

Climate Change

& our faltering response

a presentation by Richard Worthington

independent civil society expert

Johannesburg 5 September 2024

Warning: you may find some content disturbing

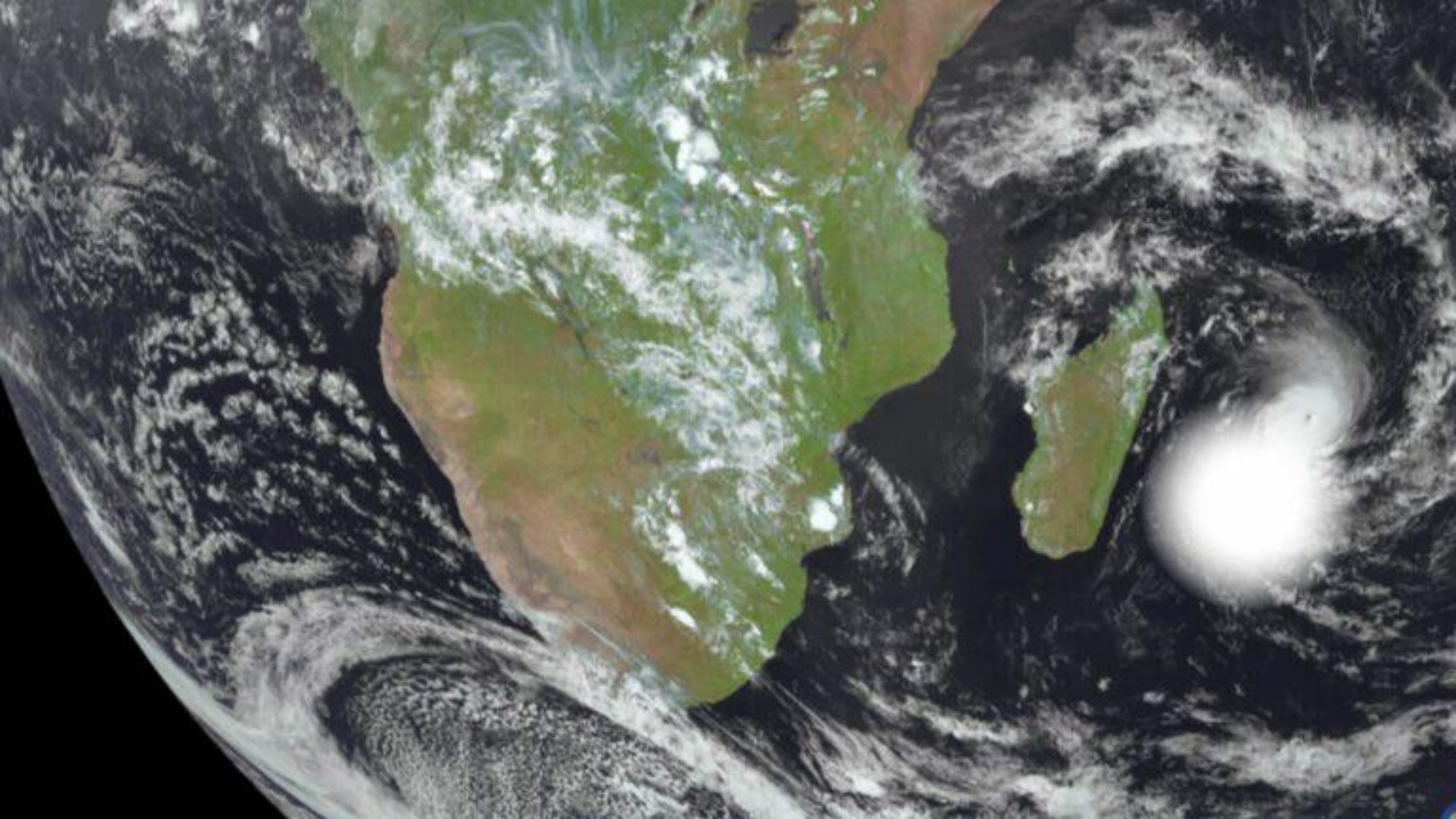
Climate System & recent science;

What it means for Southern Africa;

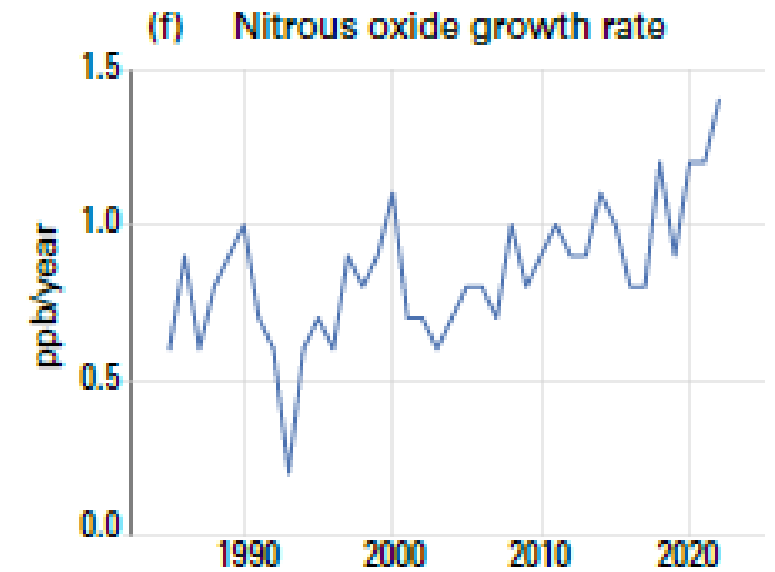
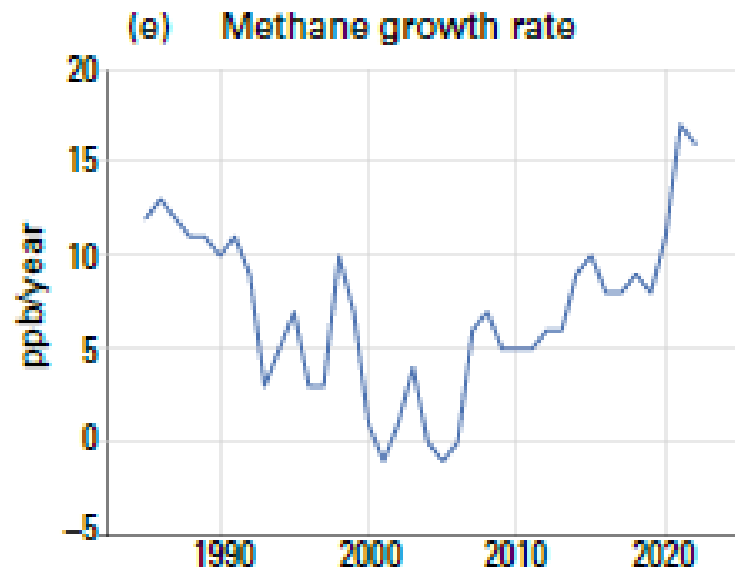
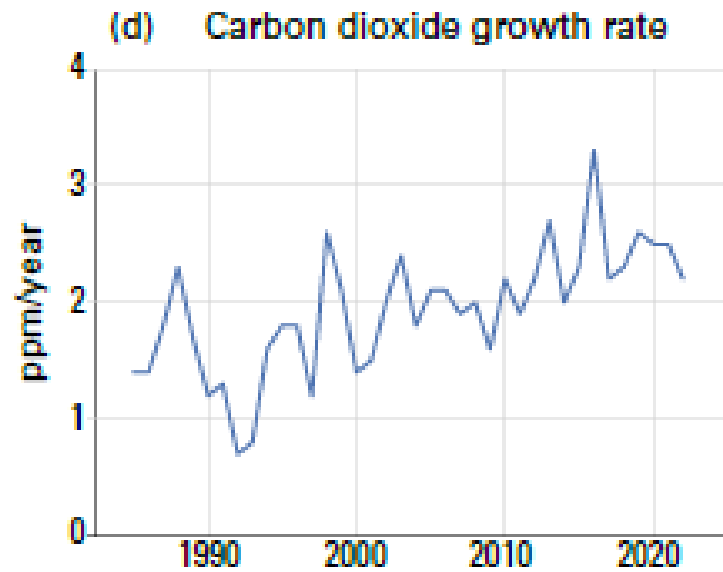
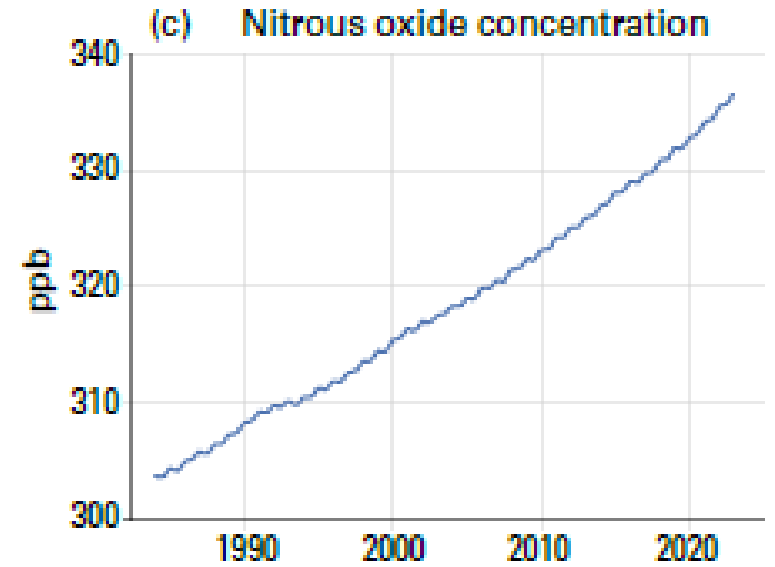
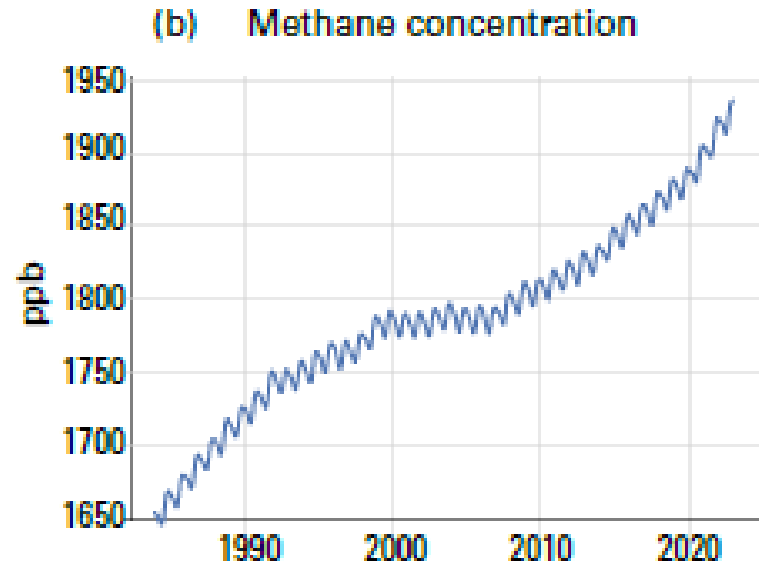
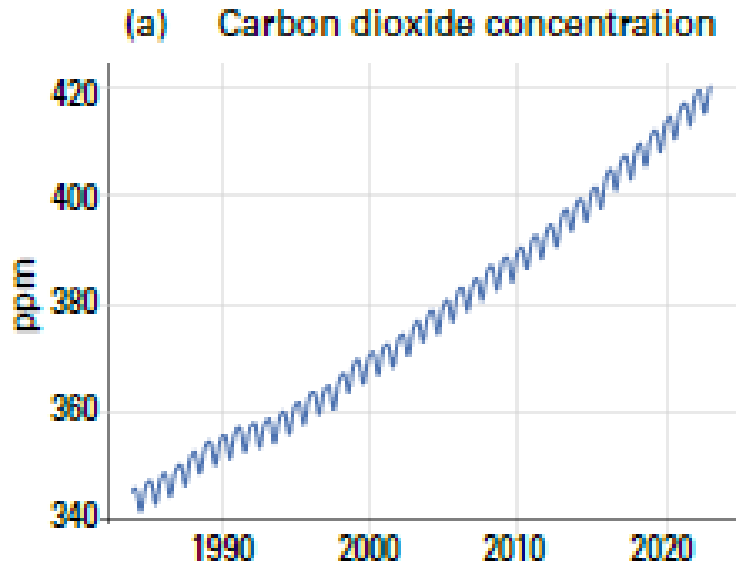
South Africa's policy response;

The Energy Transition;

The imperative for system change...



Atmospheric concentration of the three main greenhouse gasses (above) & growth rate in concentration

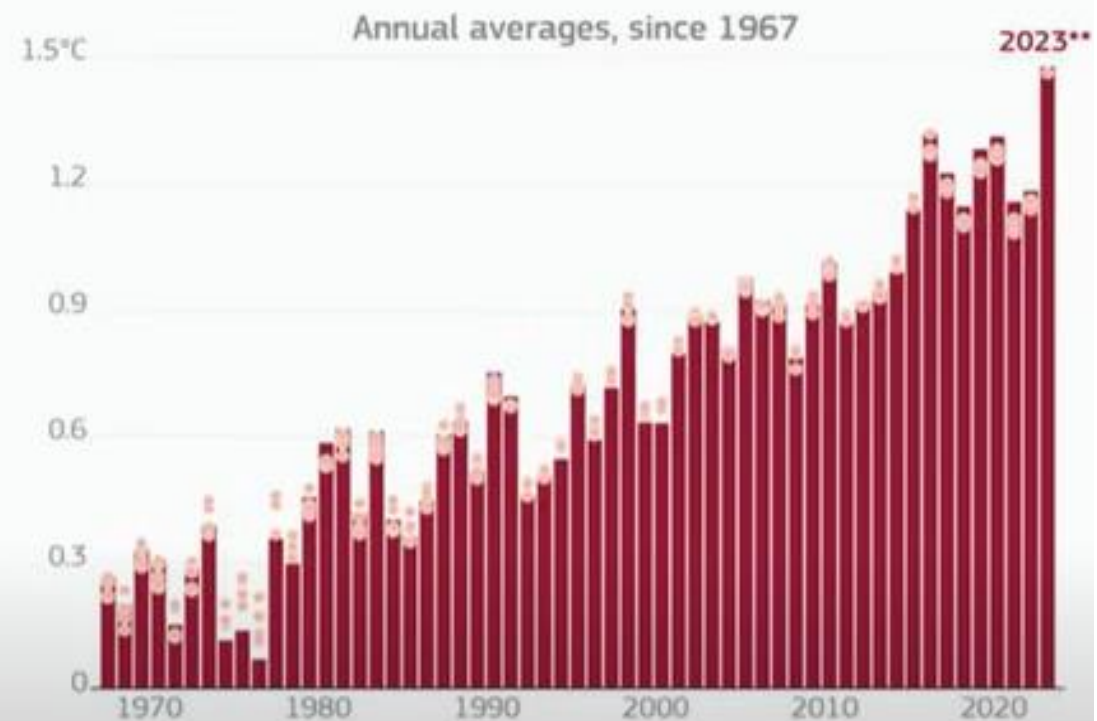
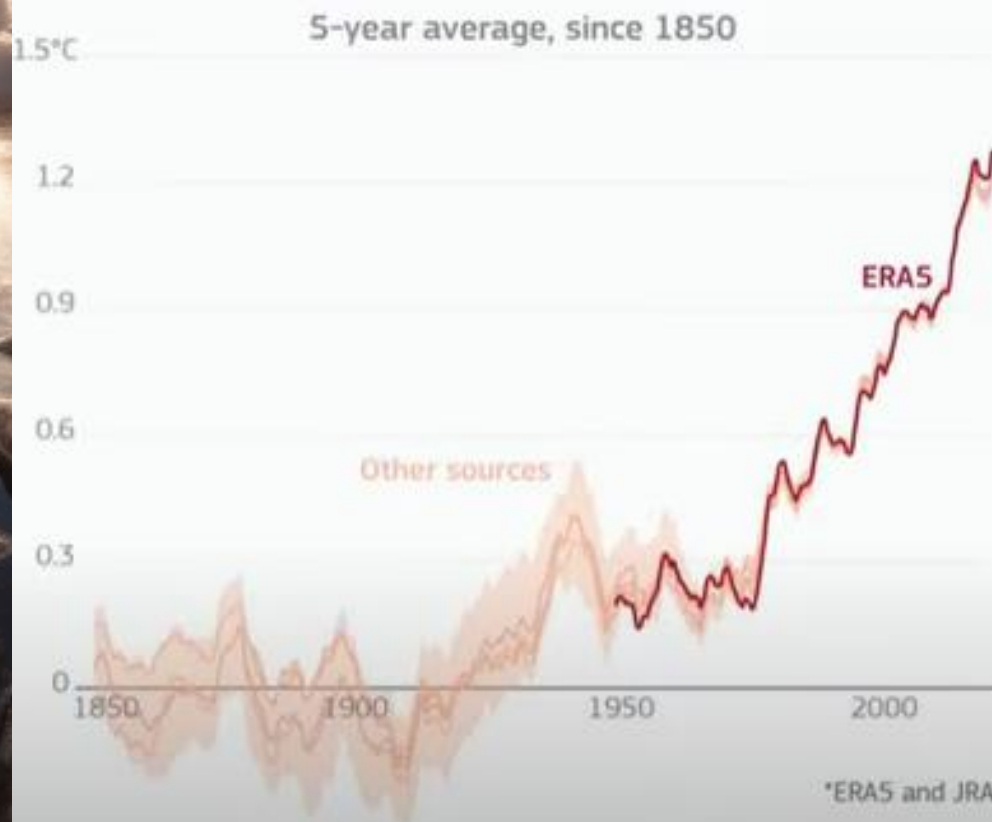


