

Why Sustainability matters, and how Education can be the difference

Professor Simon Kemp

University Lead, Education for Sustainable Development

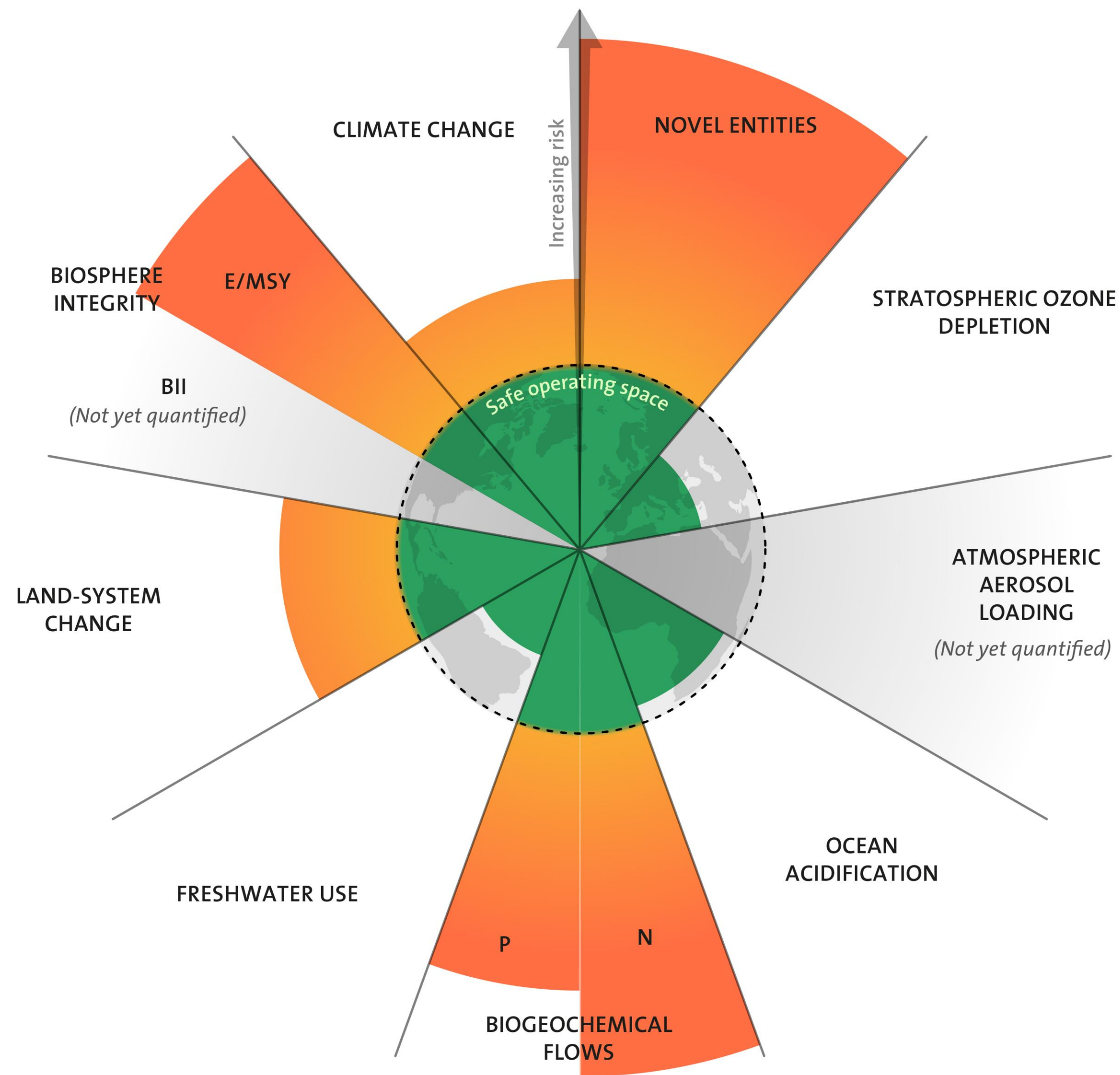
University of Southampton

Why Sustainability matters, and how Education can be the difference

- The sustainability crisis
- The UN Sustainable Development Goals
- The role of Higher Education in sustainability
- Curriculum transformation
- English for Academic Purposes & Sustainability
- The IDEAS model & the Sustainability Mindset
- Student success
- Summary

