Cambiamenti climatici e società

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Cause

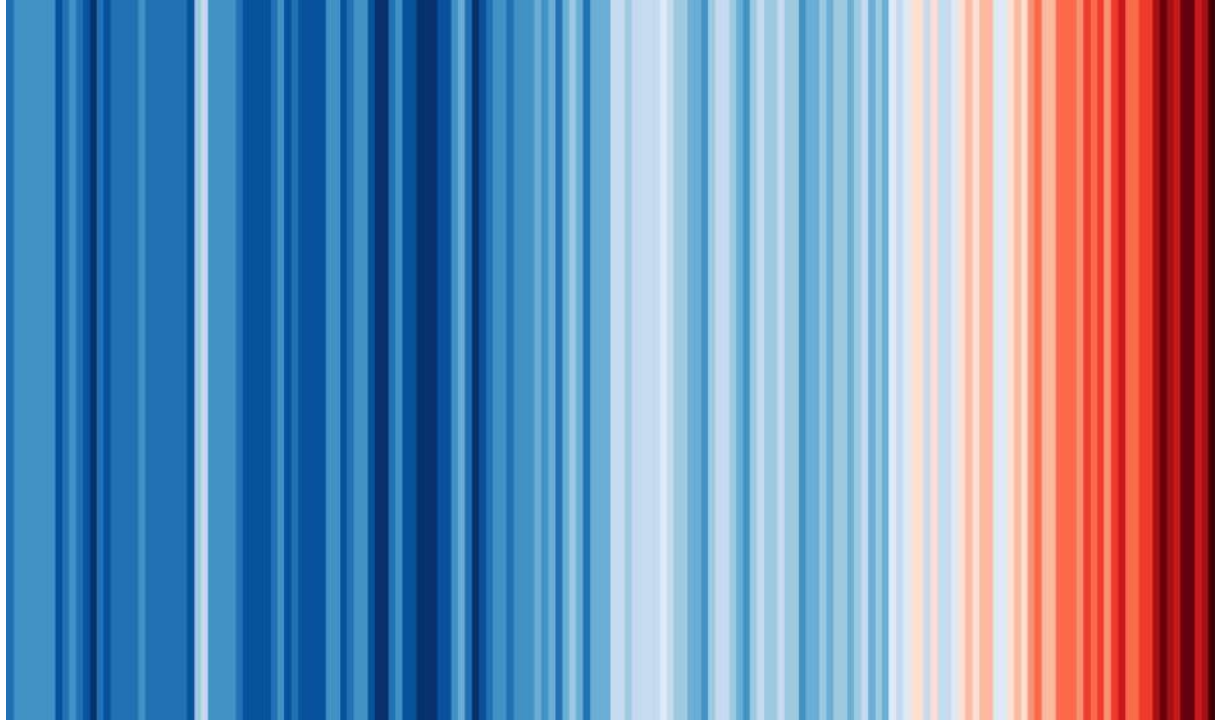
Impatti

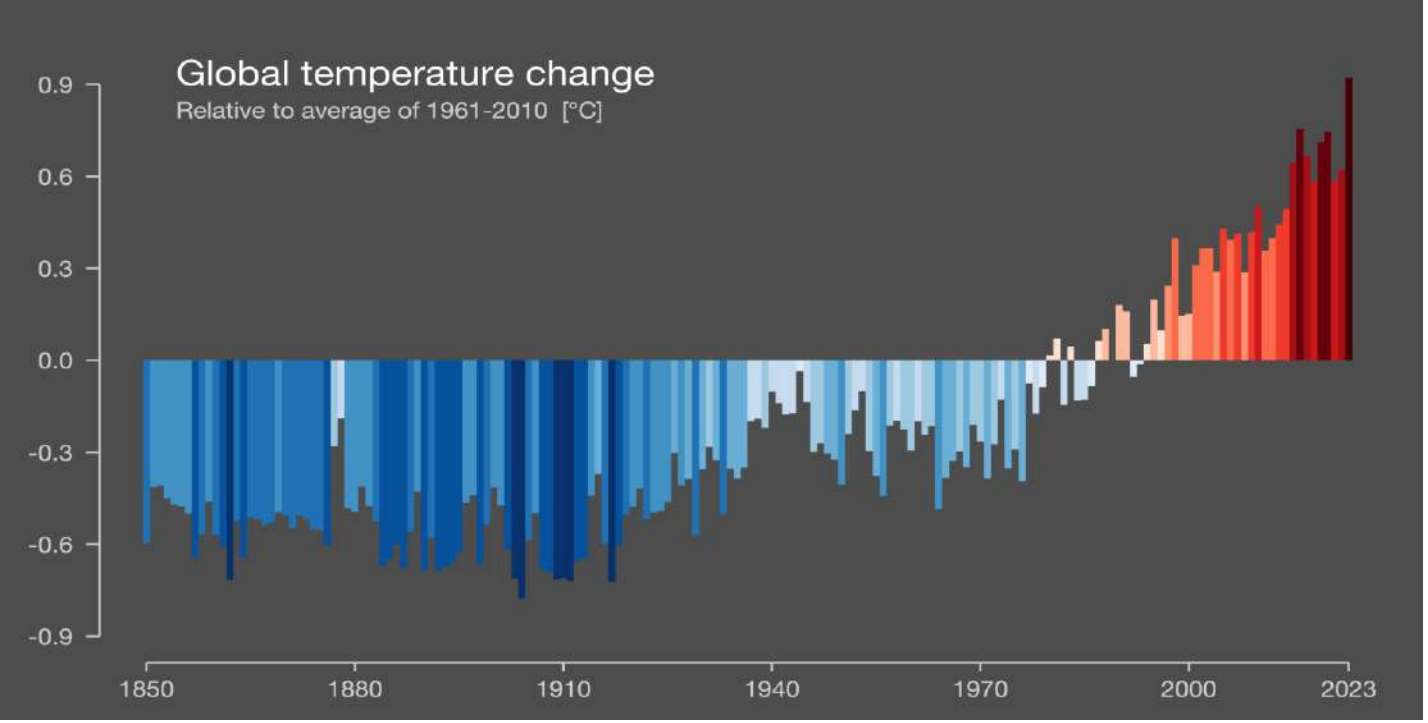
Riscaldamento globale

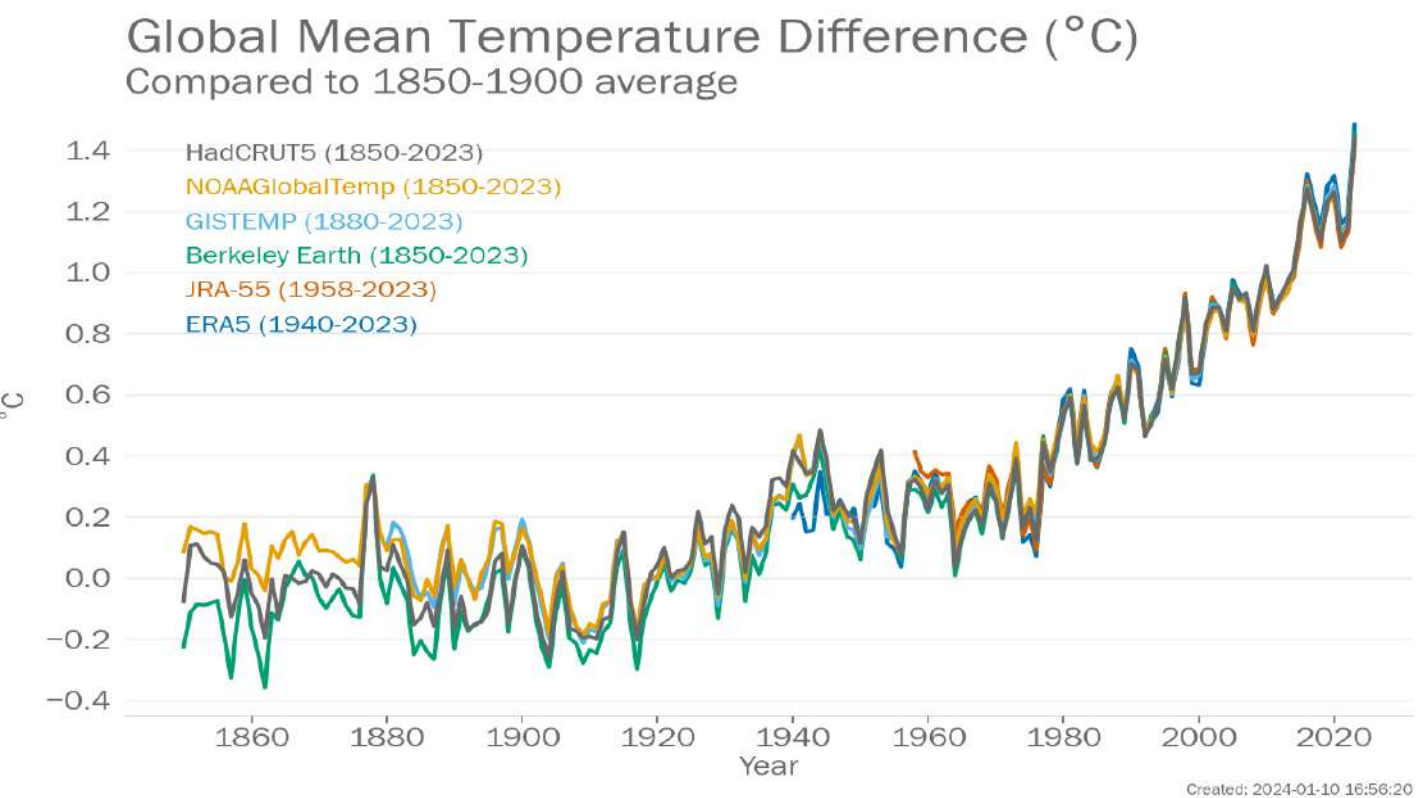
Cambiamento climatico

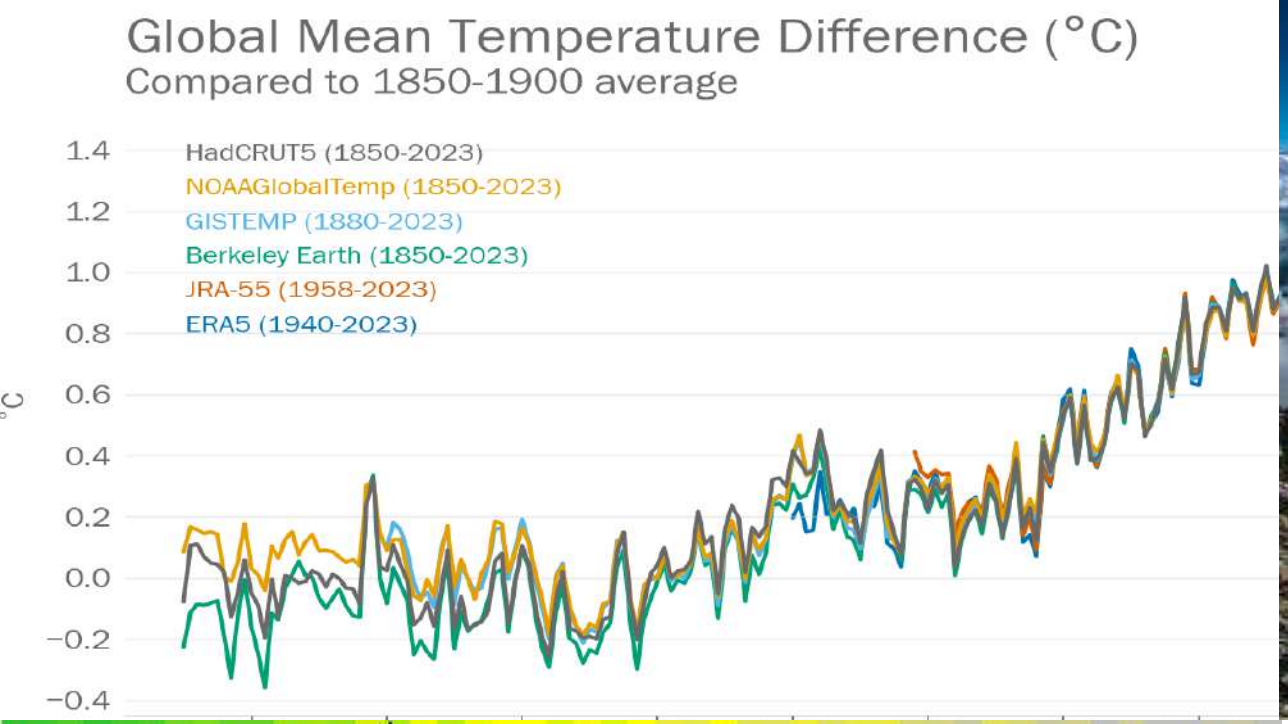
Crisi climatica

Soluzioni




Global temperature change
Relative to average of 1961-2010 [°C]
0.9
0.6
0.3
0.0
-0.3
-0.6
-0.9
1850
1880
1910
1940
1970
2000
2023


Global Mean Temperature Difference (°C)
Compared to 1850-1900 average
HadCRUT5 (1850-2023)
NOAAGlobalTemp (1850-2023)
GISTEMP (1880-2023)
Berkeley Earth (1850-2023)
JRA-55 (1958-2023)
ERA5 (1940-2023)
°C
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