State of the Global Climate 2023

Key take-away from latest WMO report:
Climate Change is accelerating

GLOBAL SURFACE TEMPERATURE: INCREASE ABOVE PRE-INDUSTRIAL LEVEL (1850-1900)

■ ERA5 data ● Other sources* (including JRA-3Q, GISTEMPv4, NOAA GlobalTempv5, Berkeley Earth, HadCRUT5)



*ERA5 and JRA-3Q data are only shown from 1948. Shaded area represents the uncertainty for HadCRUT5 data

**Estimate for 2023 based on ERA5 and JRA-3Q data only

Credit: C3S/ECMWF



Climate Heating - Effects and **Impacts** most reported

 Drought

- <https://www.carbonbrief.org/analysis-africas-extreme-weather-have-killed-at-least-15000-people-in-2023/>

 Wildfire

- At least 860 people were killed in floods and mudslides in February 2023 during Tropical Cyclone Freddy

 Storm

- April 22, 2024- Southern Africa is on the brink of a devastating hunger crisis as a relentless drought tightens its grip. <https://hsrc.ac.za/news/latest-news/immediate-action-is-needed-as-southern-africa-grapples-with-worsening-drought/>

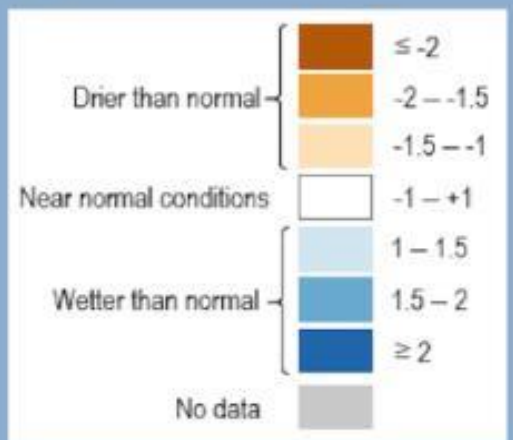
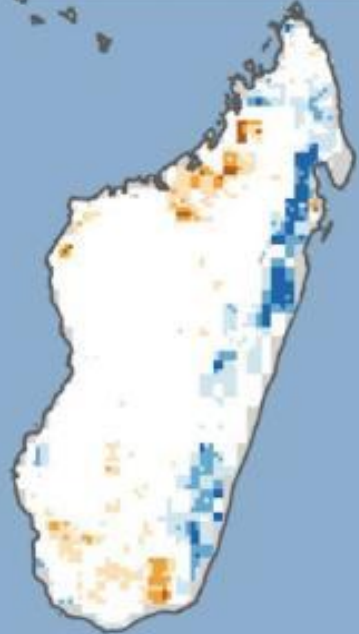
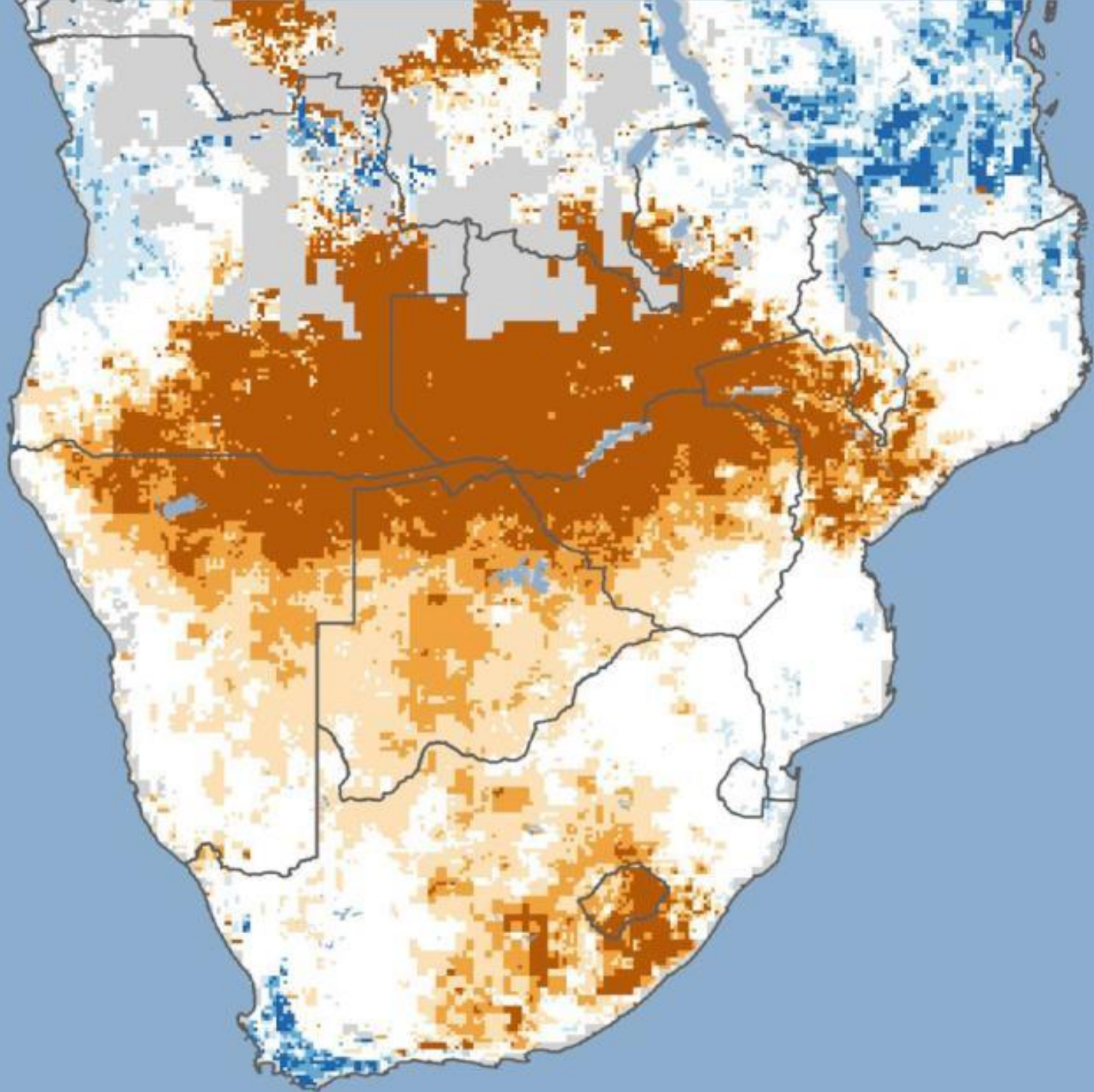
 Landslide

 Flood

- Increase in diseases, including vector-borne e.g. malaria
- Heat stress kills crops, livestock, people...
- Impacts include migration; local water conflicts...
- 'Loss & Damage' includes infrastructure....

Soil moisture anomaly

Late March 2024



https://joint-research-centre.ec.europa.eu/jrc-news-and-updates/drought-worsens-crisis-southern-africa-2024-04-19_en

Southern Africa Food Security Outlook June 2024 - January 2025:
Acute food insecurity likely to deteriorate amid drought conditions into 2025
[technical assessment and terminology - <https://reliefweb.int/report>]

15 August 2024: Girls being married off to get their families food, finds ActionAid report on drought in Southern Africa

“The Southern African region experienced drought during the 2023-24 farming season that has left an estimated [56.8 million people](#) food insecure. According to [UNOCHA](#) this is the worst drought the region has seen in 100 years.” Young Zambian woman: “The drought is significantly impacting young women and girls, who are often married off to secure food resources. ... All the efforts that we have been putting into keeping girls in school are falling down the drain.”

The brief calls for immediate action from policymakers to address migration and displacement, gender-based violence, health and nutrition and educational disruption during crises.

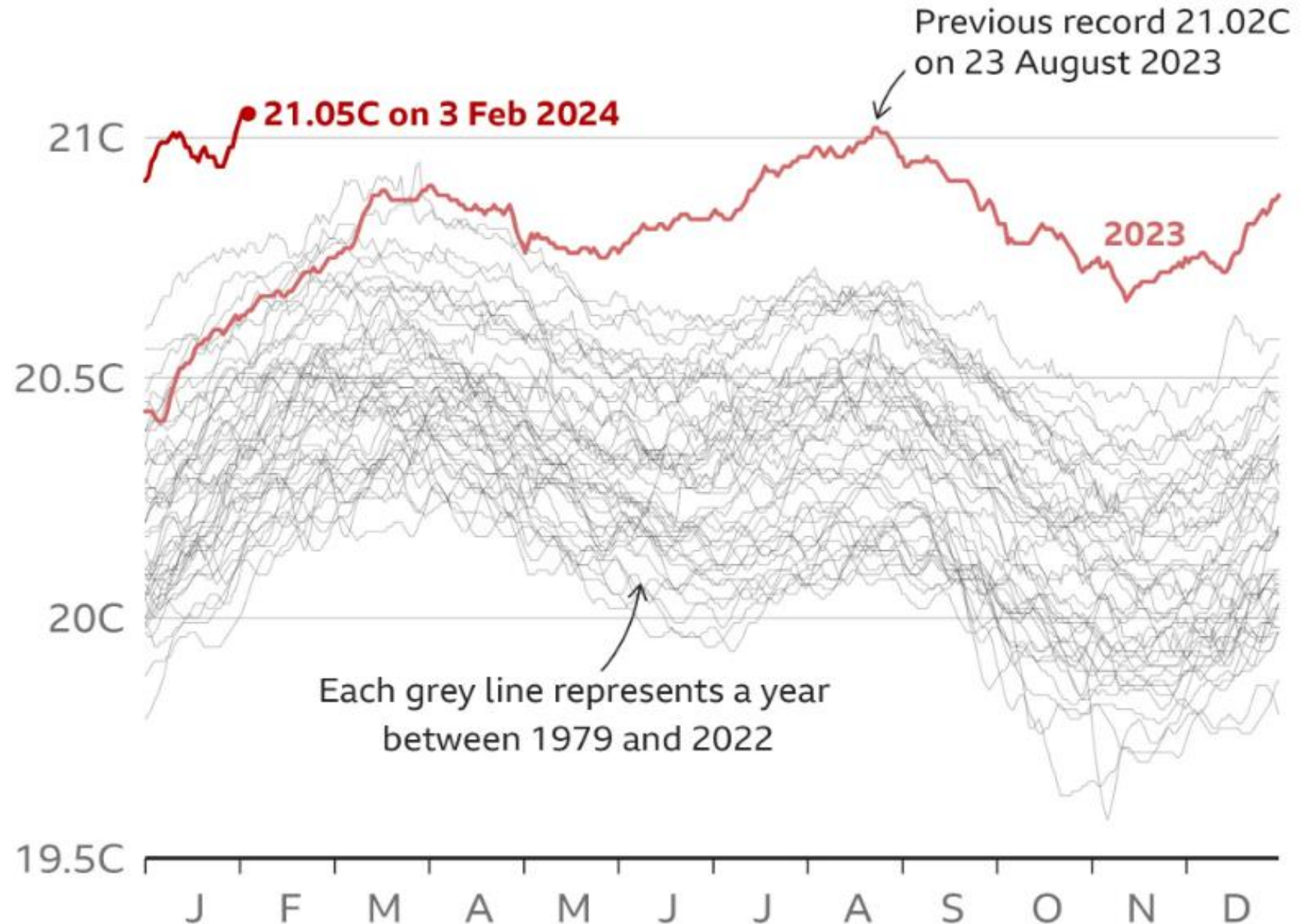
<https://actionaid.org/publications/2024/girls-being-married-get-their-families-food-finds-actionaid-report-drought>

The world's sea surface is also at its highest ever recorded average temperature - yet another sign of the widespread nature of climate records. ...ocean temperatures don't normally peak for another month or so.

By Mark Poynting
BBC News climate reporter

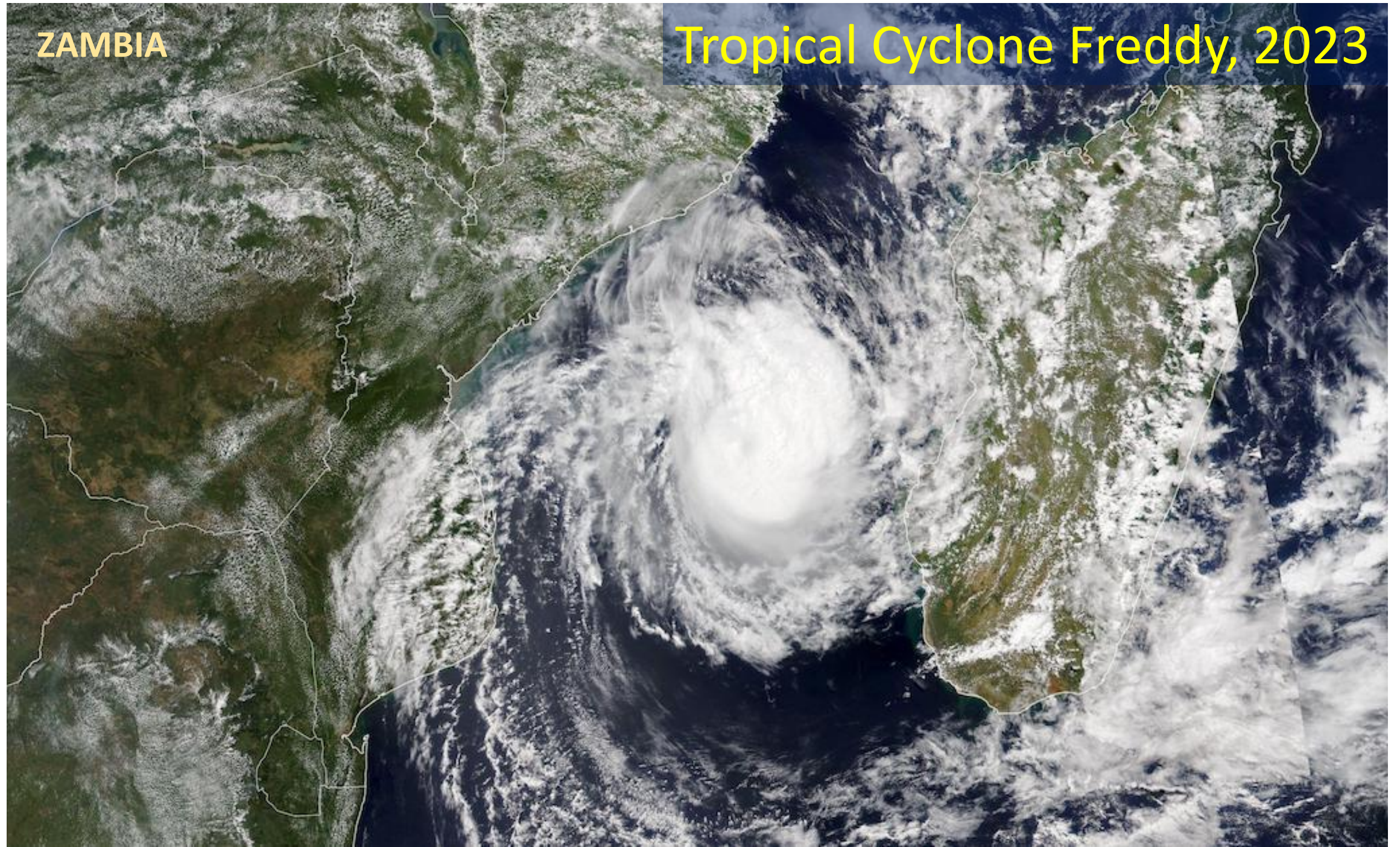
<https://www.bbc.com/news/science-environment-68110310>

