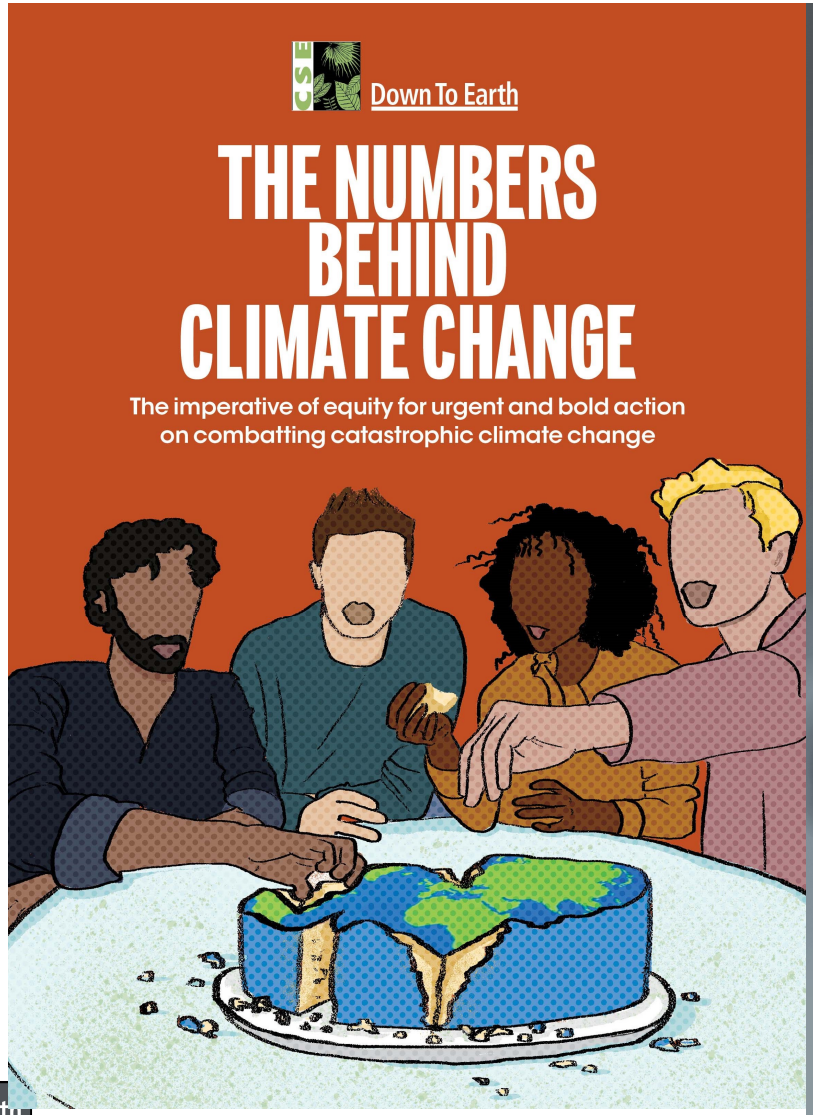
Down To Earth
THE NUMBERS BEHIND CLIMATE CHANGE
The imperative of equity for urgent and bold action on combatting catastrophic climate change


CLIMATE SPECIAL
1-15 NOVEMBER, 2021
DownToEarth
FORTNIGHTLY ON POLITICS OF DEVELOPMENT, ENVIRONMENT AND HEALTH
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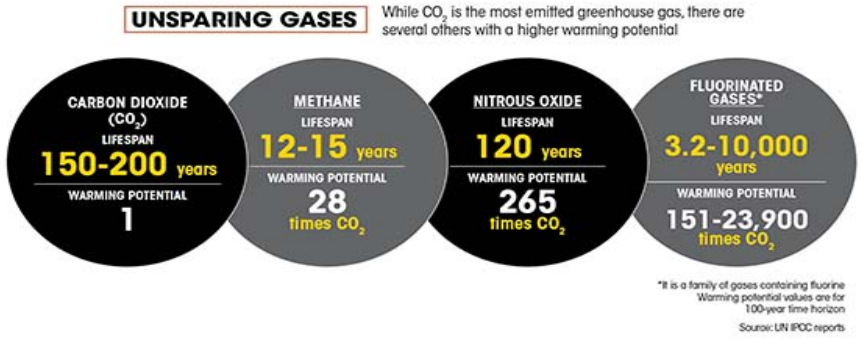
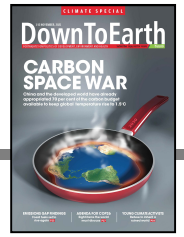
CARBON SPACE WAR
China and the developed world have already appropriated 70 per cent of the carbon budget available to keep global temperature rise to 1.5°C
2030
EMISSIONS GAP FINDINGS
Fossil fuels set to rise again P23
AGENDA FOR COP26
Eight items the world must discuss P27
YOUNG CLIMATE ACTIVISTS
Refuse to inherit a ruined world P54

The imperative of equity for urgent and bold action on climate change: the facts

1. Gases have long residence time in atmosphere: past matters
2. CO2 emissions are linked to economic growth as we know it today; not just about sharing atmospheric space but growth
3. Emerging world will need space to grow; will add to emissions; add to the climate risks