−0.2
−0.4
1860
1880
1900
1920
1940
1960
1980
2000
2020
Year
Created: 2024-01-10 16:56:20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0.6
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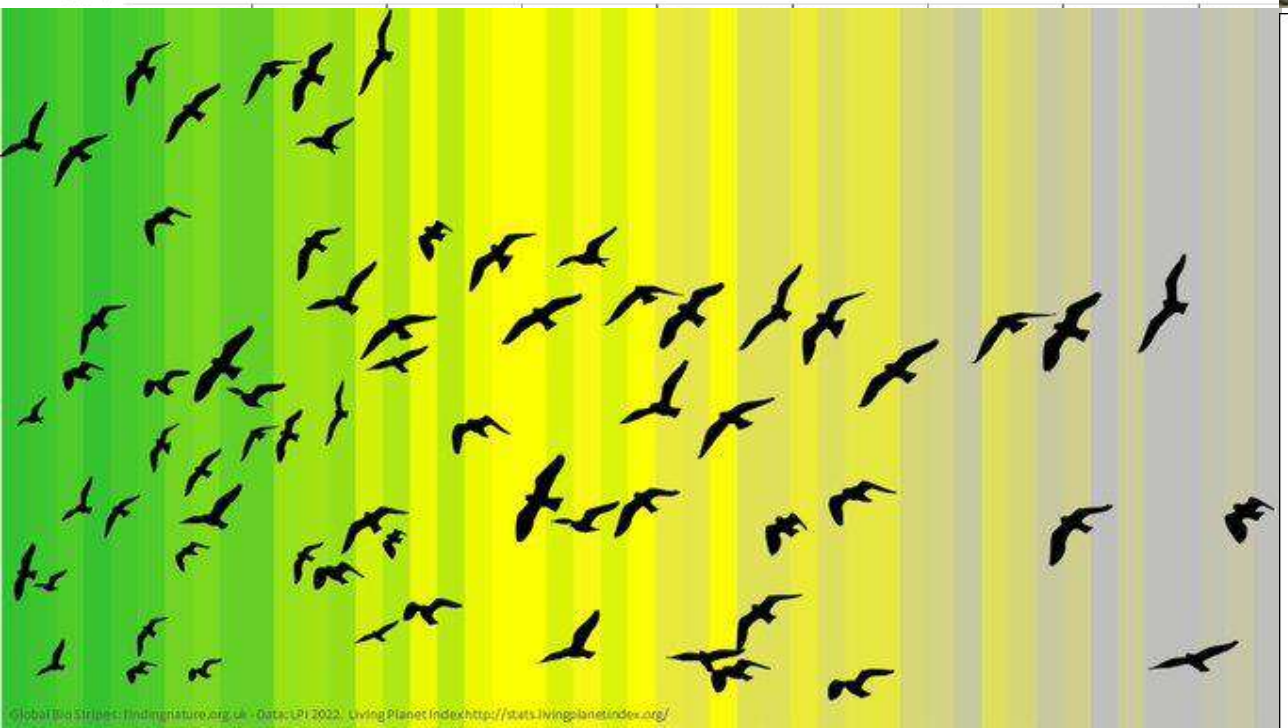
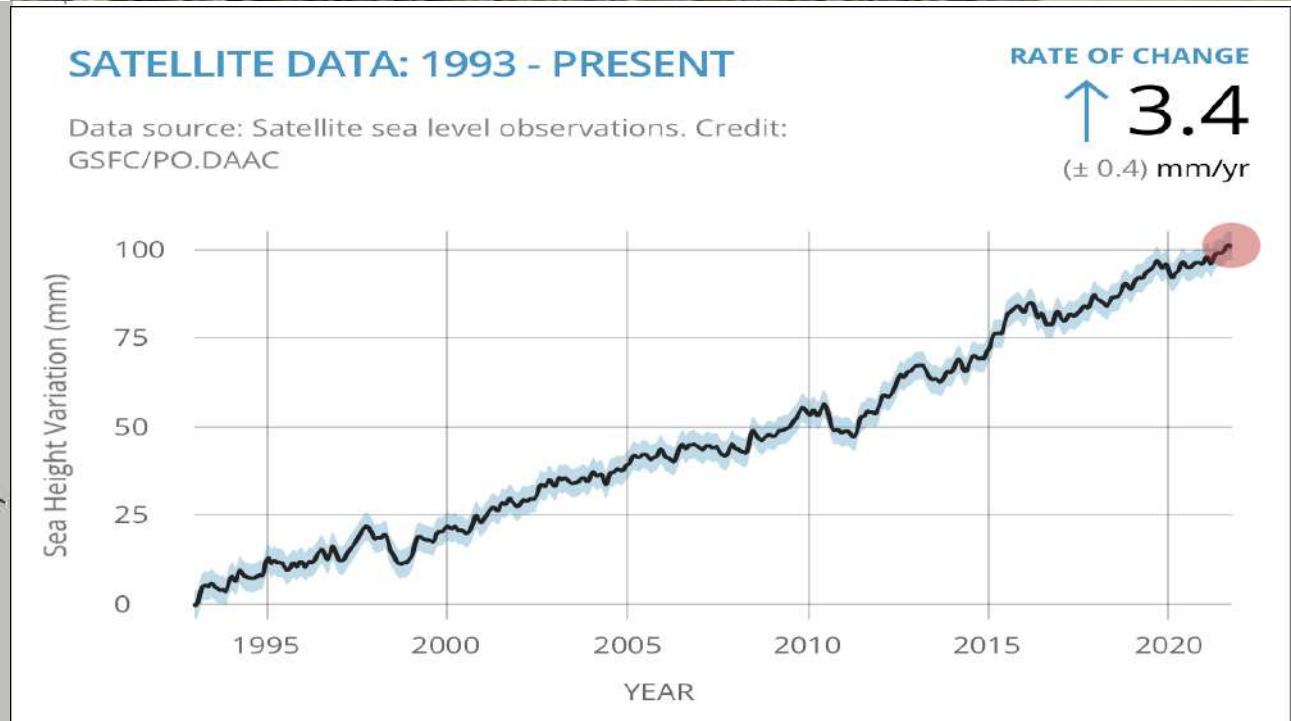
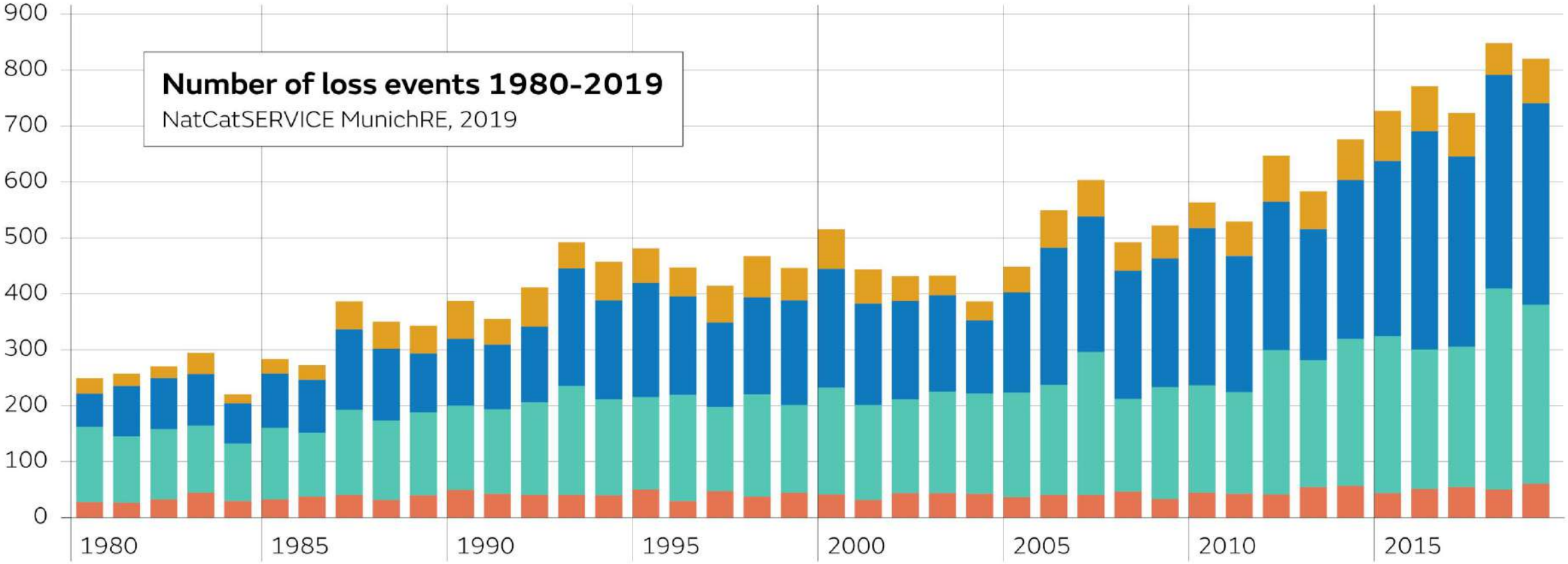
0.0
−0.2
−0.4


Global Bio Stripes: findingnature.org.uk · Data: LPI 2022, Living Planet Index http://stats.livingplanetindex.org/


SATELLITE DATA: 1993 - PRESENT
Data source: Satellite sea level observations. Credit: GSFC/PO.DAAC
RATE OF CHANGE
3.4
(± 0.4) mm/yr
Sea Height Variation (mm)
100
75
50
25
0
1995
2000
2005
2010
2015
2020
YEAR

Met Office

Gli eventi estremi sono cambiati ?