Daily average sea surface temperature between 60° North and 60° South, 1979-2024

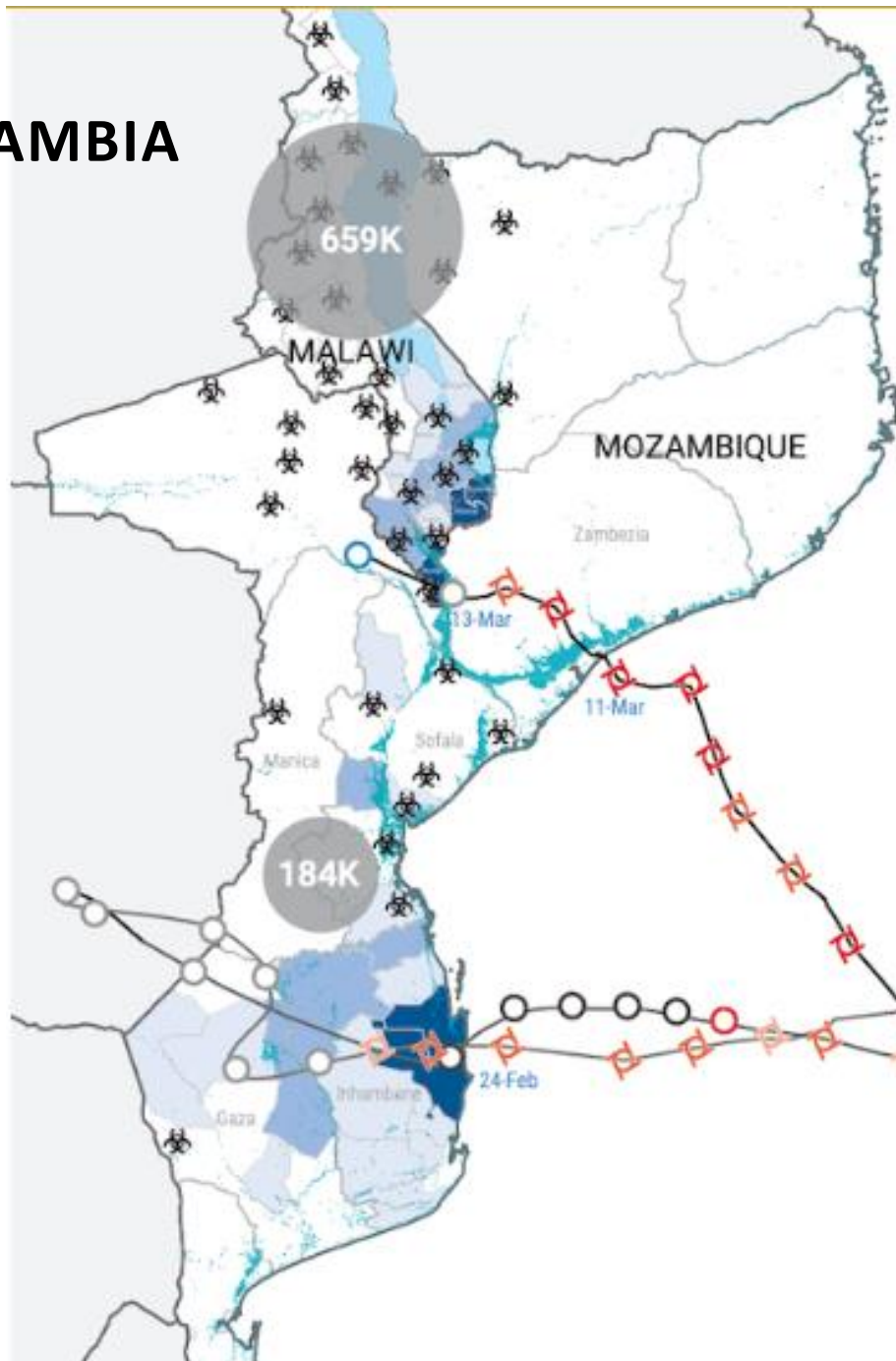


ZAMBIA

Tropical Cyclone Freddy, 2023



ZAMBIA



Areas affected by Cholera



No. of displaced people

Impacts of Tropical cyclone / storm and floods



Risks are increasing with every increment of warming

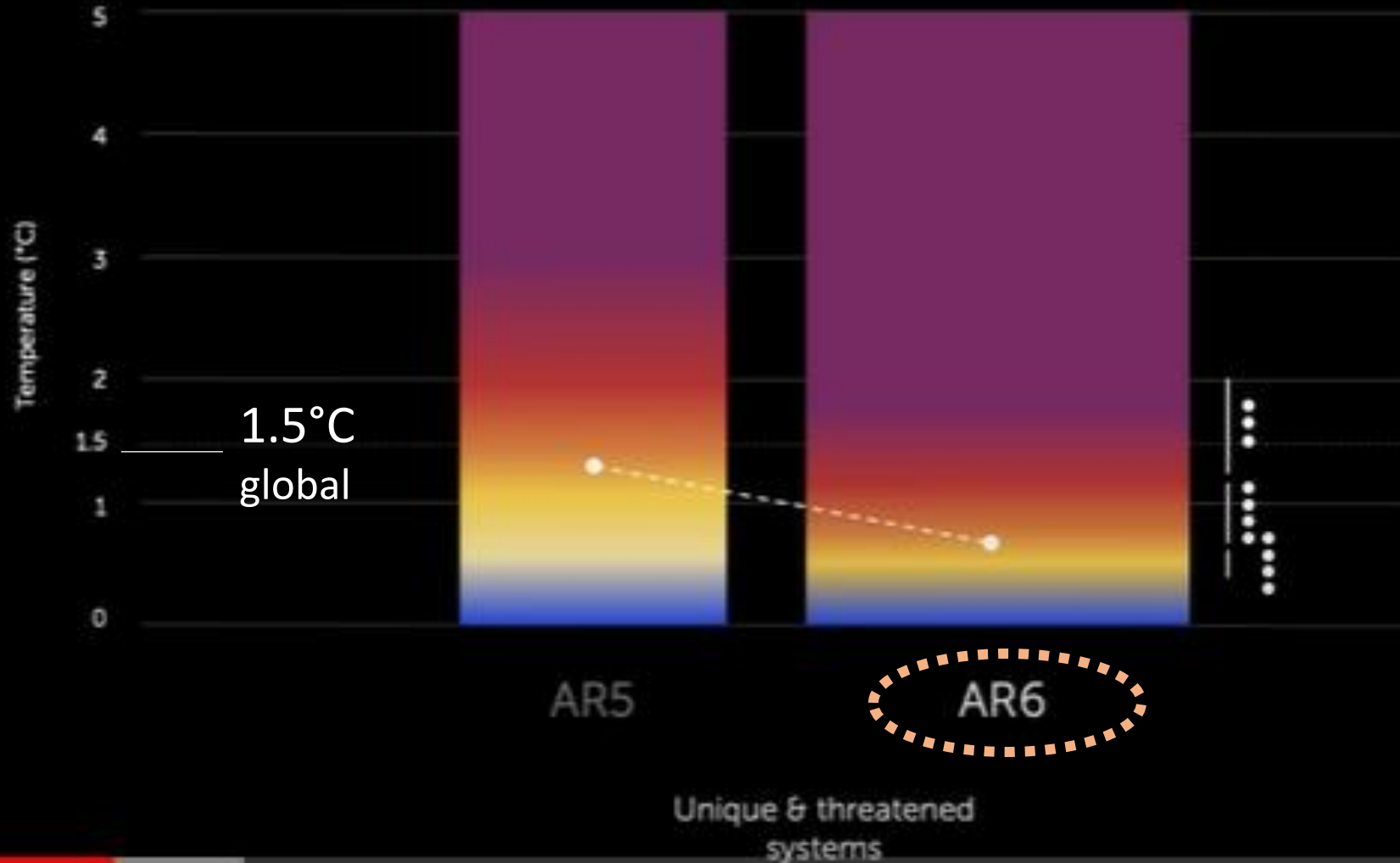
Risk/impact

- Very high
- High
- Moderate
- Undetectable

- Transition range
- Midpoint of transition

- Confidence level assigned to transition range
- Low
- Very high

Global reasons for concern (RFCs) in AR5 (2014) vs AR6 (2022)



Source: IPCC, AR6, Synthesis report

When the IPCC released the SR1.5 report in 2018, it was framed **'Reasons for Hope'** pointing out that strong climate action could still prevent the dangerous threshold of global warming of 1.5 °C being breached & **the substantial benefits that exist in restricting global warming to 1.5 °C, as opposed to 2 °C.**

The question has shifted to:



Pause for Questions?

Will we keep planetary heating below 2 degrees?

and can we eventually stabilize at about 1.5?

THE IPCC'S SIXTH ASSESSMENT REPORT

Impacts, adaptation options and investment areas for a climate-resilient southern Africa

IN THIS FACTSHEET:

- 1 How southern Africa's climate is already changing
- 2 Southern Africa's future climate
- 3 Climate change impacts we have already seen in southern Africa
- 4 Future climate risks in southern Africa
- 5 Southern Africa's potential to adapt
- 6 Key investment areas for a climate-resilient southern Africa



Daily life at Lake Malawi. Temperatures have risen by 0.1°C per decade in the lake.
© Shutterstock/wichon



SOUTH
SOUTH
NORTH

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Daily life at Lake Malawi. Temperatures have risen by 0.1°C per decade in the lake.
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SOUTH
SOUTH
NORTH

Climate Change 2022

Impacts, Adaptation and Vulnerability



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 and sustainable future for all.

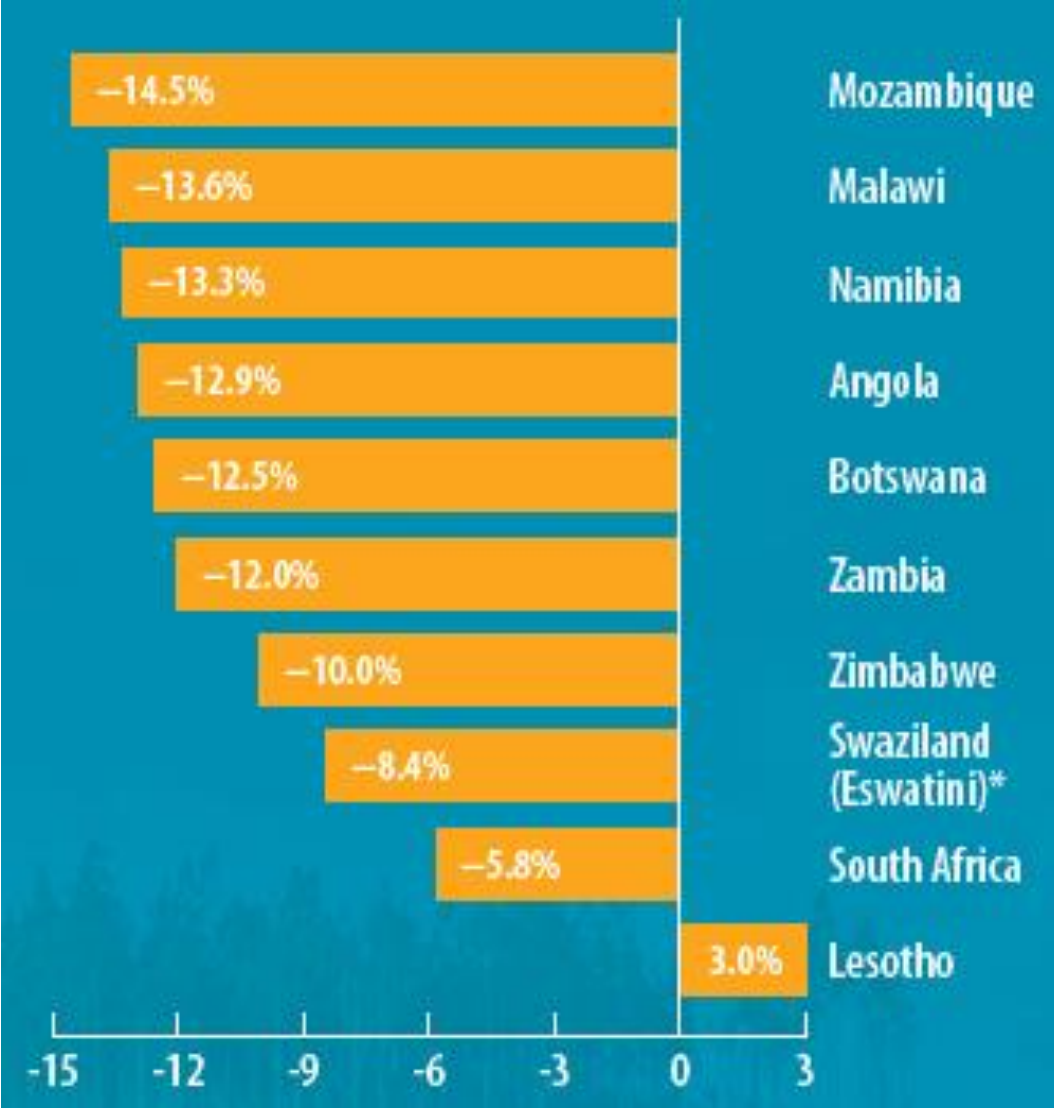


Figure 1 Percentage change in GDP per capita for countries in southern Africa due to observed climate change (1991–2010)⁵⁹

FUTURE CLIMATE RISKS IN SOUTHERN AFRICA



Human life and health

- Global warming of 1.5°C is projected to cause the spread of vector-borne diseases, exposing tens of millions more people to potential illness – and escalating the loss of life, especially in southern and East Africa (high confidence).⁷⁷ The population at risk of malaria and dengue fever is projected to increase sharply at 1.5°C global warming.
- Very high risk for human health is estimated to occur from 2°C global warming (high confidence).⁷⁹ Climate change-related illness will strain healthcare systems and economies in southern Africa.⁸⁰

...the spread of vector-borne diseases, exposing tens of millions more people to potential illness - escalating the loss of life

Wheat yields in southern Africa are projected to decline by over 50% [with] 1.5°C global warming, even with adaptation.

Food systems



- Future warming will negatively impact African food systems by shortening growing seasons and increasing water stress (high confidence).⁸⁶ Wheat yields in southern Africa are projected to decline by over 50% by 1.5°C global warming, even with adaptation. Global warming above 2°C will result in reduced yields of staple crops across most of Africa compared to 2005 yields, even with adaptation options being implemented.⁸⁷
- Relative to 1986–2005, global warming of 3°C is projected to reduce labour capacity in agriculture by 30–50% in sub-Saharan Africa due to higher temperatures.⁸⁸ Research on regionally-important cash crops, such as sugarcane, remains limited.



- Climate change threatens livestock production in southern Africa (high agreement, low evidence)⁸⁹ including through a combination of negative impacts on the availability and quality of animal fodder, availability of drinking water, direct heat stress on animals (see Figure 2), and the prevalence of livestock diseases.⁹⁰
- Rangeland net primary productivity is projected to decline 37% for southern Africa over the 2000–2050 period, under a high warming scenario.⁹¹

OPPORTUNITIES AND CHALLENGES FOR A JUST TRANSITION IN THE SOUTH AFRICAN FOOD SYSTEM: INSIGHTS FROM THE BEEF INDUSTRY

August 2024, prepared by Dr Andrew Bennie, Dr Lalitha Naidoo,
Dr Andrew Bowman, and Asanda Sandi



Cattle make a notable contribution to South Africa's greenhouse gas emissions. Calculations by Tongwane and Moeletsi (2021) suggest that cattle were directly responsible for 7.4% of South Africa's total emissions in 2019. This includes an estimated 70% of methane emissions in 2018.

Most cattle breeds perform poorly under high temperatures, particularly when they consistently go above 30°C (GCI, 2020). The **2015-16 drought in South Africa** showed the impacts of lower rainfall and higher-than-normal temperatures on cattle and commercial farming. Most cattle farmers on communal land have little buffer against such events, and most commercial farmers were financially unprepared and had not destocked preemptorily (Vetter et al., 2020). As a result, **the national livestock herd declined by 15%**. By the end of 2015 it was estimated that **40 000 cattle died in KwaZulu-Natal Province alone**, and commercial farming debt increased by 9% between 2013/2014 and 2015/2016.

African countries are set to lose out on realising potential economic growth due to the growing impacts of climate change across the continent.

Even if governments across the world live up to the commitment made in 2015 at the Paris COP23 to limit global heating to 1.5C above pre-industrial levels, **the average hit to GDP per capita across African countries will be 14% up to 2050, growing to 34% by the end of the century.**

The impact of current climate policies – likely to see global heating reach average temperatures around 2.7C higher than pre-industrial times – would lead to a 20% reduction in economic growth rates by 2050 and a huge 64% on average by 2100.

Impact of climate change on GDP for countries in the African continent in 2100

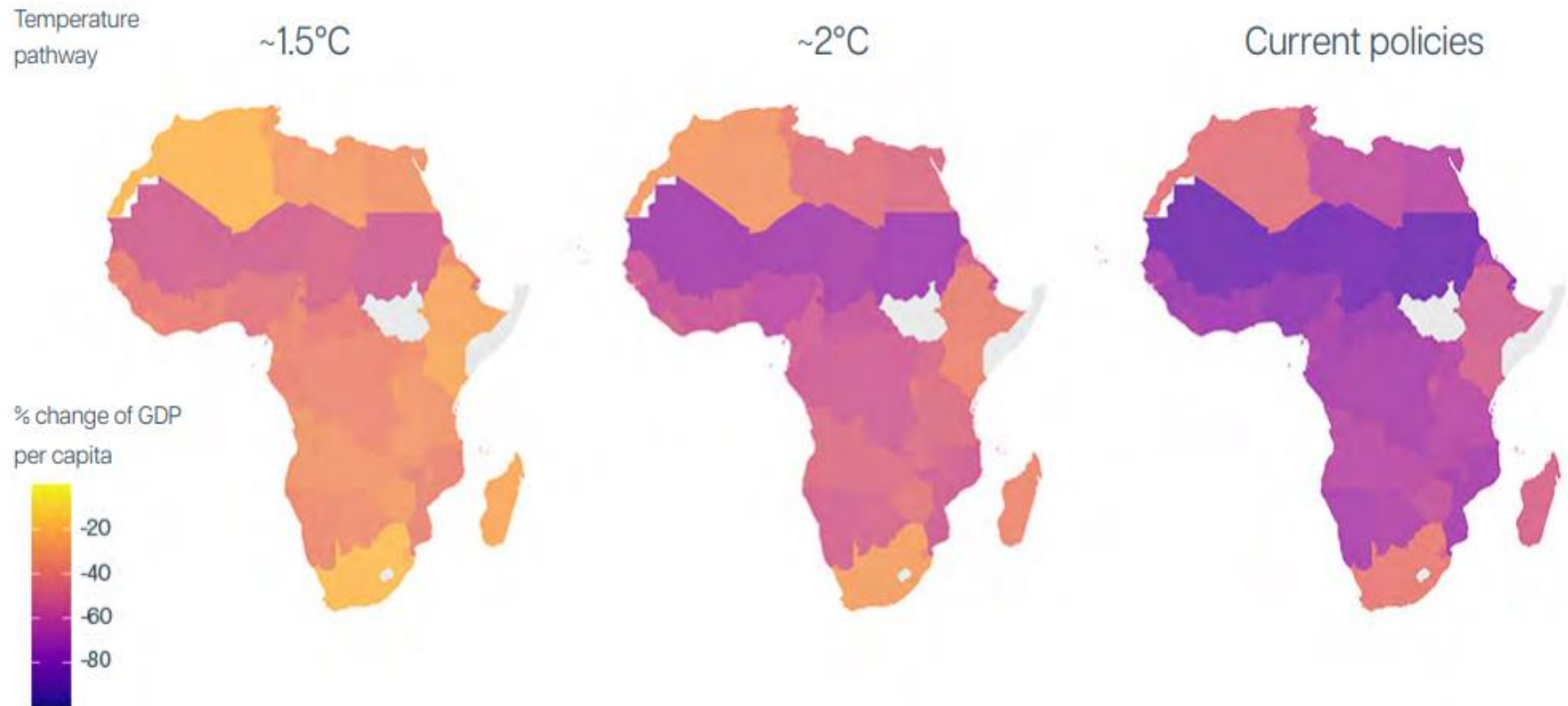


Figure 3: Maps of economic damages expressed as a decrease in GDP per capita (2100)

The **Presidential Climate Commission** is an independent, statutory, multi-stakeholder body... Our purpose is to oversee and facilitate a just and equitable transition towards a low-emissions and climate-resilient economy.