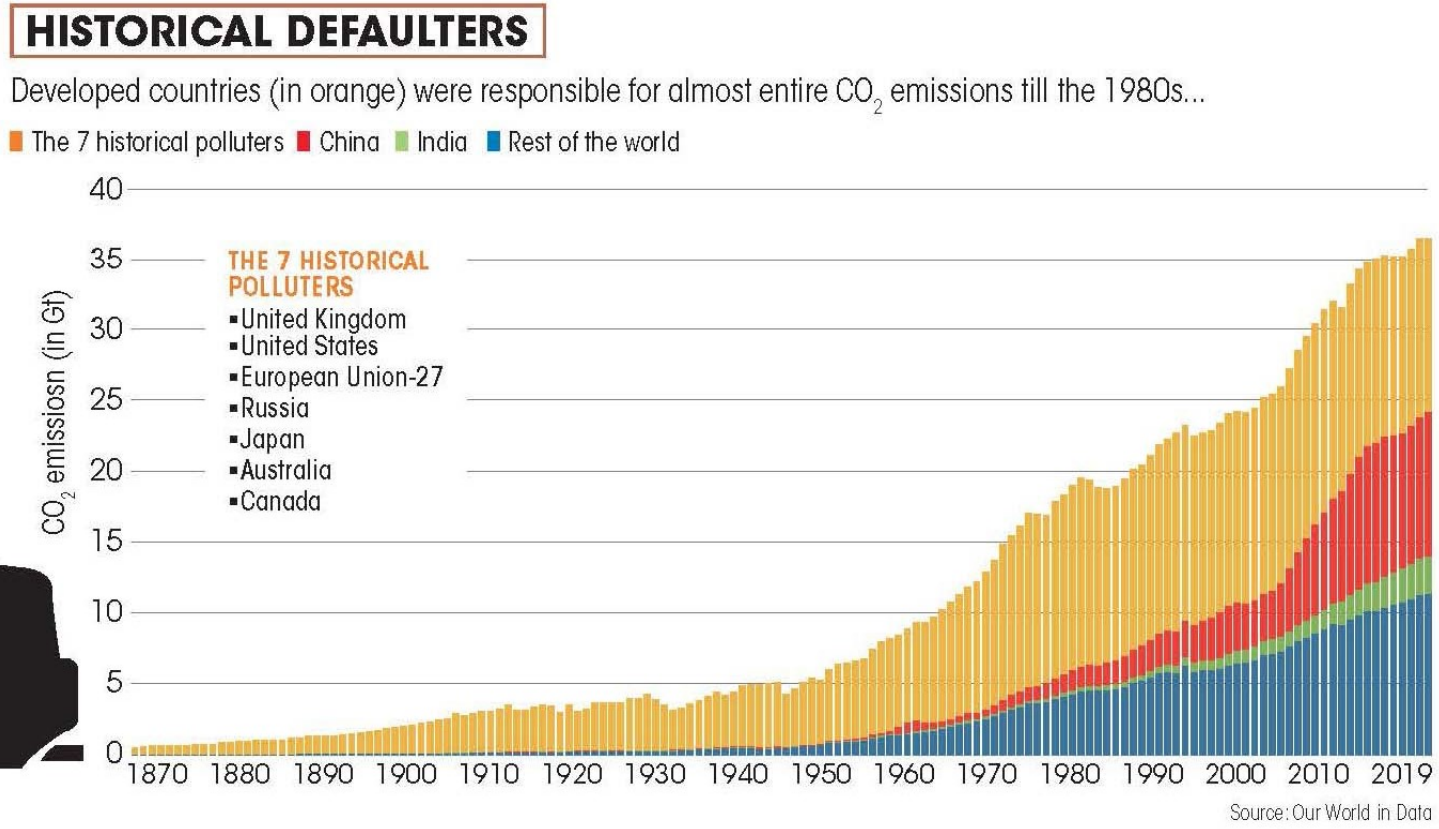


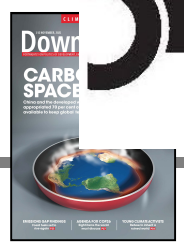


Current emissions: 36.4 Gt/CO2

China, US, EU-27 currently emit 50 per cent of emissions

Africa and India both with 17% of world's population contribute 4 and 7%

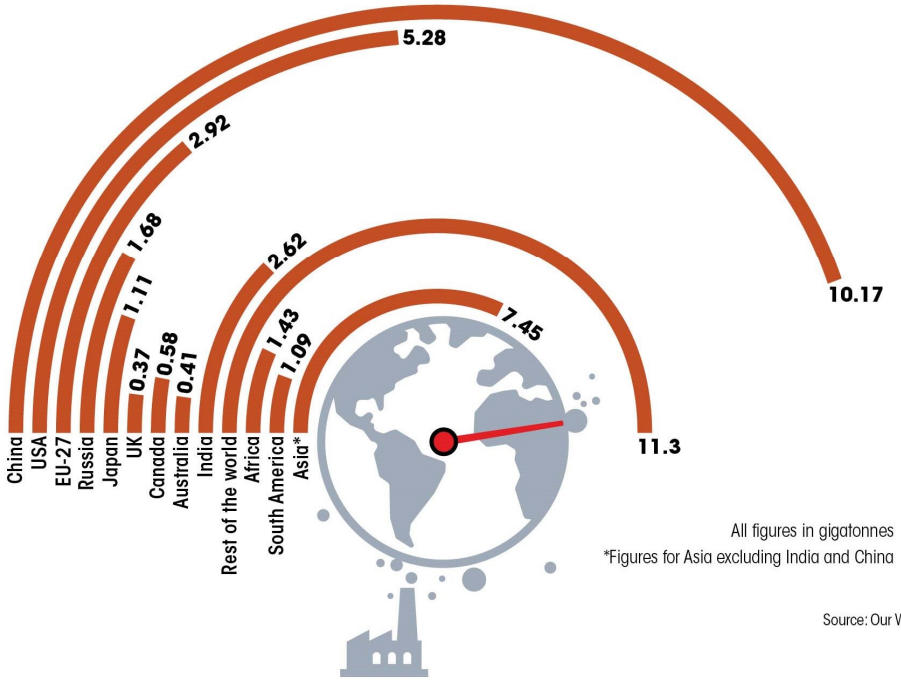




China: has leaped into the world of polluters: post 2004
Scale of difference between China, US and India is massive

