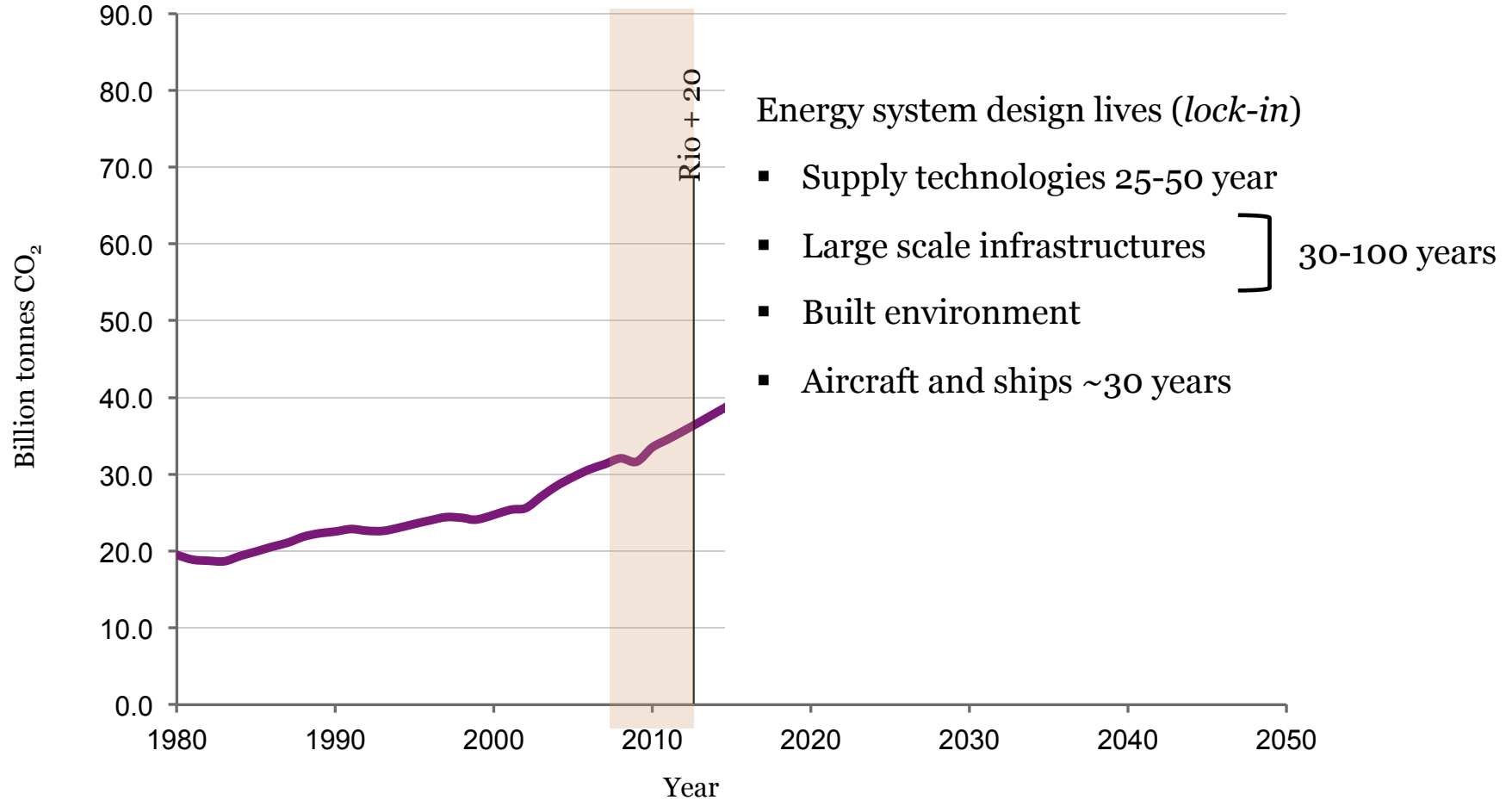
## Global emission of fossil fuel CO<sub>2</sub> (inc. cement)