July 2024:

The State of Climate Action in South

Priorities for Action for the Government of National Unity

Africa

CHAPTER 4.

CLIMATE CHANGE IMPACTS AND ADAPTATION ACTION: THE RACE TO BUILD RESILIENCE

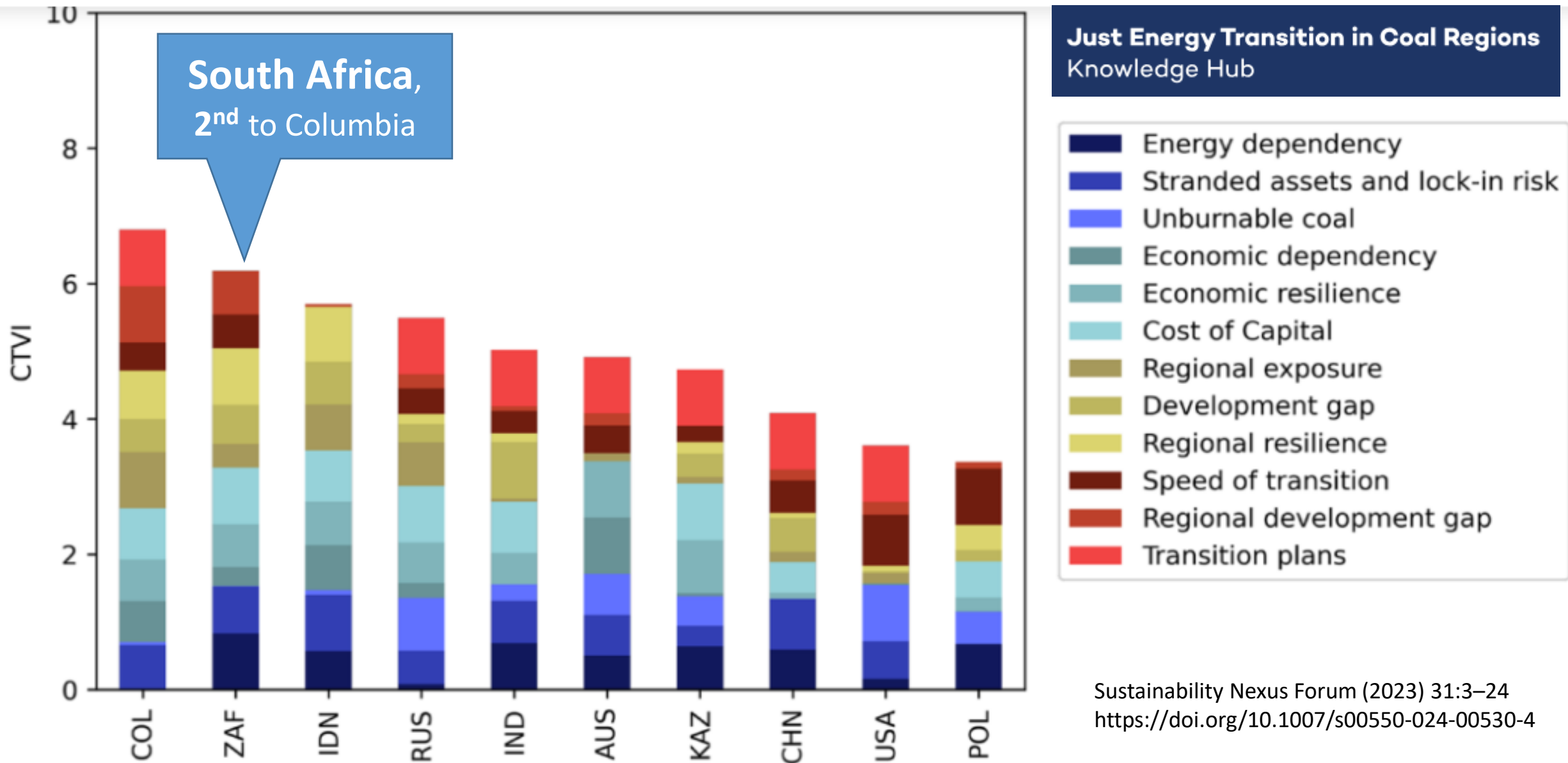
South Africa's updated NDC and its National Climate Change Adaptation Strategy (NCCAS) outline a comprehensive approach to address its climate vulnerabilities...

Vulnerable to transition risk

The country's trade systems are vulnerable because of the degree of carbon embedded in its commodities and products. Where trading partners are accelerating efforts to decarbonise, this directly affects demand for South African commodities, impacting the balance of payments and competitiveness.

Coal Transitions Vulnerability Index (COTRAVI) - 2024

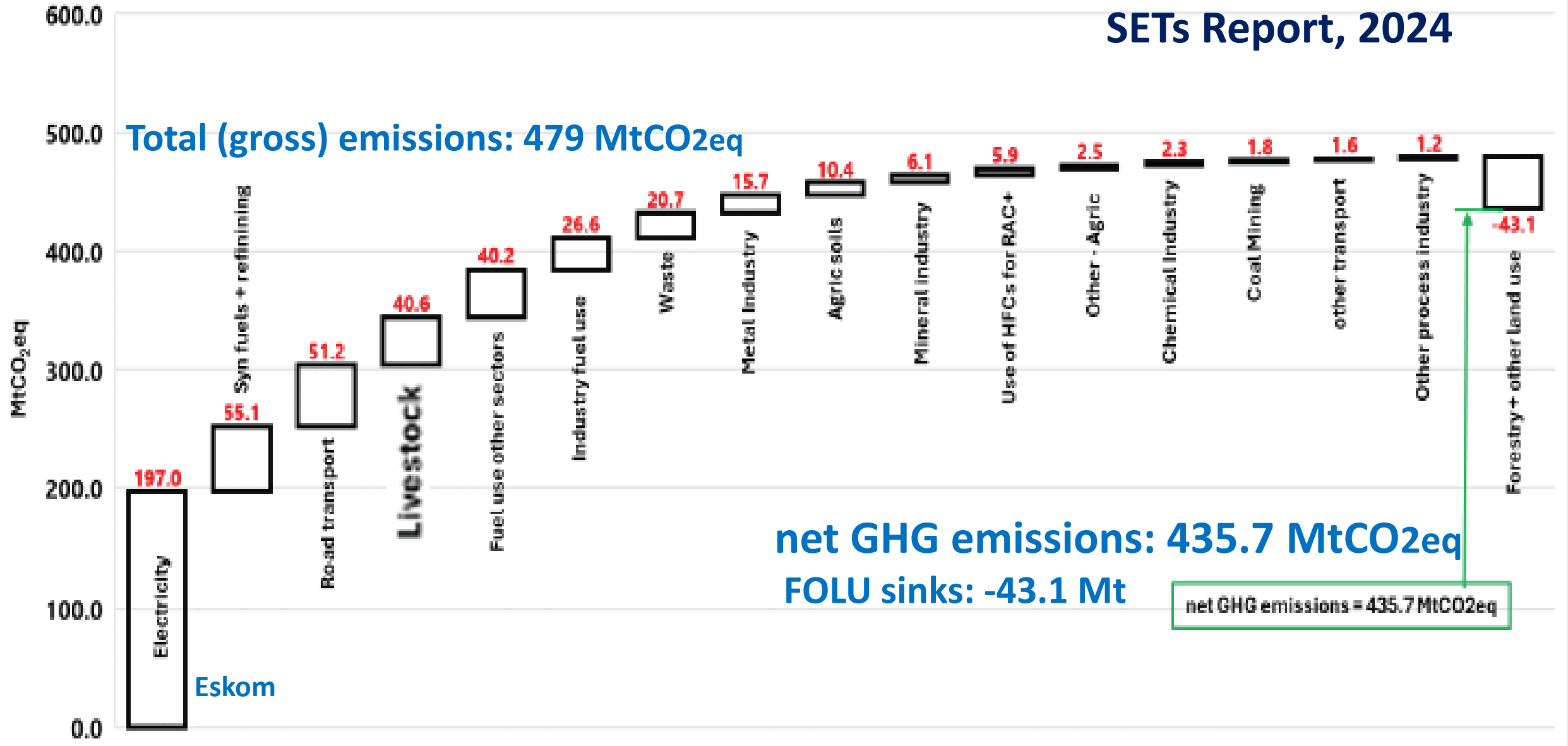
composed of 12 key “transition risk” and “ability to cope” indicators, for the 10 largest coal producing countries.



South Africa

Key GHG Emissions sources - 2022

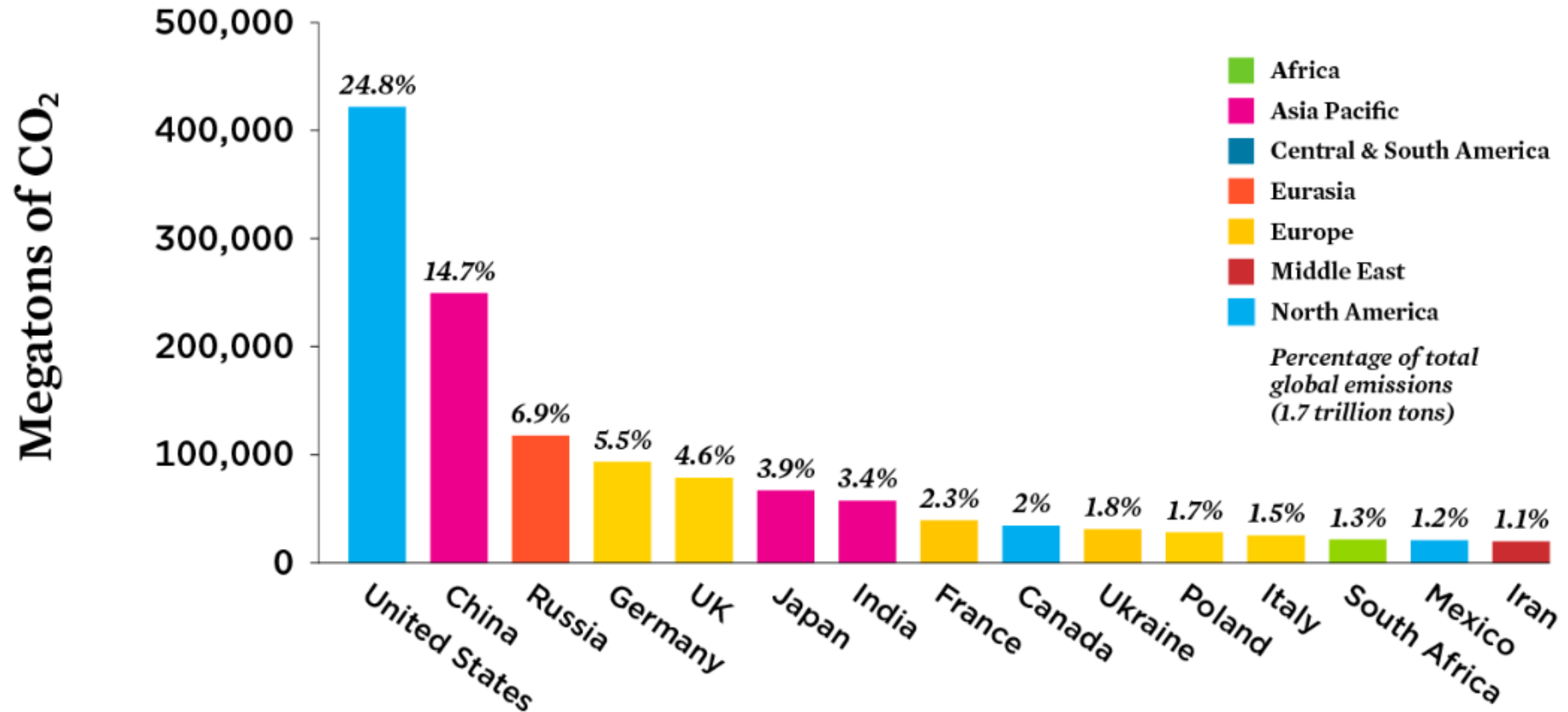
South Africa Draft SETs Report, 2024



Top CO2 emitting countries - from fossil fuels and cement

1750 - 2021

<https://www.ucsusa.org/resources/each-countrys-share-co2-emissions>





Net Zero Economy Index 2020: The Pivotal Decade - [pwc.co.uk/netzeroeconomy](https://www.pwc.co.uk/netzeroeconomy)

	Change in carbon intensity 2018-9	Annual average change in carbon intensity 2000-2019	Change in energy-related carbon emissions 2018-19	Real GDP growth (PPP) 2018-19	Carbon intensity (tCO ₂ / \$m GDP) 2019
World	-2.4%	-1.5%	0.5%	2.9%	286
G7	-4.3%	-2.3%	-2.7%	1.6%	215
E7	-2.1%	-1.6%	2.2%	4.4%	343
China	-2.8%	-2.9%	3.2%	6.1%	443
US	-4.7%	-2.6%	-2.5%	2.3%	256
EU	-5.2%	-2.4%	-3.7%	1.5%	174
India	-3.7%	-1.5%	1.2%	5.0%	274
Canada	-3.4%	-2.2%	-1.8%	1.7%	324
Saudi Arabia	0.7%	1.1%	1.0%	0.3%	440
Australia	2.3%	-1.9%	4.3%	1.9%	321
Argentina	-1.1%	-0.1%	-3.3%	-2.2%	179
South Africa	1.3%	-1.4%	1.5%	0.2%	599



Net Zero Economy Index 2023

tCO₂/\$m GDP

Carbon intensity 2022 data



South Africa **479.0**



World 240

Carbon intensity (tCO₂ / \$m GDP) measures the amount of carbon dioxide emitted per million dollars of GDP.