CO_2 EMISSIONS IN 2019

China was the wold's prime emitter in 2019, releasing as much CO_2 as the US, EU-27, Russia and Japar



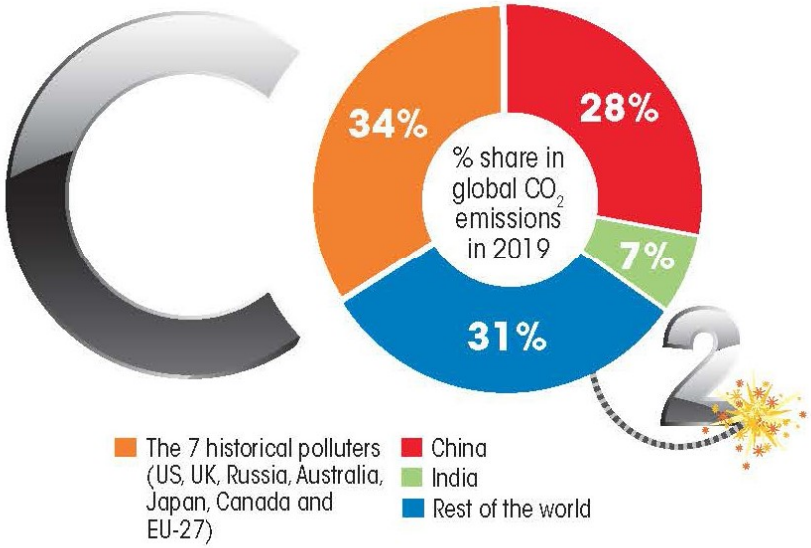
All figures in gigatonnes

*Figures for Asia excluding India and China

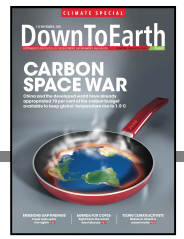
Source: Our World in Data

CURRENT CULPRITS

..Since 2000, China has been the foremost polluter



Source: Our World in Data



2019: per capita CO2 emissions makes for a highly inequitable and unjust world

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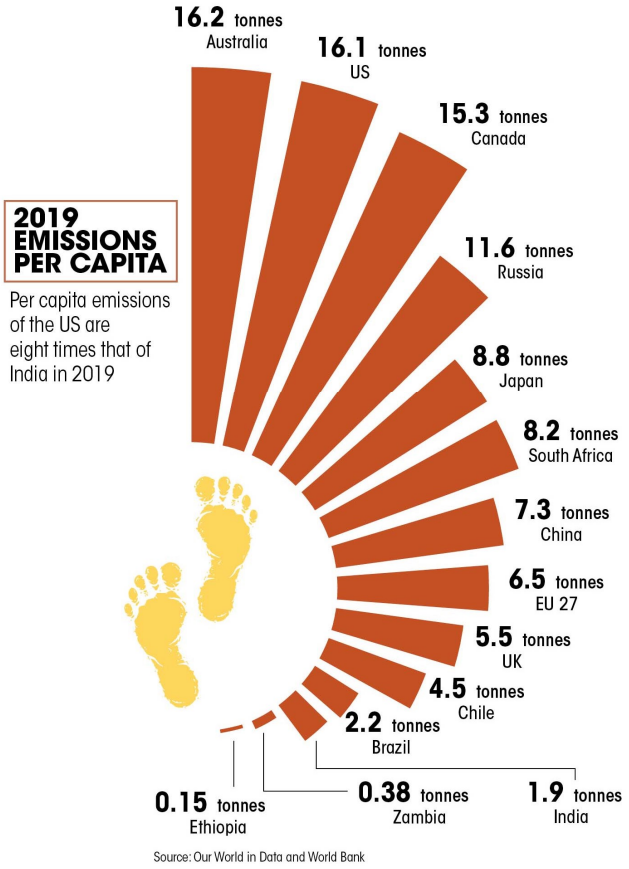
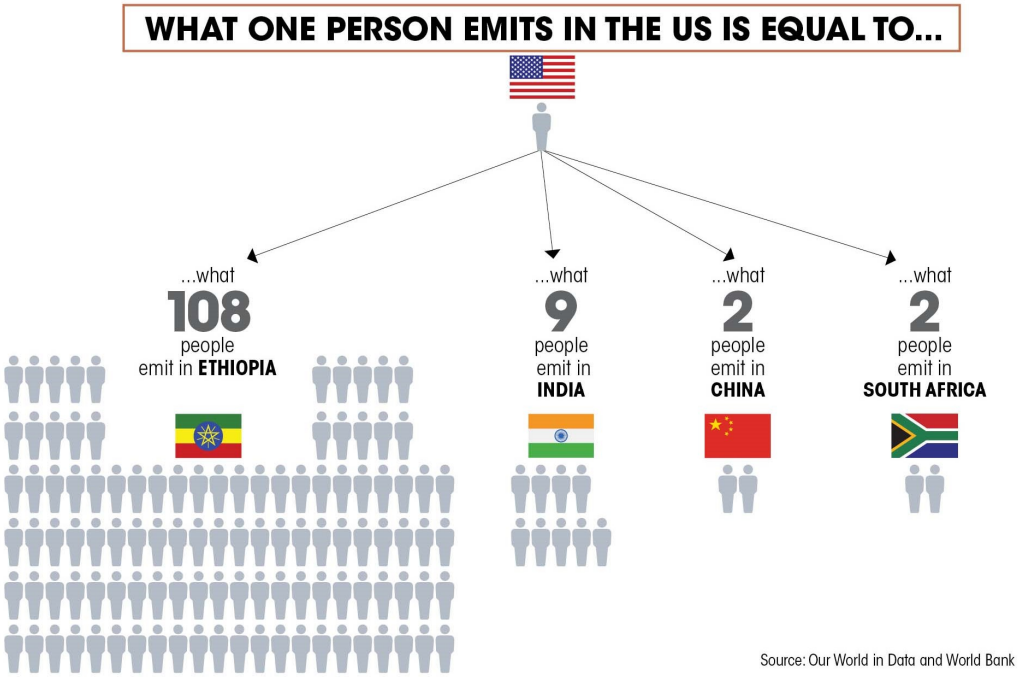