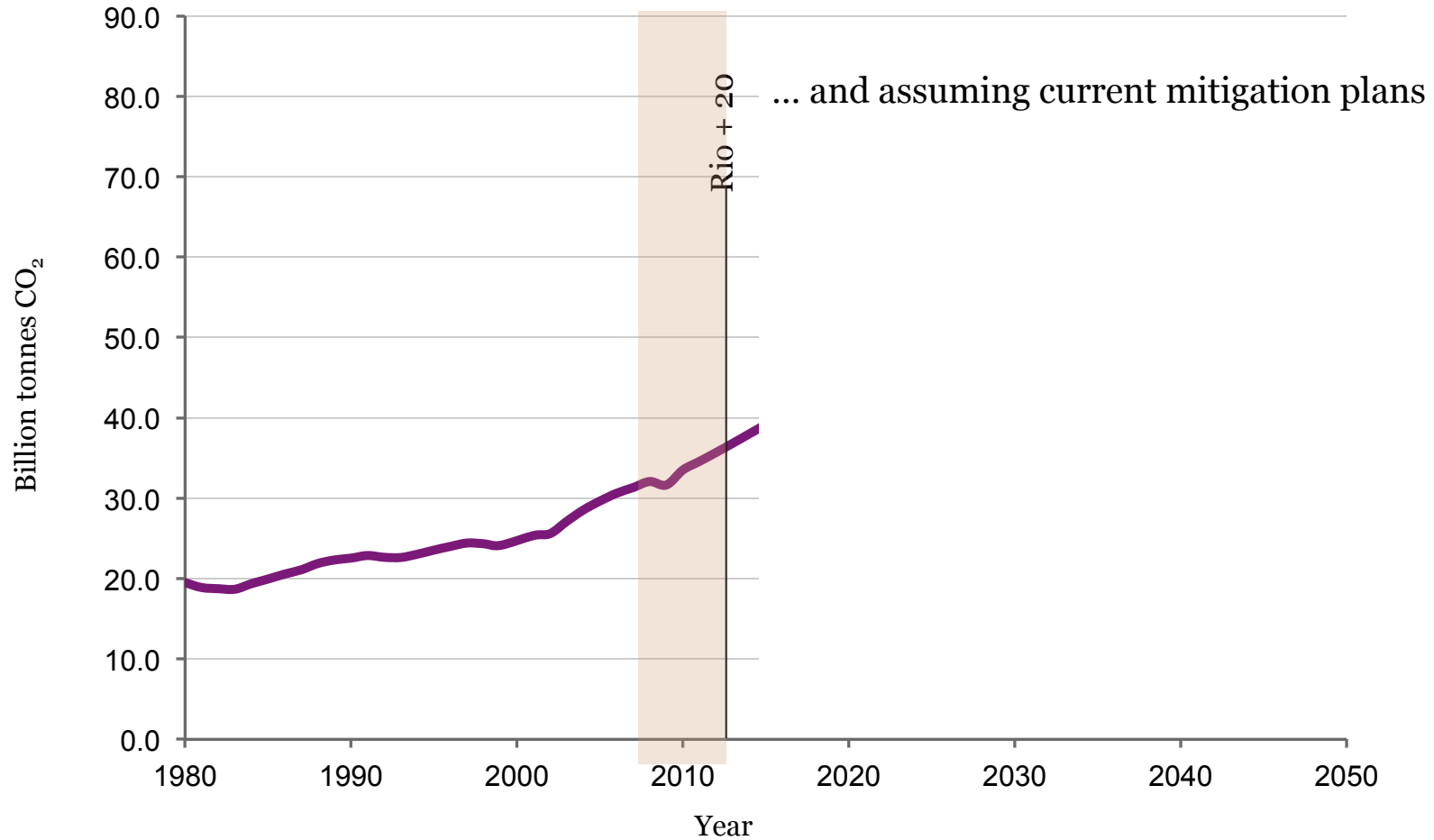
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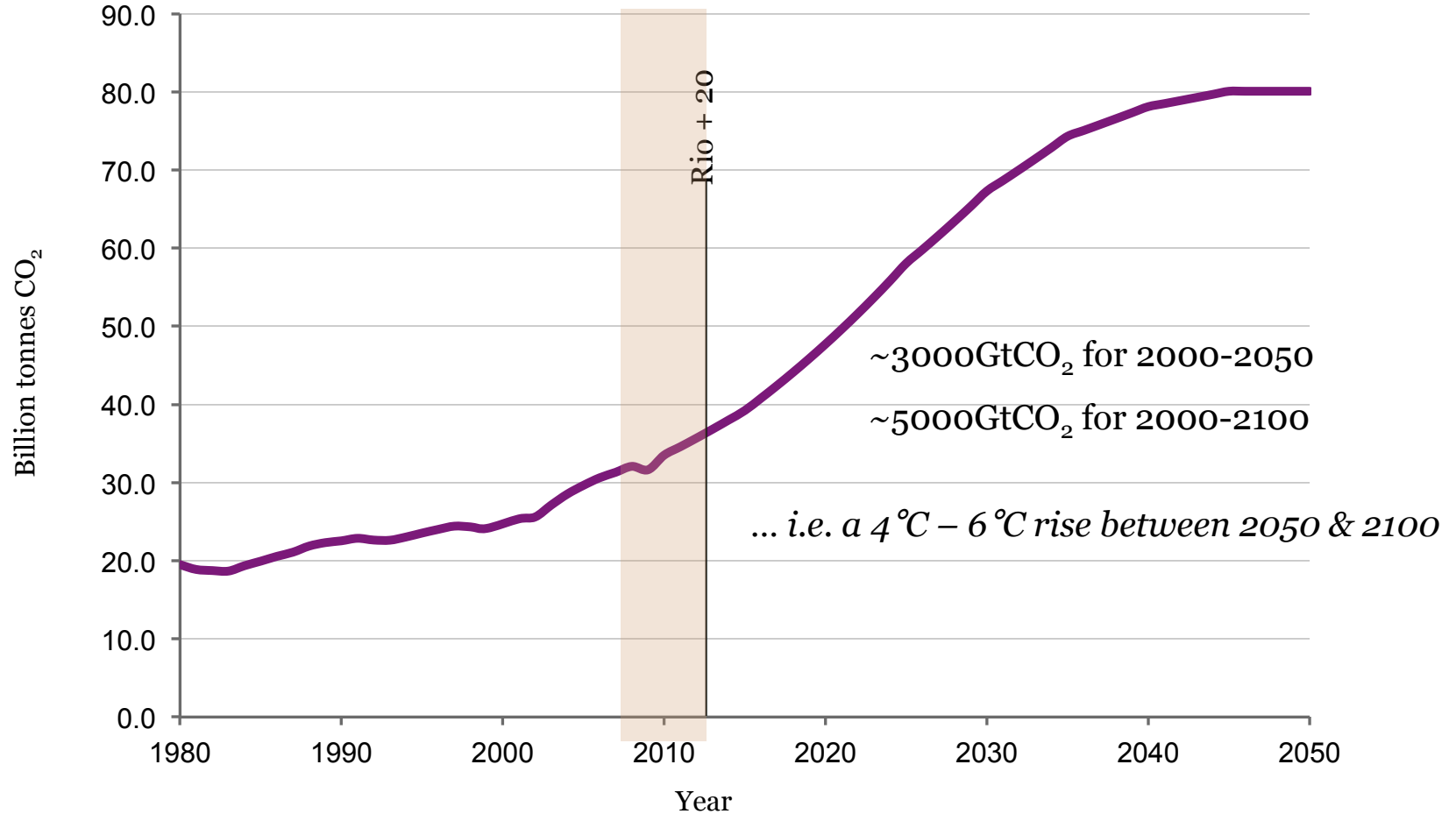