Fuel factor 2022 data

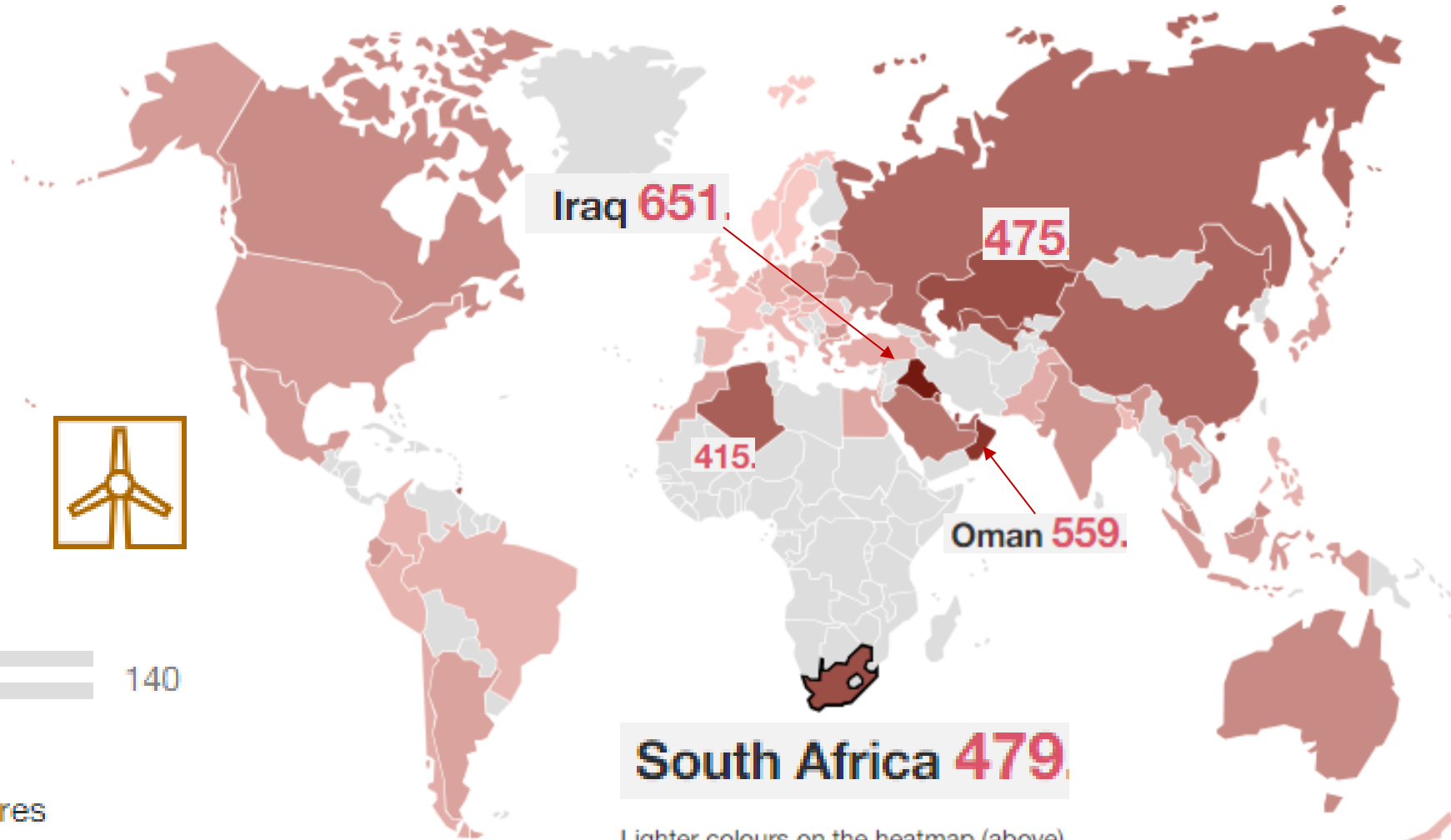


South Africa **94.7**



World 65.1

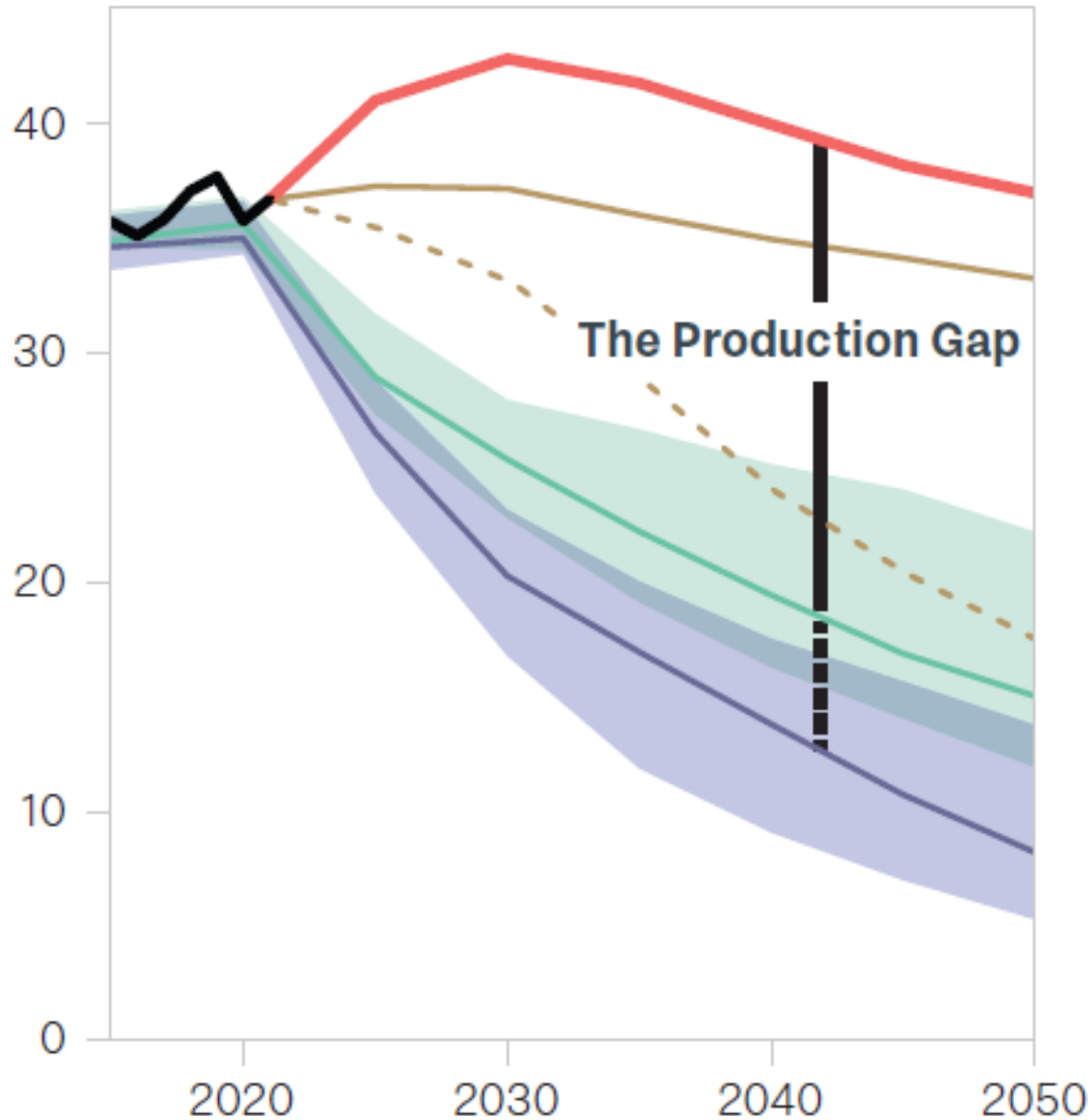
Fuel factor (tCO₂ / TJ energy) measures how much CO₂ is emitted per unit of energy consumed. Put simply, how green the energy consumption is.



Lighter colours on the heatmap (above) equate to better performance against NZEI metrics.

Global fossil fuel production

GtCO₂eq/yr



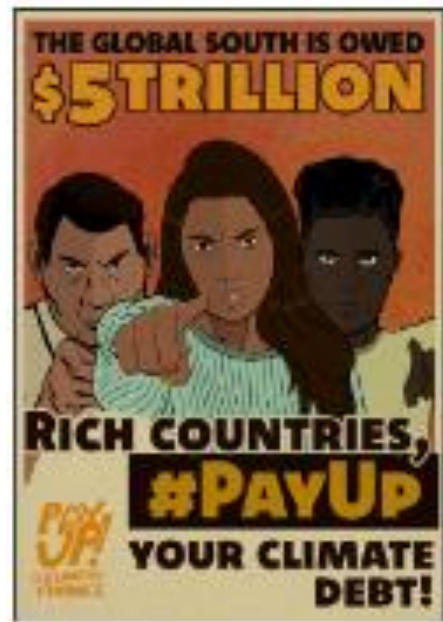
Executive Summary » Production Gap Report 2023

Governments, in aggregate, still plan to produce more than double the amount of fossil fuels in 2030 than would be consistent with limiting warming to 1.5°C.

- Government plans & projections
- Stated policies
- Announced pledges
- 2°C-consistent
- 1.5°C-consistent

The term *Unburnable Carbon* refers to fossil fuel energy sources (reserves and/or resources), which physically cannot be burned if the world is to adhere to any given temperature outcome. If burned, the associated emissions would mean exceeding the carbon budget for that temperature. The existence of this overhang of available fossil fuels, or *unburnable carbon*, leads to the concept of the *carbon bubble*.

BP: “Existing reserves of oil, gas and coal, if used in their entirety would generate somewhere in excess of 2.8 trillion tonnes of CO₂, well in excess of the 1 trillion tonnes or so the scientific community consider is consistent with limiting the rise in global mean temperatures to no more than 2 degrees Centigrade. And this takes no account of the new discoveries which are being made all the time or of the vast resources of fossil fuels not yet booked as reserves.”



Together let us raise our voices to demand Global North governments to stop making empty promises, cease pandering to corporations to perpetuate fossil fuels. They must take on their full fair share of domestic and international actions to ensure a fast, fair, feminist and funded fossil fuel phase-out.

OUR COMMON DEMANDS

	Global North governments provide at least US\$5 trillion per year to the Global South in public finance . This amount must be revised upwards regularly as needed and be considered as merely an initial payment toward the much larger total climate debt owed by the Global North.
	Adequate climate finance that covers needs for mitigation, adaptation, loss and damage transition
	Climate Finance must be public and should not be driven by profit intrinsic to private industry and corporations
	New and additional climate finance contributions on top of the existing financial commitments from the Global North such as ODAs, multilateral and bilateral aids, etc.
	Non-debt creating climate finance that will not lead to further exacerbation of the existing debt burden of the Global South
	Predictable climate finance that will ensure that resources are available when and where needed most and avoid further delays in implementing urgent action
	Climate Finance that is channeled through democratic, transparent and accountable mechanisms and NOT via the existing or new structures where the Global North dominates governance and designs policies favoring their geopolitical and economic interests.
	Global North governments to tax the polluters and profiteers and end public subsidies for fossil fuels in order to mobilize adequate climate finance



<https://www.iea.org/reports/the-oil-and-gas-industry-in-net-zero-transitions/executive-summary>
“Oil and gas investment is needed in all scenarios, but the demand trajectory in a 1.5 °C world leaves no room for new fields”

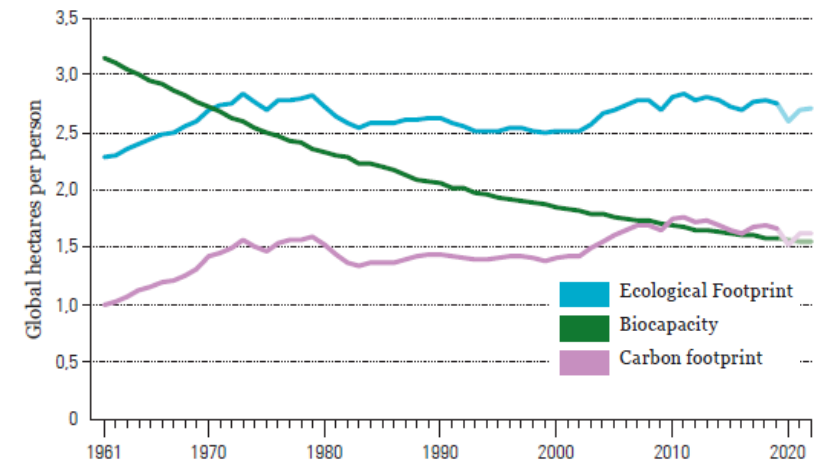




THE CLIMATE AND BIODIVERSITY CRISES - TWO SIDES OF THE SAME COIN

Today we face the double, interlinked emergencies of human-induced climate change and the loss of biodiversity, threatening the well-being of current and future generations.

**LIVING PLANET
REPORT 2022**
BUILDING A NATURE-POSITIVE SOCIETY



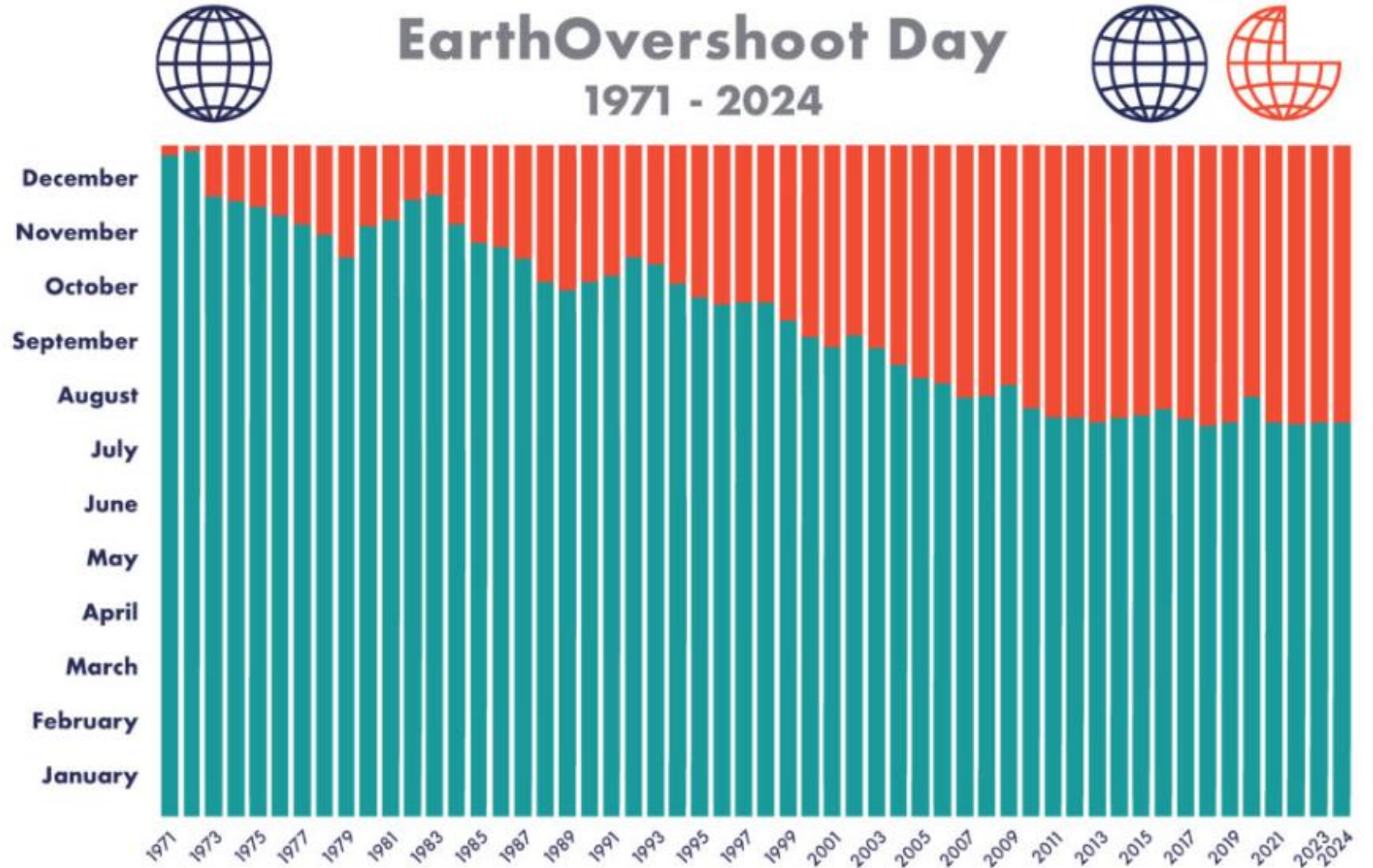
THIS REPORT
HAS BEEN
PRODUCED IN
COLLABORATION
WITH:





Earth Overshoot Day marks the date when humanity's demand for ecological resources and services in a given year exceeds what Earth can regenerate in that year. In 2024, it falls on 1 August. Here are resources on how we can #MoveTheDate.

<https://overshoot.footprintnetwork.org/about-earth-overshoot-day/>



South Africa's climate change policy landscape

- 1996: SA signs UNFCCC – UN Framework Convention on Climate Change
- 1998: National Environmental Management Act (NEMA)
- 2002: SA hosts 10th Commission on Sustainable Development (CSD) – ‘WSSD’
- 2004: Air Quality Act - in terms of NEMA
- 2006: Environmental Fiscal Reform – Treasury policy paper
- 2011: National Climate Change Response Policy White Paper (NCCRP)
& SA hosts COP17 of UNFCCC
- 2015: SA signs Paris Agreement, incl. NDCs - Nationally Determined Contributions
& Sustainable Development Goals (SDGs)
- 2018: Climate Change Bill published for comment – Mitigation System
- 2019: Carbon Tax Act
- 2024: Climate Change Act..... foregrounds Adaptation

ACT

To enable the development of an effective climate change response and a long-term, just transition to a low-carbon and climate-resilient economy and society for South Africa in the context of sustainable development; and to provide for matters connected therewith.

CHAPTER 1 - INTERPRETATION, OBJECTS AND APPLICATION

CHAPTER 2 - POLICY ALIGNMENT AND INSTITUTIONAL ARRANGEMENTS

Incl.: Presidential Climate Commission; Provincial and Municipal Forums

CHAPTER 3 - CLIMATE CHANGE RESPONSE: PROVINCES AND MUNICIPALITIES

CHAPTER 4 - NATIONAL ADAPTATION TO IMPACTS OF CLIMATE CHANGE

CHAPTER 5 - GREENHOUSE GAS EMISSIONS AND REMOVALS

Incl.: Sectoral Emissions Targets, Carbon Budgets and mitigation plans

CHAPTER 6 - GENERAL MATTERS AND TRANSITIONAL ARRANGEMENTS

ELEMENTS OF THE CLIMATE MITIGATION SYSTEM?