Source: Our World in Data and World Bank



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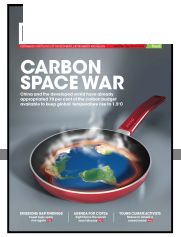

Paris Agreement: Nationally Determined Contributions (NDC) do not add up to much

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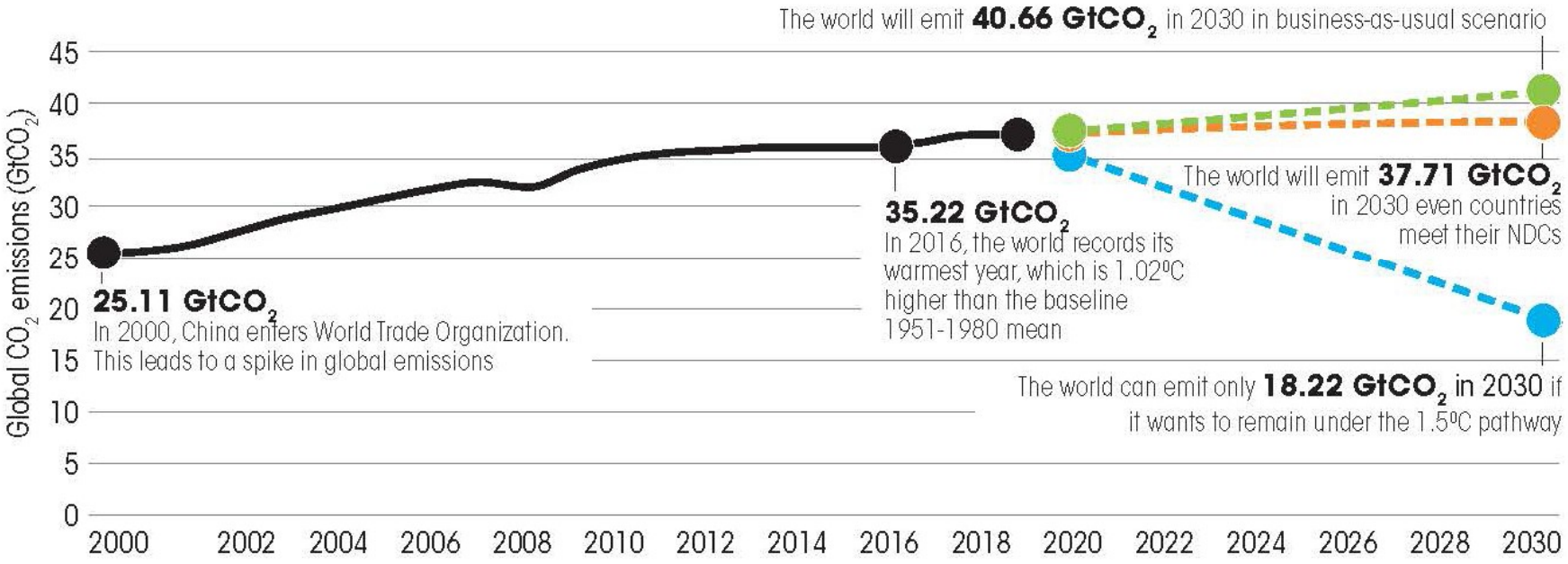
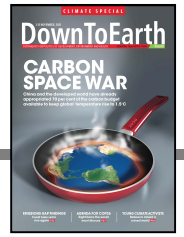
NOT NEARLY ENOUGH

The world will cross the 1.5°C threshold by 2030 even if countries meet their enhanced nationally determined targets



Source: Analysis by *Down to Earth* and Centre for Science and Environment, Delhi, based on data from Climate Watch and Our World in Data



REMAINING CARBON BUDGET WILL BE EXHAUSTED IN THIS DECADE

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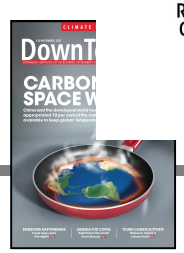
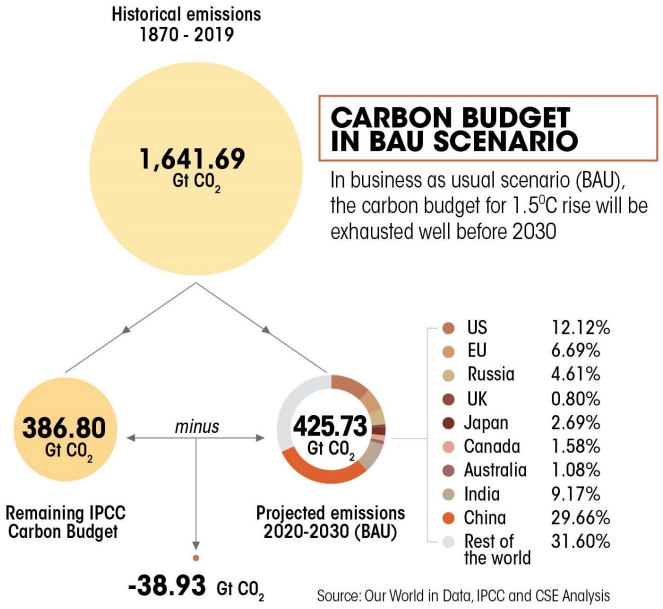
Figures in $GtCO_2$