Geophysical events
Earthquakes, tsunami, volcanic activity

Meteorological events
Tropical storm, extratropical storm, convective storm, local storm.

Hydrological events
Flood, mass movement.

Climatological events
Extreme temperature, drought, wildfire.

PNAS

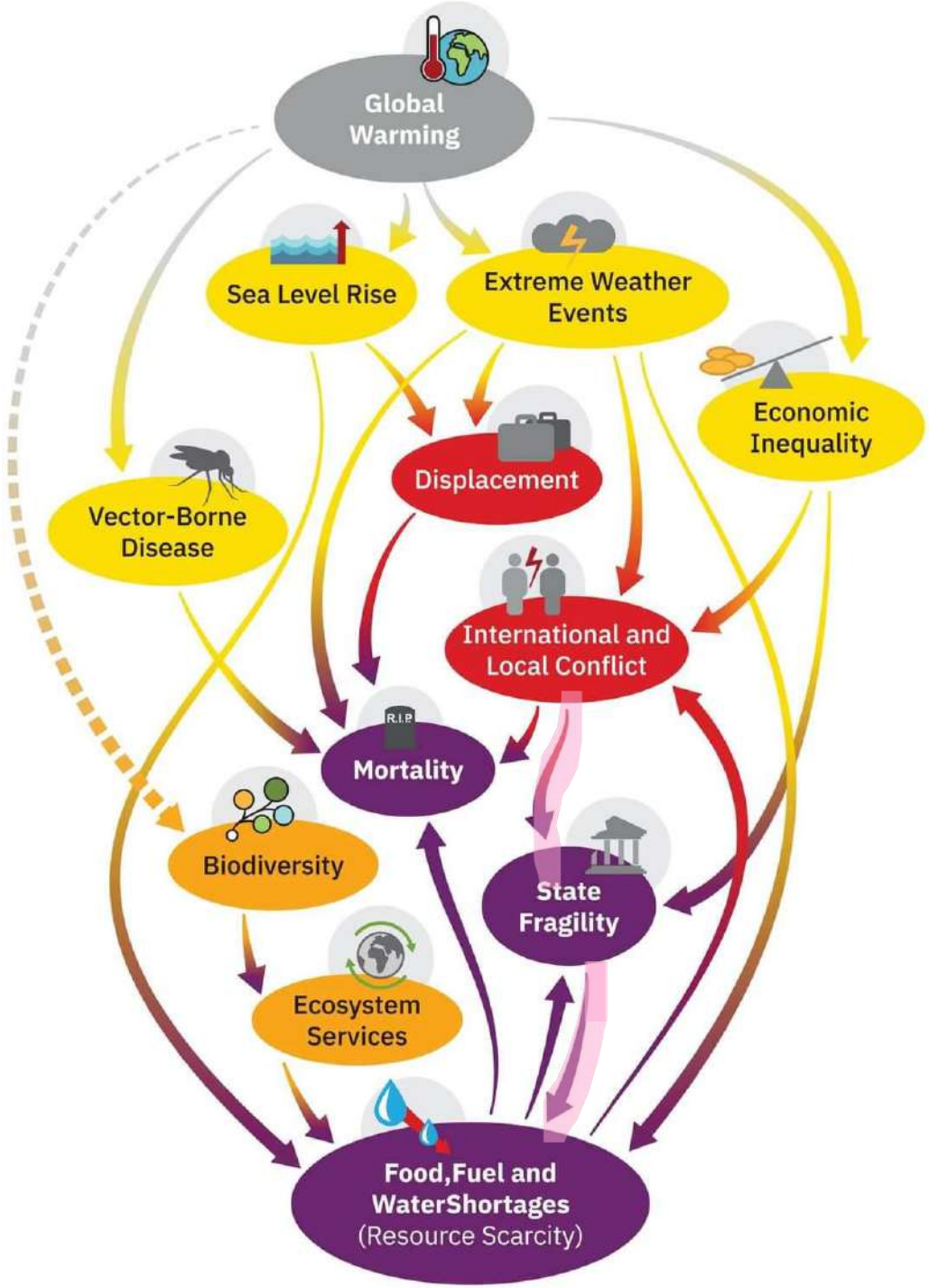
PERSPECTIVE

OPEN ACCESS

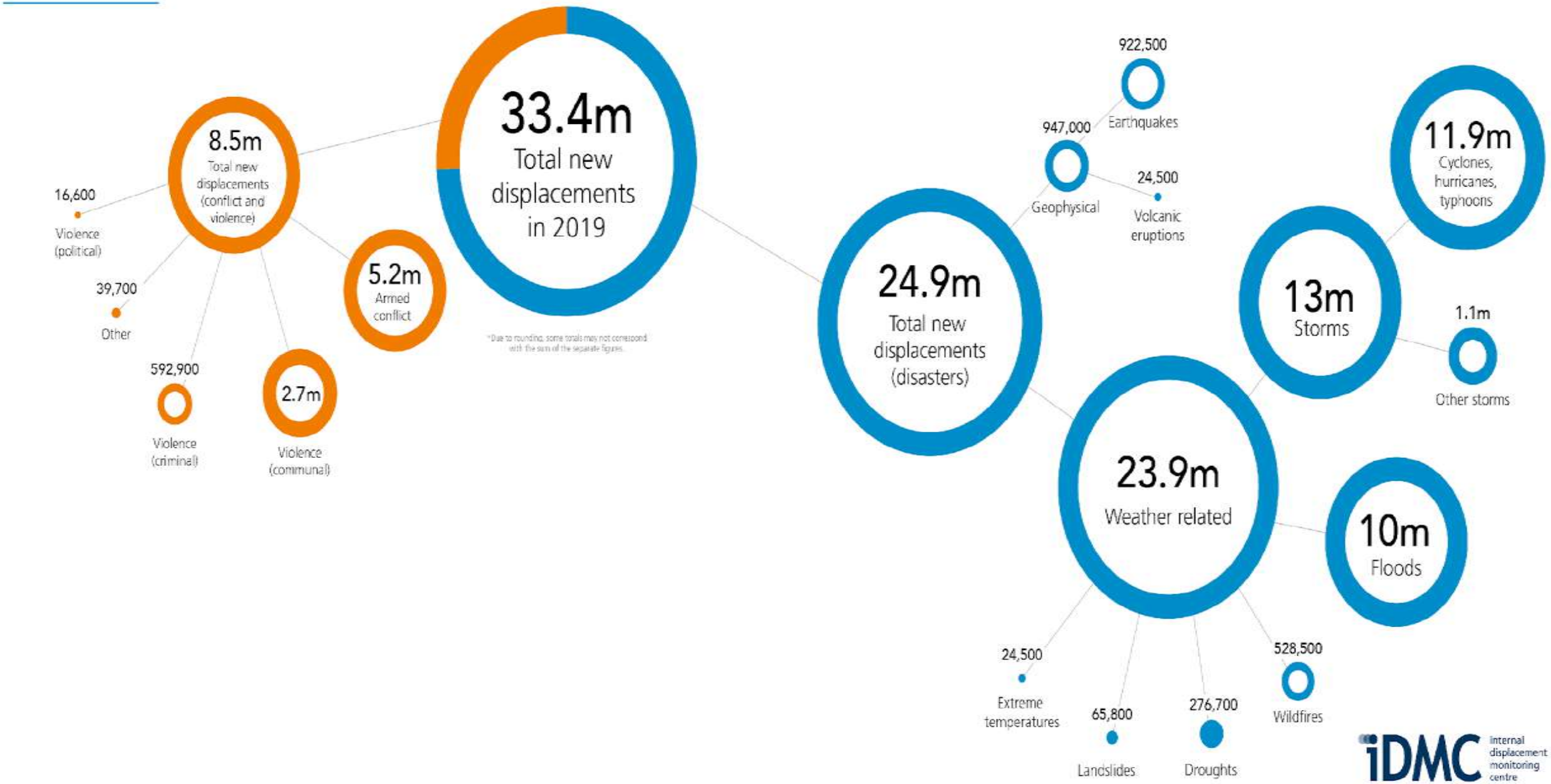
Climate Endgame: Exploring catastrophic climate change scenarios

Luke Kemp[a,b,1], Chi Xu[c], Joanna Depledge[d], Kristie L. Ebi[e], Goodwin Gibbins[f], Timothy A. Kohler[g,h,i], Johan Rockström[j], Marten Scheffer[k], Hans Joachim Schellnhuber[j,l], Will Steffen[m], and Timothy M. Lenton[n]

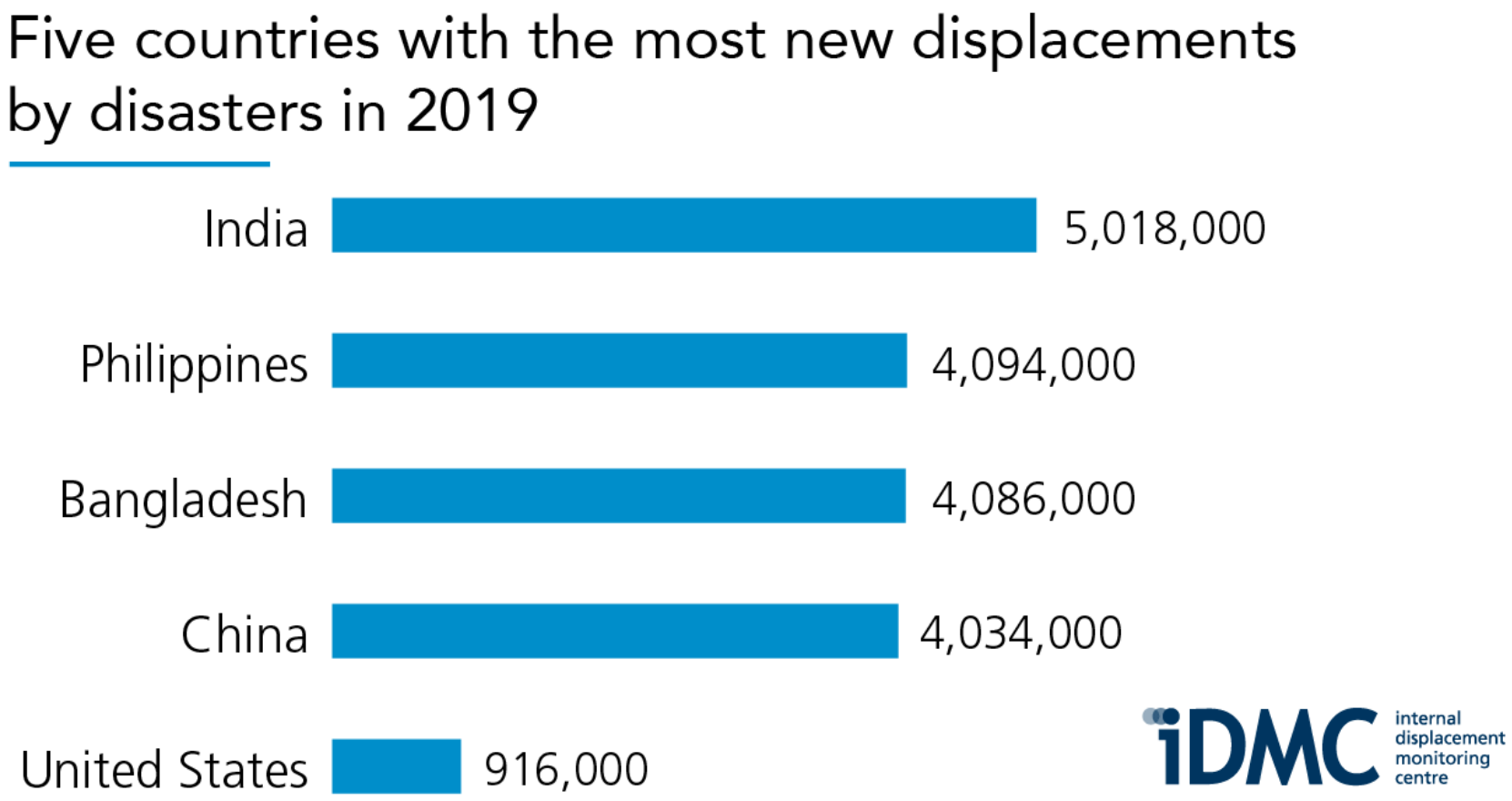
Edited by Kerry Emanuel, Massachusetts Institute of Technology, Cambridge, MA; received May 20, 2021; accepted March 25, 2022