Mitigation Goal

National GHG Emissions Trajectory Range, against which outcome of all mitigation actions will be measured

Monitoring of GHG emissions

Data collection, GHG inventory and M&E system

Sectoral Targets

Defining Desired Emission Reduction Outcomes (DEROs), now **Sectoral Emissions Targets (SETs)**, for each significant sector or sub-sector of the economy

Industry emissions limits

Adopting a **carbon budget** approach to provide for flexibility and least cost mitigation in sectors and/or sub-sectors

Industry

implementation

Mitigation plans to demonstrate how mitigation by companies is to be achieved

Sector policies to

drive mitigation

Policies and Measures (PAMS), economic measures to drive mitigation (e.g. IRP 2019 – REIPPP)



**AFRICAN
UNION CLIMATE
CHANGE AND
RESILIENT
DEVELOPMENT
STRATEGY AND
ACTION PLAN
(2022-2032)**



Principles (AU doc. Headings):

- A people-centered approach
- Conserving and restoring eco-systems / natural capital
- Aligning plans and priorities
- Leave no one behind / a just transition
- Common but differentiated responsibility
- Intersectionality
- Evidence and Practice
- African-led and African-owned
- Whole of Economy Approach



A PRESIDENTIAL CLIMATE COMMISSION REPORT

A Framework for a Just Transition in South Africa

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PRINCIPLES FOR A JUST TRANSITION



Distributive justice

Equitable distribution of risks and responsibilities addressing direct impacts of transition

Outcomes

Increased resilience of workers and communities to economic shifts and physical impacts

Higher share of working-age population in employment, in low carbon industries, with better quality of work & stable or increasing incomes



Restorative justice

Redress of historical damages in order to rectify or ameliorate situations

Outcomes

Lower Gini co-efficient & qualitative improvement in income equality

More equitable ownership of productive assets

Less land degradation, improved air quality, energy access, water quality and access



Procedural justice

Empowering workers, communities & small businesses so that they can define their own development

Outcomes

Inclusive and participatory decision-making structures

National, regional and local processes that allow people to take charge of their economic destiny

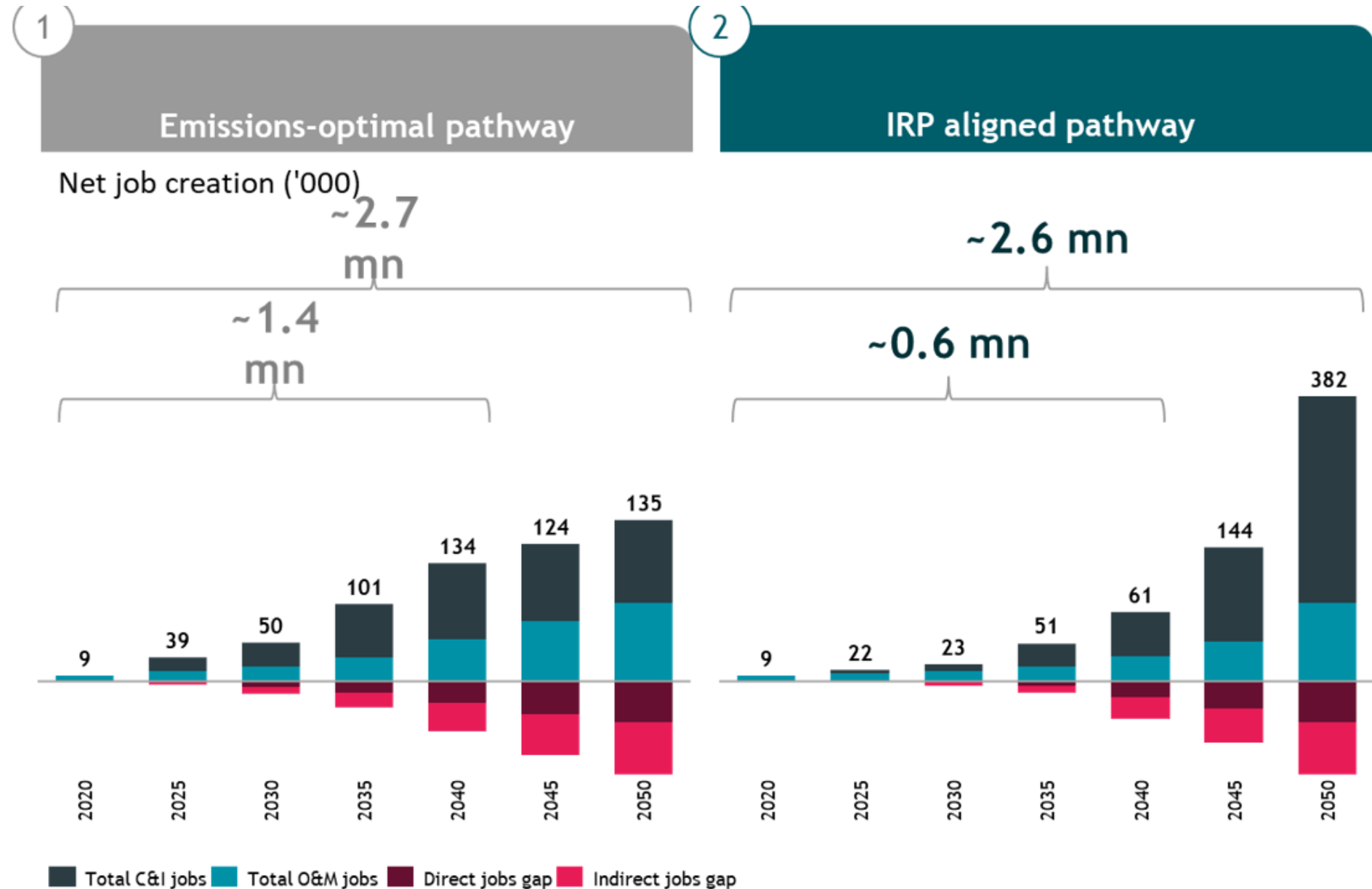
Responsive and effective state



Estimation of net job creation with lower-emissions electricity plan

derived from the **NBI Just Transition Pathways**

modelling exercise, which indicated much higher employment outcomes in the short to medium term associated with an emissions-optimal pathway as opposed to an IRP-aligned pathway.



The Impact of Trade & Climate Damage on South Africa's Economic Strategy

Summary

South Africa would gain from decarbonising its economy, even if global action is less than what's needed to keep global warming within 1.5°C



1 The scenarios results support the idea that decarbonisation comes with both gains and losses

Our results show that investments related to the transition can create new jobs and add to economic activity, therefore boosting employment and economic growth

2 Just transition investments and financial support are likely to be necessary to mitigate losses

Investments associated with the JTP and MBD financing are important instruments to mitigated losses and support growth

3 The transition brings sectoral transformation and requires labour mobility

While the net effects on employment and economic activity might be zero or even positive, the process itself implies significant labour mobility across sectors. This needs to be supported by policies to facilitate that mobility and reskilling.

4 South Africa should have an interest in limiting climate damages

Already by 2040 expected climate damages substantially impact productivity, and extreme weather events would impact infrastructure even further with adverse impacts mostly falling on vulnerable groups with limited means for adaptation. A global 1.5°C pathway can mean over 5% of GDP avoided losses.



**PRESIDENTIAL
CLIMATE COMMISSION
TOWARDS A JUST TRANSITION**



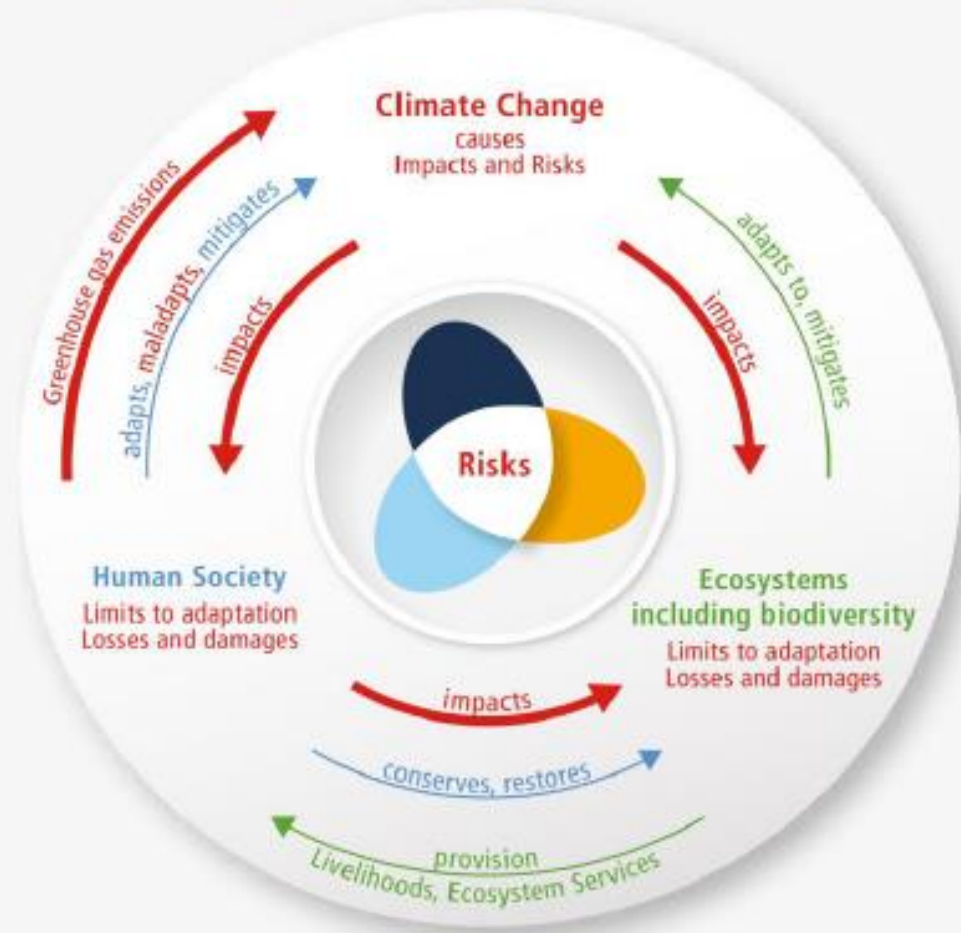
Creating employment and reducing emissions: Options for South Africa

Harald Winkler^{a,b} and Anthony Black^a

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We analyse policy instruments that can reshape the development path: reducing incentives to capital-intensive and high emissions heavy industry, ending direct and indirect support for cheap electricity, and removing fossil fuel subsidies. Industrial policy should pay attention to creating comparative advantage in more labour-demanding sectors. Agriculture can create employment, while enhancing carbon sinks. Based on our exploration of such policy instruments, we suggest that future development can align employment and mitigation objectives, seeking synergies across industrial, energy, and climate policy, while at the same time managing trade-offs.

New understanding of interconnections: climate, ecosystems and human society



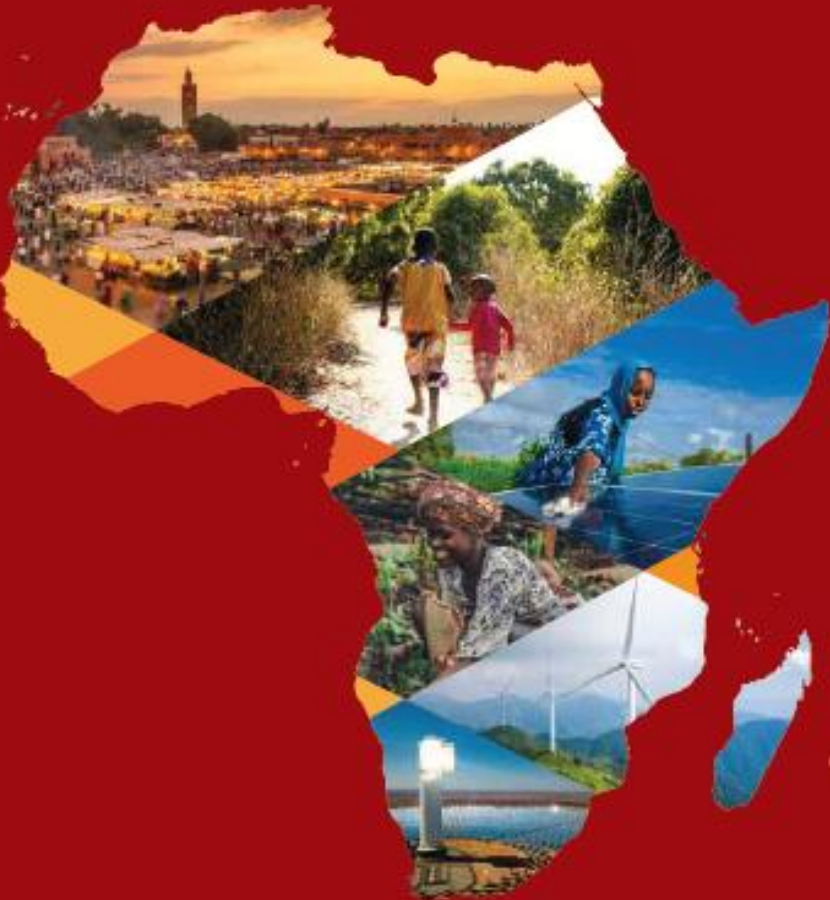
The risk propeller shows that risk emerges from the overlap of:

- Climate hazard(s)
 - Vulnerability
 - Exposure
- ...of human systems, ecosystems and their biodiversity



JUST TRANSITION

A CLIMATE, ENERGY AND DEVELOPMENT
VISION FOR AFRICA



“Realizing the continent’s potential requires bold new approaches matched by the magnitude of the **existential** challenges posed by climate change which affects the continent disproportionately. The bold actions must be coupled with a strong sense of urgency, and avoid pitfalls and traps of **maldevelopment pathways** which in the past, have held back the continent. ...

Such a vision is laid out in this seminal report from African experts on issues of climate, energy, and development ...
...new way forward focused on achieving food sovereignty, 100% renewable energy sovereignty, and an afro-centric industrial policy that increases African collaboration and resource control.”

[from the forward by]



William S. Ruto

President of the Republic of Kenya Chair of
the Committee of African Heads of State and
Government on Climate Change (2022)

FOSSIL FUEL NON-PROLIFERATION TREATY

**‘HOW A FOSSIL
FUEL NON-
PROLIFERATION
TREATY CAN
PROPEL
AFRICA’S
RENEWABLE
ENERGY
TRANSITION’
*November 2023***

Fossil fuels are failing to power the African continent.

Despite decades of coal, oil and gas extraction, 600 million Africans have been left without power.

Coal, oil and gas, responsible for 86% of carbon emissions released in the last decade, are fuelling climate catastrophe and economic collapse on the continent least responsible for the crisis.

Africa’s fossil fuel sector is dominated by foreign ownership, while the majority of the continent’s fossil fuels are exported to foreign markets, siphoning both wealth and energy out of Africa.

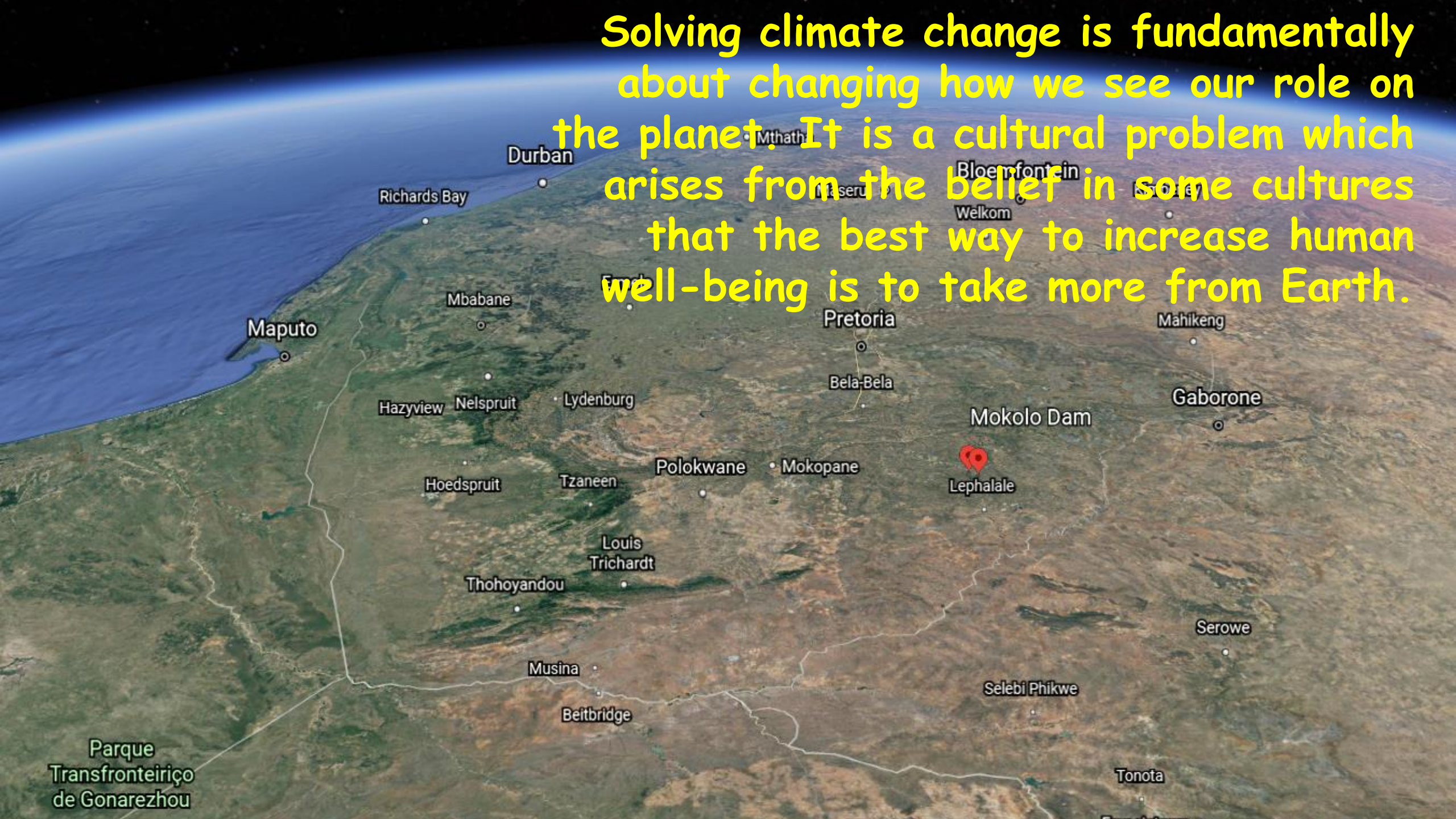
This fossil fuel plunder is not inevitable.

Africa sits atop the largest renewable energy potential on Earth – 39% of the global share¹ – and this potential is largely untapped.

International cooperation, through a **Fossil Fuel Non-Proliferation Treaty**, can unlock the finance and technology essential for Africa to unleash its clean energy potential, light up the continent, and funnel this energy into improved development outcomes, economic growth, public health benefits and educational development.

<https://fossilfueltreaty.org/>

Solving climate change is fundamentally about changing how we see our role on the planet. It is a cultural problem which arises from the belief in some cultures that the best way to increase human well-being is to take more from Earth.