World CO_2 emissions (Fossil fuel and cement)	1870-2019	1,641.69
	BAU 2020-2030	425.73
	NDC 2020-2030	408.99
Remaining IPCC AR6 budget to stay on the 1.5°C trajectory 2020 onwards*		386.80

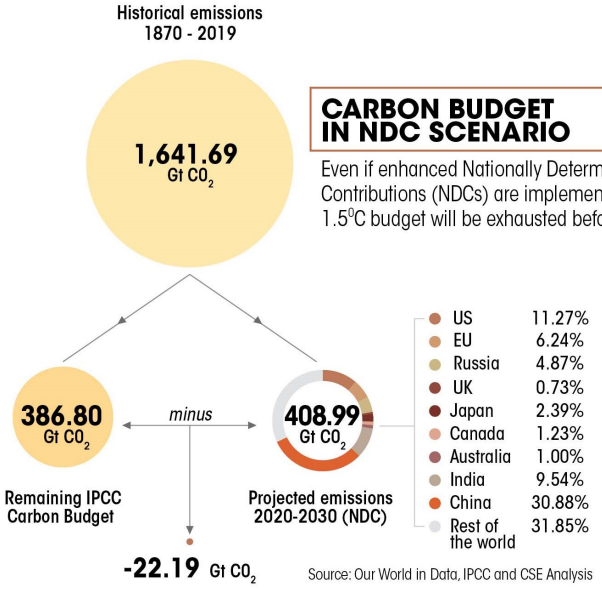
*We assume that land-use, land-use change and forestry (LULUCF) emissions account for 3% of CO_2 emissions and reduce the 400Gt budget accordingly for this analysis; BAU: business and usual; NDC: Nationally Determined Contributions

Source: Our World in Data, IPCC and CSE Analysis





Source: Our World in Data, IPCC and CSE Analysis

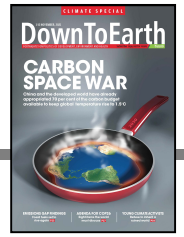


Source: Our World in Data, IPCC and CSE Analysis

NDC

Not ambitious

Not fair



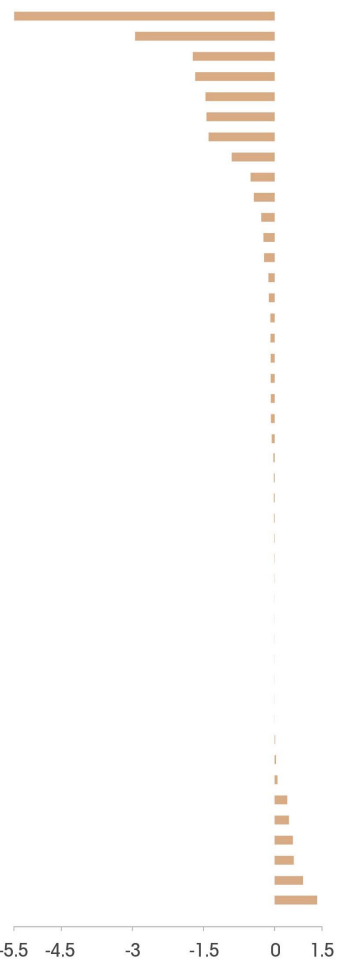
PROJECTED EMISSIONS FOR THE DECADE

2020-2030

While NDC of most countries will reduce their emissions, for some like Russia, they will lead to an increase

Figures in $GtCO_2$

	BAU	NDC
United States	51.60	46.11
EU-27	28.48	25.54
Canada	6.74	5.01
Japan	11.47	9.79
South Korea	7.33	5.87
South Africa	5.69	4.25
Kazakhstan	4.23	2.83
Brazil	6.11	5.21
Australia	4.58	4.07
United Kingdom	3.40	2.97
Oman	1.16	0.88
Colombia	1.34	1.11
Chile	1.07	0.84
Norway	0.45	0.32
Tajikistan	0.21	0.09
Switzerland	0.41	0.32
Botswana	0.14	0.05
Azerbaijan	0.48	0.40
Serbia	0.66	0.58
Zambia	0.12	0.04
New Zealand	0.42	0.34
Bosnia and Herzegovina	0.31	0.25
Moldova	0.08	0.05
Mauritius	0.06	0.05
Costa Rica	0.10	0.08
Iceland	0.04	0.02
Montenegro	0.03	0.02
Eritrea	0.01	0.01
Grenada	0.004	0.002
Micronesia	0.002	0.001
Marshall Islands	0.002	0.001
Cook Islands	0.001	0.0004
Dominica	0.002	0.001
China	126.29	126.29
India	39.03	39.03
Liechtenstein	0.001	0.001
Equatorial Guinea	0.05	0.06
Belarus	0.73	0.76
Singapore	0.42	0.48
Nicaragua	0.07	0.33
Russia	19.61	19.91
Ukraine	2.21	2.60
Argentina	1.88	2.28
Vietnam	4.65	5.25
Ethiopia	0.31	1.13