The sustainability crisis



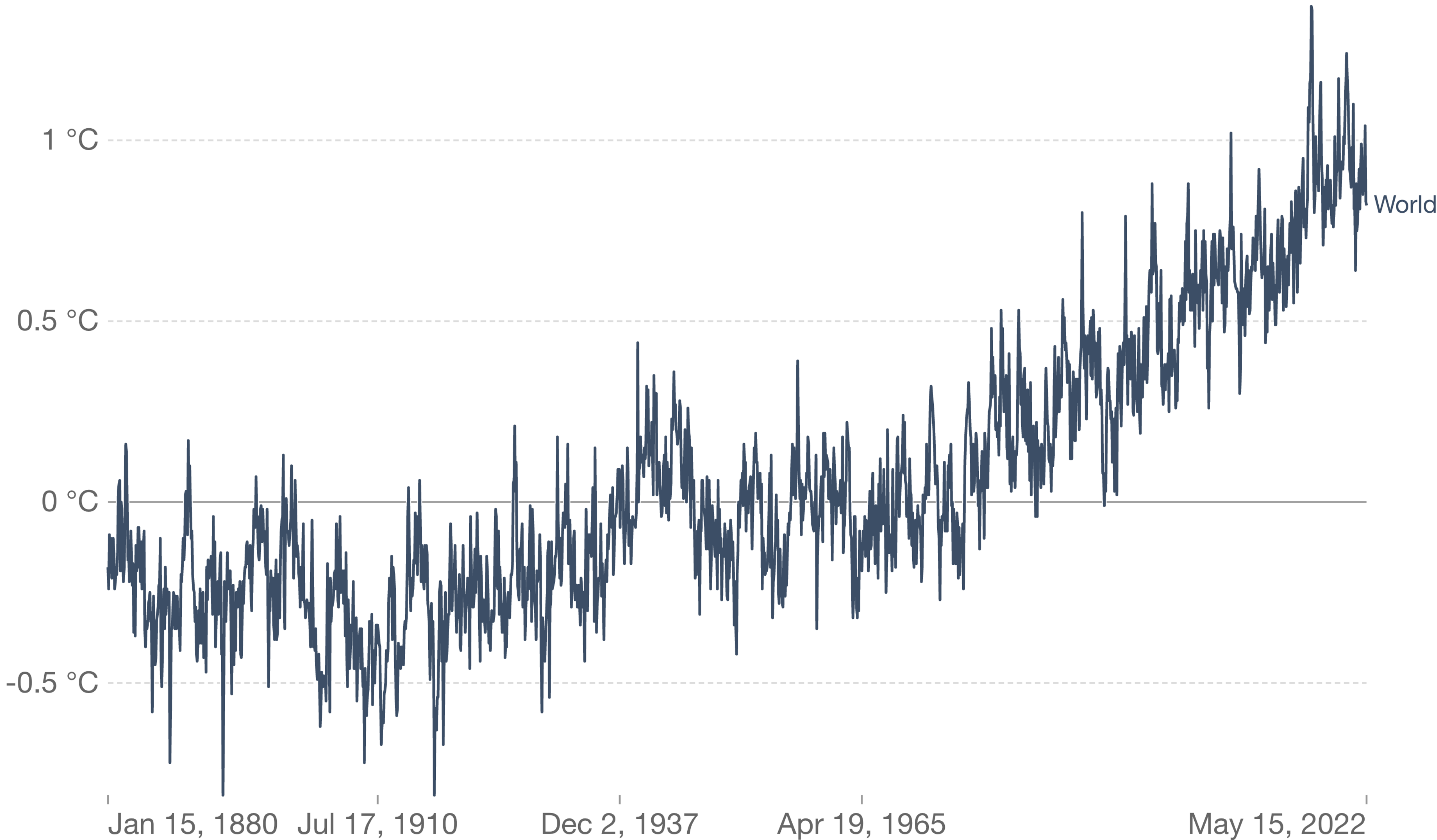


Planetary Boundaries

"Azote for Stockholm Resilience Centre, based on analysis in Persson et al 2022 and Steffen et al 2015".

Global warming: monthly temperature anomaly

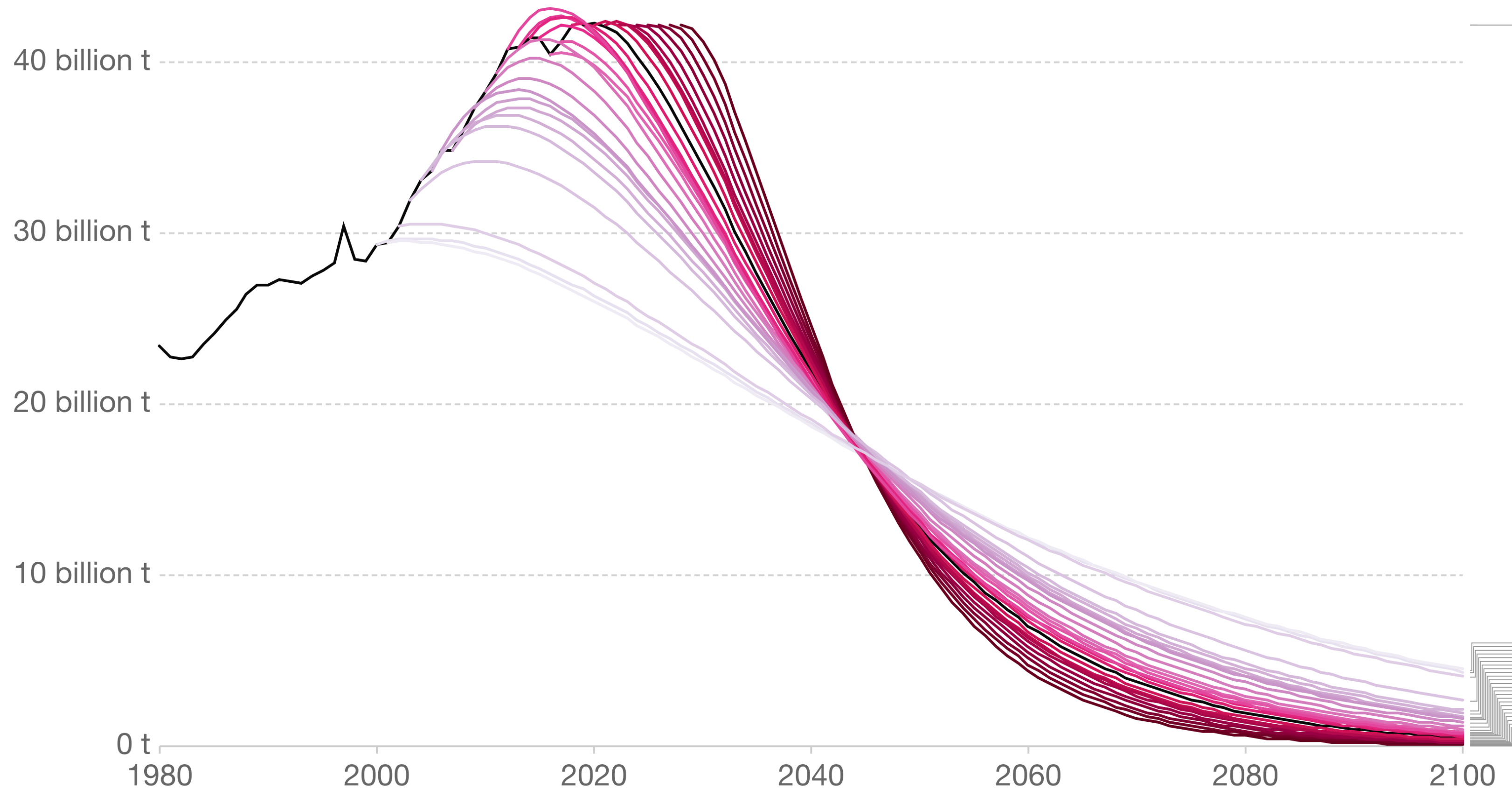
The combined land-surface air and sea-surface water temperature anomaly is given as the deviation from the 1951–1980 mean.



CO₂ reductions needed to keep global temperature rise below 2°C

Our World
in Data

Annual emissions of carbon dioxide under various mitigation scenarios to keep global average temperature rise below 2°C. Scenarios are based on the CO₂ reductions necessary if mitigation had started – with global emissions peaking and quickly reducing – in the given year.