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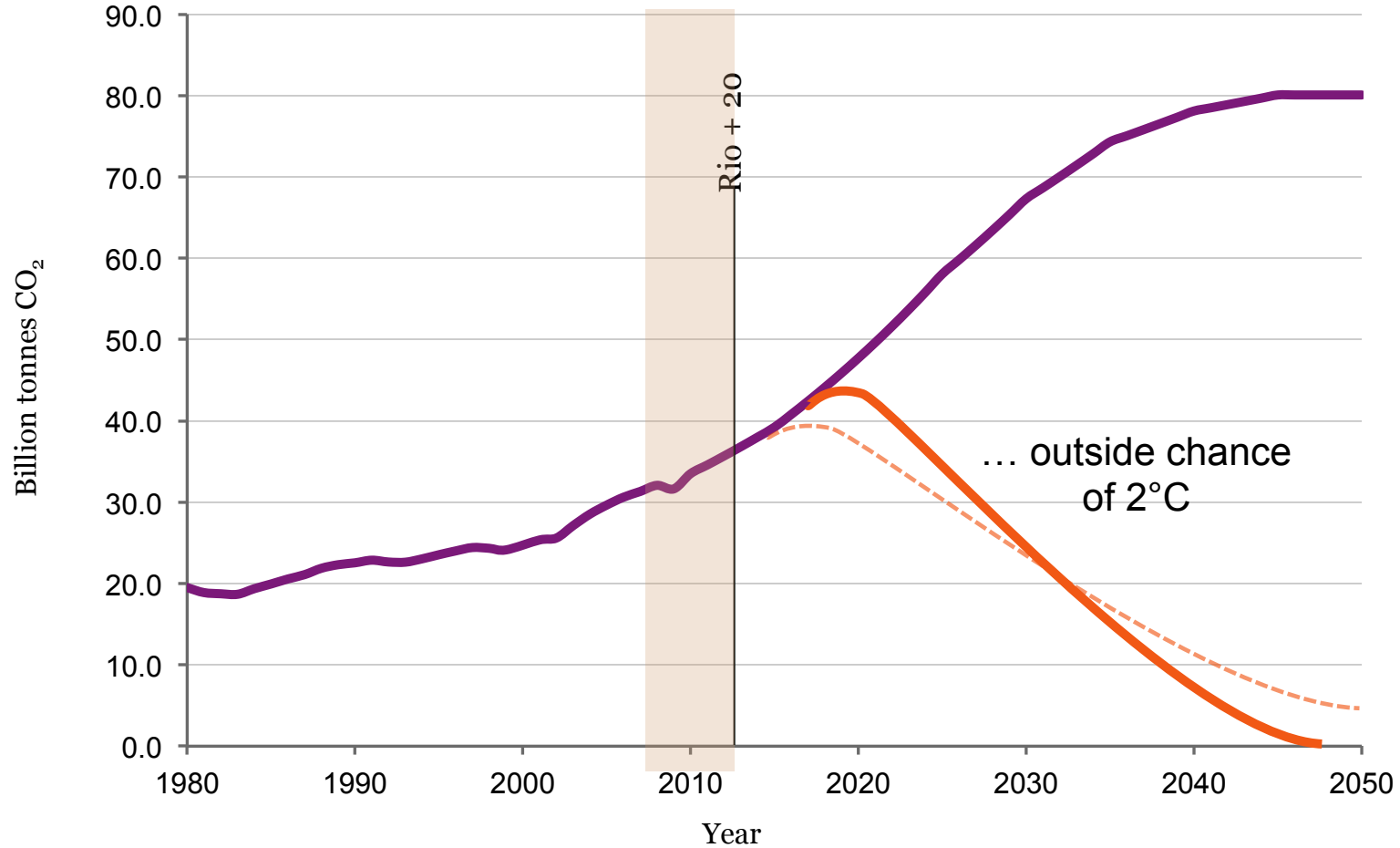