Spare material

for

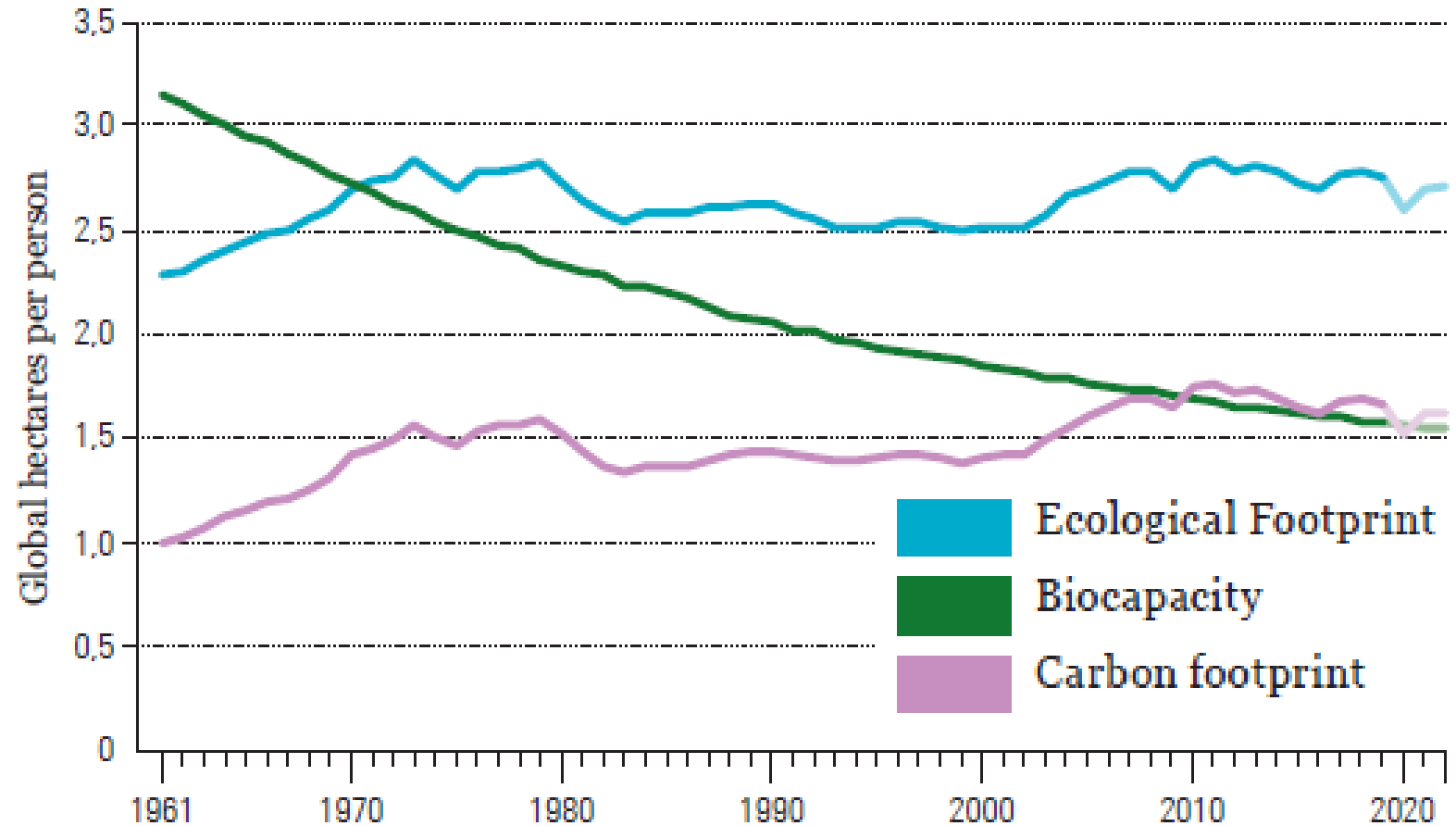
Q & A

current global energy and climate justice issues

- Decarbonisation with **System Change** - for inter-generational justice
- **Equity** amongst nations – with carbon budgeting and consequences
- Global **Governance** – UNFCCC (limited) and beyond – including human rights and rights of (mother) nature, illicit financial flows and corporate accountability
- Phasing out **fossil fuels**, e.g. Non-Proliferation Treaty, Don't Gas Africa...
- **Finance** and heterodox economics - incl. de-throne GDP, holistic indicators of progress (SDGs), International Finance Institutions, 'climate finance', universal basic income, care economy...
- Land use and ownership and food production (appropriation/enclosure of the commons) – food-water-energy nexus
- Values (egalitarian, inclusive...) vs short-term profit and pragmatism (TNA) and uprooting patriarchy

WWF LIVING PLANET REPORT 2022

Figure 12: The global Ecological Footprint and biocapacity from 1961 to 2022 in global hectares per person
The blue line is the total Ecological Footprint per person, and the pink line is the Carbon Footprint per person (a subset of the Ecological Footprint). The green line shows the biocapacity per person. Results for 2019-2022 are nowcast estimates; remaining data points are directly taken from the National Footprint and Biocapacity Accounts, 2022 edition.



Country Overshoot Days 2024

When would Earth Overshoot Day land if the world's population lived like...

Nov 24 | Ecuador, Indonesia

Nov 15 | Iraq
Nov 12 | Jamaica

Oct 18 | Guatemala
Oct 14 | Cuba
Oct 9 | El Salvador
Oct 5 | Colombia

Sep 18 | Uzbekistan, Venezuela

Sep 4 | Algeria
Sep 3 | Peru

Aug 29 | Mexico
Aug 25 | Panama
Aug 23 | Thailand
Aug 19 | Namibia

Aug 14 | Vietnam

Aug 4 | Brazil
July 31 | Costa Rica

July 20 | Romania
Jul 17 | Bolivia

June 23 | Paraguay

June 20 | Argentina, South Africa

Jun 18 | Iran

June 1 | China
June 3 | United Kingdom

May 30 | Montenegro
May 28 | Croatia, Portugal

May 27 | Switzerland
May 25 | Greece, Hungary

May 23 | Chile
May 20 | Spain

May 19 | Italy
May 16 | Japan

May 12 | Israel
May 7 | France

May 2 | Germany, Ireland

April 25 | Slovenia
April 21 | Sweden

April 18 | Czech Republic
April 12 | Finland, Norway

April 11 | New Zealand
April 7 | Austria

April 5 | Australia, Russia, Saudi Arabia
April 4 | Republic of Korea

April 1 | Netherlands
Mar 23 | Belgium

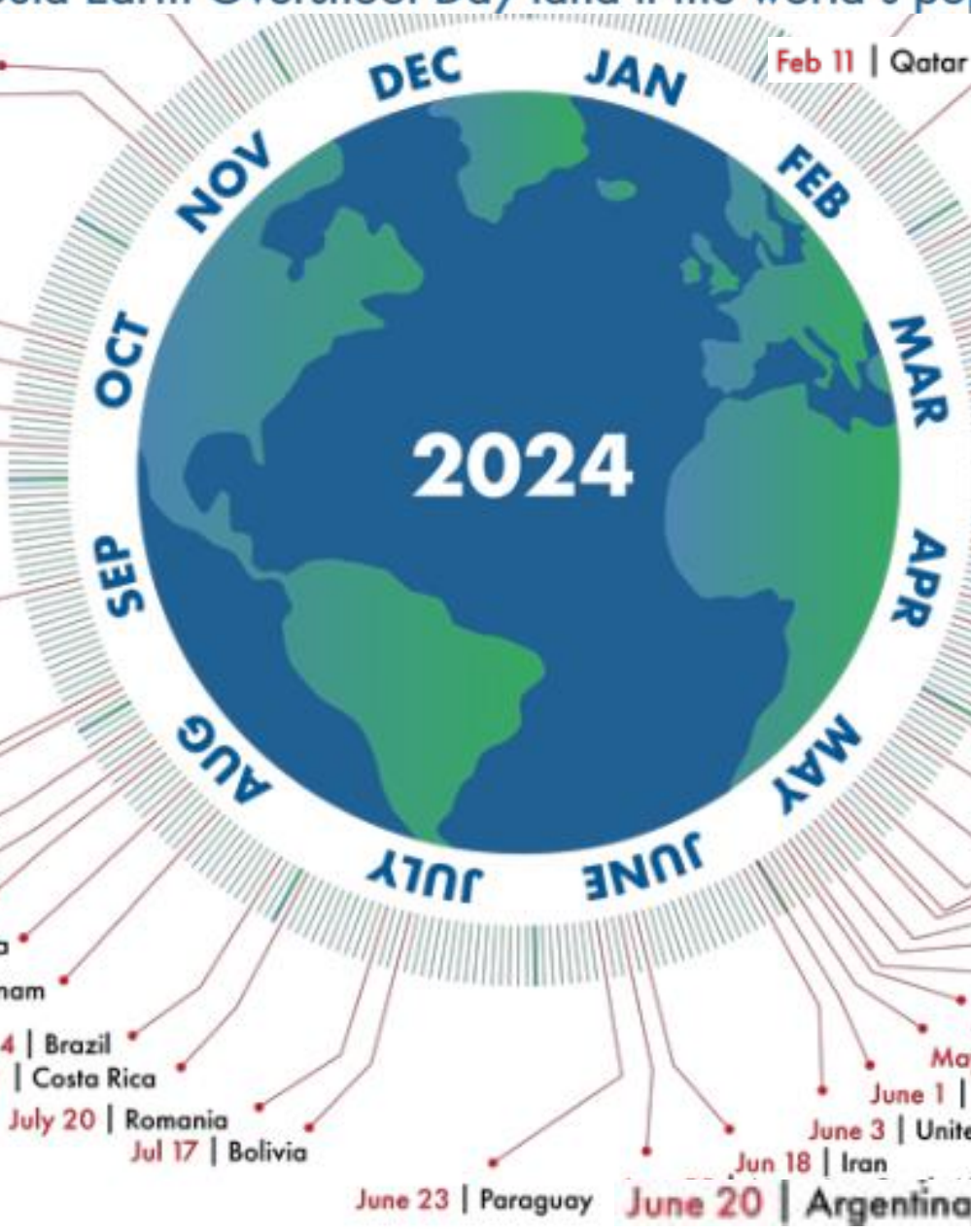
Mar 16 | Denmark
Mar 15 | Canada

Mar 14 | United States of America

Mar 4 | United Arab Emirates

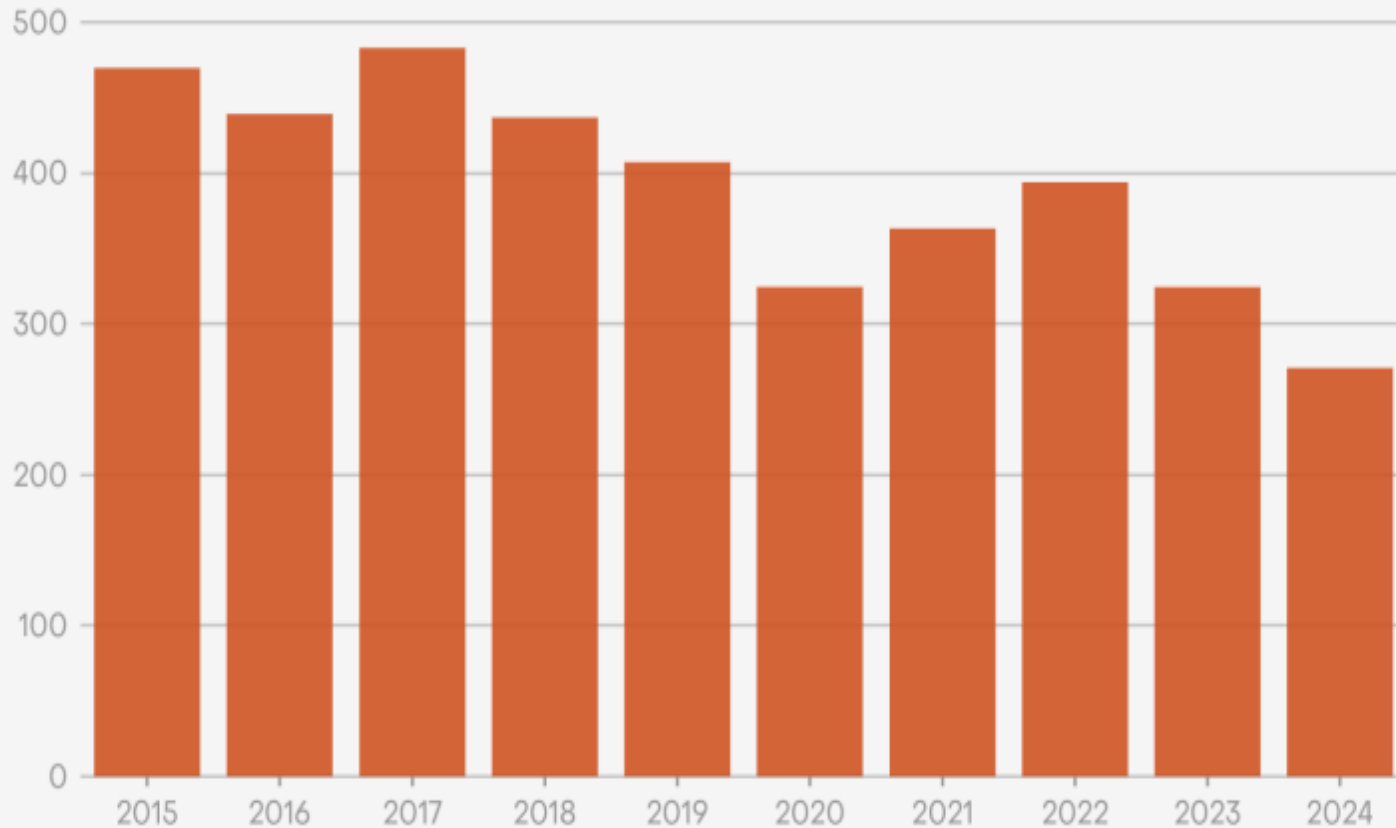
Feb 20 | Luxembourg

Feb 11 | Qatar



EU power sector emissions in the first half of 2024 were 31% lower than in 2022

Power sector emissions in the first half of each year (MtCO₂)

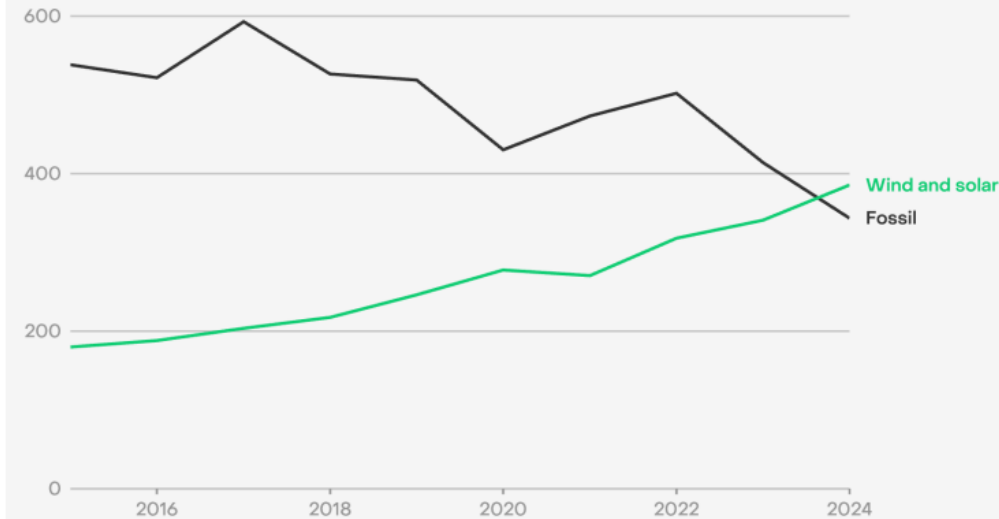


Source: Monthly electricity data, Ember
Emissions are measured in CO₂ equivalent and include other greenhouse gases such as methane



EU wind and solar overtake fossil power in the first half of 2024

Generation in the first half of each year (TWh)



