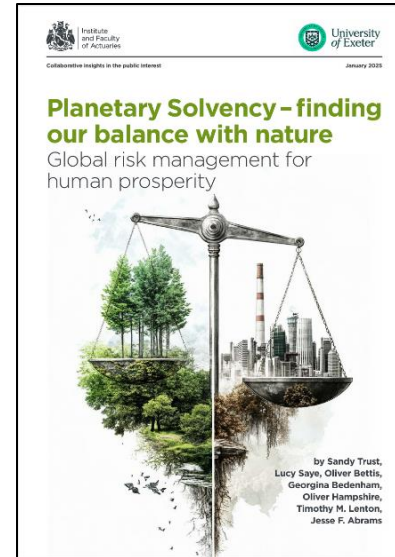


Planetary Solvency

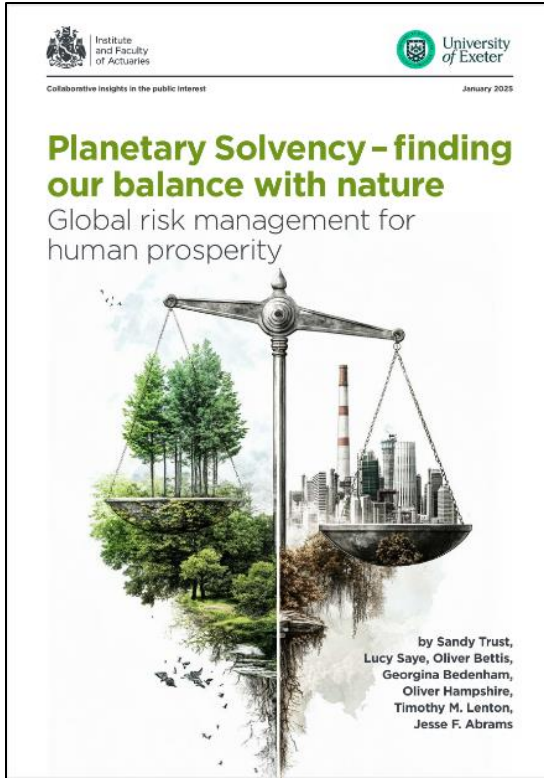
The science risk imperative



LUCIFER (Lawrence's laws)



- ✓ **Loss likely enough and severe enough to justify action**
- ✓ **Understand risk, how it develops and range of impacts**
- ✓ **Care about risk and give it sufficient priority**
- ✓ **Imminent enough to drive prioritisation**
- ✓ **Focus on actions that can be taken**
- ✓ **Effectiveness of action believed – leading to sense of agency**
- ✓ **Rational decisions economically and politically**

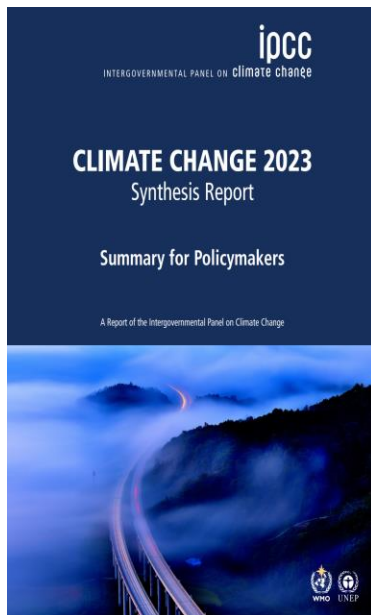


“ Global risk management is currently failing and blind to systemic risk



Professor Tim Lenton

Science led messaging



Summary findings

- Climate change has caused substantial damages, and increasingly irreversible losses (p10).
- Climatic and non-climatic risks will interact, creating compound and cascading risks that are more complex and difficult to manage (p10).
- **Climate change is a threat to human well-being and planetary health.** There is a rapidly closing window of opportunity to secure a liveable and sustainable future for all (p24).