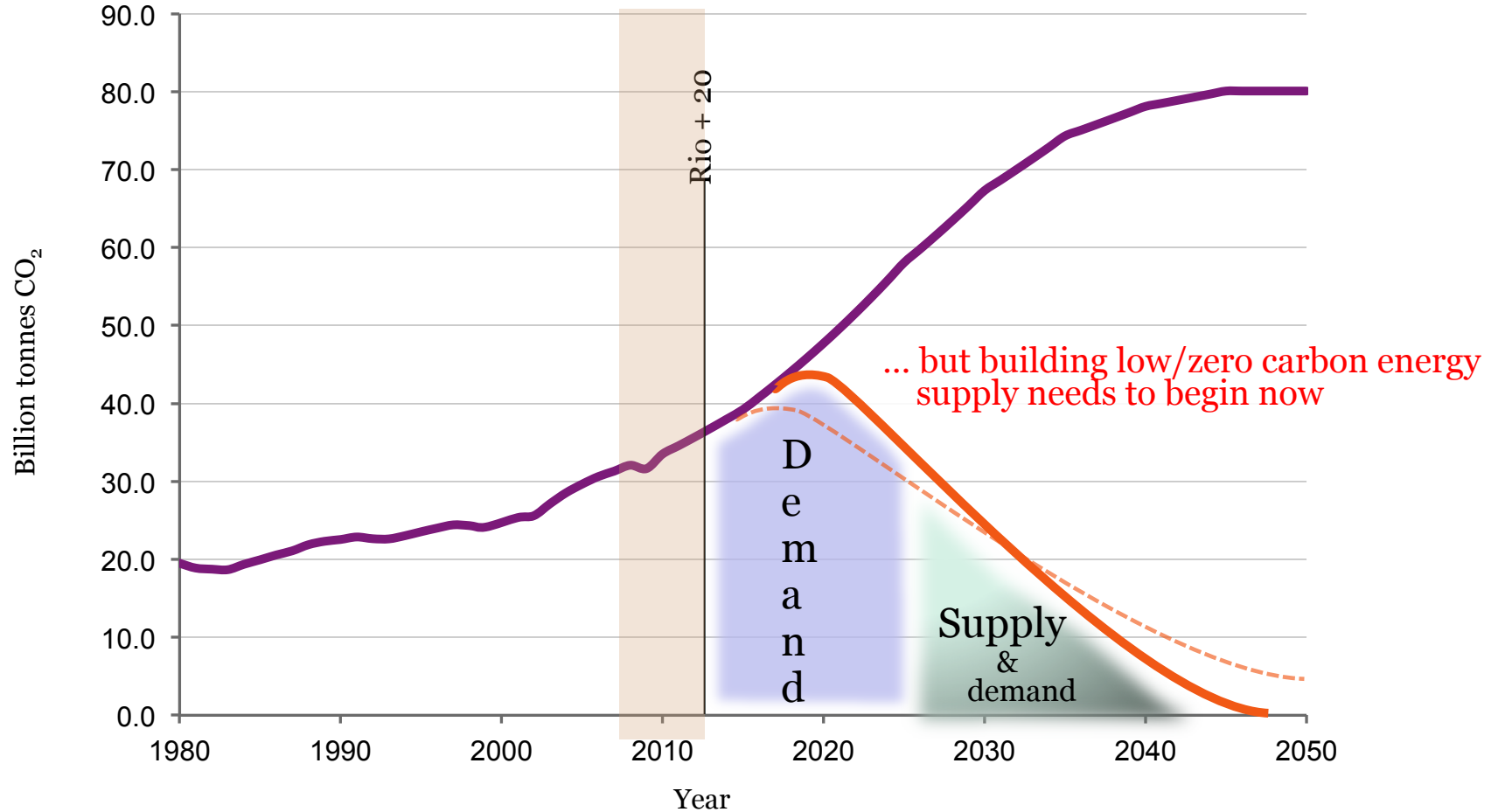
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So what of **Northern Ireland**?

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It is a signatory to:

- the UK Climate Change Act (??)
- the Copenhagen Accord
- the Cancun & Durban Agreements
- and in May 2012 the G8 Camp David agreement

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## Copenhagen Accord et al & G8 Camp David (2012)

Northern Ireland has committed to make its fair contribution to

*“To hold the increase in global temperature **below 2 degrees Celsius**, and take action to meet this objective consistent with **science** and on the basis of **equity**”*

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So for Northern Ireland, the **mitigation** question is clear

What **emission reductions** give a good chance of staying ***below*** 2°C?

... and for **adaptation**, in case the global community fails to mitigate ...

