Carbon crossroads

The Intergovernmental Panel on Climate Change (IPCC) explores four potential futures depending what policies governments adopt to cut emissions.

**The choices we face now**

<table>
<thead>
<tr>
<th>Business-as-usual</th>
<th>Some mitigation</th>
<th>Strong mitigation</th>
<th>'Aggressive' mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emissions continue rising at current rates</td>
<td>Emissions rise to 2080 then fall</td>
<td>Emissions stabilize at half today’s levels by 2080</td>
<td>Emissions halved by 2050</td>
</tr>
<tr>
<td>RCP 8.5*</td>
<td>RCP 6.0</td>
<td>RCP 4.5</td>
<td>RCP 2.6</td>
</tr>
<tr>
<td>As likely as not to exceed 4°C</td>
<td>Likely to exceed 2°C</td>
<td>More likely than not to exceed 2°C</td>
<td>Not likely to exceed 2°C</td>
</tr>
</tbody>
</table>

**Business impacted by climate change**

- More heatwaves, changed rainfall patterns and monsoon systems
- CO₂ concentration three-to-four times higher than pre-industrial levels
- Arctic summer sea ice almost gone
- Sea level rises by half to one metre
- More acidic oceans

**Our potential world in 2100**

- May require negative emissions - removing CO₂ from the air - before 2000
- CO₂ concentration falling before end of century
- Climate impacts generally constrained but not avoided
- Reduced risk of ‘tipping points’ and irreversible change

**Start of Industrial Era**

- Our carbon budget for 2°C

**Now**

- Carbon budget we have left
- By 2011, we had already emitted around half our allowance
- Carbon budget we have spent

**The pathway to two degrees**

Meeting the internationally agreed target of 2°C means spending what remains of our carbon budget wisely.*

*To have a better than two-thirds chance of limiting warming to less than 2°C from pre-industrial levels, the total cumulative CO₂ emissions since the start of the industrial era would need to be limited to 1,000 gigatones of carbon. About half of this amount had already been emitted by 2011. The amount of carbon that can be released would be reduced if concentrations of non-CO₂ greenhouse gases continue to rise. Other factors (for example, the unexpected release of greenhouse gases from permafrost) could also tighten this ‘carbon budget’.

For more information: cpsl.cam.ac.uk

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