Science

- We should not typically say that there is an iceberg until we are fully confident there is one present
- Concerned with making predictions and consensus science tends towards averages
- This is what informs economists
- Which informs policy



Risk

- There could be an iceberg, so we should typically steer well clear of it
- Concerned with ‘what is the worst that could happen’
- This is no-one’s job...
- Could the actuarial profession help?

Climate change is a risk management problem

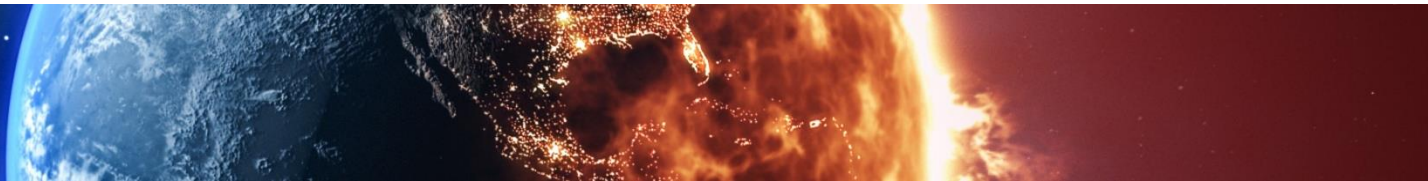
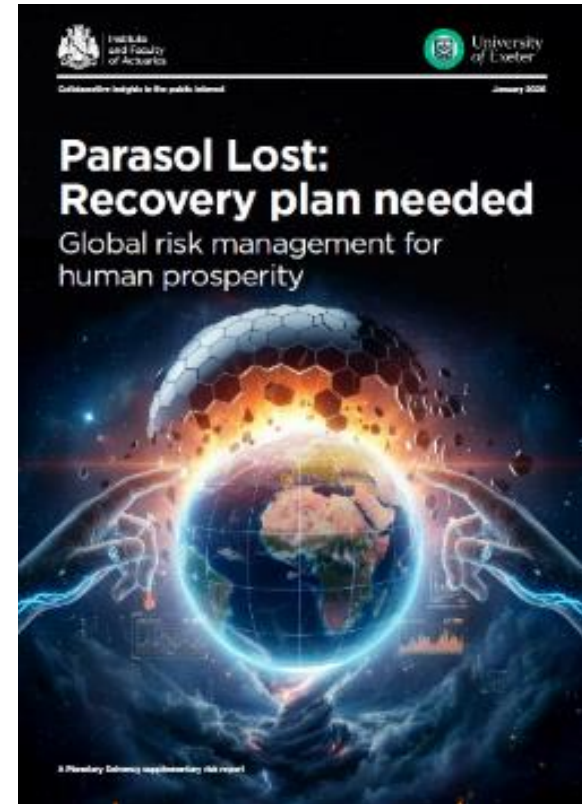


Cut emissions. Reach net zero.