Source: Robbie Andrews (2019); based on Global Carbon Project & IPCC SR15

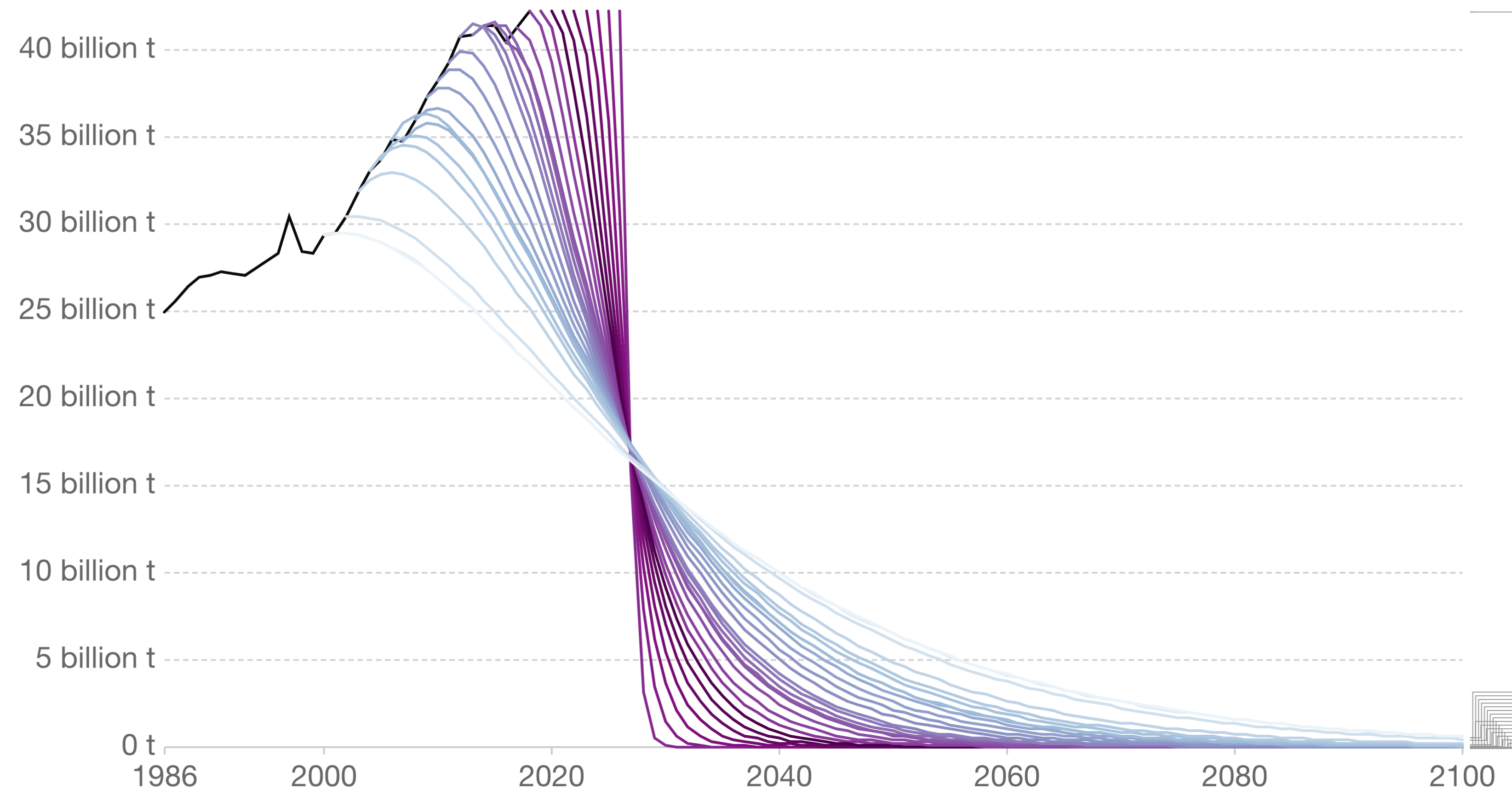
Note: Carbon budgets are based on a >66% chance of staying below 2°C from the IPCC's SR15 Report.

OurWorldInData.org/co2-and-other-greenhouse-gas-emissions • CC BY

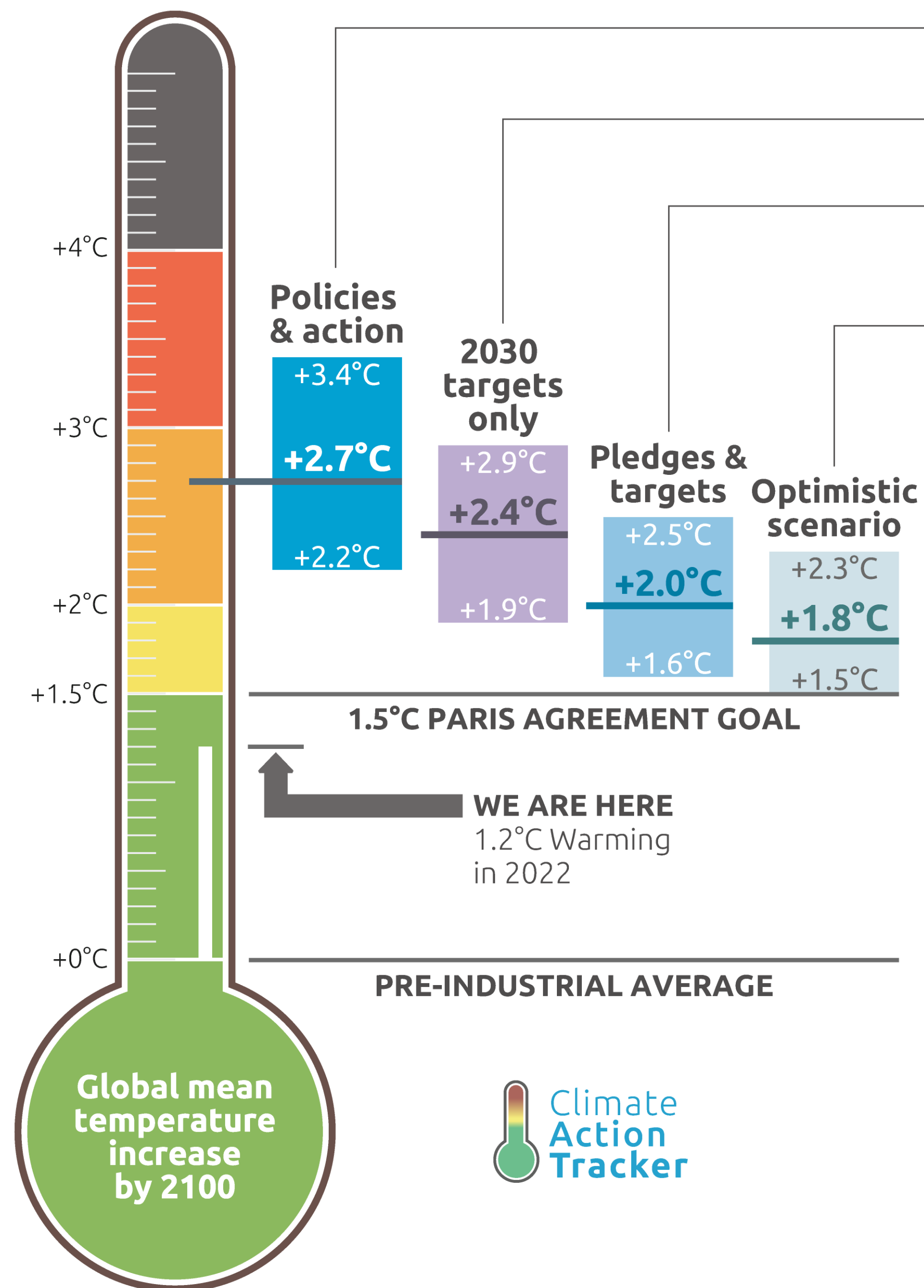
CO₂ reductions needed to keep global temperature rise below 1.5°C



