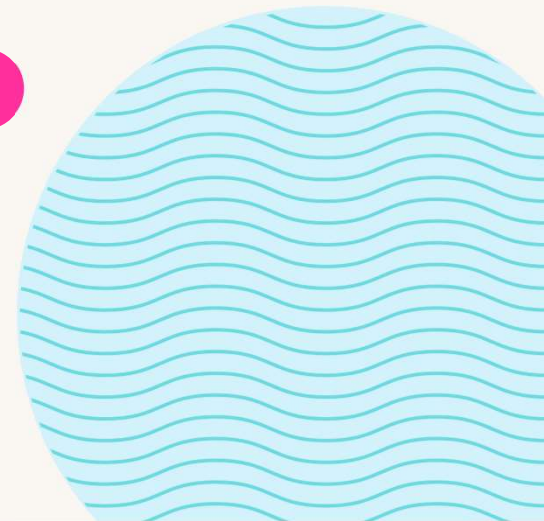
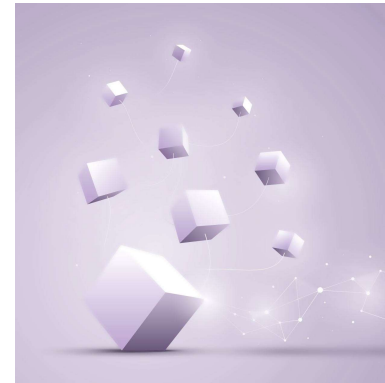


Climate Change – Data and Risks

Start off with what you know , not what you don't know

Presented By :
Chelsea Adler, FCAS
Harsh Jaitak



Global Risk Landscape

Top Global Risks by Likelihood



Top Global Risks by Impact



Source : World Economic Forum

. How Serious is Climate Change?

**The
Guardian**

We have 12 years to limit climate change
catastrophe, warns UN

BBC NEWS

Science & Environment

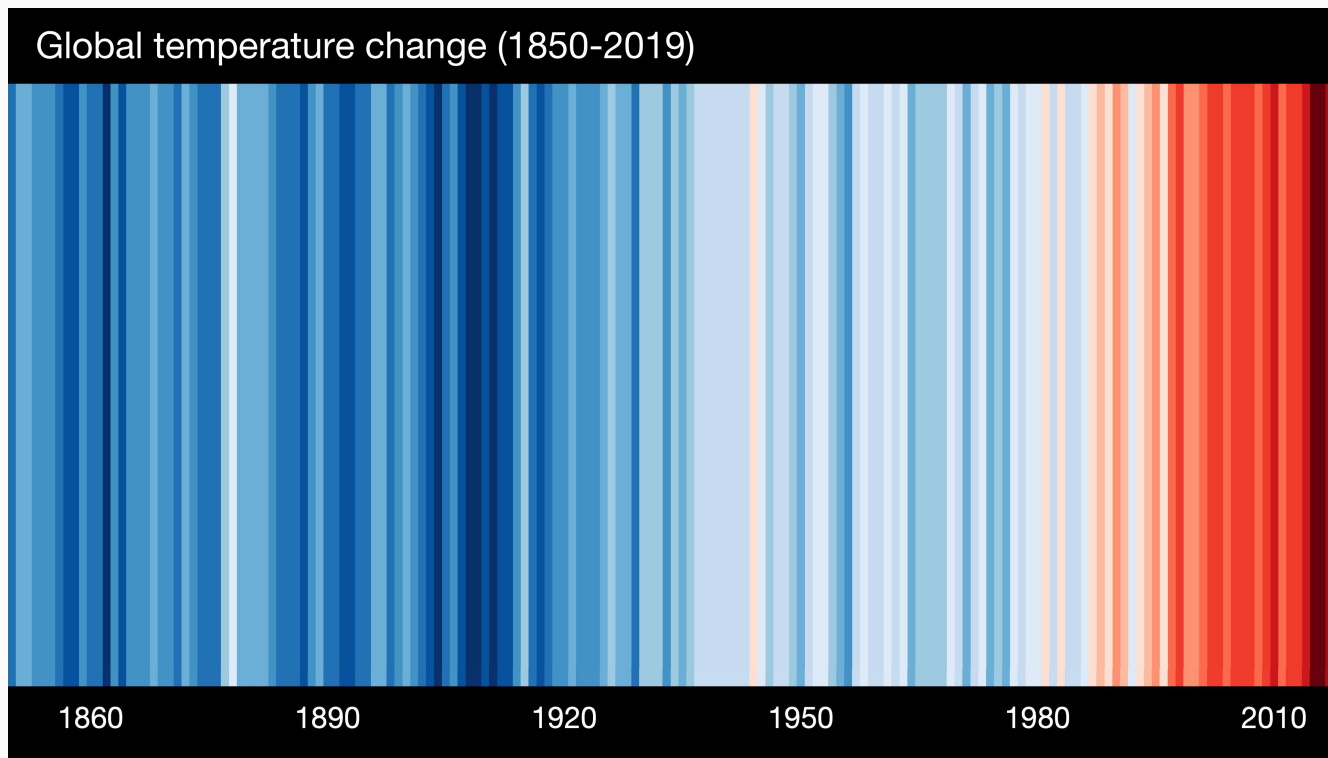
**Final call to save the world from 'climate
catastrophe'**