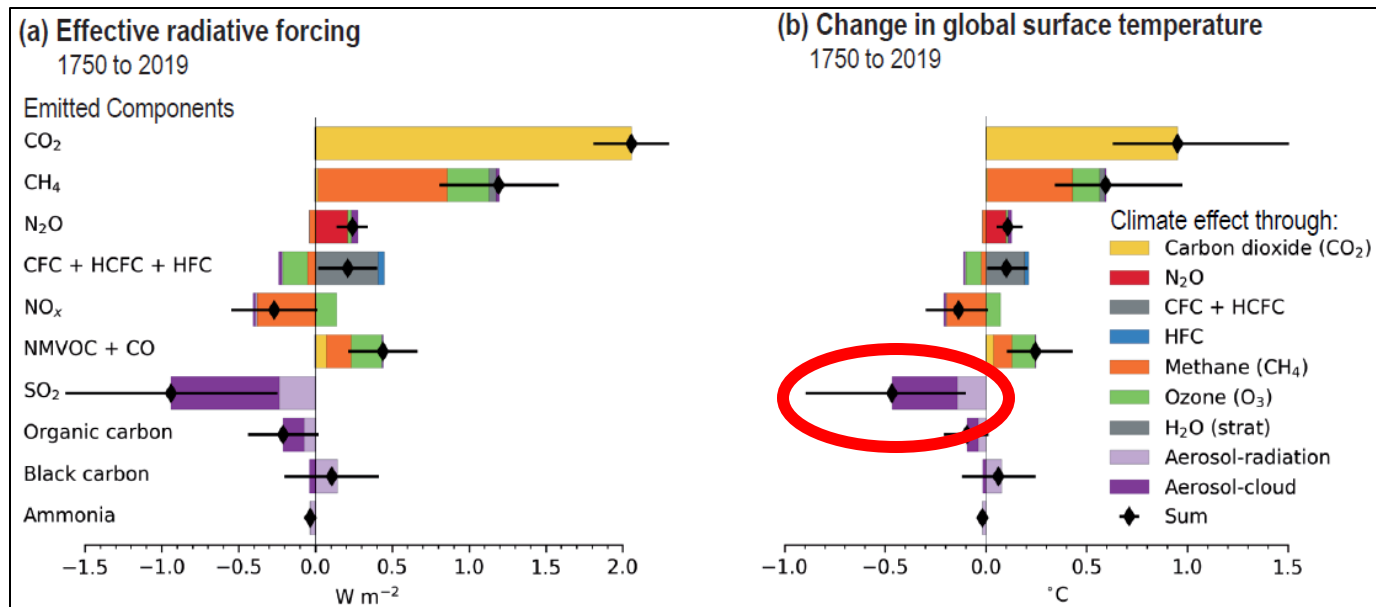
Warming will stop at 1.5C.

That promise shaped global policy, markets, and climate plans.

But what if it's wrong?