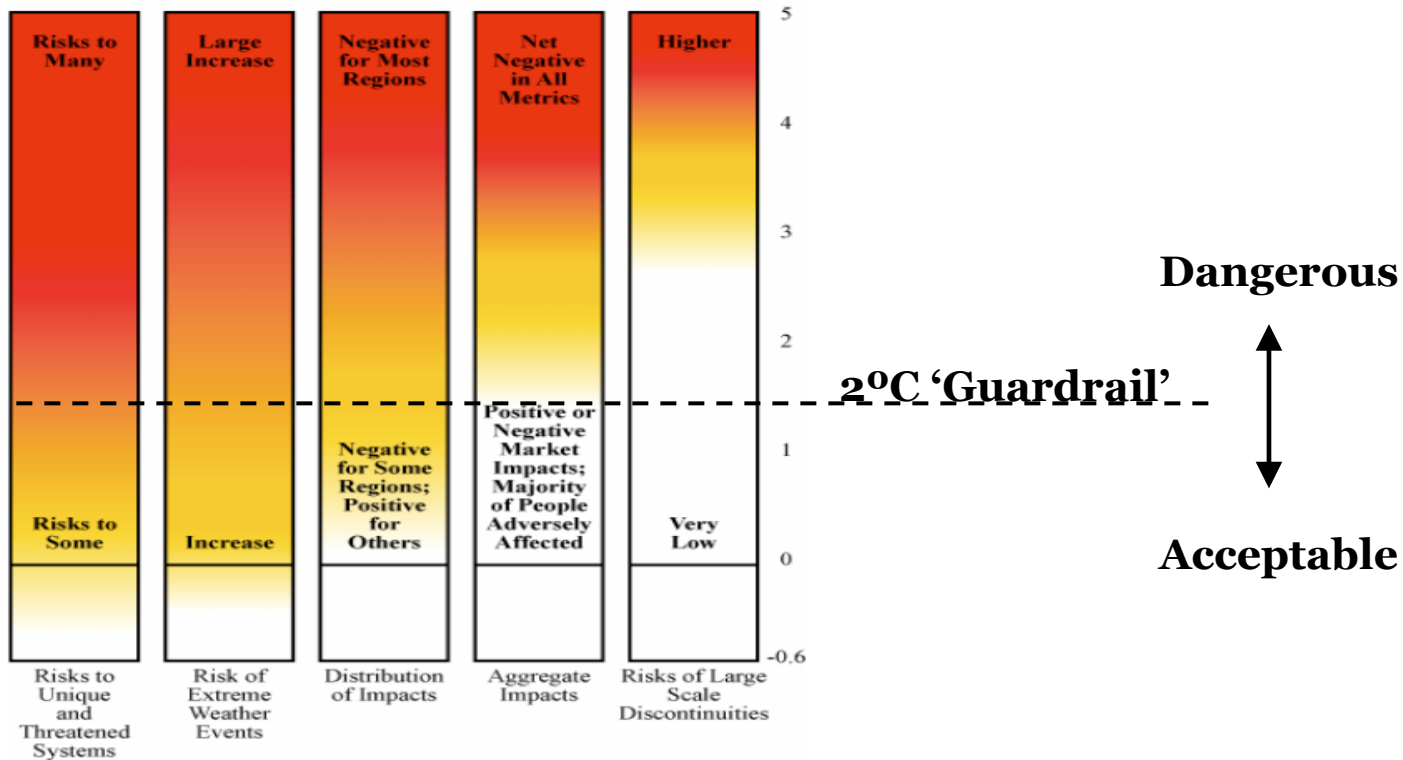
What **temperatures**/climate should Northern Ireland prepare for?

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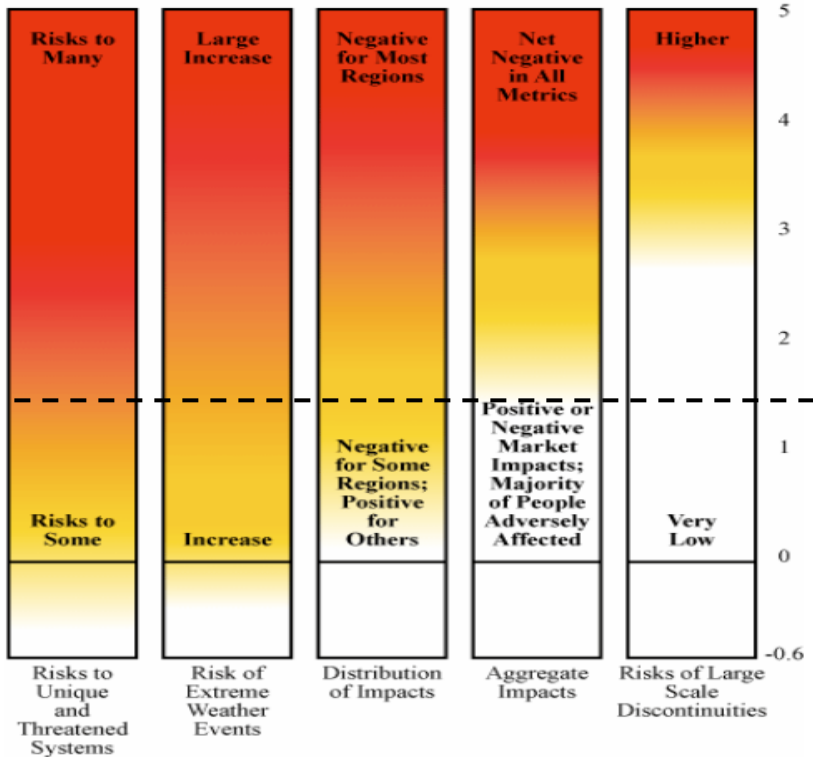
**... but why 2°C ?**