The Telegraph

📰 > News

**Earth's temperature to rise 1.5C as
early as 2030 amid dire warnings
from UN climate panel**

Climate Change Progression



- Temperature is increasing by 0.2 degrees per decade.
- Human activity has led to 1 degree Celsius (global average) of warming since pre-industrial times.

Source : <https://showyourstripes.info/> . Ed Hawkins

Impacts across the world

Alaska wildfires: 'Explosive' flames force evacuations

16 June 2015



REUTERS

Warm, dry weather is expected to continue, causing difficulties for firefighters

Summer heat killed nearly 1,500 in France, officials say

9 September 2019



Europe heatwaves



AFP

Summer heatwaves led to drought conditions across areas of France and western Europe

Uruguay floods displace thousands

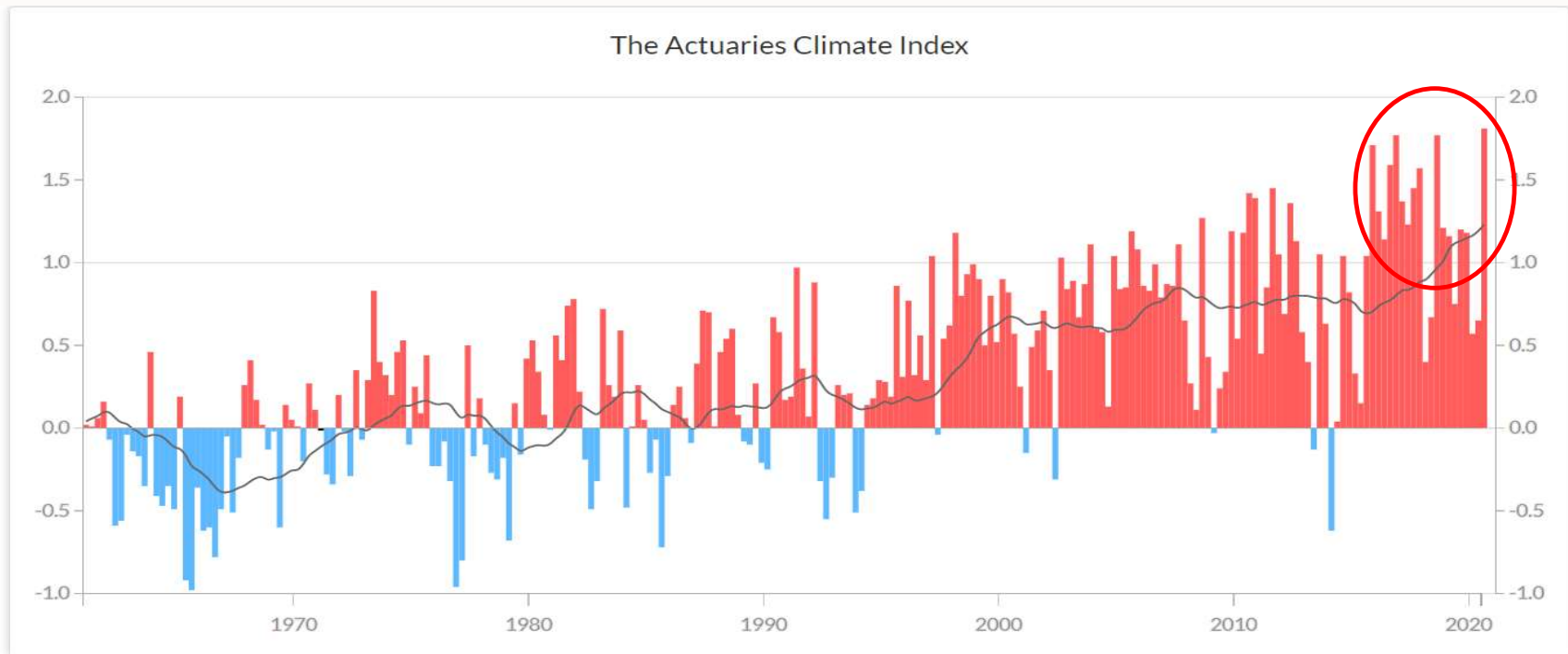
6 June 2017



SINAE

The north-west of the country has been badly affected

Actuaries Climate Index

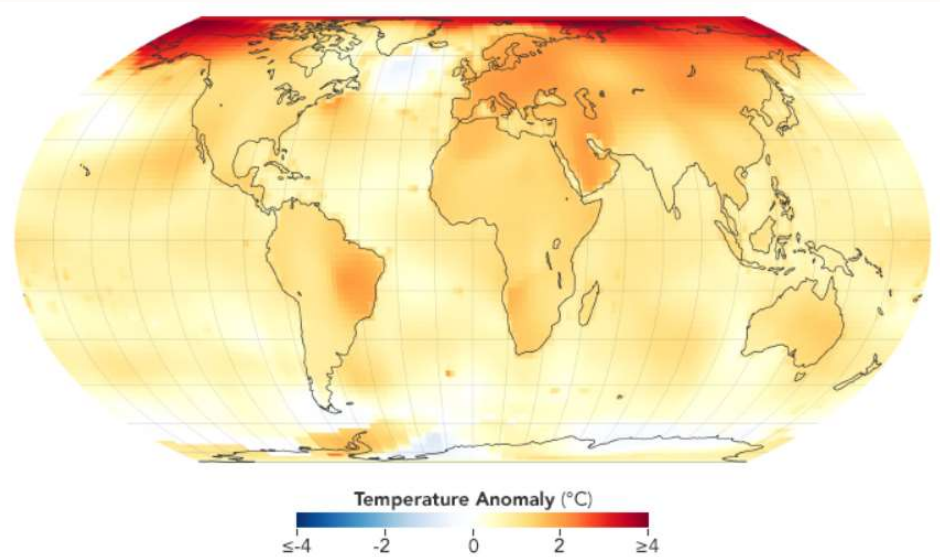
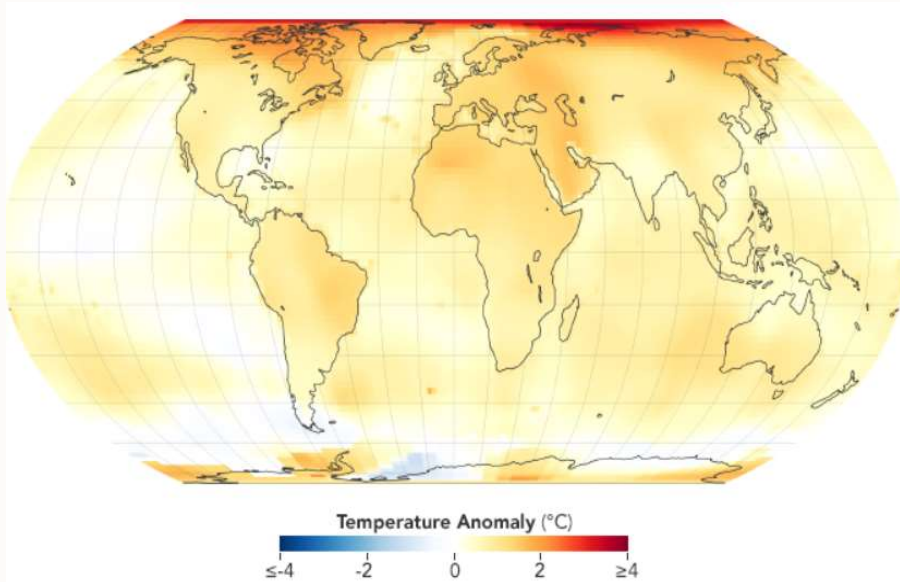


