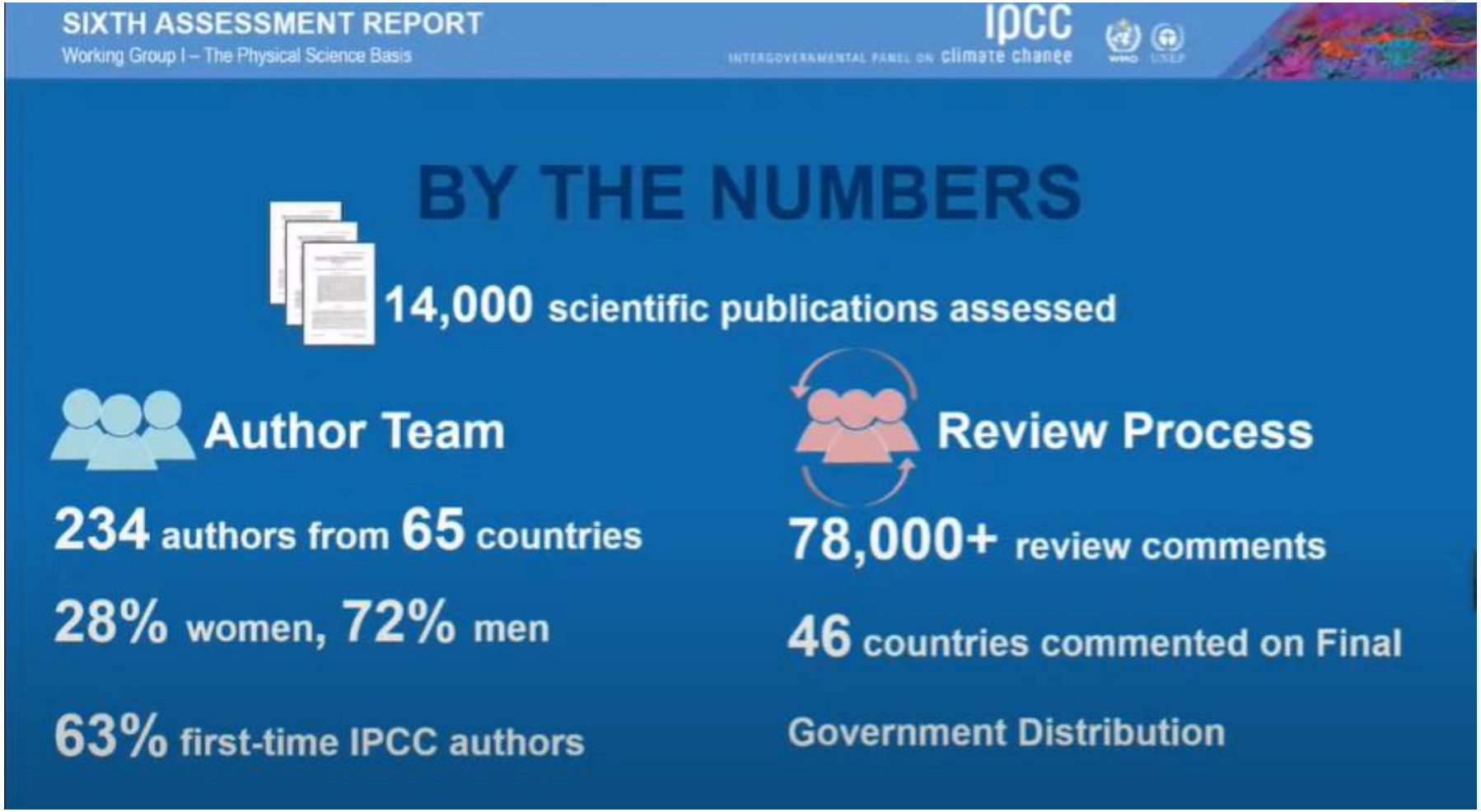
Climate Risk and Pension Funds

Botswana Pensions Society

Adam Bennot and Thembi Matabiswana

RISCURA

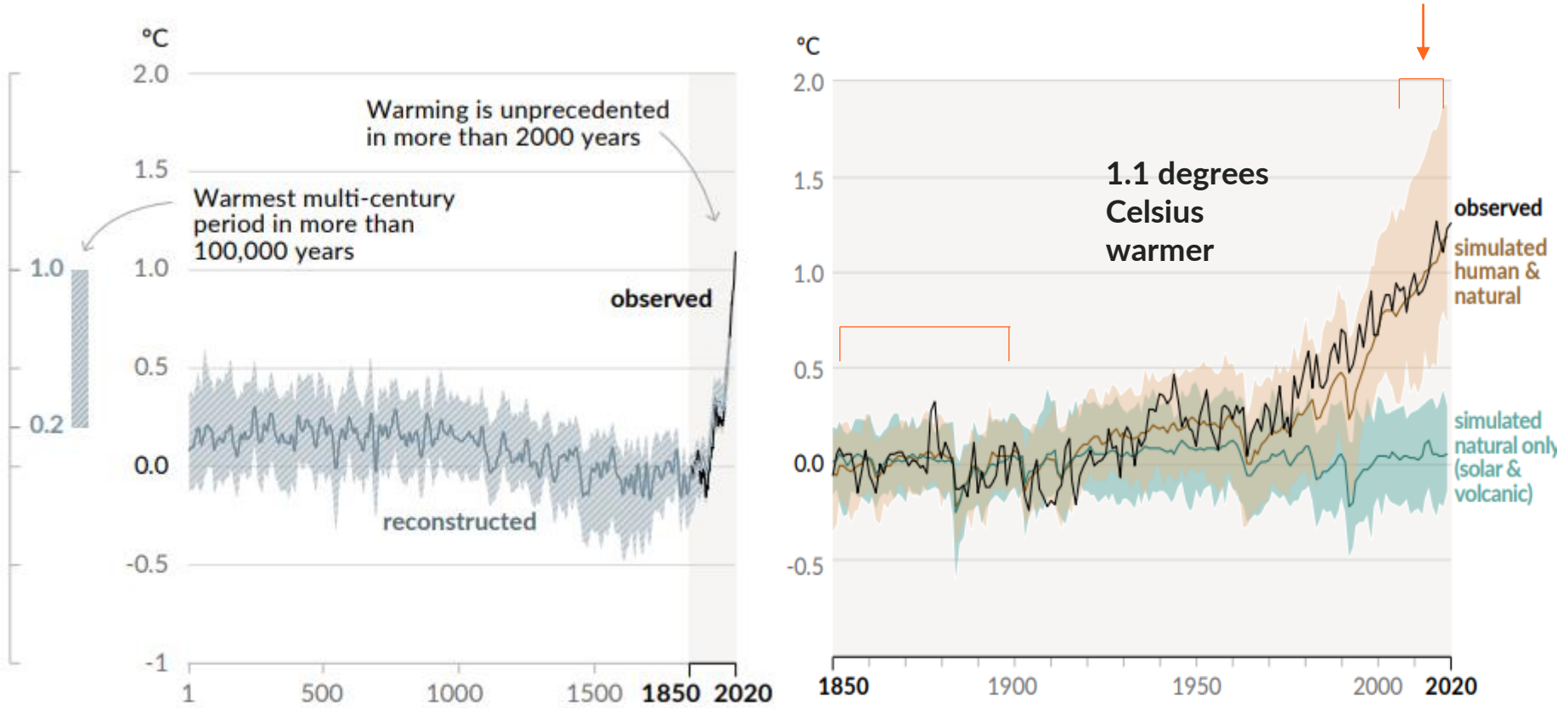
What is the report – “code red for humanity”