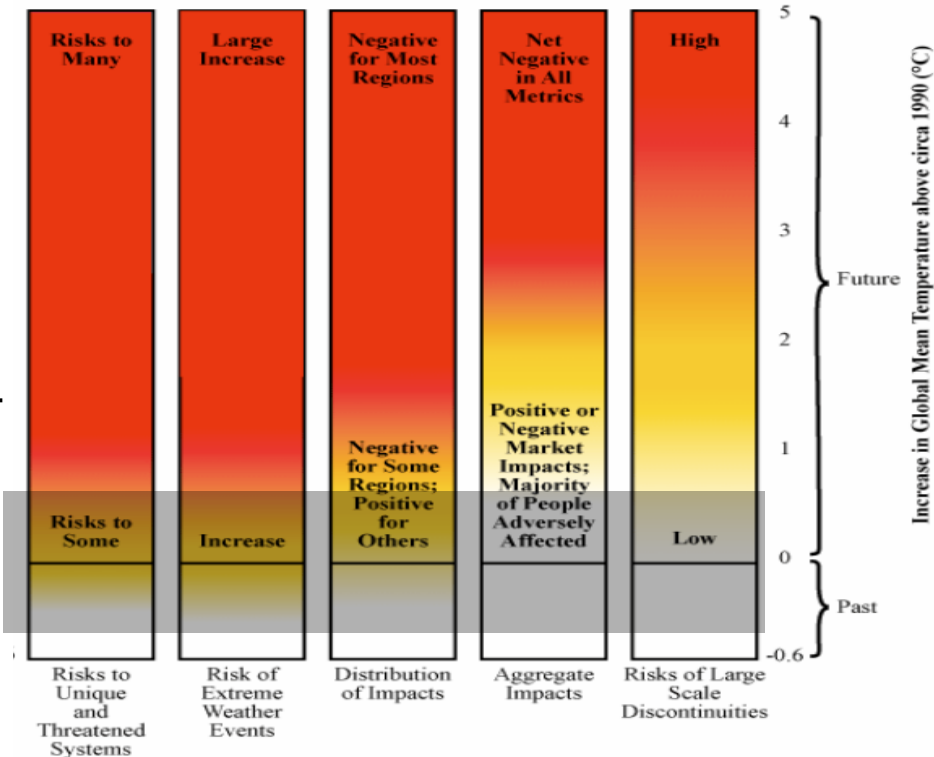
**2001**



2001



2009



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**Is 2°C – dangerous or  
extremely dangerous?**

**Is 1°C the new 2°C?**

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**... sticking with 2°C?**

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# Emission-reduction targets

- UK, EU & Global - long term reduction targets

UK's <b>80%</b>	reduction in CO <sub>2</sub> e by	<b>2050</b>
EU <b>60%-80%</b>	“	<b>2050</b>
Bali <b>50%</b>	“	<b>2050</b>

- CO<sub>2</sub> stays in atmosphere for 100+ years
- 2050 reduction unrelated to avoiding dangerous climate change (2°C)
- **Cumulative** emissions that matter (i.e. carbon budget)
- This fundamentally rewrites the chronology of climate change
  - **from long term gradual reductions**
  - **to urgent & radical reductions**

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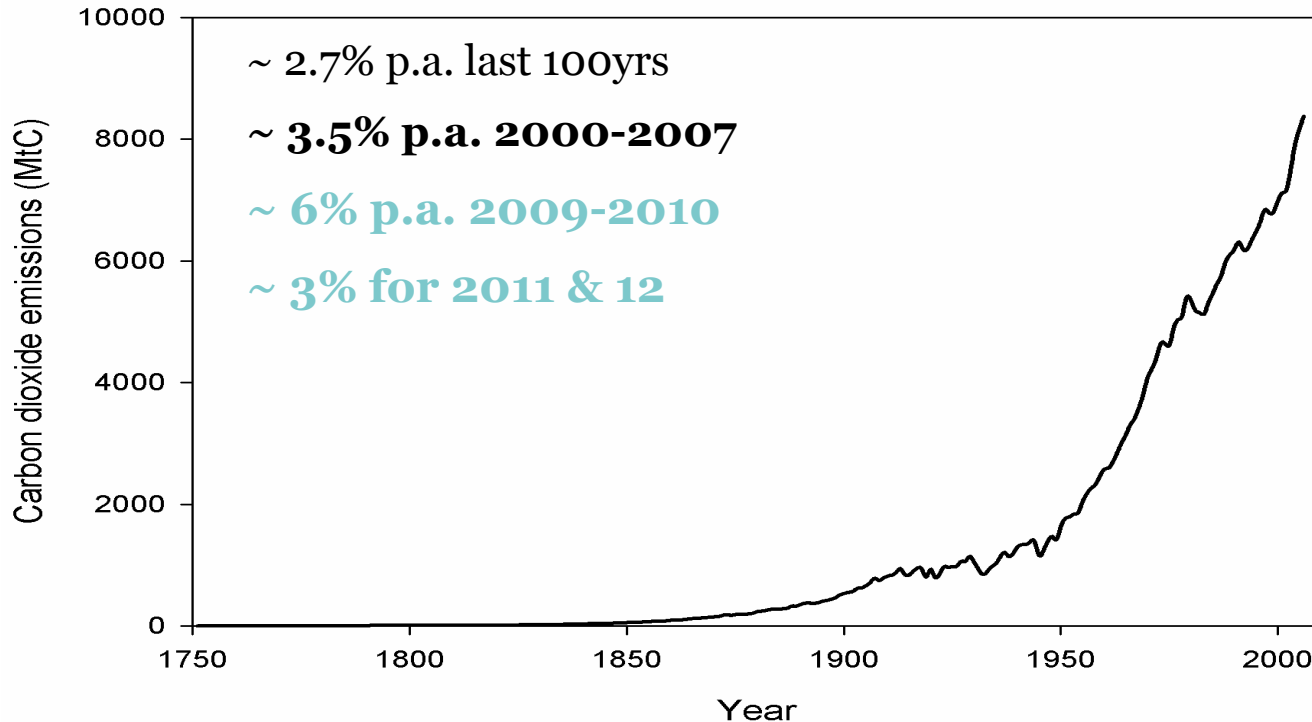
**factor in...**