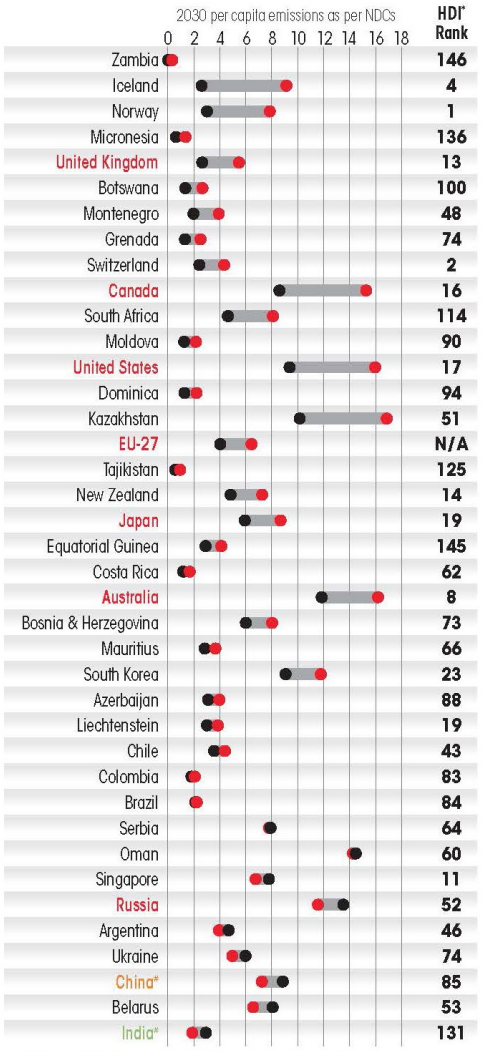
Note: We have assumed constant emissions in "business as usual" (BAU) and nationally determined contributions (NDC) scenarios in the case of China and India as these countries do not have quantified targets for reduction.

Source: Analysis by the Centre for Science and Environment, Delhi, based on data from Climate Watch and Our World in Data

LOW ON AMBITION

Developed countries have pledged lower emissions reduction by 2030 than many developing countries

- 2030 per capita emissions as per NDCs
- 2019 per capita emissions



*For China and India, business-as-usual scenario has been used

*Human Development Index rates countries on the basis of life expectancy, education, and per capita income indicators; Source: Analysis by *Down to Earth* and Centre for Science and Environment, Delhi, based on data from Climate Watch and Our World in Data

PAST PRIVILEGE

The developed world grew on unfettered fossil fuel consumption and CO_2 emissions since the 1870s, leaving little carbon space for the rest of the world

	% of total emissions for BCC (1870-1989)	% of total emissions for AC (1990-2019)	% of total emissions for BCC + AC (1870-2019)	% share in the world population in 2019
US	31.26	19.32	24.92	4.28
EU-27	23.21	12.06	17.29	5.83
Russia	8.31	5.72	6.94	1.88
UK	7.18	1.80	4.32	0.87
Japan	3.59	4.24	3.93	1.65
Canada	2.17	1.88	2.02	0.49
Australia	0.94	1.25	1.11	0.33
7 historical polluters	76.66	46.28	60.53	15.33
+ China	5.11	20.72	13.40	18.21
7 historical polluters + China	81.77	67.00	73.93	33.54
Rest of world (excluding China)	18.23	33.25	26.07	66.46
of which				
India	1.36	4.76	3.16	17.81
South Africa	1.08	1.42	1.26	0.76
South Korea	0.38	1.62	1.04	0.67
Brazil	0.58	1.23	0.92	2.75
Vietnam	0.09	0.33	0.22	1.26
World Emissions in gigatonnes				
World	769.92	871.78	1641.69	-

Source: Analysis by *Down to Earth* and Centre for Science and Environment, Delhi, based on data from Climate Watch and Our World in Data

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Historical, cumulative and current

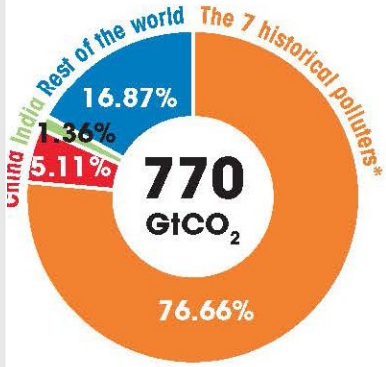
1870-1989

1990-2019

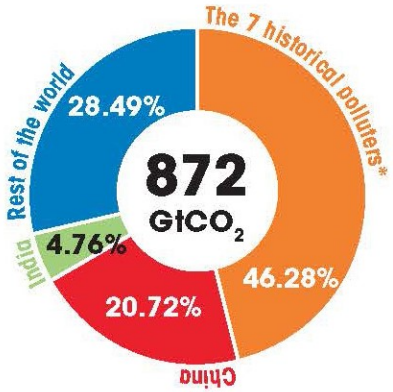
1870-2019

PROBLEMATIC TWO

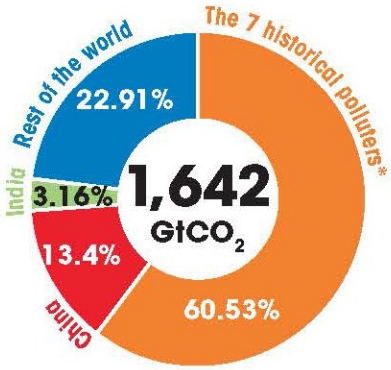
he developed countries and China are responsible for over 70 per cent of CO_2 emissions so far