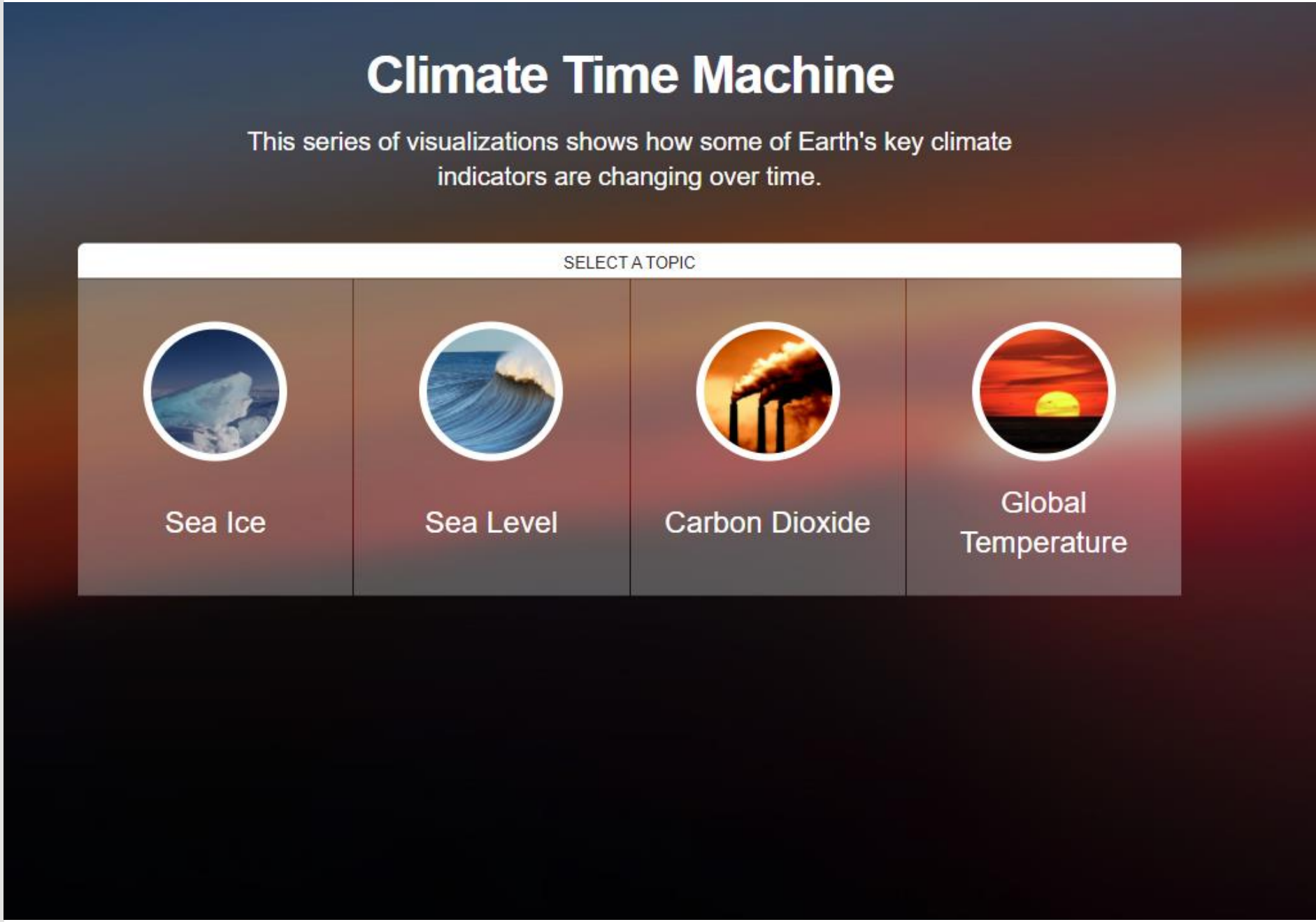
How the Earth's temperature is changing

"It is unequivocal that human influence has warmed the atmosphere, ocean and land. Widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred."

Changes in global surface temperature relative to 1850-1900



Temperature is not the only change

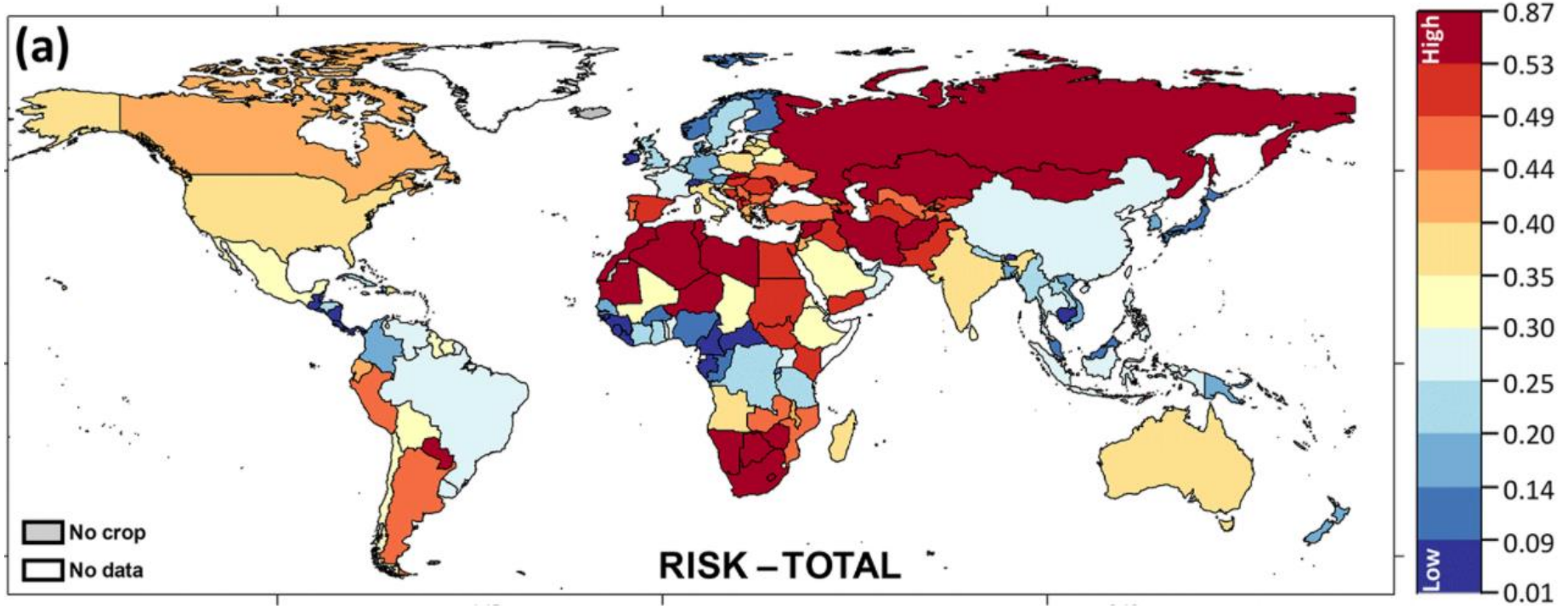


https://climate.nasa.gov/interactives/climate-time-machine/

Extreme weather – the new norm

- Between 1970 and 2019:
  - 11 000 natural disasters
  - Two million deaths
  - USD 3.64 trillion in economic loss