New displacements in 2019: breakdown for conflict and disasters



Nel 2019 i migranti climatici sono stati 24,9 milioni (stime IDMC – International Displacement Monitoring Centre)



Nel 2019 i migranti climatici sono stati 24,9 milioni (stime IDMC – International Displacement Monitiring Centre)

Nel 2050 potranno essere

- 250 milioni (stime IOM - l'Organizzazione Internazionale per le Migrazioni, rapporto sulle migrazioni climatiche "Migration and Climate Change")

- 143 milioni (Banca mondiale)

Il sud e l'est dell'Asia sono una delle zone più a rischio, principalmente per l'innalzamento dei mari visto che sei delle dieci principali metropoli asiatiche sono costruite sul mare: Giacarta, Shanghai, Tokyo, Manila, Bangkok e Mumbai. Ma le migrazioni climatiche interesseranno **l'Africa, specialmente nel delta del Nilo, sulla costa occidentale e nella fascia subsahariana**, secondo l'IOM

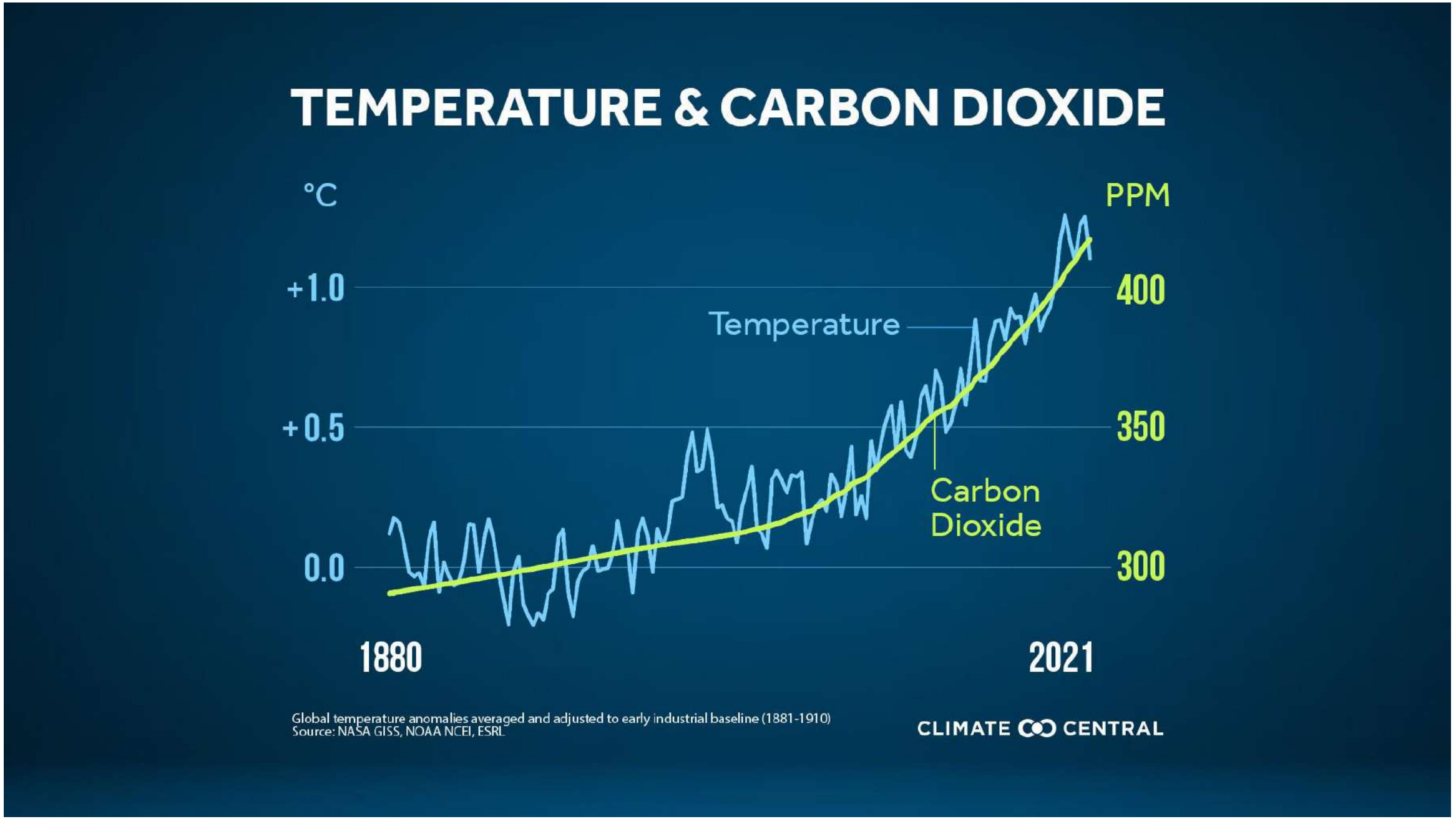
Le conseguenze sociali dei cambiamenti climatici sono una delle più grandi sfide che la comunità internazionale dovrà affrontare, sia all'interno delle nazioni che tra di esse.

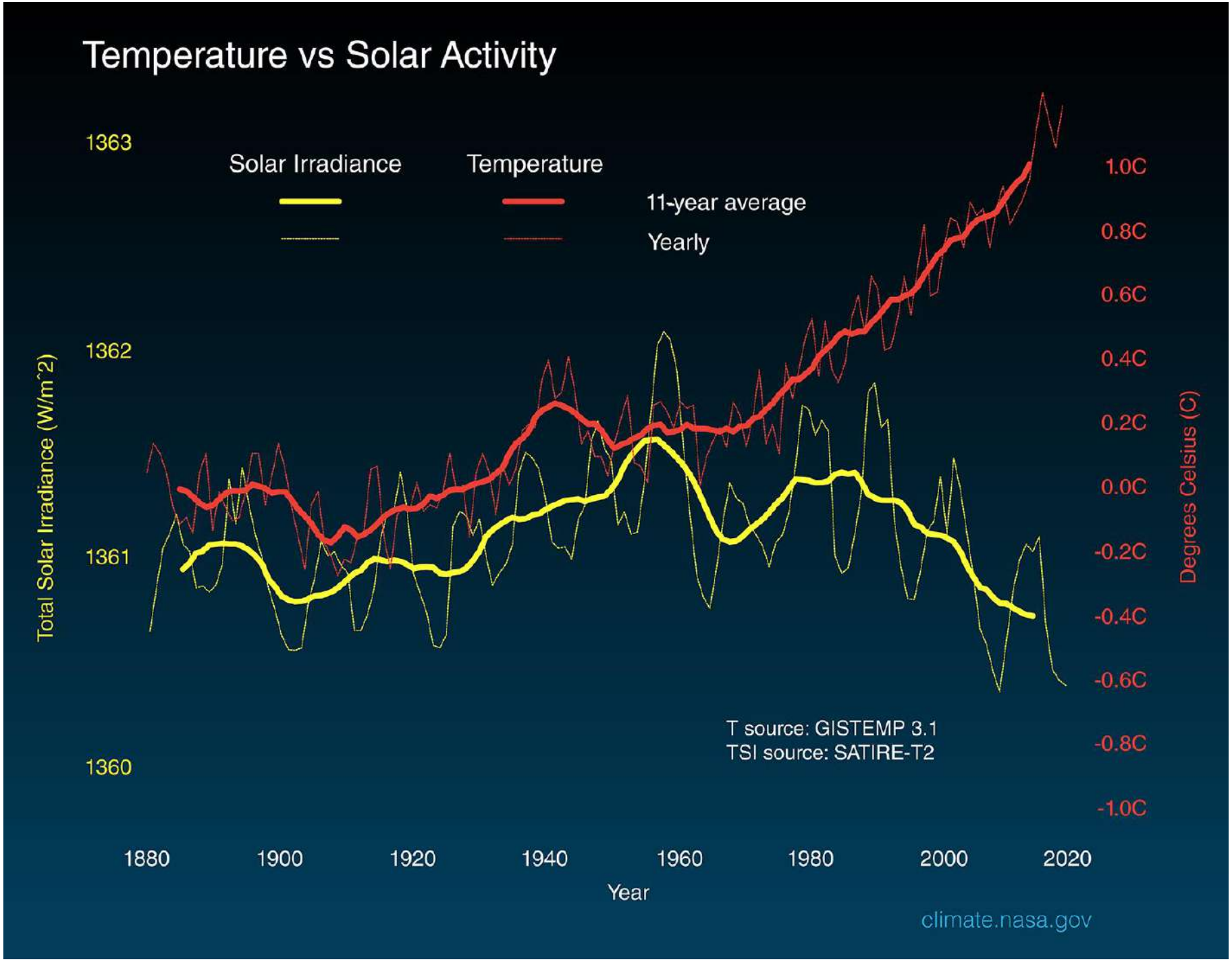
Come afferma il Rapporto speciale IPCC del 2019 sui Cambiamenti climatici e uso del suolo, "**gli impatti futuri dei cambiamenti climatici possono variare significativamente da una regione all'altra. Si prevede che i raccolti diminuiranno con l'aumento delle temperature, soprattutto nelle regioni tropicali e semi-tropicali, con gravi rischi per la sicurezza alimentare e conseguente aumento dei fenomeni migratori**" a causa degli effetti sull'aumento dei prezzi dei prodotti alimentari e dalla riduzione dei terreni disponibili per la produzione agricola".

Popolazioni che mancano di risorse per una migrazione pianificata sono maggiormente esposte ad eventi meteorologici estremi, in particolare nei paesi **in via di sviluppo a basso reddito**.