Source :<https://actuariesclimateindex.org/maps/>

Temperature Change

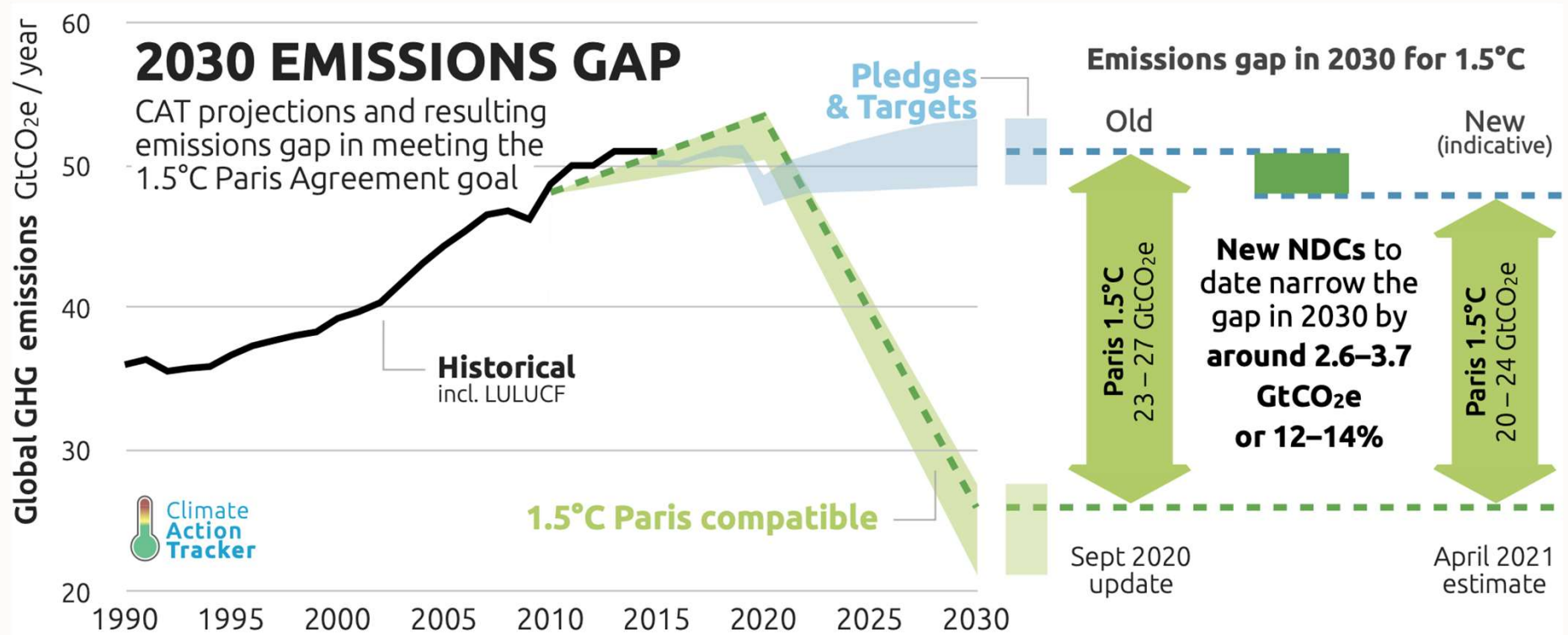
2010-2014

2015-2019



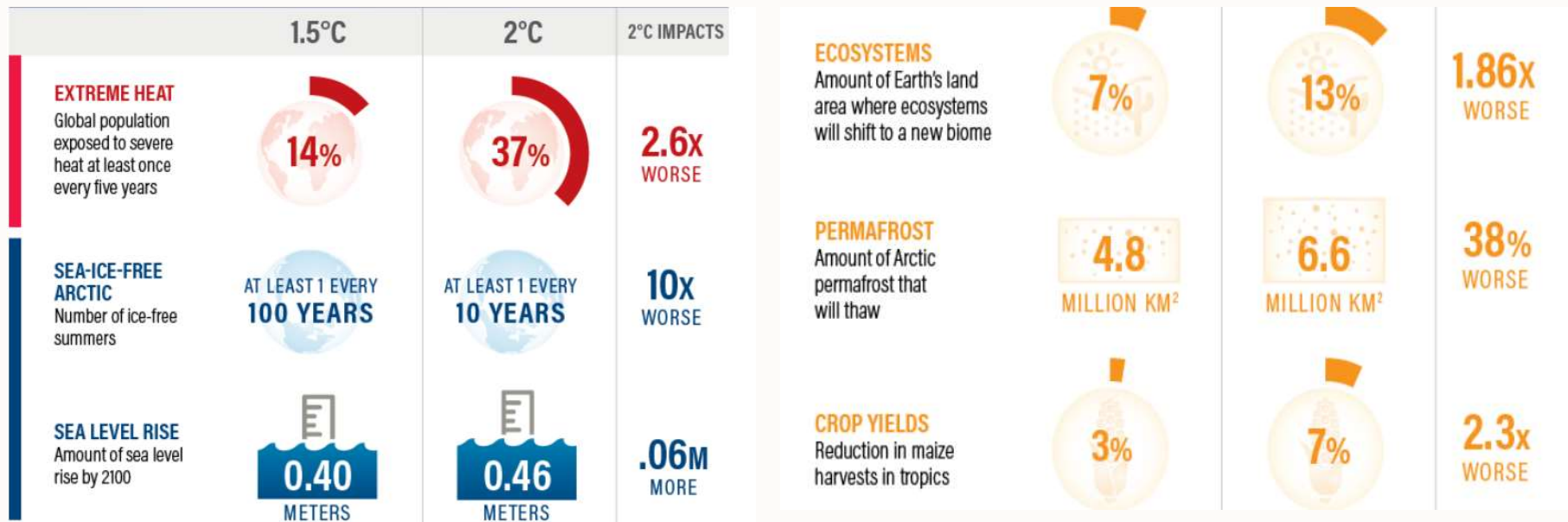
Source :NASA Earth Observatory

Where are we heading?



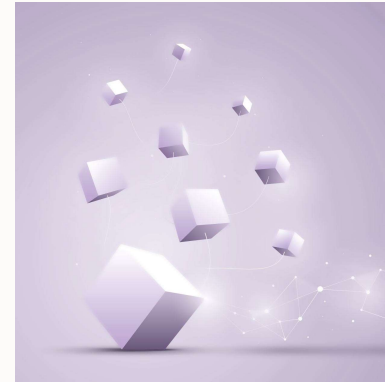
Source : <https://climateactiontracker.org/global/cat-emissions-gaps/>