Annual emissions of carbon dioxide under various mitigation scenarios to keep global average temperature rise below 1.5°C. Scenarios are based on the CO₂ reductions necessary if mitigation had started – with global emissions peaking and quickly reducing – in the given year.



Source: Robbie Andrews (2019); based on Global Carbon Project & IPCC SR15
Note: Carbon budgets are based on a >66% chance of staying below 1.5°C from the IPCC's SR15 Report.
OurWorldInData.org/co2-and-other-greenhouse-gas-emissions • CC BY



Policies & action

Real world action based on current policies †

2030 targets only

Based on 2030 NDC targets* †

Pledges & targets

Based on 2030 NDC targets* and submitted and binding long-term targets

Optimistic scenario

Best case scenario and assumes full implementation of all **announced** targets including net zero targets, LTSs and NDCs*

† Temperatures continue to rise after 2100

* If 2030 NDC targets are weaker than projected emissions levels under policies & action, we use levels from policy & action

CAT warming projections Global temperature increase by 2100

November 2022 Update

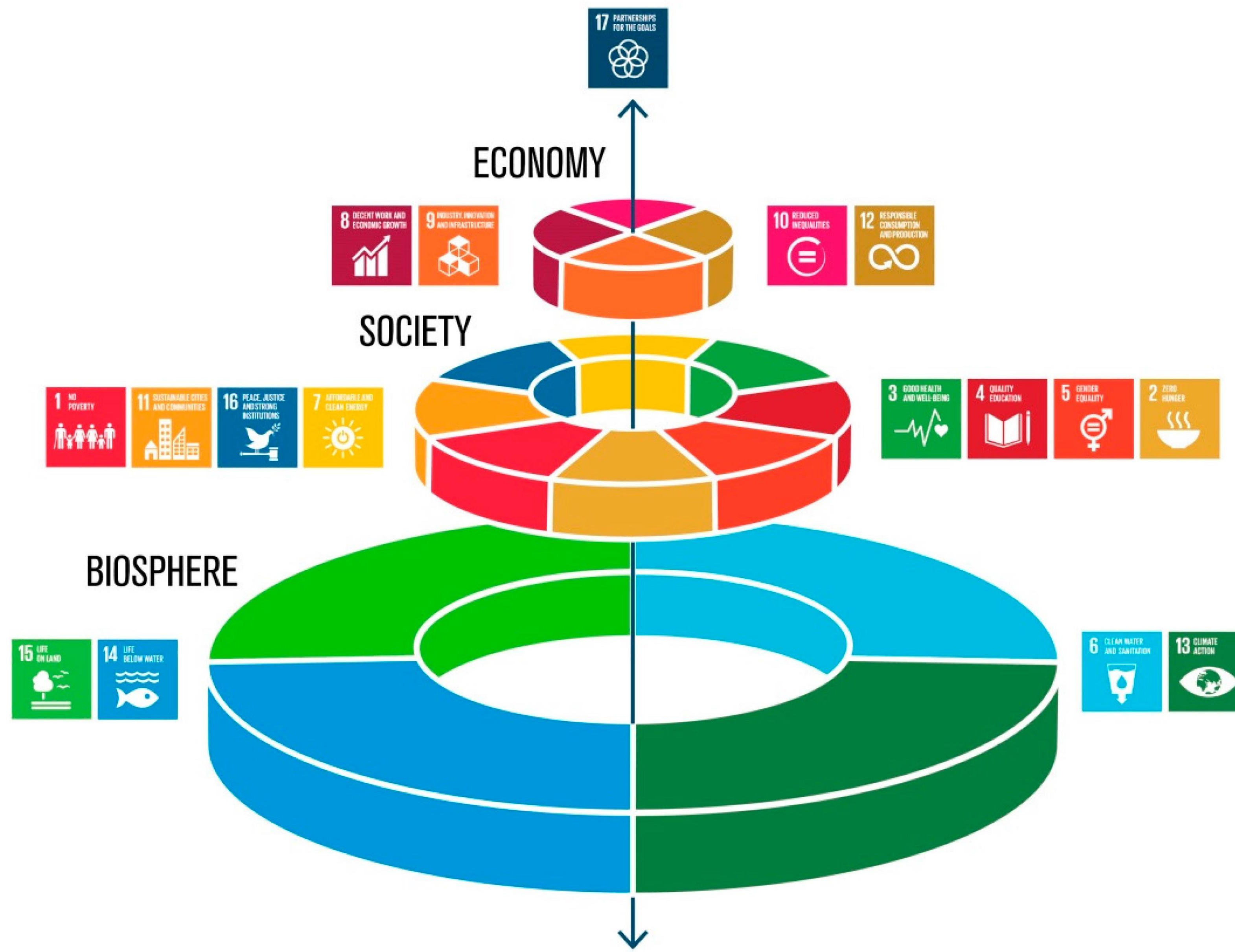


The UN Sustainable Development Goals

THE GLOBAL GOALS

For Sustainable Development





Graphics by Jerker Lokrantz/Azote

FOOD



CLIMATE



Sustainability matters, so how can
Education be the difference?