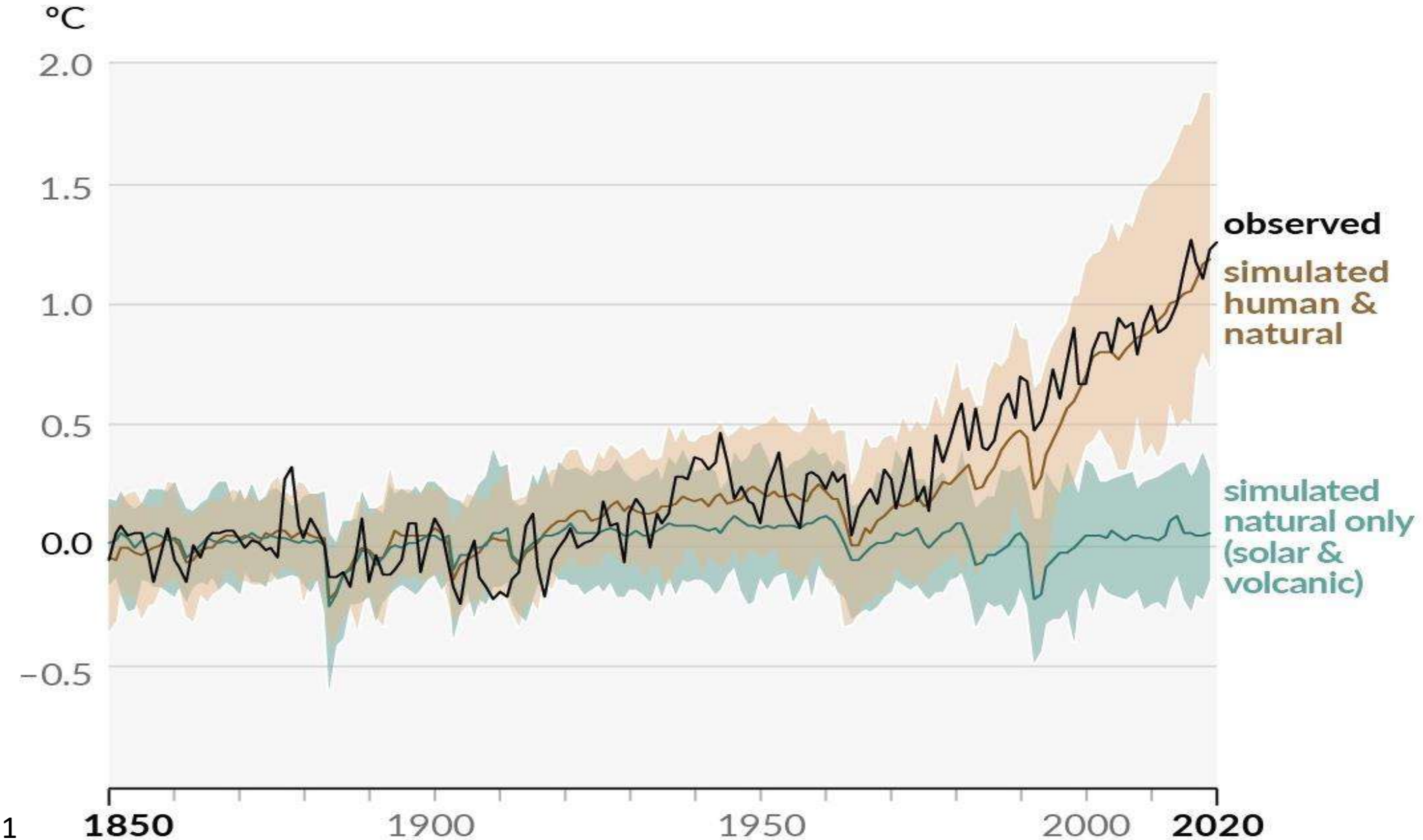
Come ci siamo arrivati?

Temperatura e CO_2



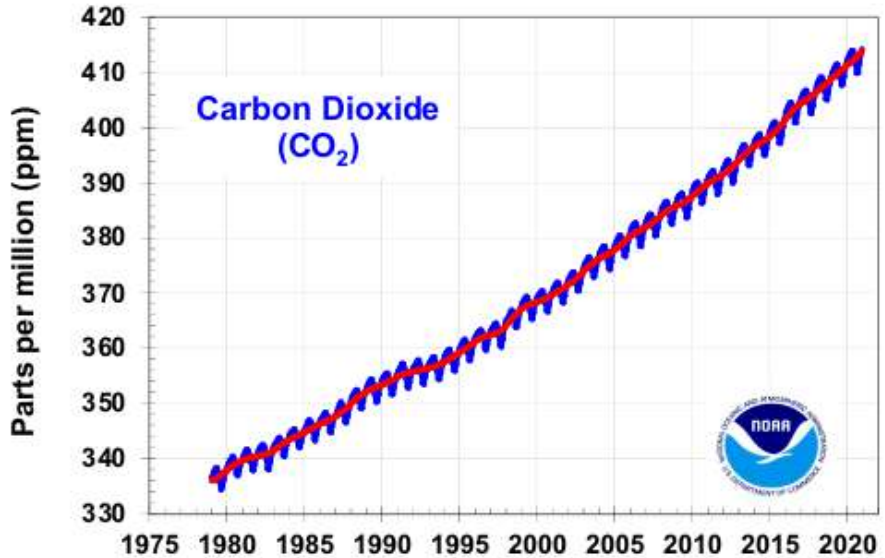

Temperature vs Solar Activity
Solar Irradiance
Temperature
11-year average
Yearly
1363
1362
1361
1360
Total Solar Irradiance (W/m^2)
1.0C
0.8C
0.6C
0.4C
0.2C
0.0C
-0.2C
-0.4C
-0.6C
-0.8C
-1.0C
Degrees Celsius (C)
T source: GISTEMP 3.1
TSI source: SATIRE-T2
1880
1900
1920
1940
1960
1980
2000
2020
Year
climate.nasa.gov

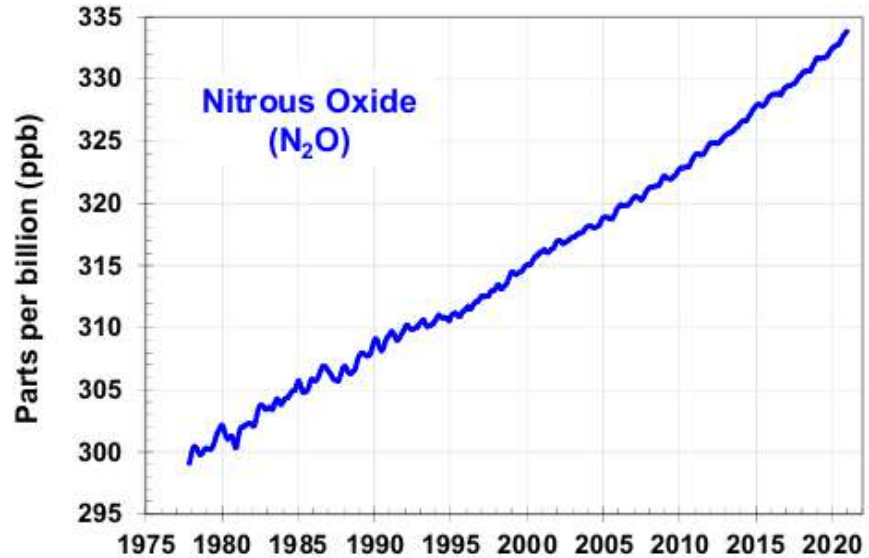
A che cosa è dovuto l'aumento di temperatura?