Half a Degree matters

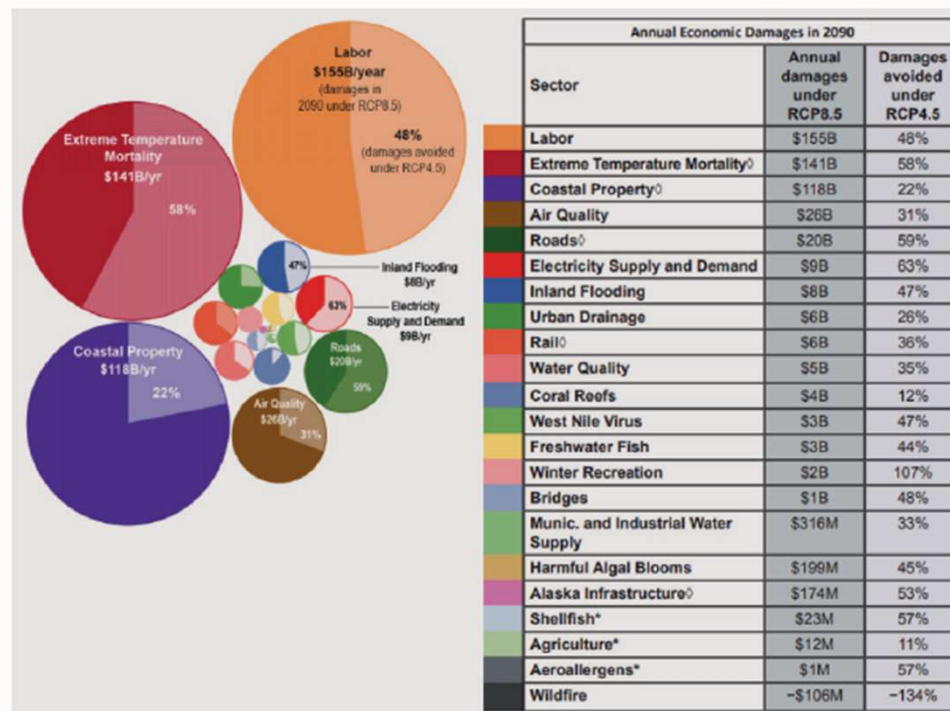


Source :wri.org

Climate Change – Damages and Associated Costs

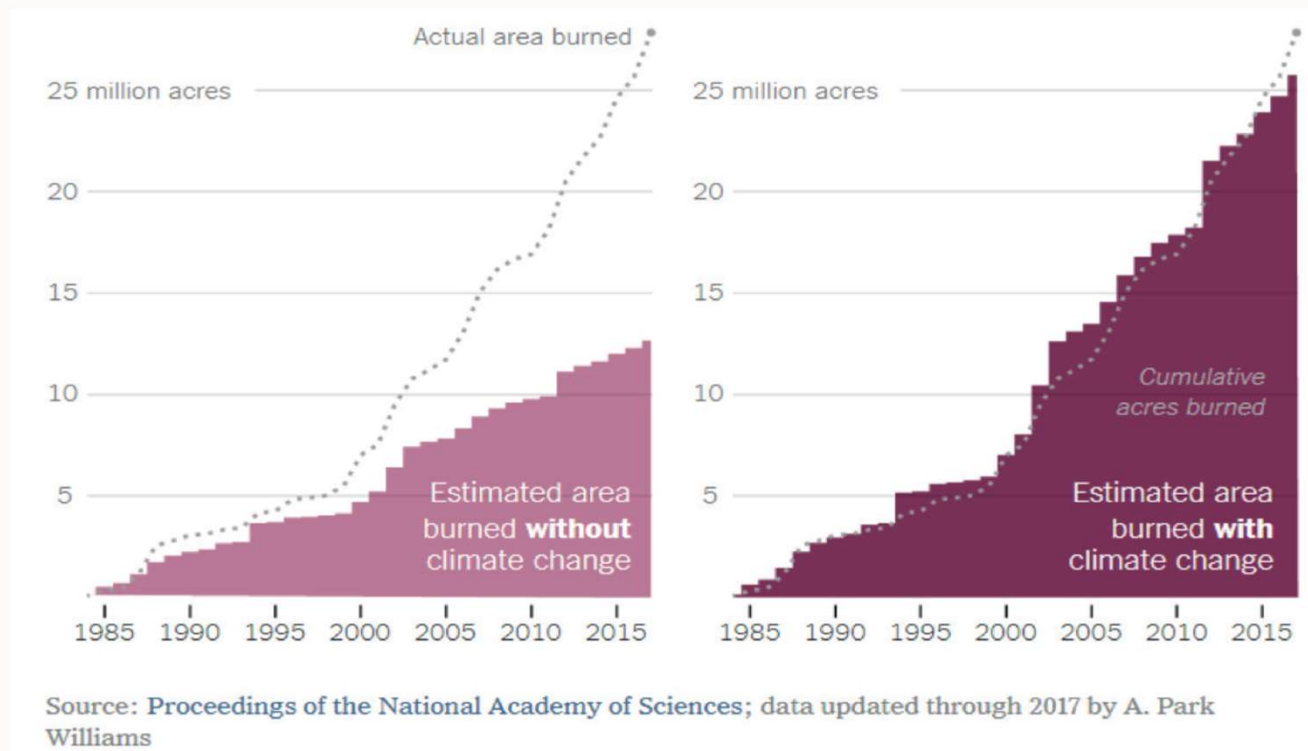


Climate Change : Damages and Associated Costs



Source : <https://nca2018.globalchange.gov/>

Area burnt by Wildfire



Source : <https://nca2018.globalchange.gov/>

Climate Change Damages

Global Economic loss by NatCat events = USD 344 bn (97% weather related)

USD 140 bn out of 344 bn was insured loss