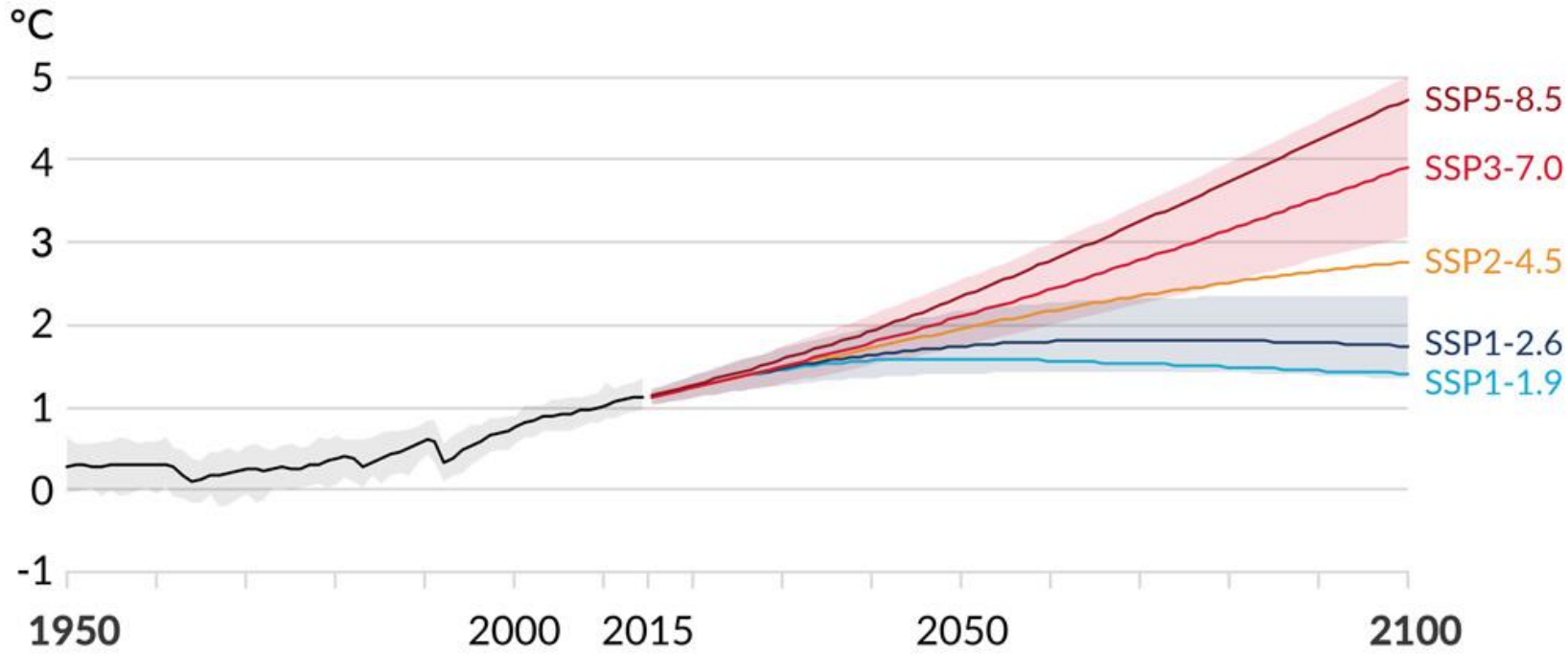
Multi-year droughts are the number one risk Botswana faces

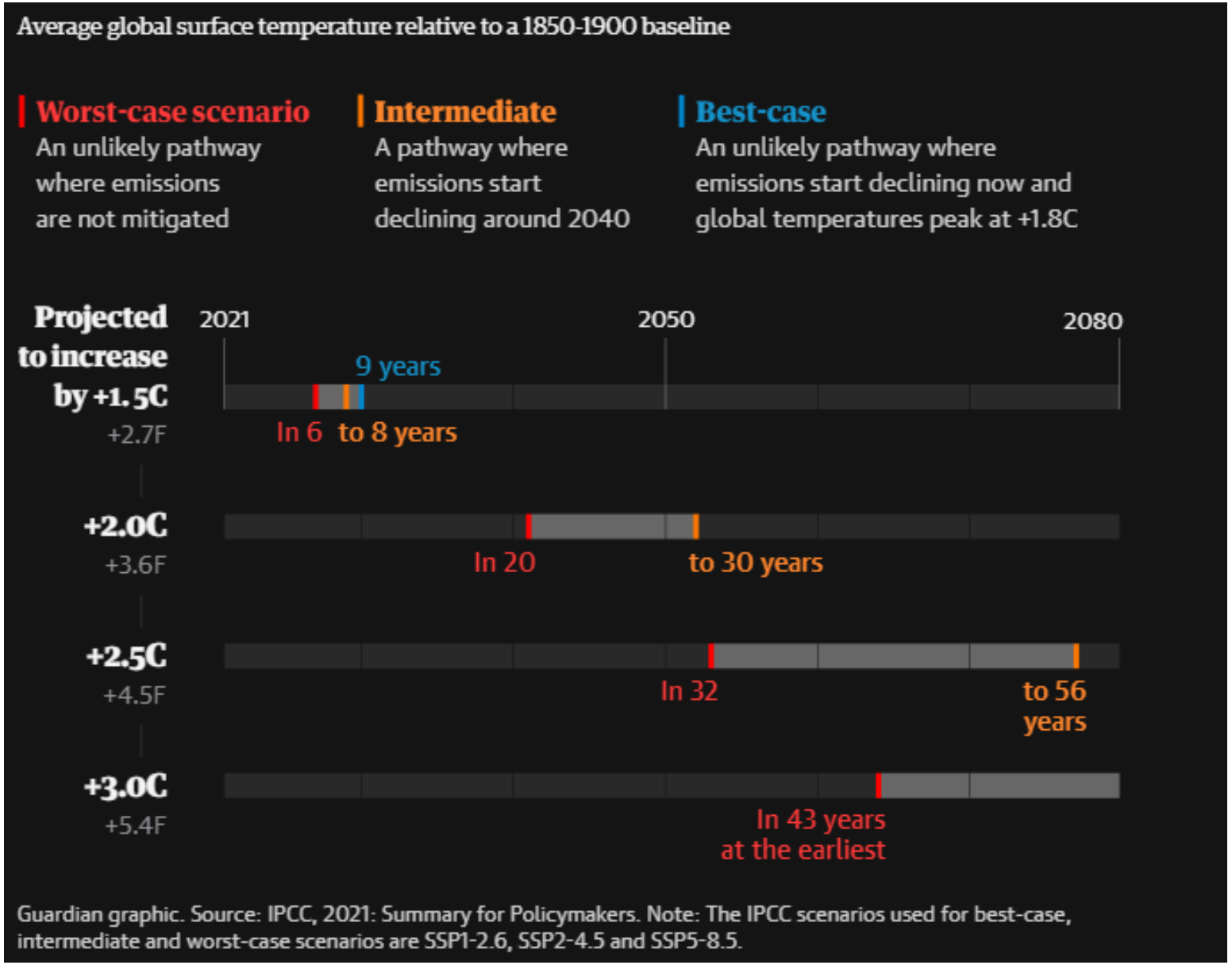


How much warmer will the world get in the future?

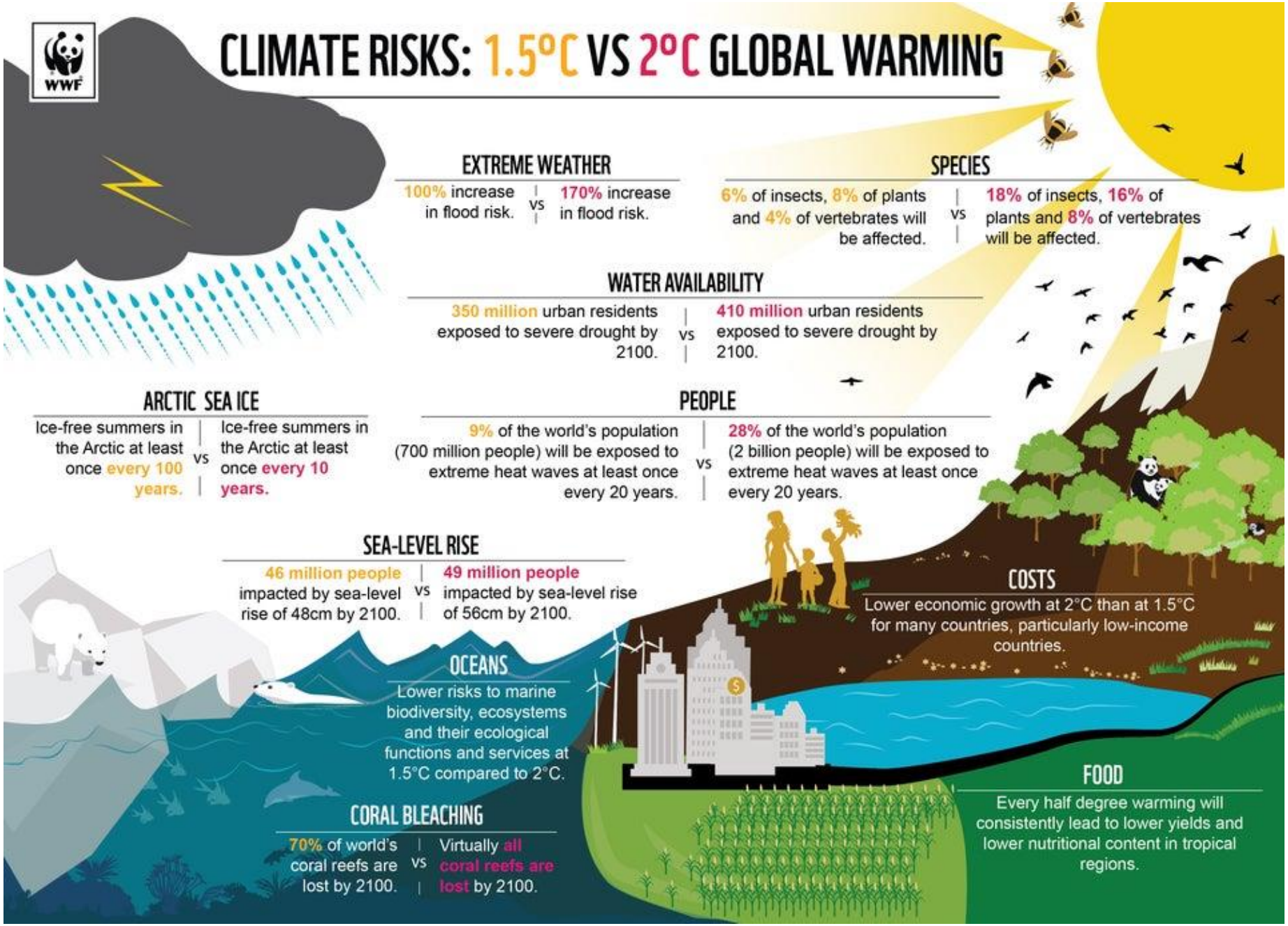
Unless there are immediate, rapid and large-scale reductions in greenhouse gas emissions, limiting warming to 1.5 degrees Celsius will be beyond reach."