the latest emissions data

**what is the scale of the global  
'problem' we now face?**

# Things are getting worse!

## Global CO<sub>2</sub> emission trends?



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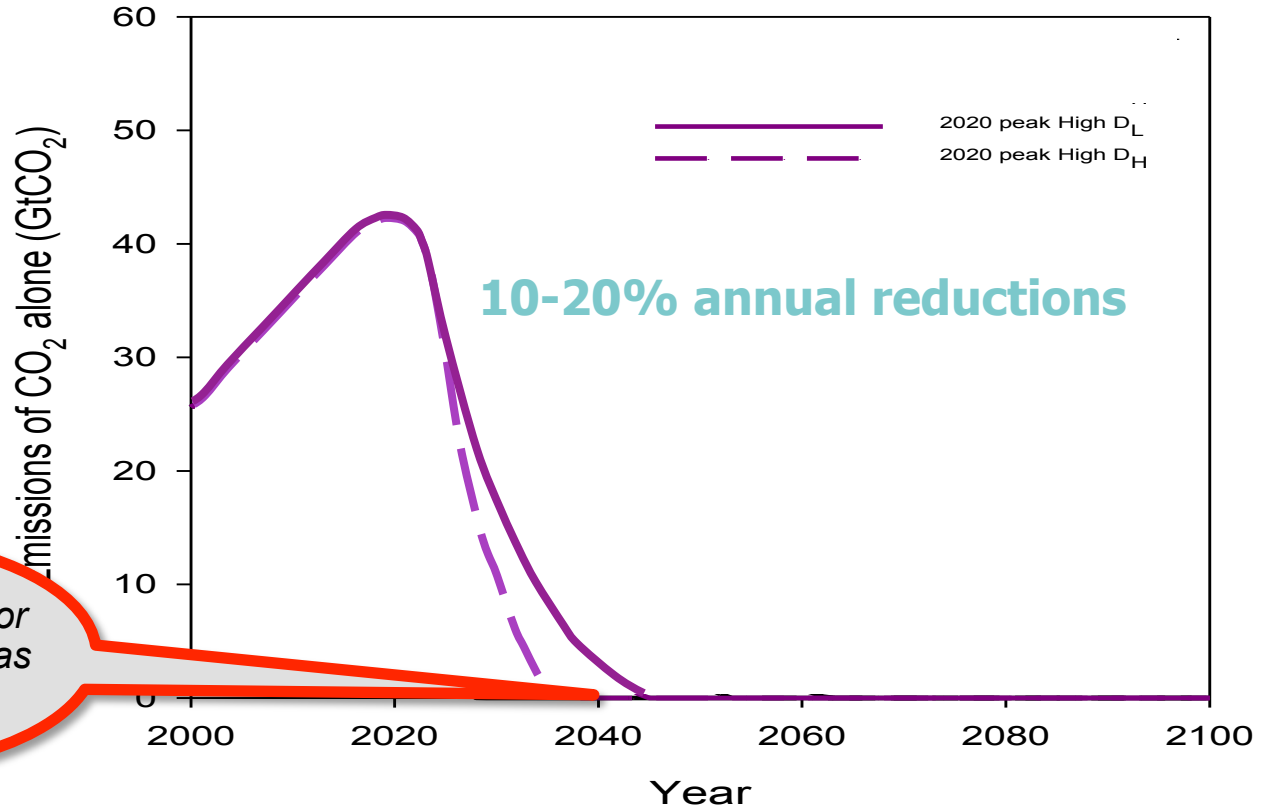
## What does:

- This failure to reduce emissions  
&
- The latest science on cumulative emissions
- **Say about a 2°C emissions reduction pathway?**



# for energy emissions? (*with 2020 peak*)

**Total  
Decarbonisation  
by ~2035-45**



*No emission space for  
coal, gas, or shale gas  
– even with CCS!*

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**If this all looks too difficult**  
**... what about a 4°C future?**

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For **4°C** & emissions peaking by 2020 a  
~ **3.5%** p.a. reduction in CO<sub>2</sub> from energy is necessary

... & such a reduction rate is achievable

**so is aiming for 4°C more realistic?**

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For **4°C** global mean surface temperature

**5°C - 6°C** global *land* mean

*... & increase °C on the hottest days of:*

**6°C - 8°C** in China

**8°C - 10°C** in Central Europe

**10°C -12°C** in New York

In low latitudes **4°C** gives

up to **40% reduction** in maize & rice

as population heads towards **9 billion** by 2050

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## **There is a widespread view that 4°C is:**

- incompatible with an organised global community
- beyond ‘adaptation’
- devastating to eco-systems
- highly unlikely to be stable (‘tipping points’)

... consequently ...

**4°C should be avoided at ‘all’ costs**

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Before despairing ...

Have we got the **agency** to achieve the unprecedented reductions rates linked to an outside chance of 2°C ?