Source: Monthly electricity data, Ember



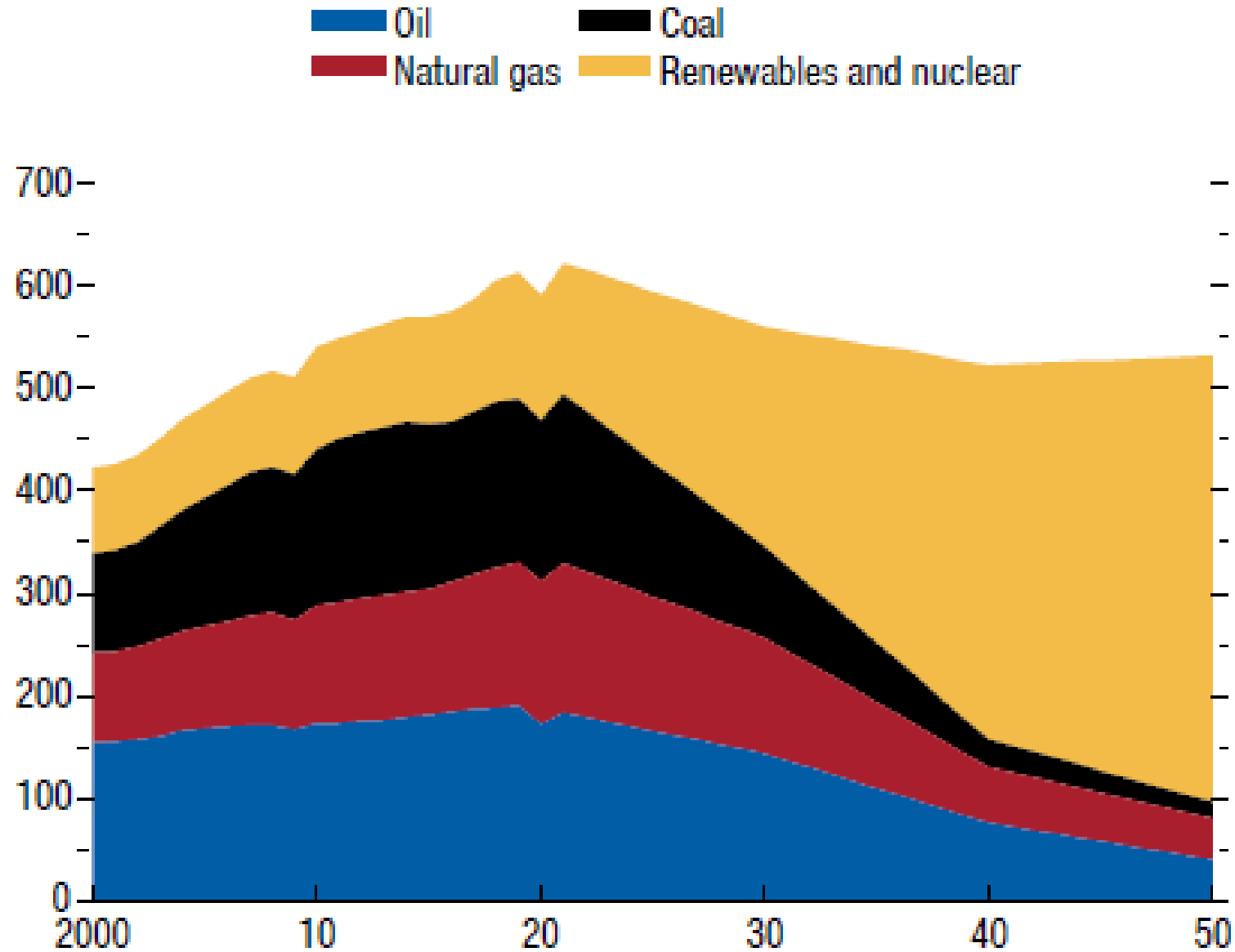
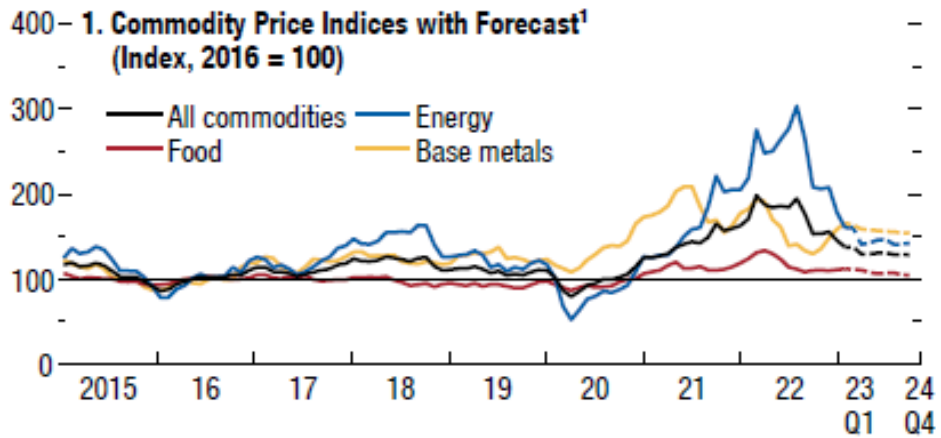
Germany managed to grow renewables in the first half of 2024 to about 65% of all power supply.

NOTE: This does not include fugitive methane from gas supply chains

Snapshot of anticipated fossil fuel decline in “a net zero emissions scenario”

International Monetary Fund | April 2023

Figure 1.SF.1. Commodity Market Developments



Sources: International Energy Agency; and IMF staff calculations.

<https://theprogressplaybook.com/2024/08/27/study-shows-which-climate-policies-actually-work/>

The Potsdam Institute for Climate Impact Research and other organisations looked at 1,500 **climate policies** implemented worldwide over the past 25 years for the study, which was published in ‘Science’: “Our insights on effective but rarely studied policy combinations highlight the important role of price-based instruments... Lead author Nicolas Koch said the study demonstrated that “the right mix of measures is crucial. For example, **subsidies or regulations alone are insufficient; only in combination with price-based instruments, such as carbon and energy taxes, can they deliver substantial emission reductions.**”

BACKGROUND: SECTORAL EMISSION TARGETS

- The National Climate Change Bill defines SETs as the greenhouse gas emissions reduction goals, either qualitative or quantitative, applicable to sectors or sub-sectors over a period of time (determined for three rolling 5-year periods and will be reviewed every 5 years in line with **NDC**).
- PAMs may include **regulatory instruments** (specifically legislation, regulations and standards), **economic instruments** (for example, incentives and taxes), **government procurement programmes** or **direct investment by government**
- Sectoral policies and measures (**PAMs**) are critical for the implementation of the SETs.
- **Integrated Resource Plan, National Energy Efficiency Strategy, Green Transport Strategy** and **National Waste Management Strategy** are some of the examples of PAMs that would help sector implement and meet their allocated SETs for their respective sectors
- Most of these PAMs already form part of the **South African Low Emission Development Strategy (LEDS)** which will also serve as a vehicle to drive the implementation of our NDC.

GHG Analysis of SETs – conducted using DFFE’s Integrated Emissions Model

Scenarios assessed:

With Existing Measures:

- No changes made across the economy to what exists in 2022
- Business as Usual scenario

SETs Policy Package:

- PAMs as identified with Line Department
- Policies that do not exist: targets projected based on stakeholder engagement

“Realistic PAMs”:

- All SETs PAMs where implementation is assumed to be 75%

SETs 1.5 degree scenario

- All SETs PAMs plus increased ambition in Energy, Transport and Environment



THE AFRICA CARBON MARKETS INITIATIVE

A WOLF IN SHEEP'S CLOTHING

SEPTEMBER 2023



POWER SHIFT
AFRICA

[350Africa.org](https://www.350Africa.org)



CAN
CLIMATE ACTION NETWORK
AFRICA



AFRICA WATER
JUSTICE NETWORK



MUHURI
SUSTAINABLE POWER SOLUTIONS
AFRICA

AFRICA COAL
NETWORK

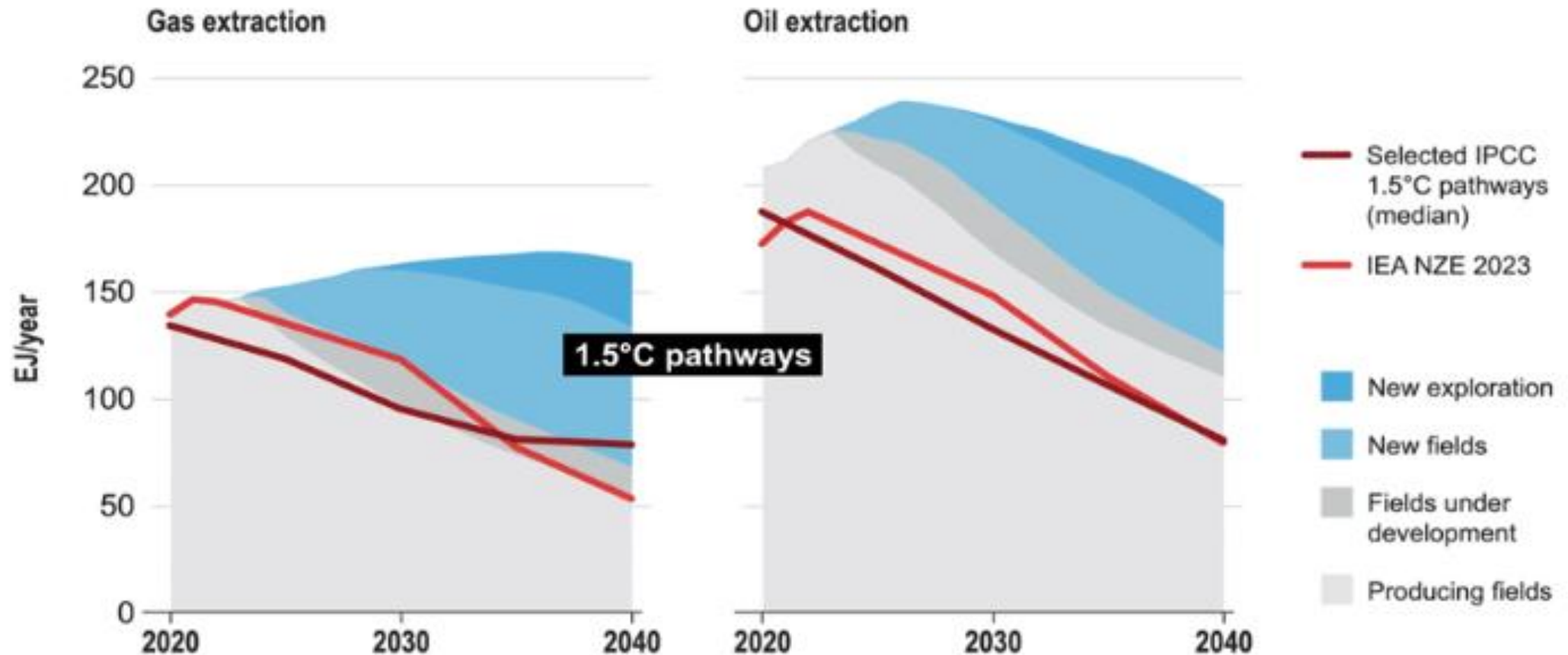
Africans Rising
For Unity, Justice, Peace & Dignity



Friends of
the Earth
Africa

May 2024: A new study from University College London (UCL) and the International Institute for Sustainable Development (IISD) finds that there is “no room for new fossil fuel projects in a 1.5°C-aligned world”.

Projected global oil and gas production far exceeds 1.5°C limits

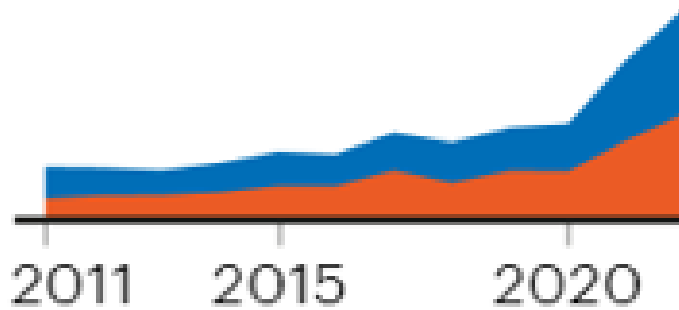


Climate Finance (*Nature*, 2023) [https://www.nature.com/immersive/d41586-023-03601-](https://www.nature.com/immersive/d41586-023-03601-6/index.html?utm_source=Live+Audience&utm_campaign=90a078dcce-briefing-dy-20231122&utm_medium=email&utm_term=0_b27a691814-90a078dcce-49499872)

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Climate investments skyrocketed to record levels in 2021 and 2022, but an analysis by the Climate Policy Initiative indicates that the world needs to ramp spending up to more than US\$10 trillion in the 2030s and beyond.

— Private — Public

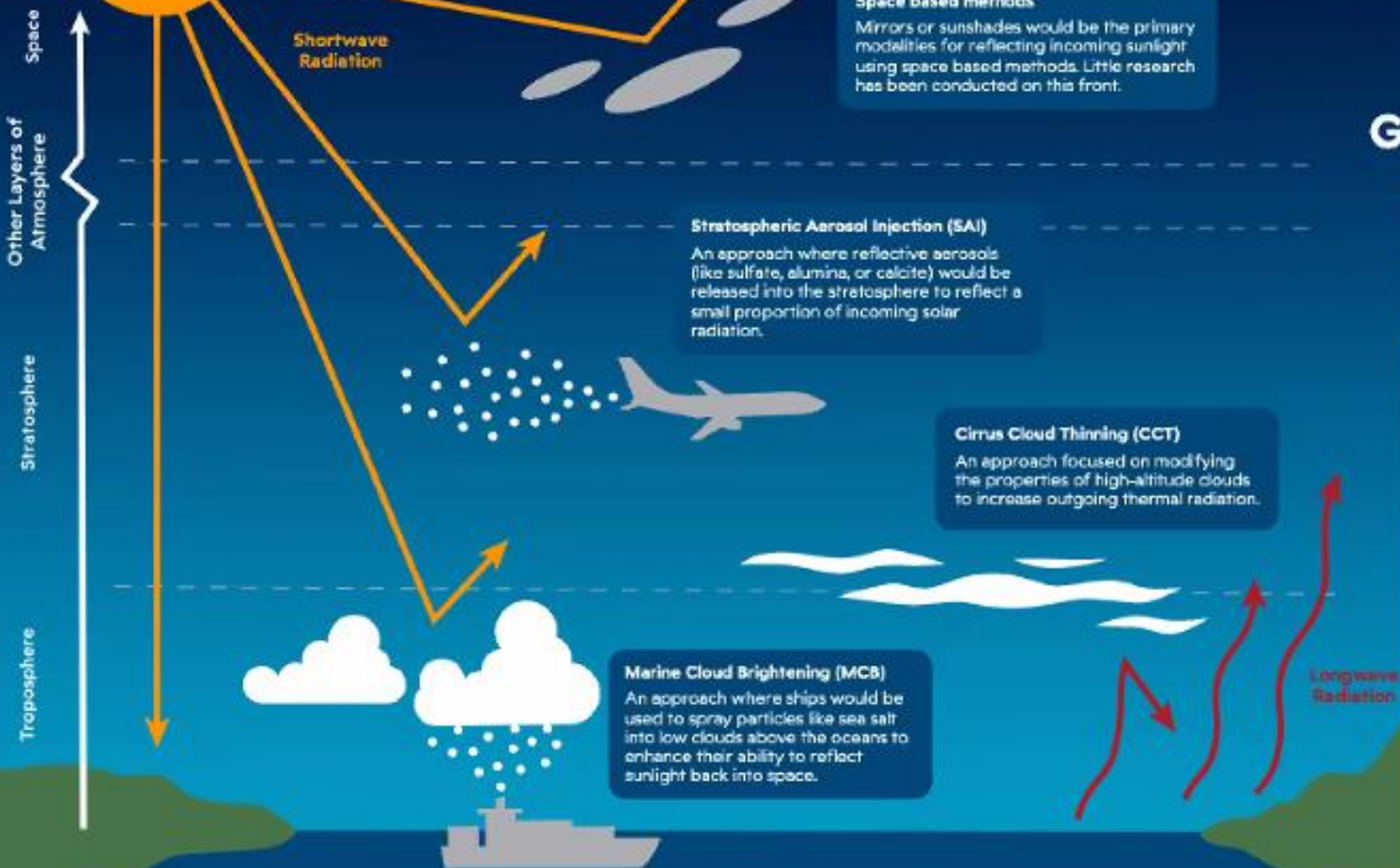


THIS IS POSSIBLE,
objectively assessed,
but looks improbable...
Why?
Fear of discontinuity in our
political economy
is overwhelming
acknowledgement of
accelerating discontinuity
in planetary / humanity's
life-support systems

Solar Radiation Modification (SRM)

What is Solar Geoengineering?

Solar Geoengineering (also referred to as solar radiation modification or SRM) refers to large-scale and intentional approaches to increase the amount of sunlight reflected back into space to cool the planet.



Space based methods
Mirrors or sunshades would be the primary modalities for reflecting incoming sunlight using space based methods. Little research has been conducted on this front.

Stratospheric Aerosol Injection (SAI)
An approach where reflective aerosols (like sulfate, alumina, or calcite) would be released into the stratosphere to reflect a small proportion of incoming solar radiation.

Cirrus Cloud Thinning (CCT)
An approach focused on modifying the properties of high-altitude clouds to increase outgoing thermal radiation.

Marine Cloud Brightening (MCB)
An approach where ships would be used to spray particles like sea salt into low clouds above the oceans to enhance their ability to reflect sunlight back into space.

Impacts

There are a range of potential impacts on global systems. There is still deep uncertainty in how these impacts will be felt across regions and whether they will be beneficial or harmful.

- Temperature
- Food Security
- Precipitation
- Energy Systems
- Public Health
- Cryosphere
- Geopolitics
- Climate Displacement
- Biodiversity
- Sea Level Rise
- Aerosol Interactions (incl. ozone)

NASBE, 2021. "Reflecting Sunlight: Recommendations for Solar Geoengineering Research and Research Governance." Washington, DC: The National Academies Press. <https://doi.org/10.17226/25142>
 NOAA, 2021. "Atmospheric Aerosols and Their Potential Role in Solar Climate Intervention Methods." <https://epa.noaa.gov/Funding/Opportunities/FY2021/Recipients/55>
 Kravitz, B. and McFarlin, D.D. 2020. "Uncertainty and the basis for confidence in solar geoengineering research." *Nature Earth and Environment* 1, 64-75. <https://doi.org/10.1038/s43017-019-0094-7>



Goldilocks Technology - A Checklist

- Minimize Energy Inputs
- Shrink Supply Chains for Key Inputs
- Move to Simple (Less Complex) Inputs
- % Circularity
- % Regenerative
- < Ecological Impacts
- Anticipate Problem Shifting
- Affordable & Scalable
- Relevant to The Great Simplification
- "Wide Boundary Profitable"