1870 - 1989
Before Climate Convention



1990 - 2019
After China



1870 - 2019
Before Climate Convention + After China

JS, UK, Russia, Australia, Japan, Canada and EU-27
ource: Analysis by *Down to Earth* and Centre for Science and Environment, Delhi, based on data from Climate Watch and Our World in Data

PERPETUAL GAP

Even in NDC scenario, developed countries and China will continue to emit almost 60 per cent of future CO_2 emissions

	% of total emissions for BCC + AC (1870-2019)	% of total emissions if NDCs are met 2020-2030	% of total emissions for BCC+AC+NDC (1870-2030)
US	24.92	11.27	22.20
EU-27	17.29	6.24	15.09
Russia	6.94	4.87	6.52
UK	4.32	0.73	3.60
Japan	3.93	2.39	3.63
Canada	2.02	1.23	1.86
Australia	1.11	1.00	1.08
7 historical polluters	60.53	27.73	53.98
China	13.40	30.88	16.89
7 historical polluters + China	73.93	58.60	70.87
Rest of world (excluding China)	26.07	41.40	29.13
of which			
India	3.16	9.54	4.44
South Africa	1.26	1.04	1.22
South Korea	1.04	1.44	1.12
Brazil	0.92	1.27	0.99
Vietnam	0.22	1.28	0.43

Source: Analysis by *Down to Earth* and Centre for Science and Environment, Delhi, based on data from Climate Watch and Our World in Data

Future inequity maintained

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1870-2019

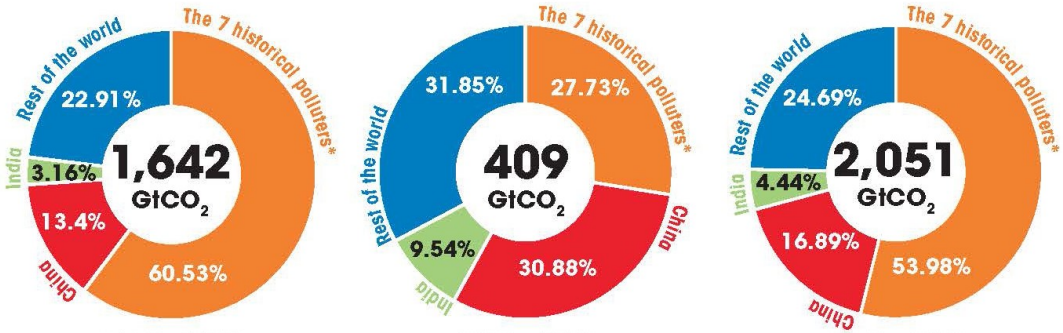
2020-2030

1870-2030

66 per cent of world population is left with 30 per cent of the share of emissions

UNCHANGED FUTURE

China and the developed world are likely to account for almost 70 per cent CO_2 emissions from 1870 to 2030



*US, UK, Russia, Australia, Japan, Canada and EU-27

Source: Analysis by *Down to Earth* and Centre for Science and Environment, Delhi, based on data from Climate Watch and Our World in Data

CO_2 BUDGET: LIMITED AND APPROPRIATED

Historical contribution of countries and their future plans

Country	% of IPCC AR5 budget exhausted by 2019	% of IPCC AR6 budget exhausted by 2030 **(BAU)**	% of IPCC AR6 budget exhausted by 2030 **(NDC)**
US	18.18%	13.33%	11.91%
EU-27	12.61%	7.36%	6.60%
Russia	5.06%	5.07%	5.14%
UK	3.16%	0.88%	0.77%
Japan	2.87%	2.96%	2.53%
Australia	0.81%	1.18%	1.05%
Canada	1.47%	1.74%	1.29%
China	9.78%	32.63%	32.63%
India	2.31%	10.09%	10.09%
Rest of the world	**43.75%**	**24.76%**	**27.98%**

As the world exceeds the budget, we have taken it as a % of the contribution
AR5 Budget - 2250 $GtCO_2$ (between 1870-2100)
AR6 Budget - 400 $GtCO_2$ adjusted to 387 $GtCO_2$ (2020 onwards)

Source: Our World in Data, IPCC and CSE Analysis

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Carbon budget

Per capita

Inequity frozen

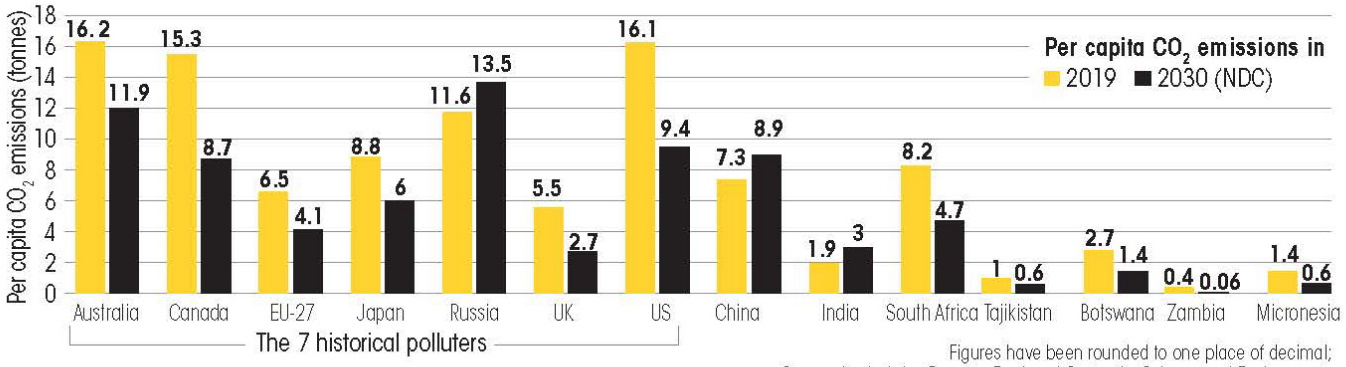
Climate apartheid

But worse, what happens now

Need space for growth?