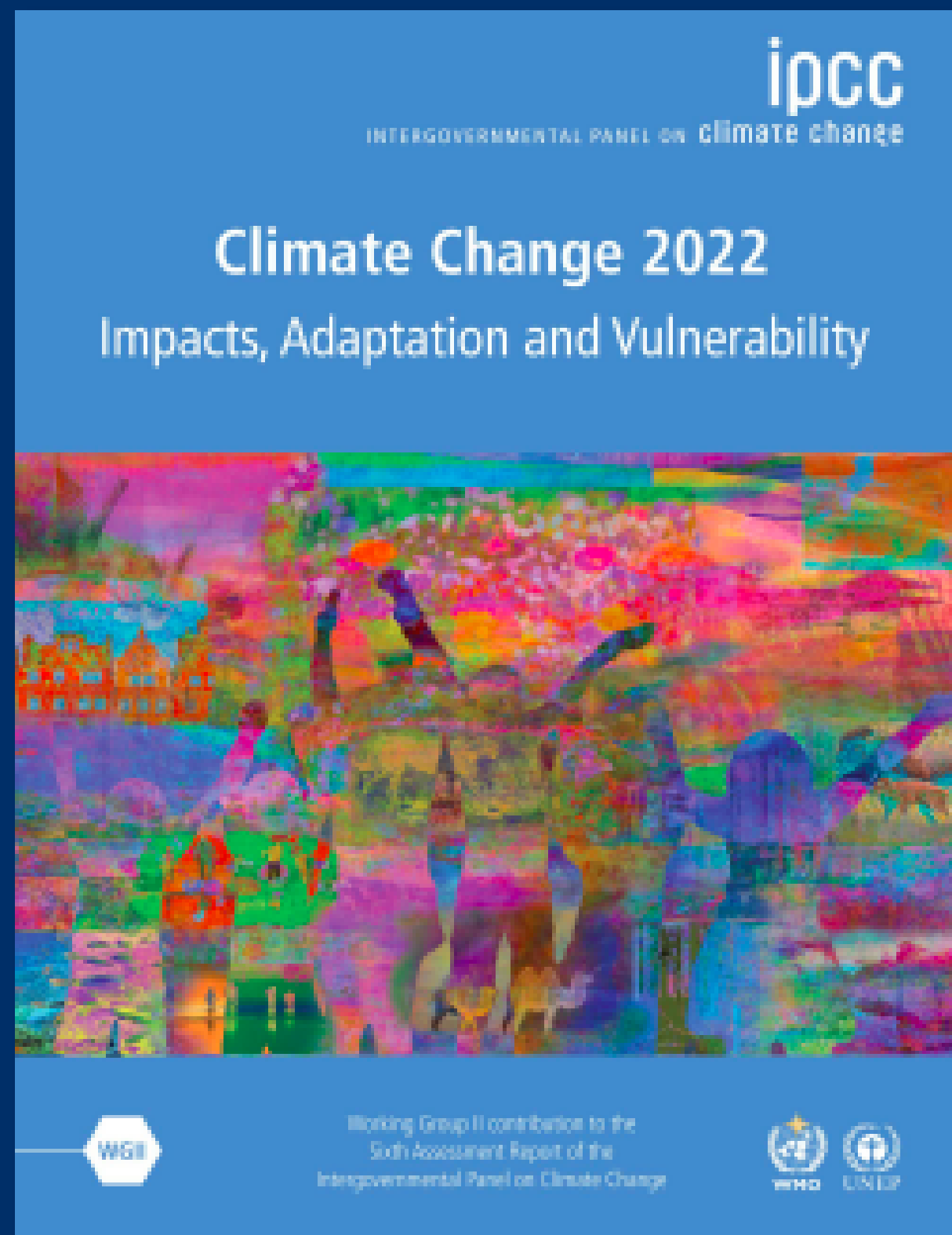
The role of Higher Education in sustainability

"Education is the most powerful weapon which you can use to change the world."

- Nelson Mandela







“ The scientific evidence is unequivocal: climate change is a threat to human well-being and the health of the planet. Any further delay in concerted global action will miss the brief, rapidly closing window to secure a liveable future. This report offers solutions to the world.

Report by numbers



270 Authors



67 Countries



43 % Developing countries
57 % Developed countries



41 % Women / 59 % Men



675 Contributing authors



More than
34,000 scientific papers



62,418
Review comments

**Growing scientific
knowledge gives us our
best understanding yet**



STEPPING UP TO OUR TRAVEL CARBON FOOTPRINT

Hi Krishna

We are hosting a meeting in Edinburgh next Wednesday 10am - 2pm. I just wanted to check if you can join us?

Story 1: Round trip to Edinburgh for 4 hour meeting
(Each bag of coal = 25kg CO₂e)

Hi Carl

Be delighted to attend. I'll see you next week.

Do you take the train?



Go plug-in hybrid?

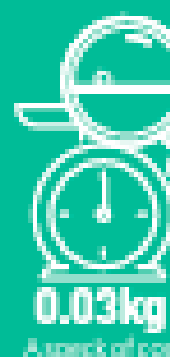


Petrol driven?



The majority of trips (and the greatest emissions) are due to **conferences and business meetings** with research and fieldwork only featuring more strongly during 2020/21.*

Or, do you have a video conference?



And, if you turn off your video...



Do you fly?

STEPPING UP TO OUR TRAVEL CARBON FOOTPRINT

Hi Simon

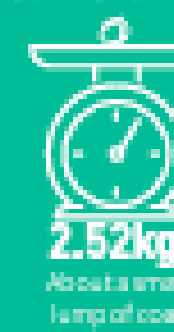
Glad that you can join us for the conference in Malaysia next month. I look forward to seeing you again.

Story 2: Round trip to UoS Malaysia (Singapore) for 16 hours of meetings over 3 days
(Each bag of coal = 25kg CO₂e, flights and hotel only)

Do you fly? Economy?



Or, do you have a video conference?



And, if you turn off your video...



Premium Economy?

Make this poster half as big again, then add another **86** sacks of coal.

Business Class?

Make this poster three times as big, then add another **271.5** sacks of coal.