Global economic damage by 2100 acc. To IPPCC Special report is huge.

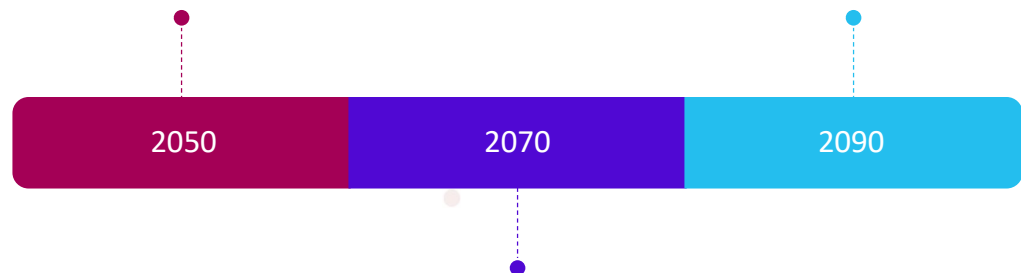
USD 54 trillion with 1.5 degree of warming and USD 68 trillion with 2 degrees

An increase to 3.7 degree may cause USD 551 trillion of loss

Damage Projections due to Climate Change

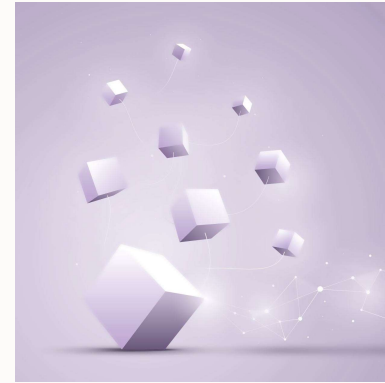
NCA4 Report – Annual damage to bridges
USD 1.2 bn to USD 1.4 bn each year

High carbon emission Scenario – USD
20bn loss to paved roads.