STARK CONTRAST

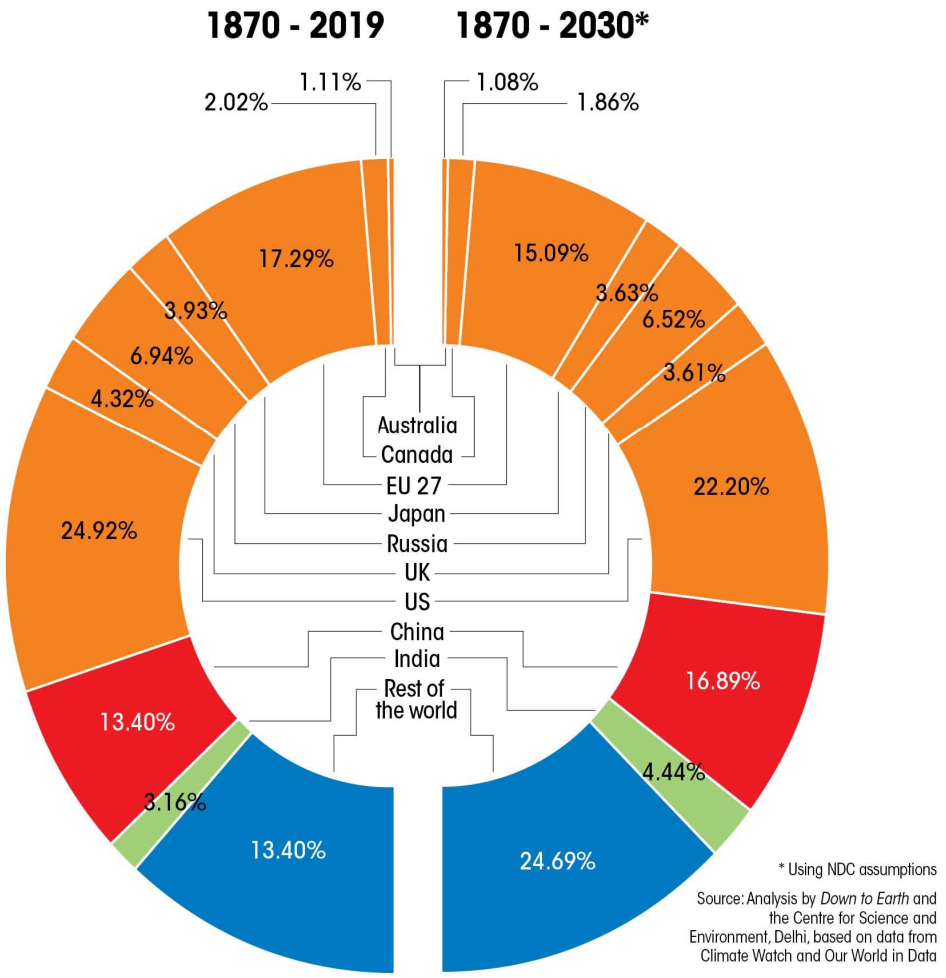
Per capita emissions of developed countries and China will remain high even in 2030



Figures have been rounded to one place of decimal;
Source: Analysis by *Down to Earth* and Centre for Science and Environment, Delhi, based on data from Climate Watch and Our World in Data

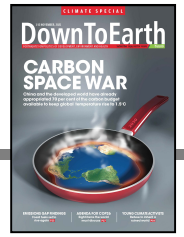
APPROPRIATION OF WORLD EMISSIONS

% of total world emissions for the given period



* Using NDC assumptions

Source: Analysis by *Down to Earth* and the Centre for Science and Environment, Delhi, based on data from Climate Watch and Our World in Data



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Agenda for COP26

- 1. Climate justice has to be bedrock of action; cannot dilute it or erase historical emissions (as done in Paris agreement)
- Vast numbers in the world (roughly 70 per cent) population needs access to carbon space for development; cannot be told not to grow. But question is how will this growth happen without CO2 emissions?
- 2. China has to be in the spotlight: It has not given any CO2 reduction targets; will take up 33 per cent of remaining carbon budget in this decade. India needs to be de-hyphenated from China; China needs to be de-hyphenated from G-77
- 3. Not net-zero but emissions cuts by 2030 needs to be in focus. Front-loading of emissions of the 7+1 so that there is space for the rest to grow

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Agenda: COP26

- 4. Finance: crucial; but also needs transparency to measure how much and for what (many NDC targets are conditional and so if finance is not provided will not be met)
- 5. Market and nature-based solutions: must be for transformational action/not cheap credits
- 6. Loss and damage: Paris Agreement is deeply flawed as it says this cannot be taken as compensation or liability. Needs to be reworked
- 7. Adaptation Goal: needs more than networking and information. It needs finance. Real and urgent.

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Agenda: India

- 4th highest contributor (3rd highest without EU)
- Quantum of historical, current and even future is not comparable to big polluters in the world
- But reality is that world has run out of carbon budget; run out of time
- Also we are victims of climate change: will suffer as we are most vulnerable
- **Need to act; in our self-interest**
- Our climate change strategy has to be based on co-benefits
- Not net-zero but low-carbon growth strategy for every sector; measure and count the difference; require world to pay the high-cost options through the market-instrument