Pre COVID 19 about **95%** of our business travel emissions were due to flights*

*Data sources and assumptions can be found at: <https://bit.ly/gUUmDe>

*Data sources and assumptions can be found at: <https://bit.ly/gUUmDe>

Curriculum transformation

“The truth is that many things on which your future health and prosperity depend are in dire jeopardy: climate stability, the resilience and productivity of natural systems, and biological diversity.

It is worth noting that this is not the work of ignorant people. It is, rather, largely the result of work by people with BAs, BScs, LLBs, MBAs, and PhDs.

More of the same kind of education will only compound our problems.....the worth of education must now be measured against the standards of decency and human survival..... It is not education that will save us, but education of a certain kind”

David Orr, 1991

Education for Sustainable Development

“ESD empowers learners to take informed decisions and responsible actions for environmental integrity, economic viability and a just society, for present and future generations, while respecting cultural diversity. It is about lifelong learning, and is an integral part of quality education. ESD is holistic and transformational education which addresses learning content and outcomes, pedagogy and the learning environment. It achieves its purpose by transforming society.”

UNESCO, 2019

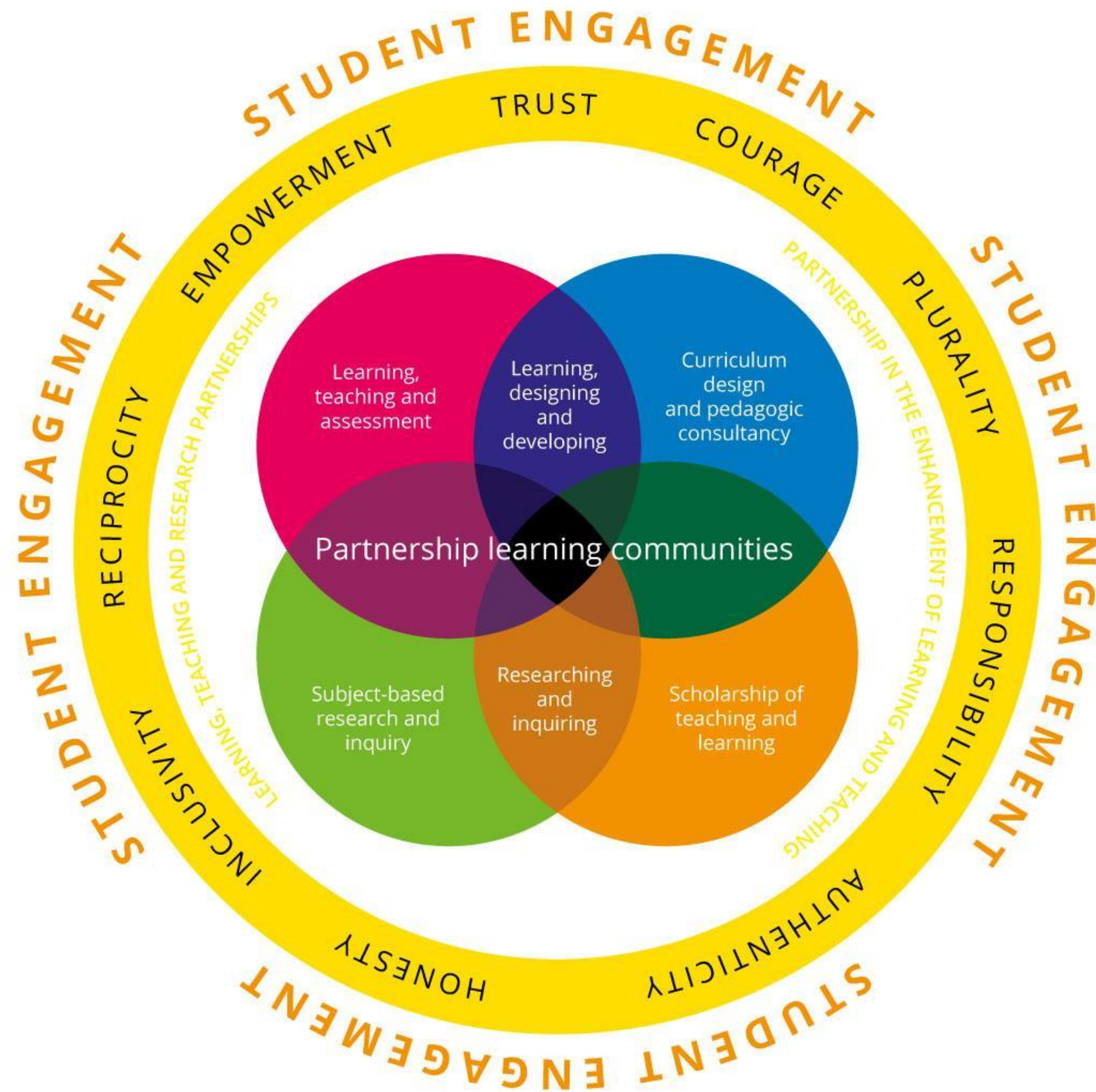
AdvanceHE



Education for Sustainable Development Guidance

March 2021











**903 UG & PGT
programmes audited**



**1582 compulsory
modules audited**



**2.6 - average number of
SDGs per module**

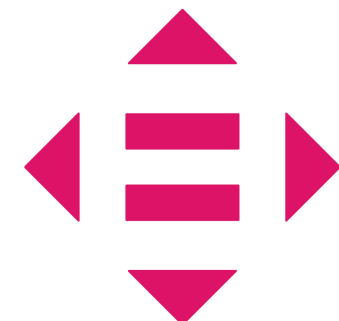
9 INDUSTRY, INNOVATION
AND INFRASTRUCTURE



8 DECENT WORK AND
ECONOMIC GROWTH



10 REDUCED
INEQUALITIES



3 GOOD HEALTH
AND WELL-BEING



11 SUSTAINABLE CITIES
AND COMMUNITIES



12 RESPONSIBLE
CONSUMPTION
AND PRODUCTION



16 PEACE, JUSTICE
AND STRONG
INSTITUTIONS



North America

Sustainable development goals
GLOBAL SUMMIT



+30

Top Priority

Middle East

Sustainable development goals
GLOBAL SUMMIT



+3

Influence

South America

Sustainable development goals
GLOBAL SUMMIT



-9

Blocking Move

Pacific Rim

Sustainable development goals
GLOBAL SUMMIT



+4

Influence

Europe

Sustainable development goals
GLOBAL SUMMIT



+6

Influence

Africa

Sustainable development goals
GLOBAL SUMMIT



+2

Influence

China

Sustainable development goals
GLOBAL SUMMIT



+8

Influence

India

Sustainable development goals
GLOBAL SUMMIT



+9

Top Priority



White, M.P., Alcock, I., Grellier, J. *et al.* Spending at least 120 minutes a week in nature is associated with good health and wellbeing. *Sci Rep* 9, 7730 (2019)