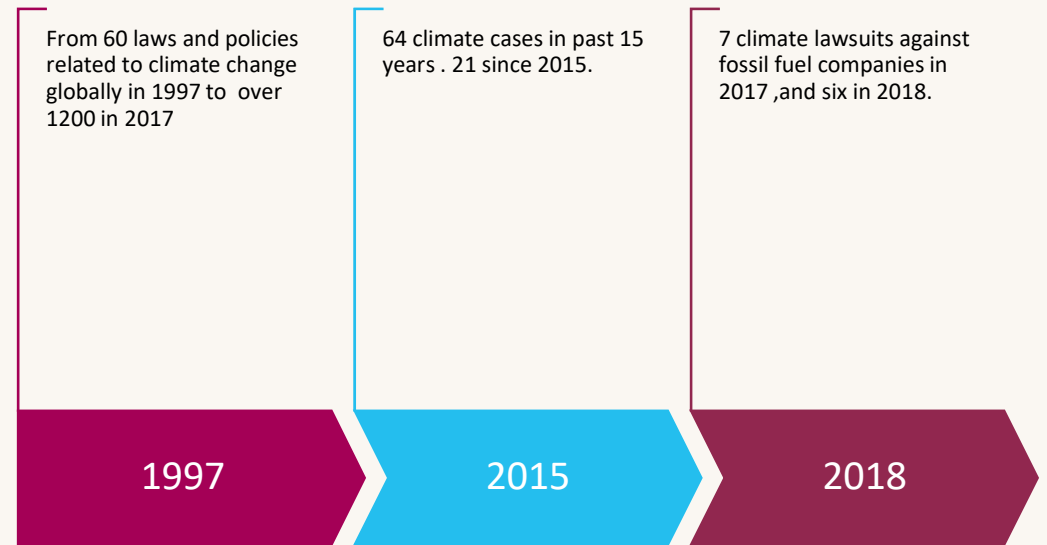


NOAA Report – Miami streets could flood
every single day.

Climate Change – Litigation



Increase in Litigations



Important Litigations

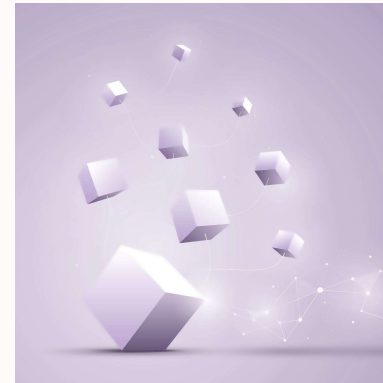
Massachusetts v. EPA, 549 U.S. 497 - EPA has authority under the Clean Air Act to regulate Greenhouse Gas Emissions from mobile sources .

Pacific Coast Federation of Fishermen's Associations, Inc. v. Chevron Corp. – Fossil fuel companies resulted in “prolonged closures” of Dungeness crab fisheries.

Juliana vs United States - They are asking the district court to order the federal government to prepare a plan that will ensure the level of carbon dioxide in the atmosphere falls below 350 ppm by 2100, down from an average of 405 ppm in 2017.

Milieudefensie v. Royal Dutch Shell - Suit against Royal Dutch Shell for failing to align its business model with the goals of the Paris Climate Agreement

Insurance Coverage Implications



AES Corp. v. Steadfast Ins. Co.

Only reported decision involving coverage for climate change liabilities.

Virginia Supreme court held that the insurer had no obligation to provide a defense or coverage for the insured's potential climate change-related liabilities.

The case was summarily disposed solely on the lack of an “occurrence” issue

Commercial General Liability (CGL) Policy




The term “Damages” not define under most policies .




Majority of states have ruled that environmental response costs are “damages”.



Hence covered under the CGL policy.




Do suits involve “Property Damage”?



“Property Damage” generally defined as “Physical injury to tangible property”

Generally environmental damage to property has been found by courts to constitute physical injury to tangible property.



However, the scientific community and even the fossil fuel companies admit GHGs have been and are causing detrimental physical changes in the earth’s climate. But are physical changes to the earth’s climate “property damage”?

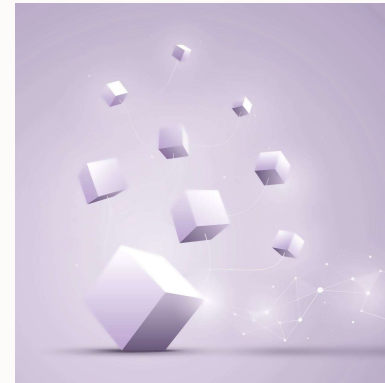
A decorative graphic consisting of several colored circles (pink, orange, blue, purple) of varying sizes scattered across the slide, primarily in the top-left and bottom-right corners.

Is it a D&O issue?