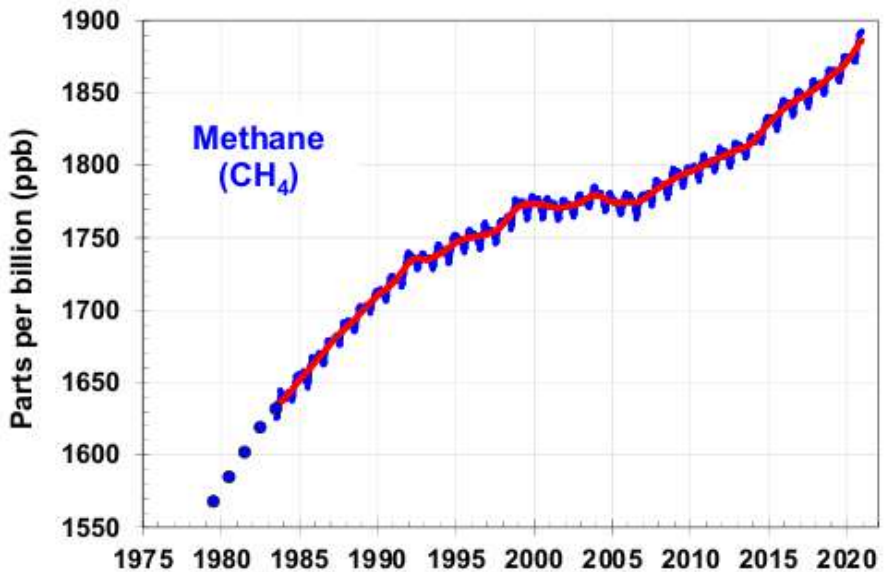


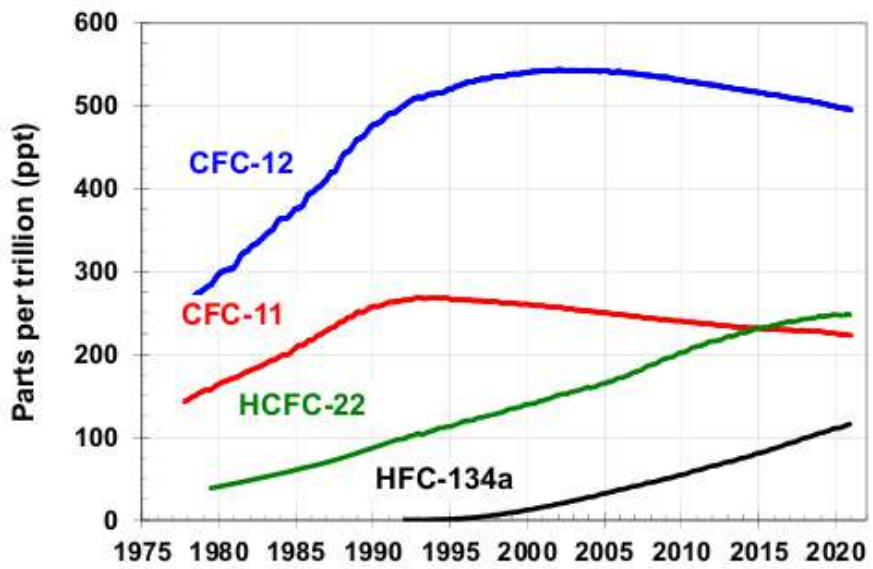
IPCC AR6, 2021

Aumento dei gas serra in atmosfera

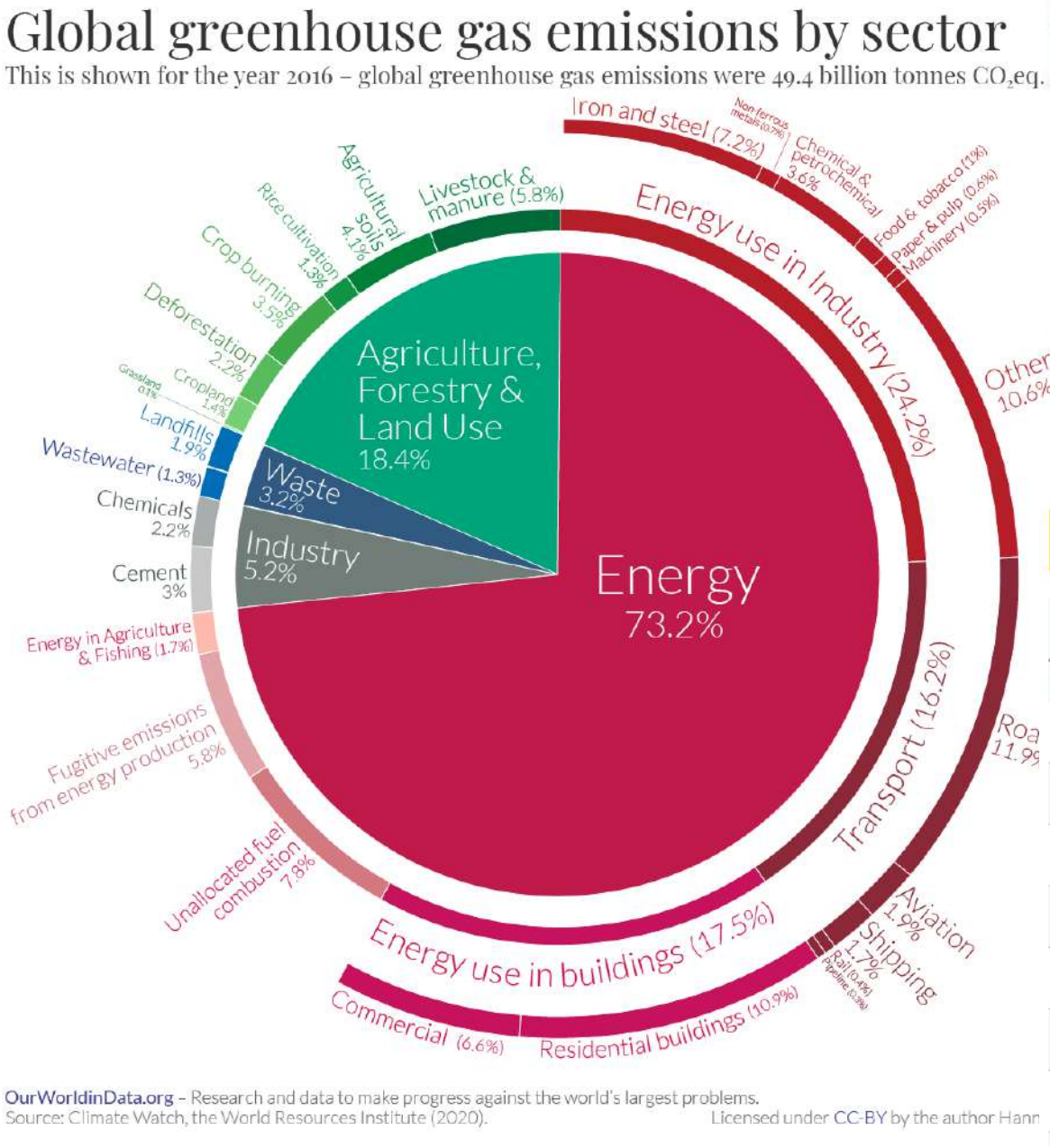


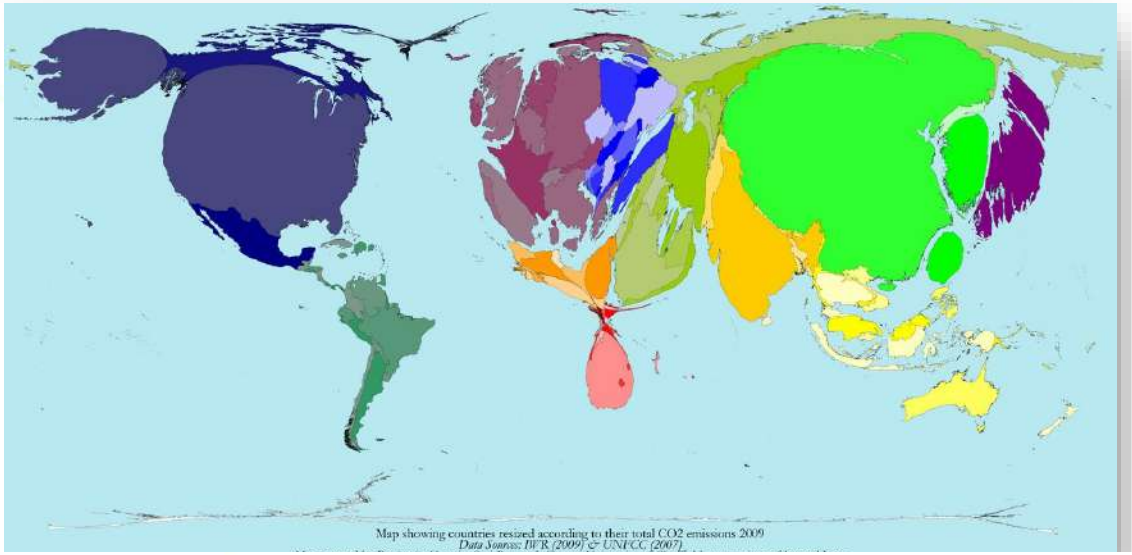






Da dove derivano le nostre emissioni e dove vanno a finire



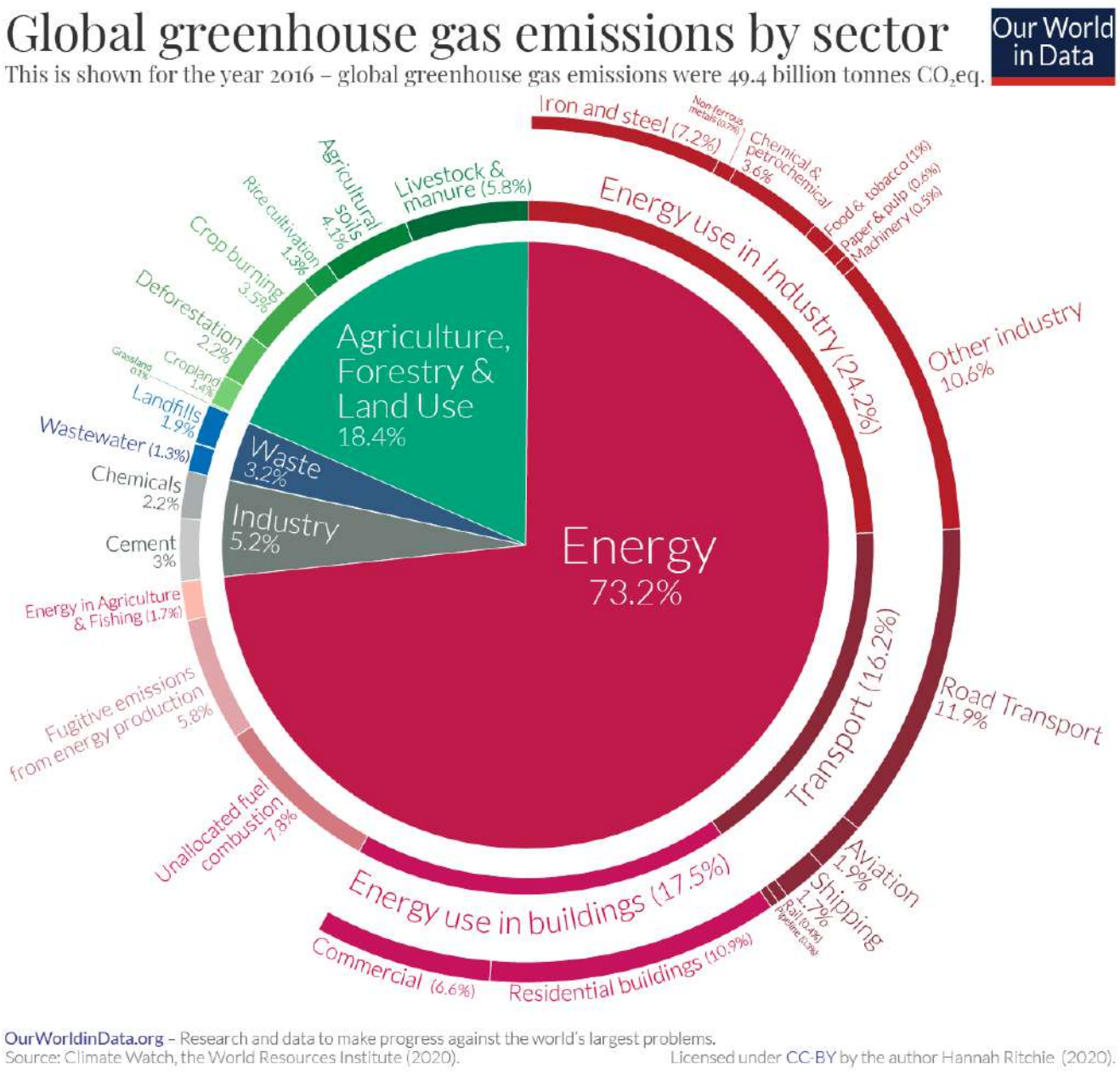


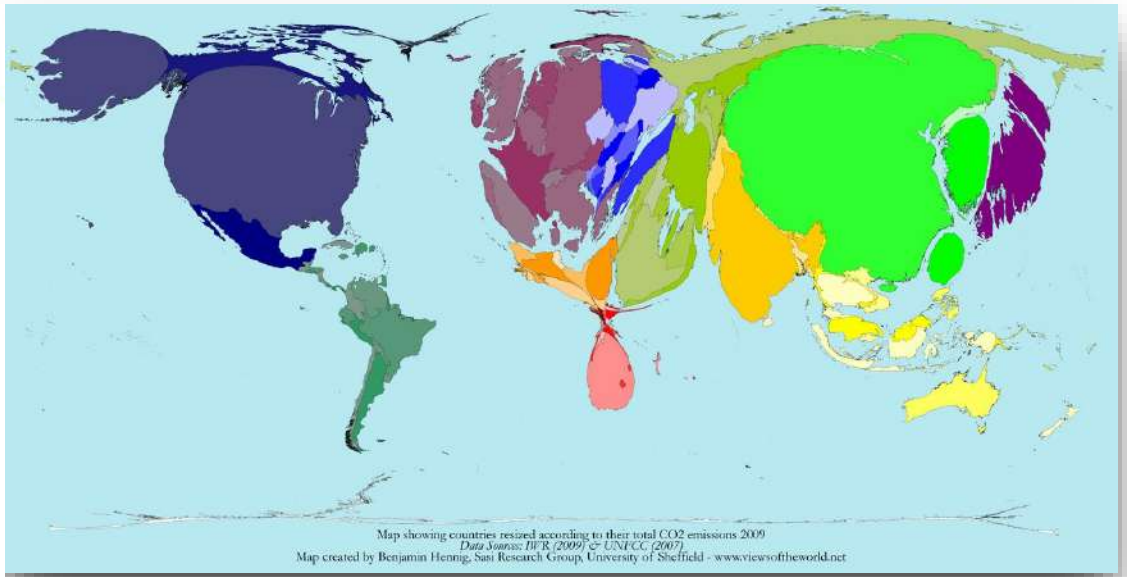
GHG total emissions

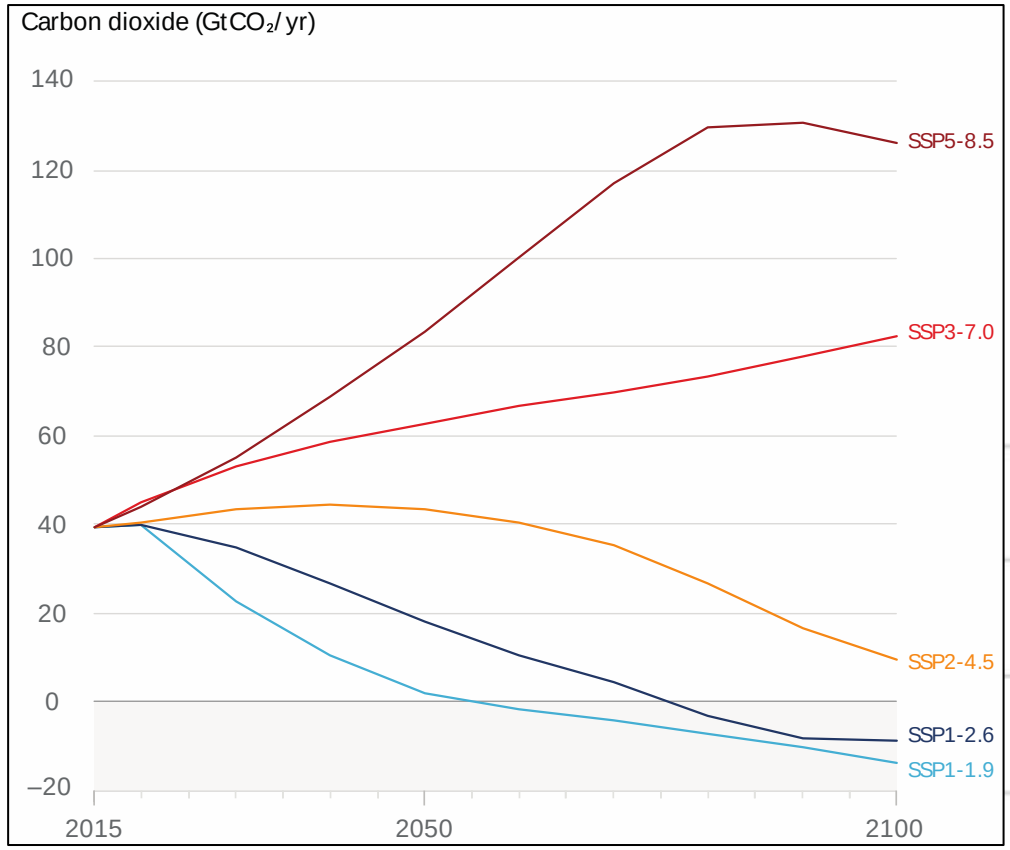
https://edgar.jrc.ec.europa.eu/

Country	1990	2000	2005	2015	2020	2022	2023	2023 %
unit	Mton CO_2eq	Mton CO_2eq	Mton CO_2eq	Mton CO_2eq	Mton CO_2eq	Mton CO_2eq	Mton CO_2eq	% World Tot
GLOBAL TOTAL	32726.23	36175.15	41296.88	48808.77	49327.54	51968.47	52962.90	100.00
China	3876.39	5242.74	8191.09	13118.90	14497.90	15159.64	15943.99	30.10