The sunshade – sulphate aerosol cooling



PLANETARY SOLVENCY DASHBOARD 2026



DRIVER ALERT – CATASTROPHIC RISKS

GLOBAL TEMPERATURE

1.45°C

above pre-industrial



ENERGY IMBALANCE

0.9 W/m²

energy imbalance



WARMING RATE

CRITICAL

+0.30°C / decade

DECADAL RATE



TIPPING POINTS

WARNING

1 of 16

TRIGGERED



GHG CONCENTRATION

DANGER

424 ppm CO₂e

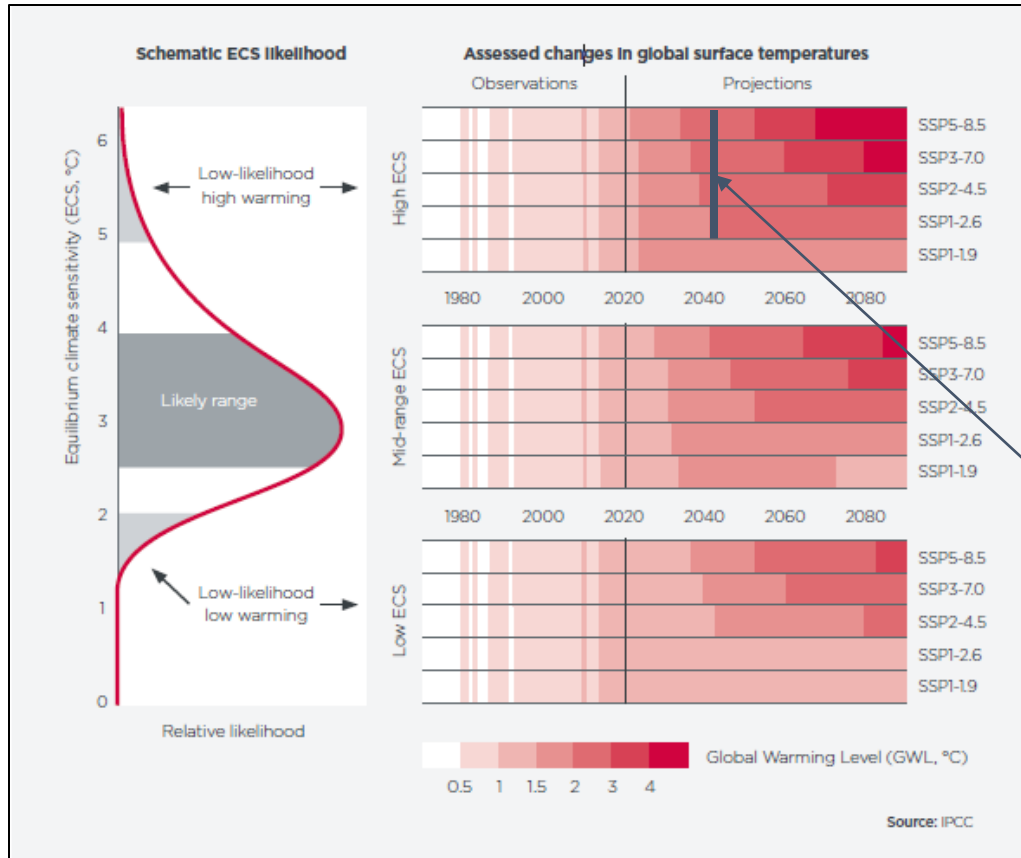
CONCENTRATION

PLANETARY BOUNDARIES

6 OF 9



Implications of high climate sensitivity



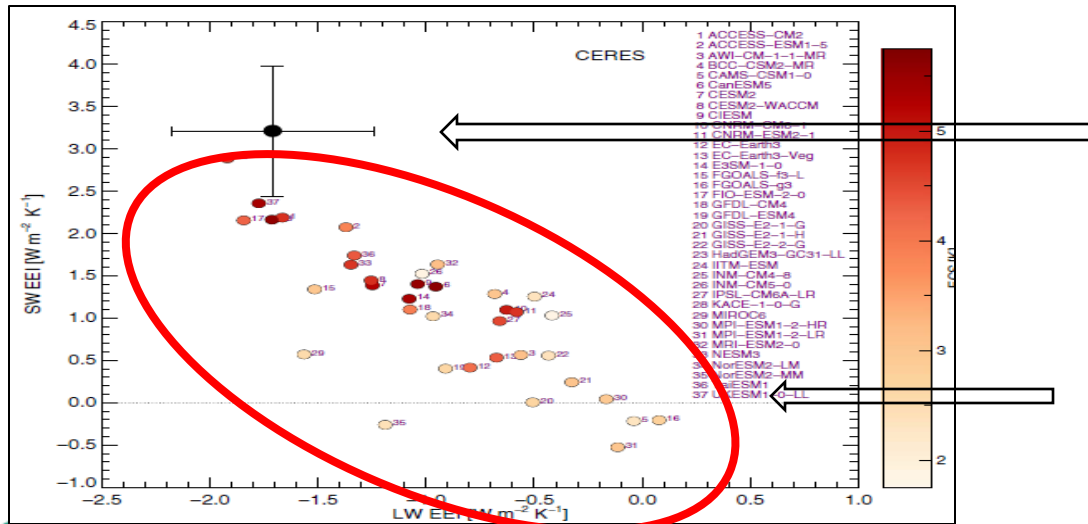
- The IPCC estimated a 90% probability range for ECS of 2°C to 5°C, i.e. there **is a 5% probability that it is >5°C**.
- Higher ECS implies more warming for the same amount of GHGs – see the IPCC diagram on the left.
- **In a High ECS world 2C is breached before 2050 in all but a low emissions scenario**
- So, what is the evidence telling us?