Environmental Management Systems



Climate in the Mathematics Syllabus Project

Chris Sutton (Senior Lecturer in Actuarial Science) & Six Student Interns

Project to embed analysis of climate change and its effects into the undergraduate mathematics curriculum with students working as co-creators

- New content that embeds climate considerations into QMUL Mathematics across a range of modules.
- Positive impact on future student experience given the growing importance of climate science and its applications.
- Assistance for colleagues in developing innovative new content & applications for existing modules.
- Enhanced employability for student co-creators & future QMUL students seeking skills for the Green Economy.
- Enhanced student experience that will be welcomed by a broader set of stakeholders (e.g., the Institute & Faculty of Actuaries) given the place of climate in their own strategic and educational priorities.

[Home](#)

[How to Use](#)

[Tutor's Toolkit](#)

[Resources](#)

[About](#)



Fashion Design for Sustainability: Resources for Tutors

ESD & English for Academic Purposes

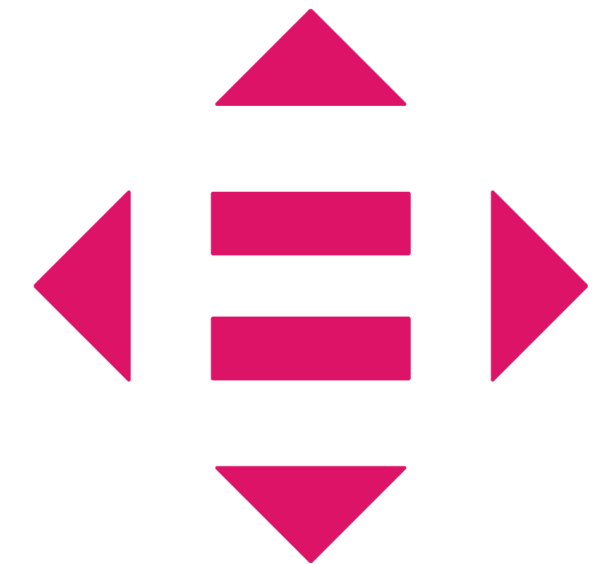
3 GOOD HEALTH
AND WELL-BEING



4 QUALITY
EDUCATION



10 REDUCED
INEQUALITIES



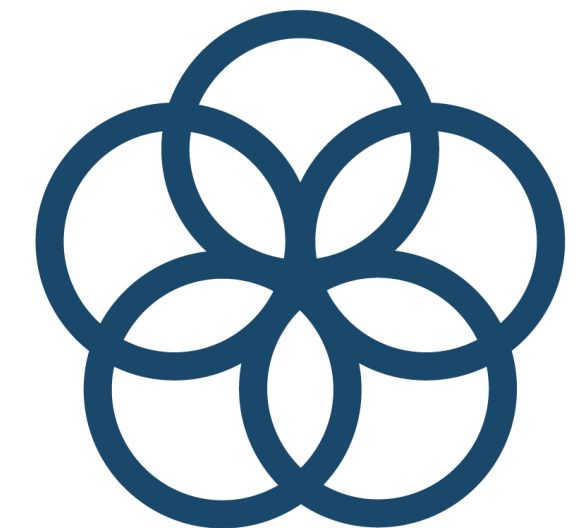
11 SUSTAINABLE CITIES
AND COMMUNITIES



16 PEACE, JUSTICE
AND STRONG
INSTITUTIONS



17 PARTNERSHIPS
FOR THE GOALS



Student transformation

The 'Hidden Curriculum' (Cotton, D., Winter, J., Bailey, I., 2013)





SOUTHAMPTON BLACKOUT HEADLINE RESULTS



6%
REDUCTION
OVER THE WEEKEND



SAVED MORE THAN
£1,600
IN ONE WEEKEND

SAVED
7 TONNES
OF CARBON

&

16,000 kWh
OF ENERGY

=

ENOUGH TO POWER
5 FAMILY HOMES
FOR A YEAR



[Follow on Twitter](#)[Like on Facebook](#)

About this Journal

Meliora: International Journal of Student Sustainability Research is an open access Academic Journal for the publication of student independent research work in the broad sphere of sustainability. We publish articles that demonstrate the excellence of student research, and how their work can contribute towards changing the world for the better.

Published articles have an interdisciplinary perspective incorporating a social, cultural, economic or environmental dimension. Submitted articles can be from either undergraduate or postgraduate taught students.

LATEST ARTICLES

POPULAR ARTICLES



Meliora Issue III

Turner & Kemp — 24 Apr 2019

Share: [f](#) [t](#) [g+](#) [in](#)



Assessing the Economic Benefits of Investing in Residential Photovoltaics With Energy Storage Systems in a 'Greening' Economy: a Case Study of Norway

Aanesen & James — 24 Apr 2019

Share: [f](#) [t](#) [g+](#) [in](#)



A baseline assessment of the United Nations Sustainable Development Goals (SDGs) within European Student Union web environments

Haines et al. — 24 Apr 2019

Share: [f](#) [t](#) [g+](#) [in](#)



Accessibility and Perceptions of



Creating a sustainable future together.

Building partnerships between students and organisations for positive change

Student success

What does student success
look like?

- Traditional indicators of 'good' marks & progression?
- Extra-curricular activities?
- The 'Hidden Curriculum'?
- Friends for life?
- Professional networks?
- Intellectual enrichment and personal growth?