United States	6209.29	7203.33	7123.63	6329.00	5671.60	6046.22	5960.80	11.25
India	1383.06	1845.45	2120.89	3302.49	3433.62	3897.21	4133.55	7.80
EU27	4877.28	4481.45	4553.56	3879.73	3388.28	3482.31	3221.79	6.08
Russia	3065.70	2089.10	2174.74	2257.64	2395.62	2621.52	2672.04	5.05
Brazil	671.58	898.96	1025.42	1252.31	1216.00	1298.49	1300.17	2.45

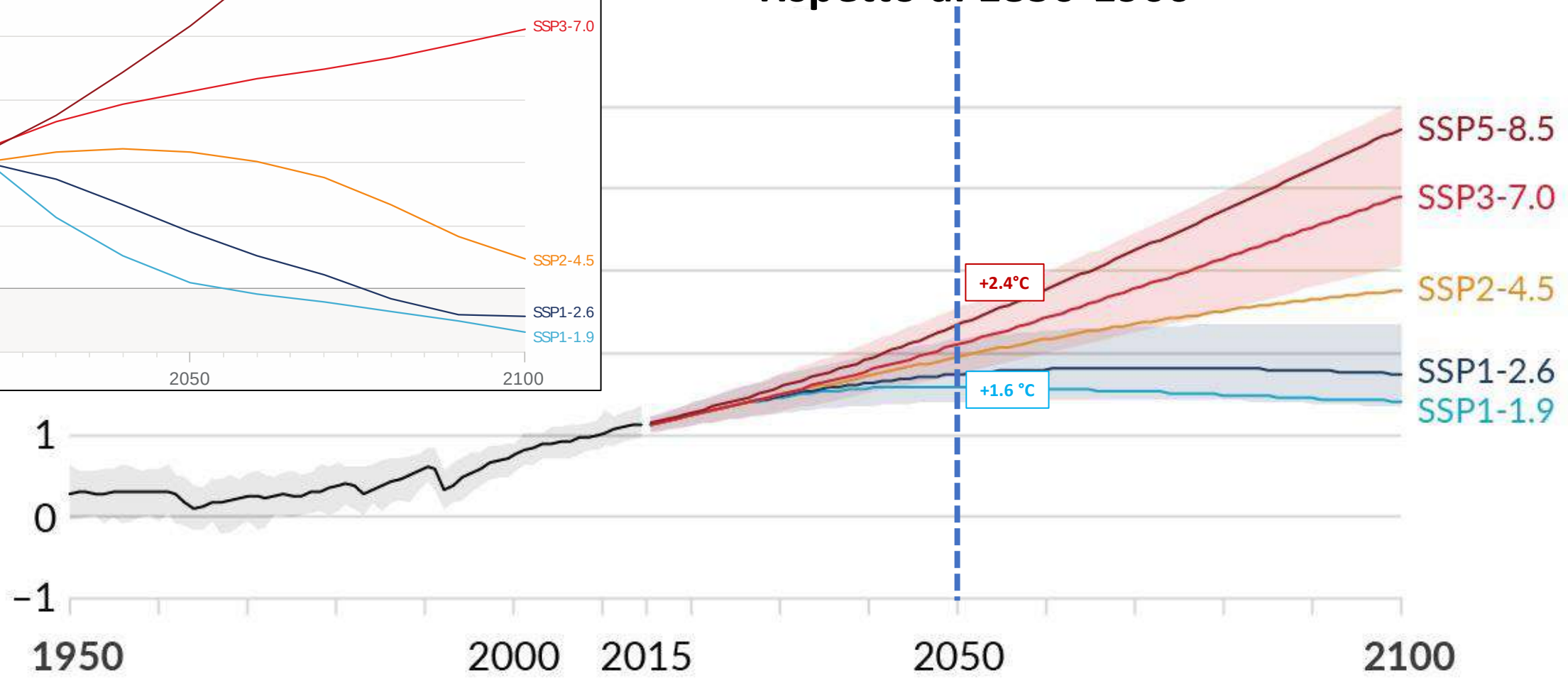
Da dove derivano le nostre emissioni e dove vanno a finire







Cambiamento di temperatura rispetto al 1850-1900



[Credit: Peter John Maridable]

> “Unless there are immediate, rapid, and large-scale reductions in greenhouse gas emissions, limiting warming to 1.5°C will be beyond reach.

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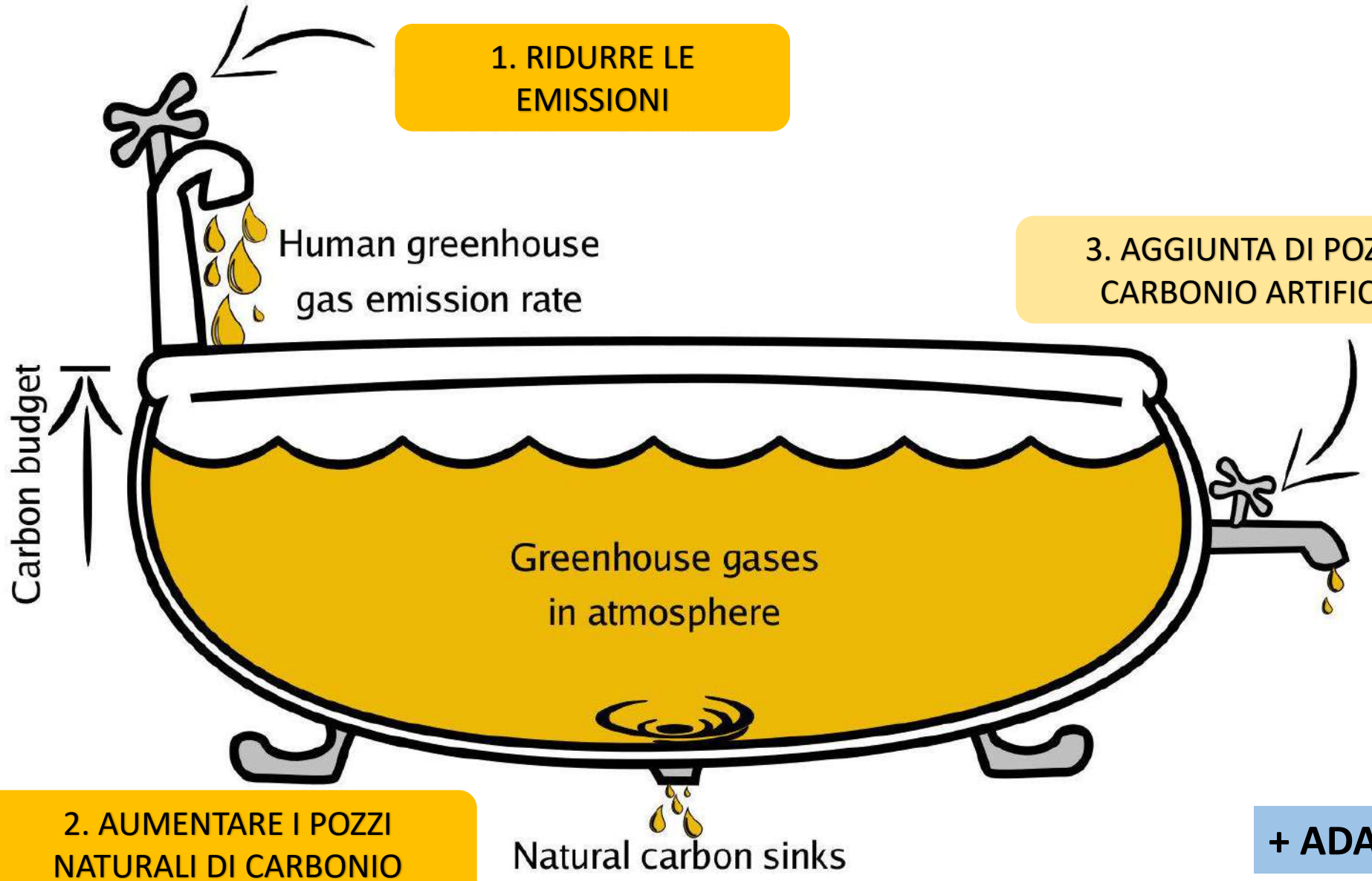
INTERGOVERNMENTAL PANEL ON climate change