Recent evidence on climate sensitivity

I: Paleoclimate data suggests an ECS range of 4 to 5°C during the last 70m years

II: Satellite data shows EEI has more than doubled in recent years

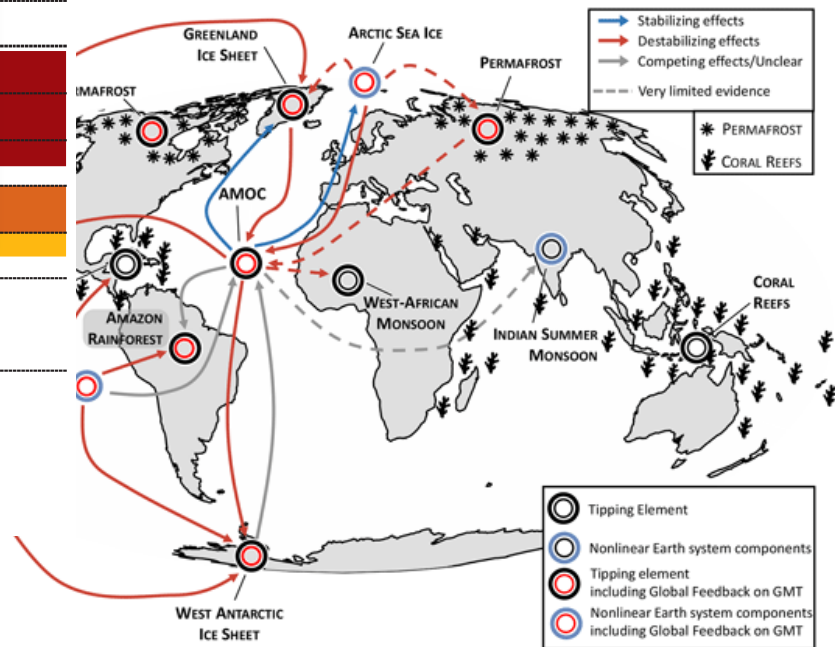
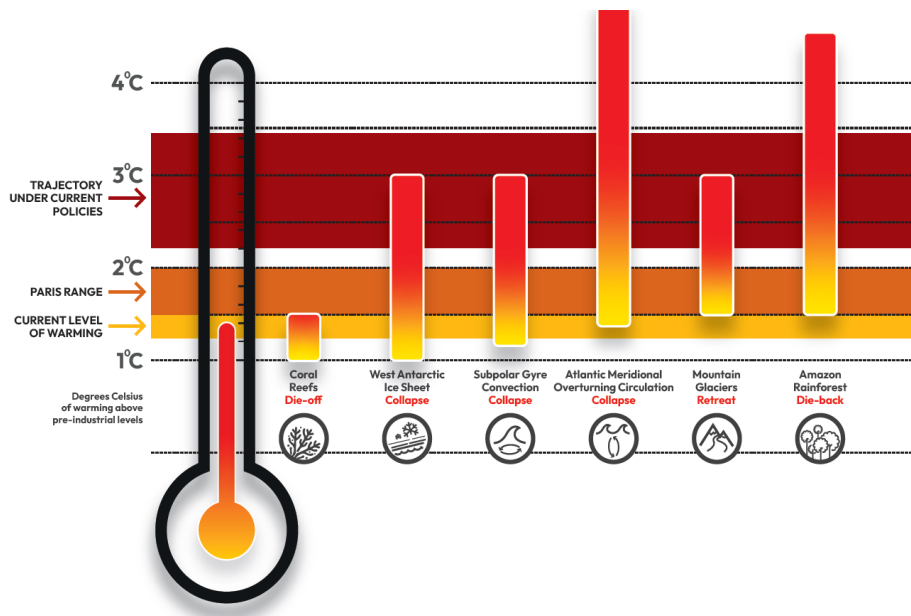
III: Low ECS climate models cannot replicate satellite observations



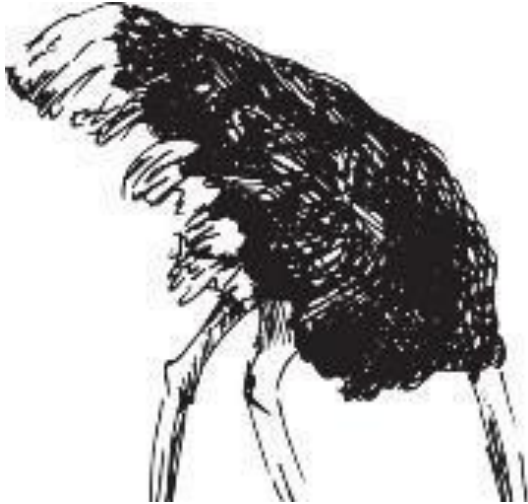
Ceres satellite data with 90% confidence intervals

Outputs from 37 climate models used in IPCC's AR6.