The report describes possible futures depending on how dramatically the world cuts emissions.




Average global surface temperature relative to a 1850-1900 baseline
Worst-case scenario
An unlikely pathway where emissions are not mitigated
Intermediate
A pathway where emissions start declining around 2040
Best-case
An unlikely pathway where emissions start declining now and global temperatures peak at +1.8C
Projected to increase by +1.5C
+2.7F
2021
2050
2080
9 years
In 6 to 8 years
+2.0C
+3.6F
In 20
to 30 years
+2.5C
+4.5F
In 32
to 56 years
+3.0C
+5.4F
In 43 years at the earliest
Guardian graphic. Source: IPCC, 2021: Summary for Policymakers. Note: The IPCC scenarios used for best-case, intermediate and worst-case scenarios are SSP1-2.6, SSP2-4.5 and SSP5-8.5.

Climate Risks: 1.5° vs 2°C Global Warming



Source: WWF

Vulnerability of global economy

	Temperature rise scenario, by mid-century			
	Well-below 2°C increase	2.0°C increase	2.6°C increase	3.2°C increase
	Paris target	*The likely range of global temperature gains*		*Severe case*
Simulating for economic loss impacts from rising temperatures in % GDP, relative to a world without climate change (0°C)				
World	−4.2%	−11.0%	−13.9%	−18.1%
OECD	−3.1%	−7.6%	−8.1%	−10.6%
North America	−3.1%	−6.9%	−7.4%	−9.5%
South America	−4.1%	−10.8%	−13.0%	−17.0%
Europe	−2.8%	−7.7%	−8.0%	−10.5%
Middle East & Africa	−4.7%	−14.0%	−21.5%	−27.6%
Asia	−5.5%	−14.9%	−20.4%	−26.5%
Advanced Asia	−3.3%	−9.5%	−11.7%	−15.4%
ASEAN	−4.2%	−17.0%	−29.0%	−37.4%
Oceania	−4.3%	−11.2%	−12.3%	−16.3%

Source: Swiss RE Institute

GLOBAL CARBON BUDGET 2010-2019

Global Carbon Project

TOTAL EMISSIONS

39.9 (±3.3)

ATMOSPHERIC CO_2 GROWTH RATE

18.7 (±0.07)

TOTAL SINKS

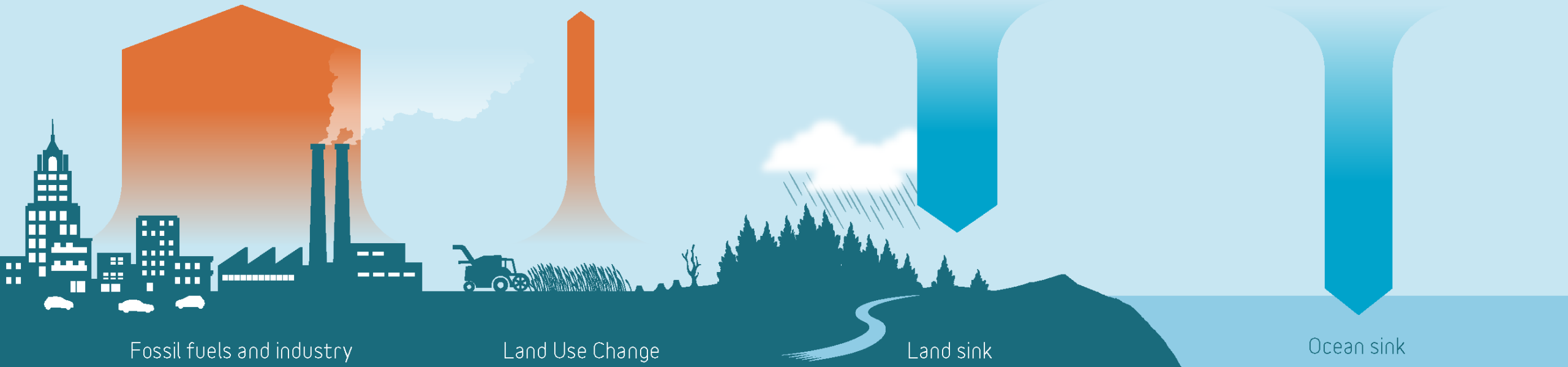
21.7 (±4.0)

34.4 (±1.8)

5.9 (±2.6)

12.5 (±3.3)

9.2 (±2.2)



Fossil fuels and industry

Land Use Change

Land sink

Ocean sink

EMISSIONS AND SINKS

In billion-tons CO_2 per year (Pg CO_2 / yr), average 2010-2019

GLOBAL CARBON PROJECT

FONDATION

Global carbon budget (from 2020 on)

To stabilize at 1.5 degrees Celsius:

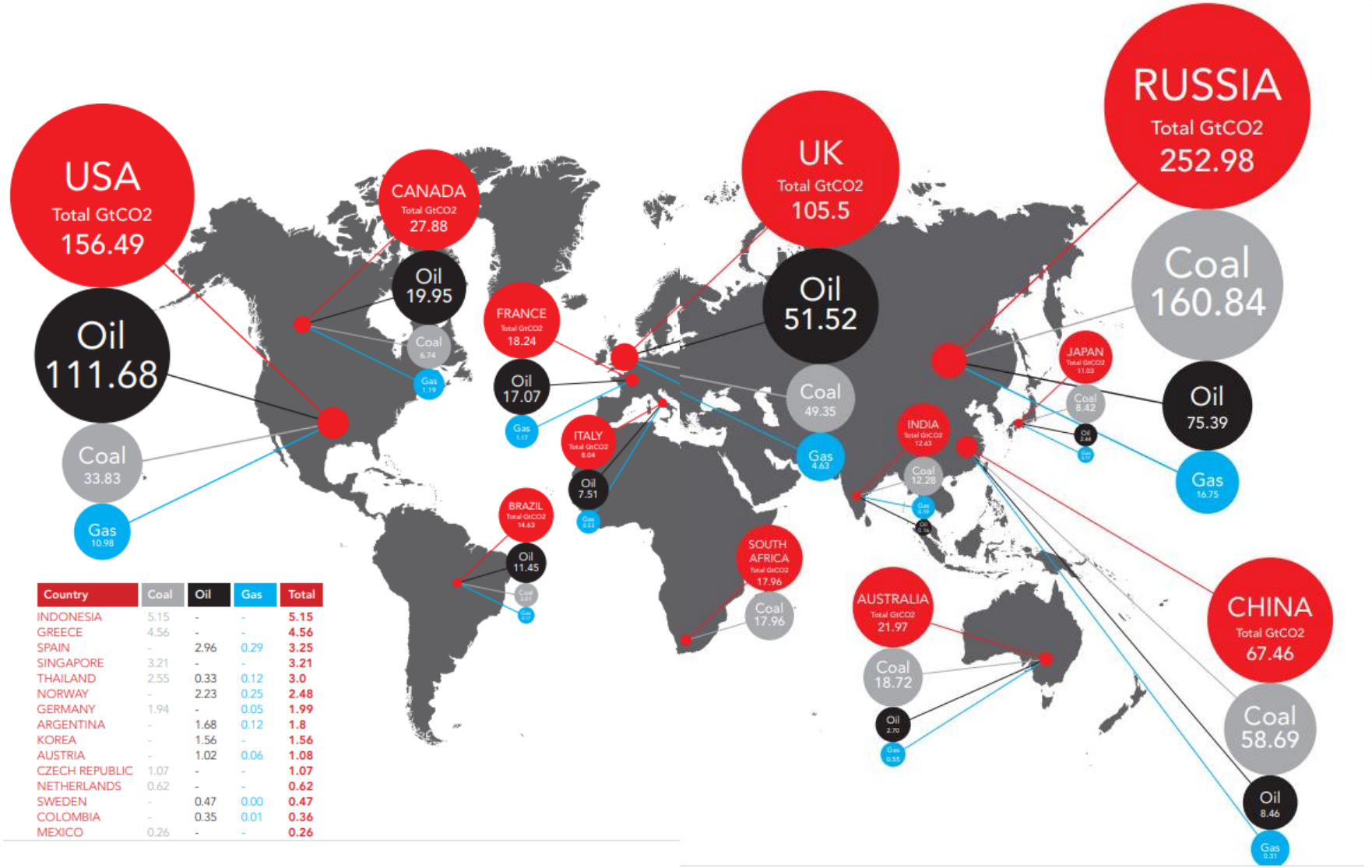
- For a 66% chance:

  We can't emit more than 400 gigatons CO2 (12 years of 2018 emissions)

- For a 50% chance:

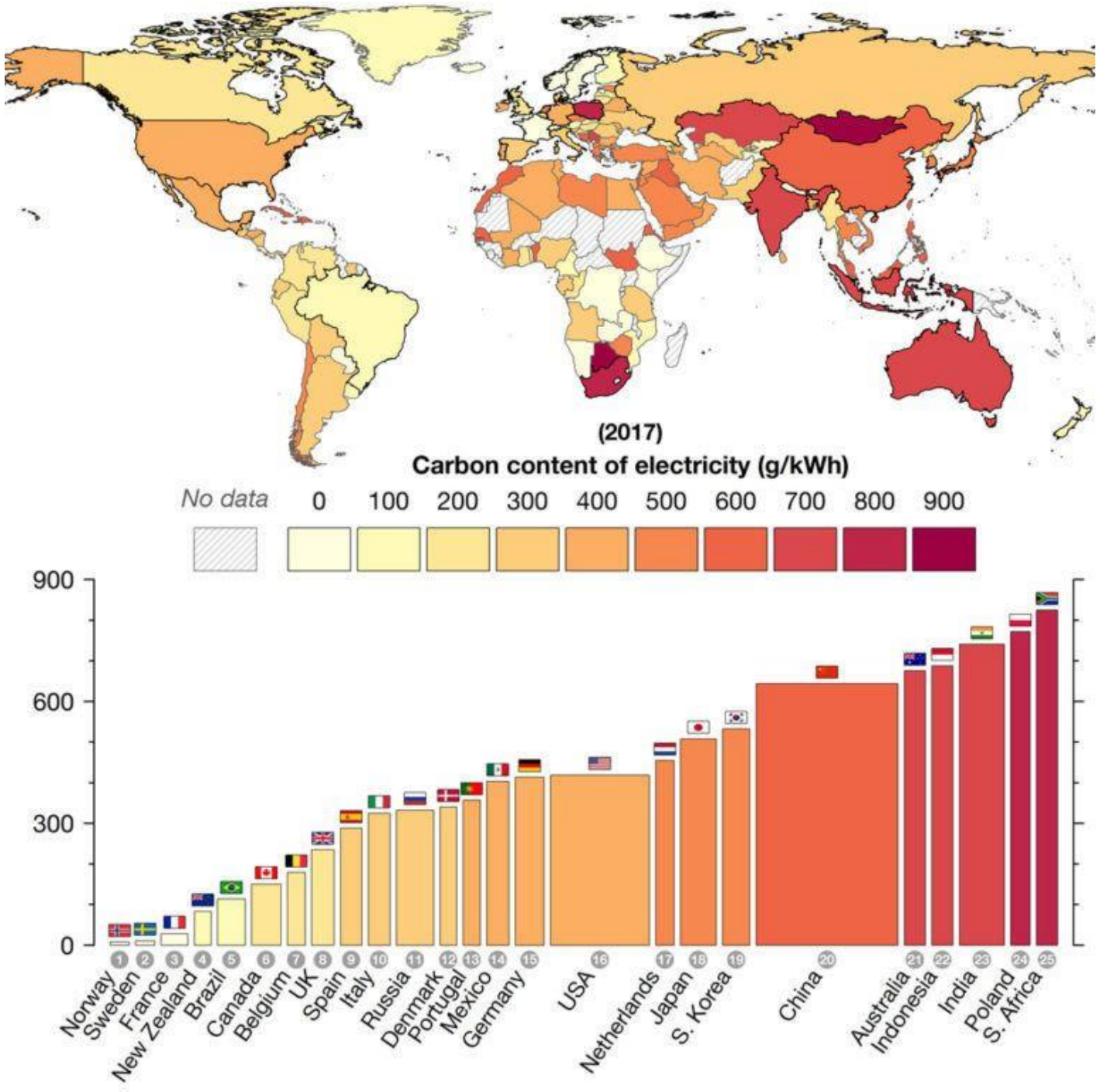
  We can't emit more than 500 gigatons of CO2 (15 years of 2018 emissions