WMO UNEP

5. C’è tempo?

1. RIDURRE LE EMISSIONI



3. AGGIUNTA DI POZZI DI CARBONIO ARTIFICIALI

2. AUMENTARE I POZZI NATURALI DI CARBONIO

+ ADATTAMENTO

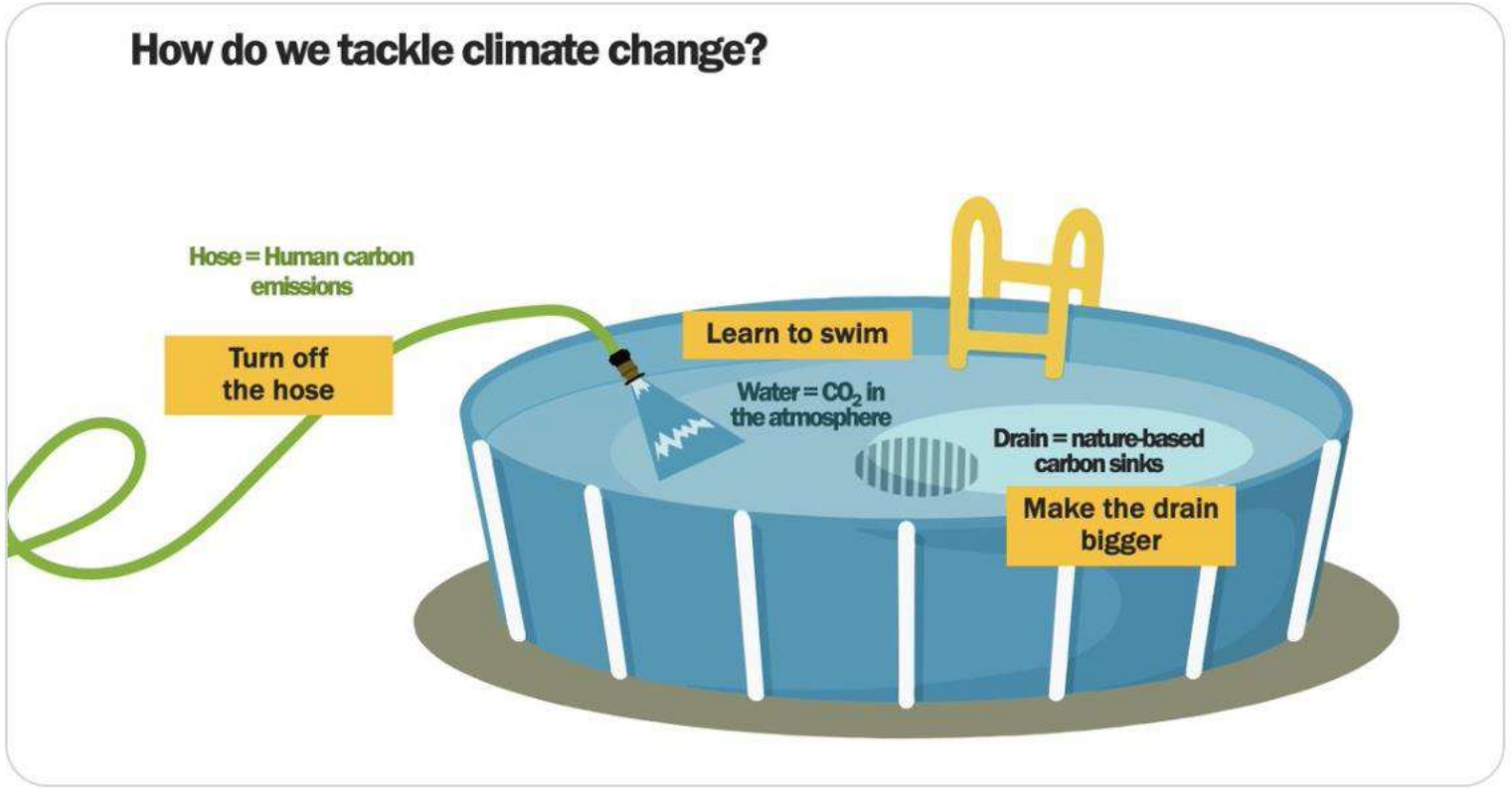
Credit: M. May/Helmholtz-Zentrum Berlin

5. C’è tempo?

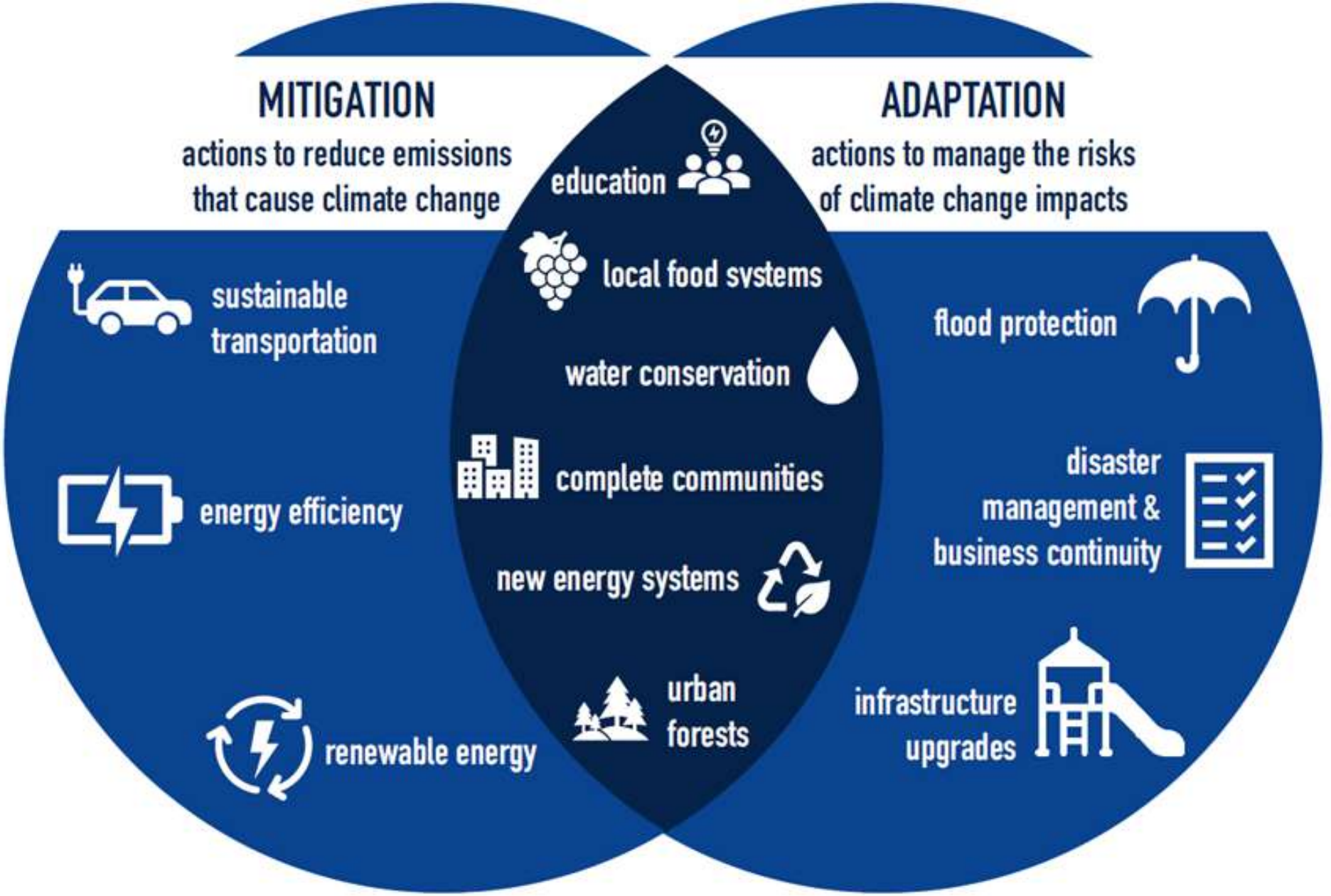
The Real Prof. Katharine Hayhoe
@KHayhoe

In a nutshell: we need to turn off the hose as fast as we can, enlarge the drain at all speed, all while learning how to swim + help others learn as well.

Traduci il Tweet



Mitigazione e Adattamento

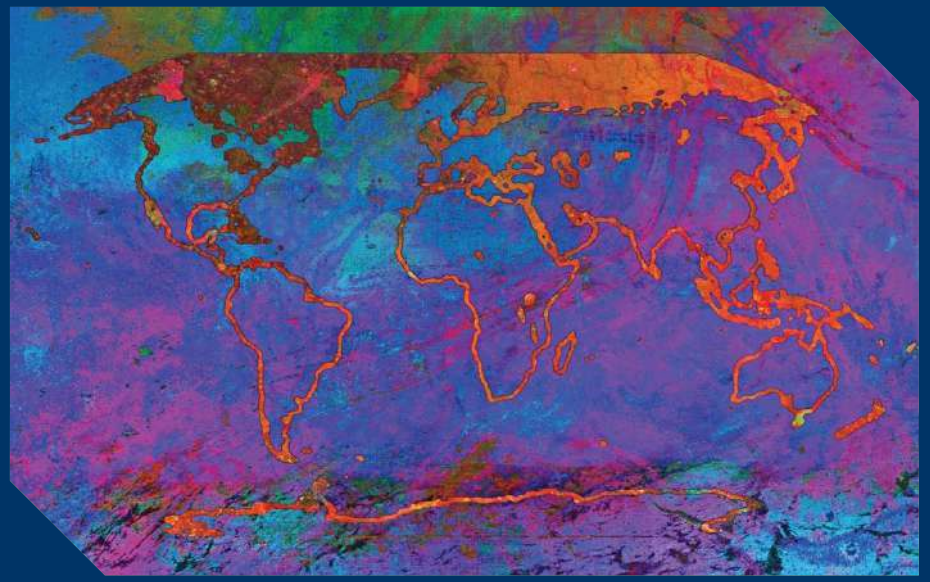


The hope

Mainstreaming effective and equitable climate action now will reduce losses and damages **for nature and people.**

Climate action provides co-benefits.

Multiple, feasible and effective options are available **to reduce GHG emissions and adapt to human-caused climate change.**



“ The climate we experience in the future depends on our decisions now.

Grazie!

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