Seeking a tipping cascade?



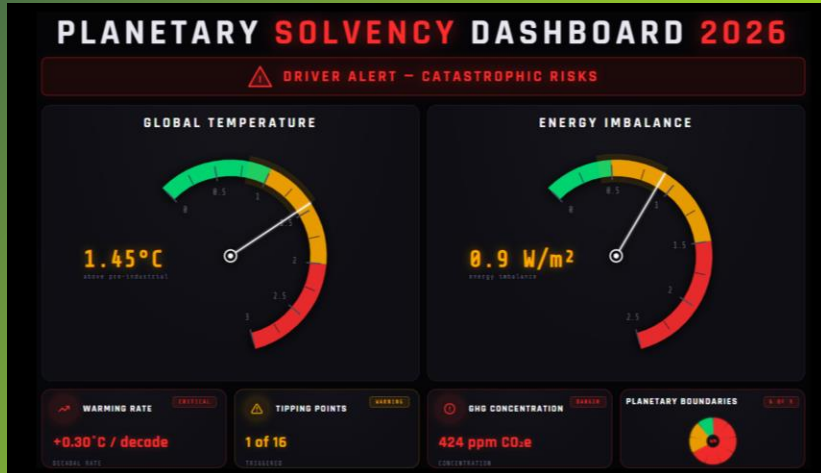
Don't worry – the economy will be fine (in climate risk model land)



- ⑩ A global economic recession caused by climate change is not foreseen, even in the worst-case scenario.
- ⑩ Physical climate risks are still not exhaustively modelled
- ⑩ Sea level rise and ocean acidification are excluded
- ⑩ Tipping points are excluded
- ⑩ No allowance for conflict or migration
- ⑩ Nature related risks excluded
- ⑩ Human health impacts not covered

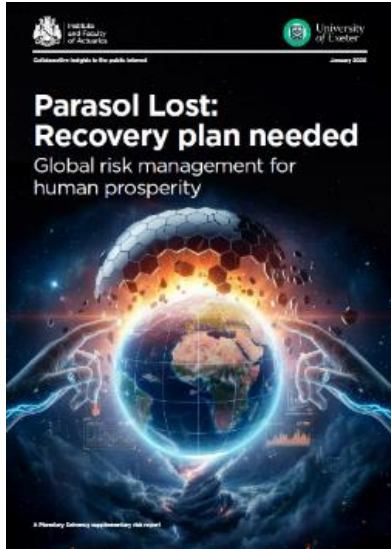


- Humanity is on a knife edge



- Risking Planetary Insolvency

More warming and damages than expected



- ✓ We may be en route to 3C+ of warming today if climate sensitivity high
- ✓ Aerosol cooling is huge inadvertent geo-engineering, which we will lose
- ✓ Net zero carbon budgets will not limit temperatures to 1.5C
- ✓ More warming than expected means more damages than expected
- ✓ Low temperature scenarios are no longer congruent with physical reality
- ✓ Strong parallels with the Global Financial Crisis

BUT WE HAVE AGENCY

... AND IT WILL BE OVERWHELMINGLY POSITIVE ECONOMICALLY

Planetary Solvency recovery plan



to
support human
prosperity



Mindset shift

From unintended planetary consequences as a by-product of human activity to intentional planetary stewardship.



Quick wins

Moving rapidly on material quick wins, reducing methane and other short-lived climate forcers, and halting deforestation.



Supercharge the transition

Policy interventions to activate the positive economic tipping points, driving investment, jobs, growth and accelerated emissions reductions.



Working with nature

Implement a strategic approach to protecting and restoring natural carbon sinks at scale, capturing carbon and leveraging the cooling potential of trees and forests.



Emergency brakes

Research and investigate deploying technological solutions to rapidly reduce Earth's energy imbalance, reduce warming and mitigate the risk of tipping points.