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# To put some numbers on this non-marginal challenge for energy

- 10% reduction in emissions year on year
  - ~40% reduction by ~2015 (c.f. 1990)
  - ~70% ~2020
  - ~90+% ~2030

**Impossible?**

**... is living with a 4°C global temperature rise by 2050-70 less impossible?**

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# Agency

- Equity – a message of hope – perhaps?
- Technology – how far, how fast & how soon?



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Little chance of changing policies aimed  
at 7 billion

... but how many people need to make the  
necessary changes?

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## Pareto's 80:20 rule

80% of something relates to ... 20% of those involved

~80% of emissions from ~20% of population

*run this 3 times*

**~50% of emissions from ~1% of population**

Or more realistically:

**~40% to 60% from ~1% to 5%**

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## - who's in the 1% to 5%?

- Climate scientists
- Climate journalists & pontificators
- OECD (& other) academics
- Anyone who gets on a plane
- All MLAs?

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Are **we** sufficiently concerned to

... make or have enforced substantial personal  
sacrifices/changes to our lifestyles

*To accept a steady-state rather than growing economy?*

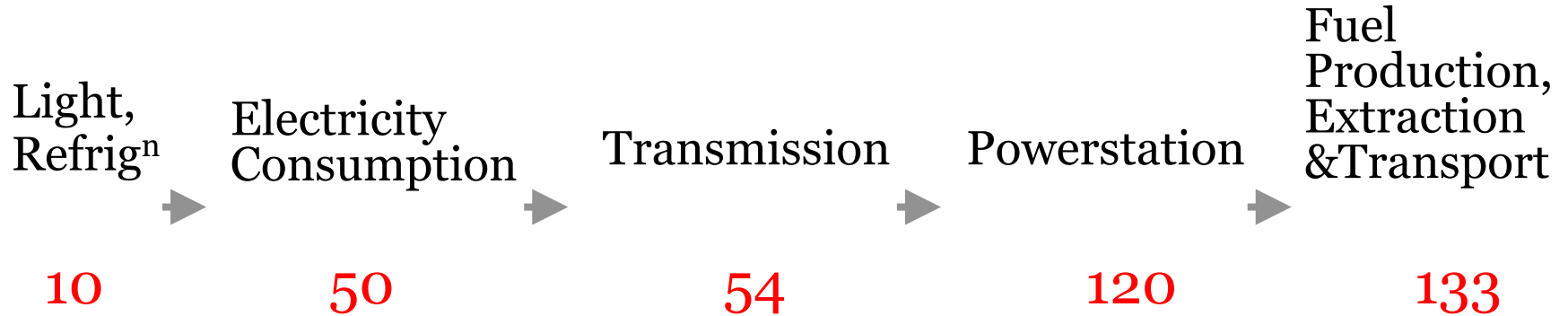
**NOW ?**

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Technical **AGENCY**  
– another message of hope

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# The Electricity system



**Demand opportunities dwarf those from supply in short-term**

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## Car efficiency (without rebound)

- UK mean car emissions ~175g/km (new ~150g/km)
- EU 2015 plan 130g/km (fleet mean with buy out)
- 2008 BMW 109g/km, VW, 85-99g/km; 1998 Audi A2 ~ 75g/km
- ~8 year penetration of new cars ... ~90% of vehicle-km
- **~50% CO<sub>2</sub> reduction by 2020 with no new technology**
- Reverse recent trends in occupancy **~70% by 2020**

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**To summarise...**



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# Uncomfortable implications of conservative assumptions

## If ...

- Link between cumulative emissions & temp' is broadly correct
  - Industrialising (non-OECD) nations peak emissions by 2025/30
  - There are rapid reductions in deforestation & food emissions
  - No 'discontinuities' (tipping points) occur
- & Stern/CCC/IEA's "feasible" reductions of 3-4% p.a. is achieved

**2°C stabilisation is virtually impossible**

**4°C by 2050-2070 looks 'likely' (could be earlier & on the way to 6°C+)**

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# For policy makers the message is simple but uncomfortable

- **Should avoid 4°C at all costs**
- **Need ~70% decarbonisation over next decade or so**
- **Only small % of global population need to mitigate**
- **Low carbon energy supply is too little too late in the West**
- **Principal response is to reduce energy demand now**
- *Carbon trading & prices are not viable for non-marginal (large) reductions*

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## Headline messages

- **Change behaviour** - today (producers and consumers)
- **Improve technology** - now & over the next few years
- **Consume less**

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... & for Northern Ireland, the challenge is:

**Mitigation** - a 60-70% reduction in 'total' emissions by ~2020

**Adaptation** - plan for impacts of up to 4C or more by 2050-70

*... and in both of these equity & poverty are pivotal issues*

*– at home and abroad!*

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## *So ... for MLAs*

- Lead by example
- Don't be the exception - *(cars, planes, ships – all argue to be treated leniently)*
- Don't hide behind/blame of others - *(UK blames China, China blame US ...)*
- Consider the system - *(e.g. shale's impact on coal use, etc.)*
- Acknowledge it is not going to be easy – it will often hurt

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Be courageous both as leaders and as citizens

**Mitigate for 2°C, but plan for 4°C – or more**

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# Finally,

“... this is not a message of futility, but a wake-up call of where our rose-tinted spectacles have brought us. Real hope, if it is to arise at all, will do so from a bare assessment of the scale of the challenge we now face.”

**Anderson & Bows**

*Beyond 'dangerous climate change*

**Philosophical Transactions of the Royal Society**

Jan 2011

# Thank you



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