CO2 emissions from proven fossil fuel reserves

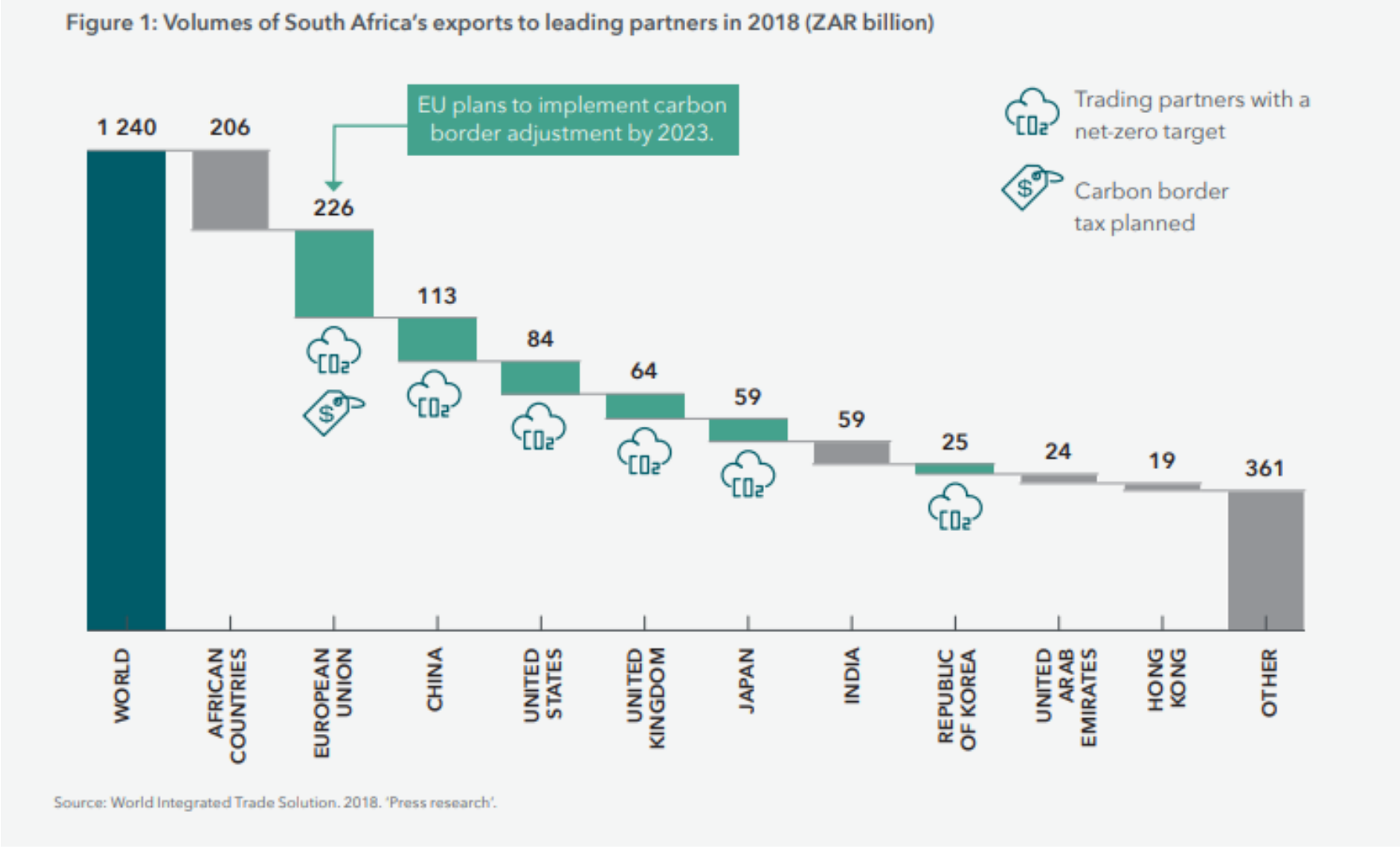


Country	Coal	Oil	Gas	Total
INDONESIA	5.15	-	-	**5.15**
GREECE	4.56	-	-	**4.56**
SPAIN	-	2.96	0.29	**3.25**
SINGAPORE	3.21	-	-	**3.21**
THAILAND	2.55	0.33	0.12	**3.0**
NORWAY	-	2.23	0.25	**2.48**
GERMANY	1.94	-	0.05	**1.99**
ARGENTINA	-	1.68	0.12	**1.8**
KOREA	-	1.56	-	**1.56**
AUSTRIA	-	1.02	0.06	**1.08**
CZECH REPUBLIC	1.07	-	-	**1.07**
NETHERLANDS	0.62	-	-	**0.62**
SWEDEN	-	0.47	0.00	**0.47**
COLOMBIA	-	0.35	0.01	**0.36**
MEXICO	0.26	-	-	**0.26**

Carbon intensity of Botswana electricity



Trade vulnerability is particularly acute



Source: NBI

COP26

- COP26 is set to be the most significant UN climate change conference since the Paris Agreement was secured in 2015.
- The move towards a net zero emissions world is one of the key priorities for the conference.

Priority areas:

- More ambitious NDCs aligned with to keep warming below 1.5°C
- Commit to global net zero by mid-century
- Decarbonization roadmaps for carbon intensive sectors
- Implement policy frameworks that deliver net-zero targets such as removal of fossil fuel subsidies and carbon pricing (carbon border adjustment mechanism, carbon tax etc.)
- Phase out thermal coal powered electricity
- Commit to implement mandatory climate risk disclosure aligned TCFD
- Delivering a Just Transition: Integrating human rights due diligence; ensure equitable access and participation of energy and climate solutions

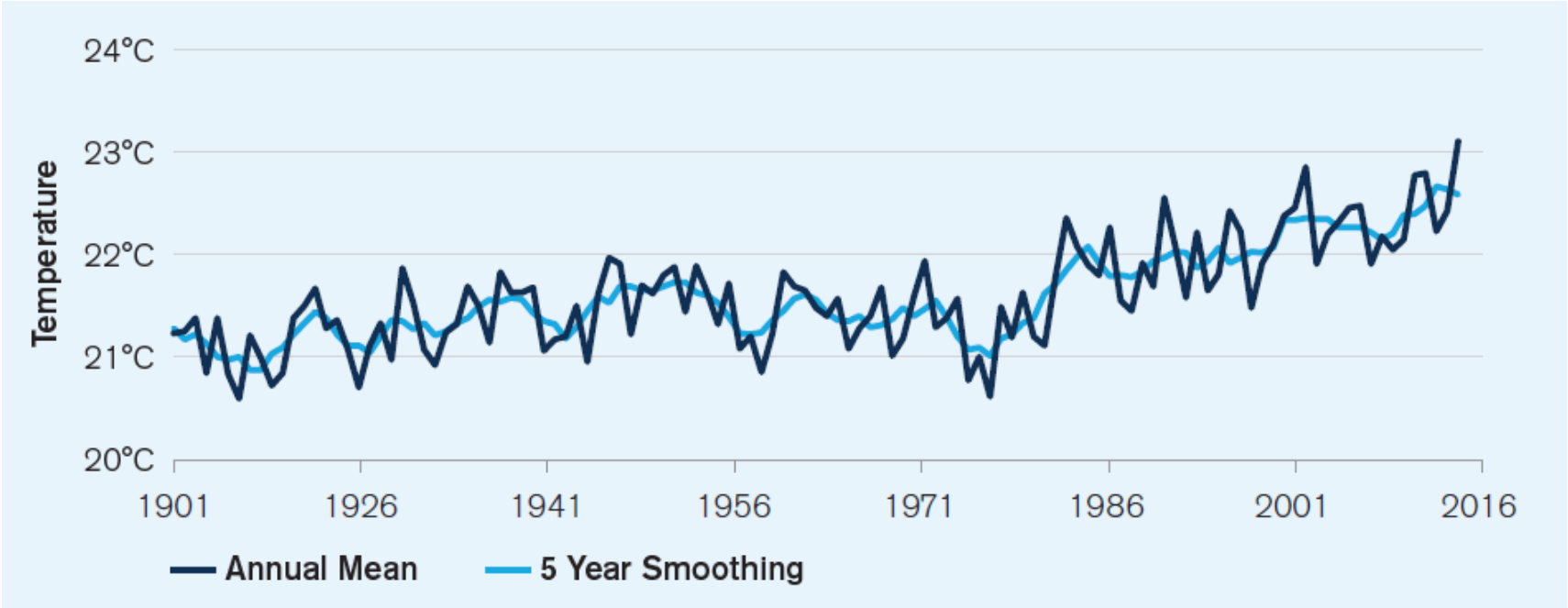
Retiring with dignity is not only about the money!

Source: A Wasteland of Cash – by Matt Bors

Botswana Case Study

Botswana Snapshot

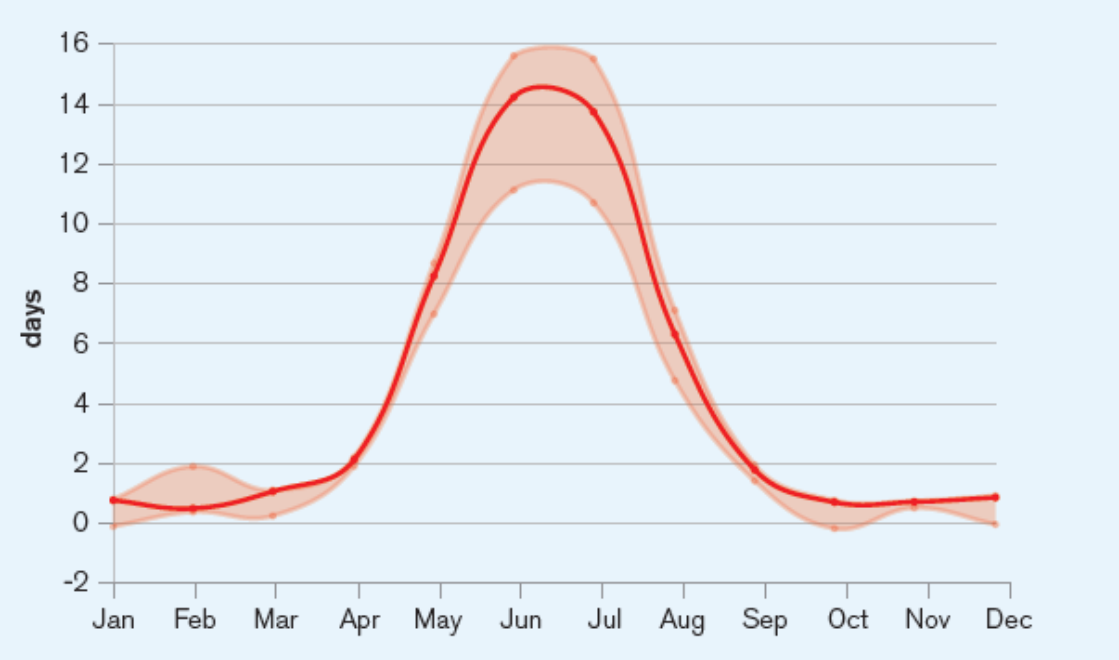
Observed temperature for Botswana, 1901–2019