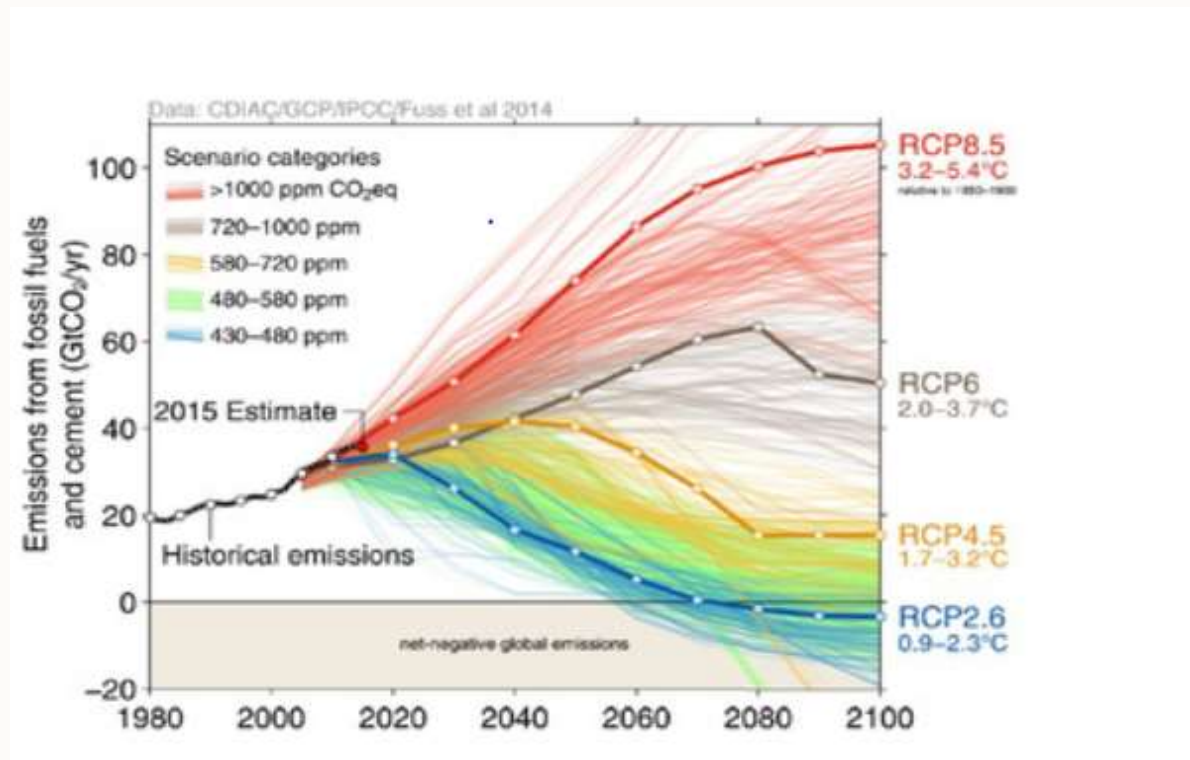
- Likely to see increased Claims
- Companies failing to adequately manage Climate Risk
- Failure to disclose risk to investors
- Might impact Financial lines as well
- Use of fossil fuels might be restricted. Never use fossil fuel reserves.
- Massively overstate value of business

Source : Zurich Quarterly Claim Journal

Risk Landscape for Actuaries



Best- and Worst-Case Scenario



Risks for General Insurance



Physical Risks



Transition Risks



Liability Risks

Physical Risks



First Order risks from weather related events (Chronic or Acute)



Regional variability



Severe, pervasive and Irreversible impacts

Transition Risks



Financial risks from transition to a lower carbon economy



Changes in motor liability risks



Changes in commercial risks



Potential Latent Claims

Liability Risks



Risks for insurance firms from parties suffering loss from climate change seeking to recover losses.

Increase in climate related litigation claims.



Failure to mitigate ,adapt or disclose .

Pricing



Increased uncertainty in data trends and degree of confidence.



Develop leading indicators



Calibration of Catastrophic Models for past years



New opportunities

Reserving



Current techniques rely on past experience



Transition risks and underlying exposure



Impact analysis in form of scenarios

Reinsurance



Increased cost and importance of Reinsurance Protection



Concentration risk might increase



High impact on reinsurance structures



Management of sideways exposures.

Risk management



Incorporating Climate Risk in risk register



Carry forward looking stress and scenario tests



Assessing risk in different time frames

Capital Management

Chronic physical
risks not there in
current cat models

Heightened
uncertainty when
new markets will
develop

Introduce more
dependencies

Questions?