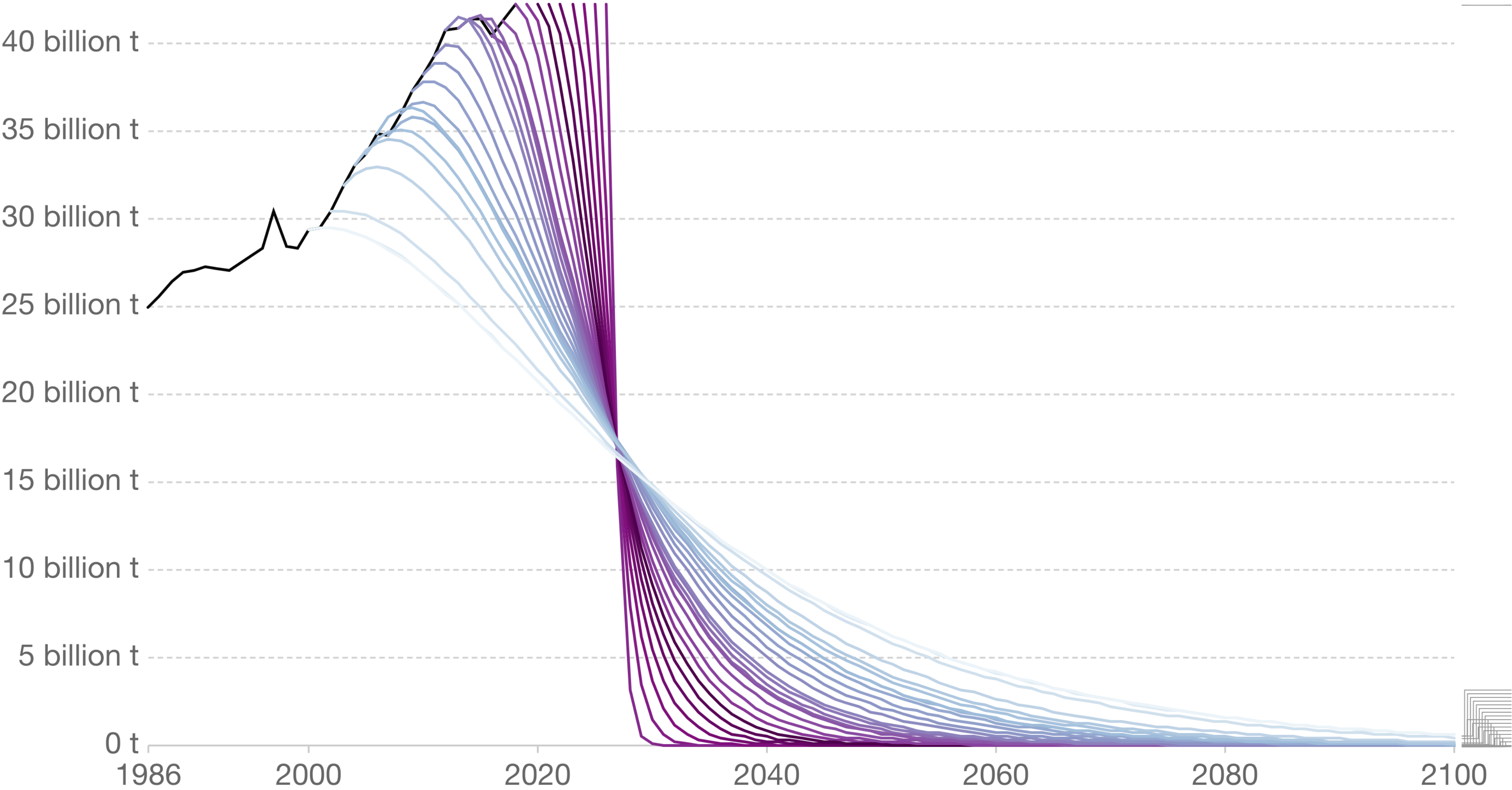
Interdisciplinary Learning for Sustainability





CO₂ reductions needed to keep global temperature rise below 1.5°C

Annual emissions of carbon dioxide under various mitigation scenarios to keep global average temperature rise below 1.5°C. Scenarios are based on the CO₂ reductions necessary if mitigation had started – with global emissions peaking and quickly reducing – in the given year.



Source: Robbie Andrews (2019); based on Global Carbon Project & IPCC SR15
Note: Carbon budgets are based on a >66% chance of staying below 1.5°C from the IPCC's SR15 Report.
OurWorldInData.org/co2-and-other-greenhouse-gas-emissions • CC BY

The wider benefits of adaptation



For more than 3.4 billion people in rural areas: improved roads, reliable energy, clean water, food security

SDG 1: No poverty



Green buildings, green spaces, clean water, renewable energy, sustainable transport – in cities

SDG 3: Good health and wellbeing



Policies that increase youth access to land, credit, knowledge and skills can support agri-food employment

SDG 10: Reduced inequality



Restored and connected habitats can provide corridors for vulnerable species

SDG 14/15: Life on land & below water

Sustainability matters, so how can
Education be the difference?

Engaging students in sustainability

- **Authentic**
- **Interdisciplinary**
- **Partnership**
- **Leadership**
- **Experiential**
- **Community**
- **360 degrees**
- **Transformative**



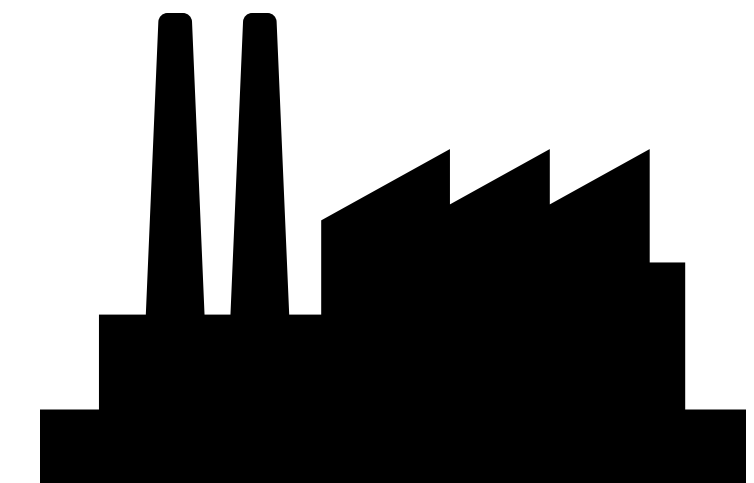
Students & Sustainability



2,912, 380
UK HE students
2020/21 (HESA)



872,765
qualifications awarded
2020/21 (HESA)



42 years
possible work-life
for an average graduate



A vision for 2050:

Climate emission reduction targets realised

Biodiversity loss reversed

Social inclusion & justice

Balanced society, culture, economy & environment

A vision realised by a sustainability focused higher education system led by sustainability literate & skilled graduates contributing to a fair, secure & resilient future

Thank you for attending

Any questions?