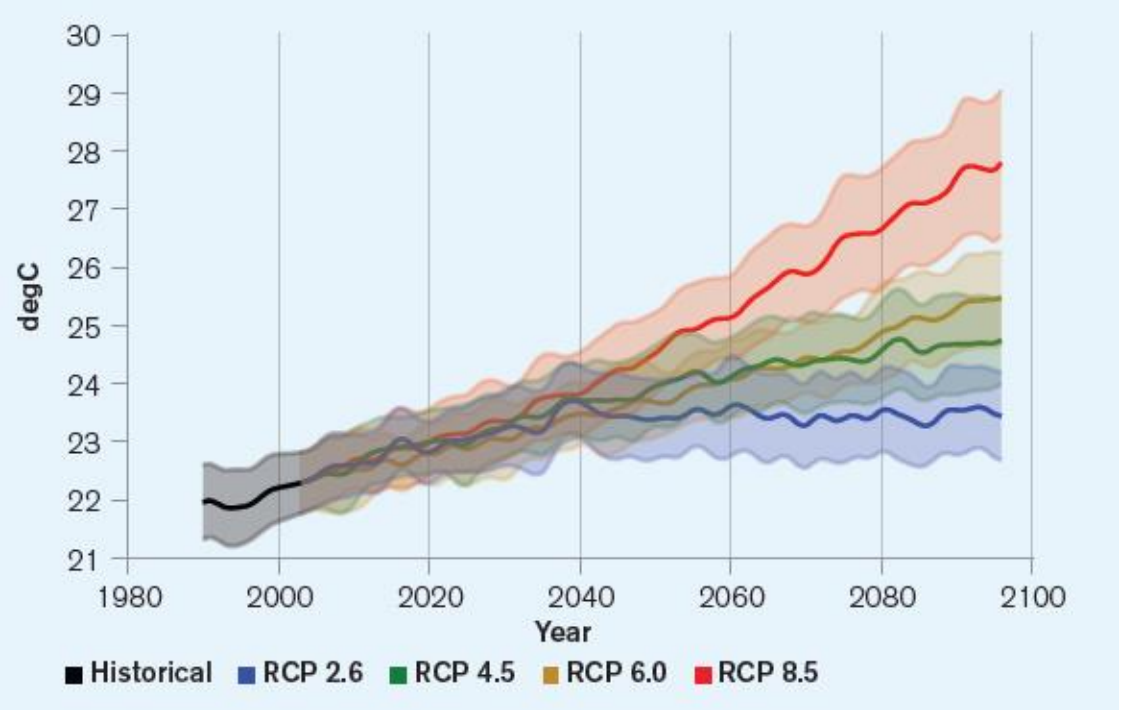
Source: World Bank

Future Trends

Projected change in summer days (max temp >25)

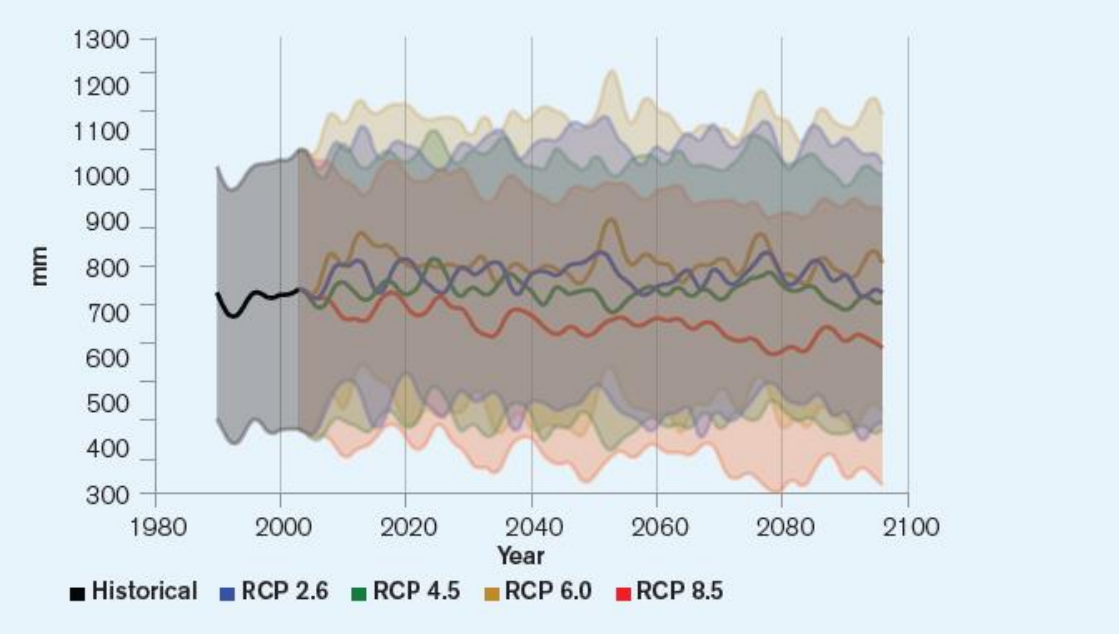


Historical and projected Avg Temp for Botswana from 1986 to 2099



Future Trends

Annual average precipitation in Botswana for 1986 to 2099



Annual average precipitation is expected to decrease slightly by the of the century

Natural Hazards

Natural Hazard 1900–2020	Subtype	Events Count	Total Deaths	Total Affected	Total Damage ('000 USD)
Drought	Drought	6	0	1,344,900	47,000
Epidemic	Bacterial Disease	1	2	15	0
	Parasitic Disease	1	183	14,618	0
Flood	Flash Flood	1	20	5,500	0
	Riverine Flood	7	23	164,609	5,000
Insect Infestation	Locust	1	0	0	0
Storm	Convective Storm	1	0	400	0

Impact

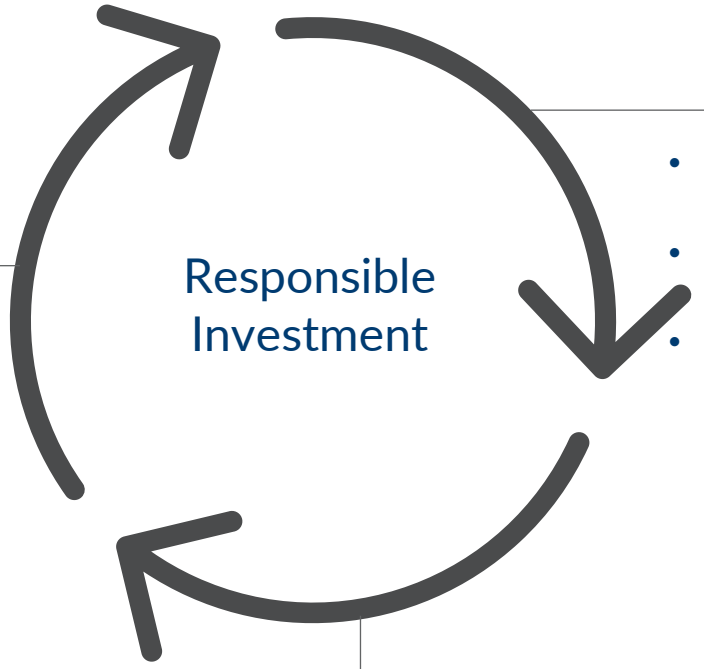
- Agriculture
- Energy
- Water
- Tourism
- Healthcare

Climate Risk and Investments

Why externalities matter to institutional investors

- Environmental costs are becoming increasingly financially material.
- Reducing greenhouse gas (GHG) emissions, water use and air pollution would have the greatest effect on reducing environmental costs.
- Five sectors account for around 60% of all externalities from the largest 3,000 listed companies.
- Most large, diversified equity funds invest in many companies with significant environmental impacts that undermine the environment's ability to support the economy
- External costs caused by companies can reduce returns to investors.
- The costs of addressing environmental damage after it has occurred are usually higher than the costs of preventing pollution or using resources in a more sustainable way

Practical steps for Asset Owners to drive real change



Plan

- Define goals and objectives
- Establish strategy
- Set targets

Disclose

- Disclose against objectives
- Demand high quality, comparable and consistent disclosure

Act

- Engage your managers/investees
- Invest in climate solutions
- Collaborate with peers
- Support key initiatives

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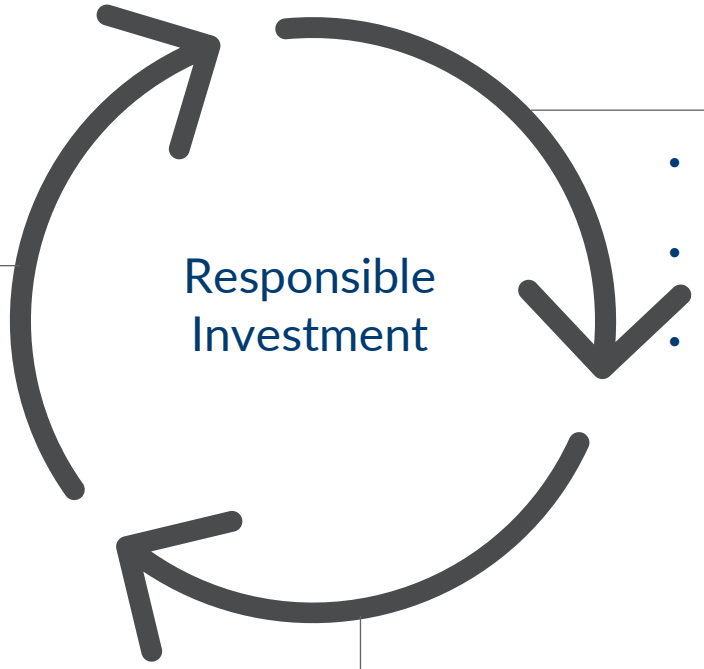

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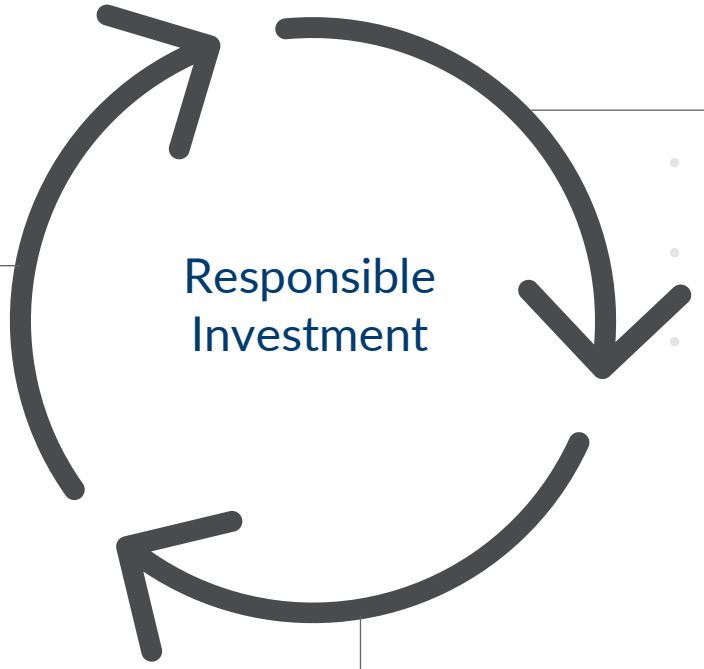

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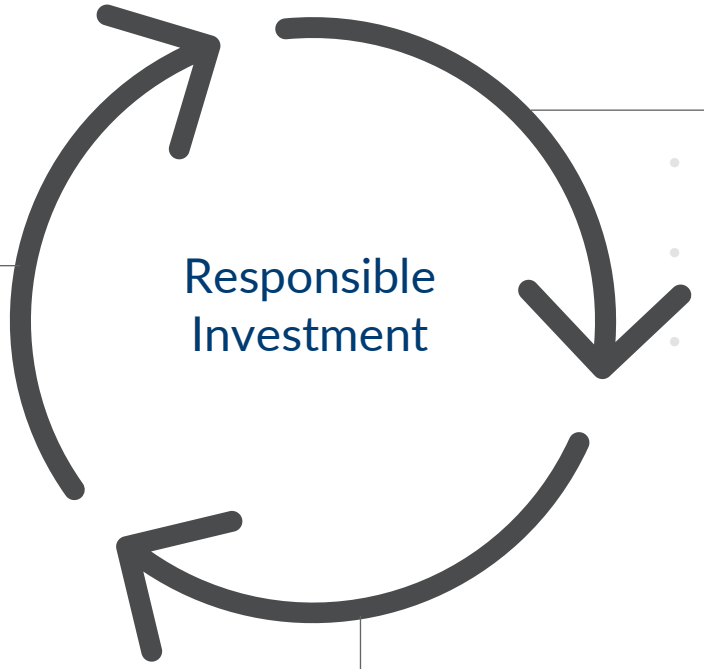

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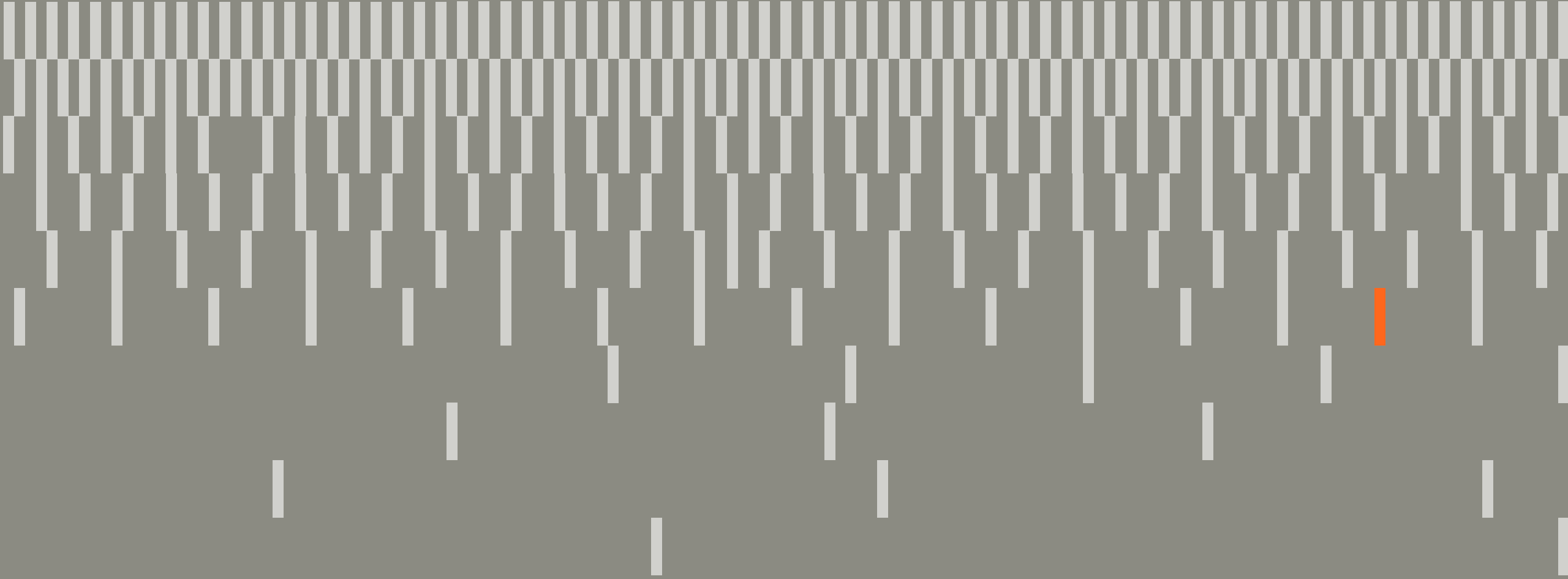

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