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MITIGATION AMBITION AND JUSTICE

The world is not on track to reduce emissions in line with the 1.5°C temperature goal of the Paris Agreement

COP 27 must not dilute or erase climate justice in mitigation

COP 27 must discuss how countries will front-load emissions reduction by 2030 based on their cumulative historical emissions



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We are not on track to control planetary warming

The world is not on track to achieve the Paris Agreement's stated goal to "limit global warming to well below 2, preferably to 1.5 degrees Celsius, compared to pre-industrial levels." The new NDC Synthesis report released by the United Nations Framework Convention on Climate Change (UNFCCC) in October 2022 noted that the Nationally Determined Contributions (NDCs) pledged by countries to arrest climate change were insufficient. If implemented, the latest NDCs would lead to emissions of 52.4 gigatonne of CO₂ equivalent (GtCO₂e) of greenhouse gases (GHGs) in 2030.¹

How does this impact the planet's temperature?

Four modelled estimates published in October 2022 suggest that we will breach the limit of a 1.5°C rise above pre-industrial levels even if all current NDCs are implemented. Announcing pledges is the easy part while there is no guarantee that they will be implemented and achieved within the timeframe of 2030 (see *Table 1: Estimates of temperature rise if NDCs are implemented*).

Table 1: Estimates of temperature rise if NDCs are implemented

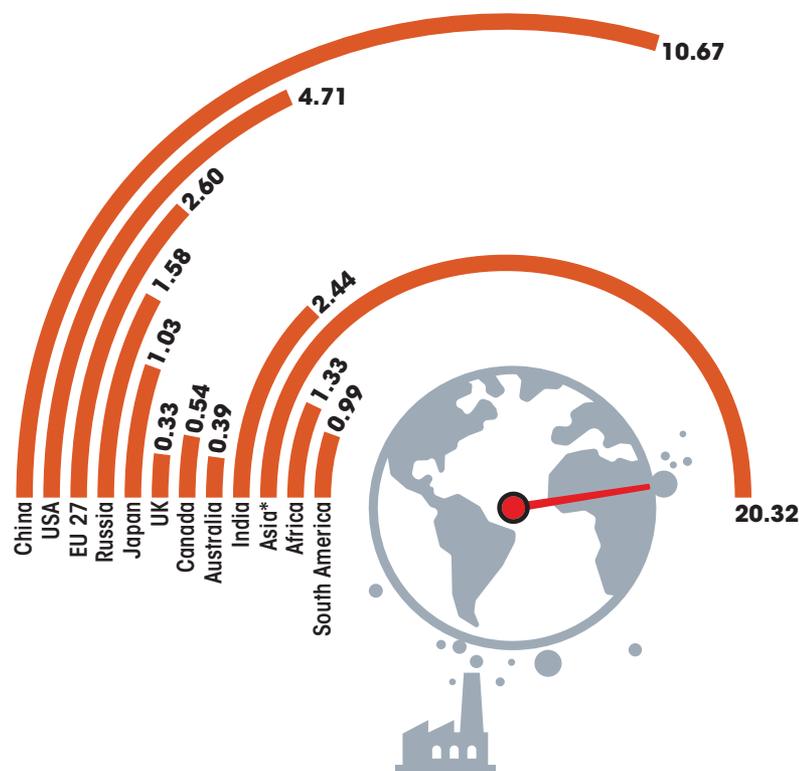
Report	Published by	Temperature rise if all 2030 NDCs are implemented
NDC Synthesis Report	UNFCCC	2.1–2.9°C
Emissions Gap Report 2022	UNEP	2.4–2.6°C
State of Climate Action 2022	Bezos Earth Fund, Climate Action Tracker, Climate Analytics, ClimateWorks Foundation, NewClimate Institute, the United Nations Climate Change High-Level Champions, and World Resources Institute	2.4–2.8°C
World Energy Outlook 2022	IEA	1.7°C

Current state: 2020 emissions

The Centre for Science and Environment (CSE) analysed carbon dioxide (CO₂) emissions data for 2020 published by the Global Carbon Project.²

ANNUAL CO₂ EMISSIONS IN 2020

China was the world's prime emitter in 2020, releasing more CO₂ than US, EU 27, Russia and Japan combined



All figures in gigatonne
Source: Our World in Data

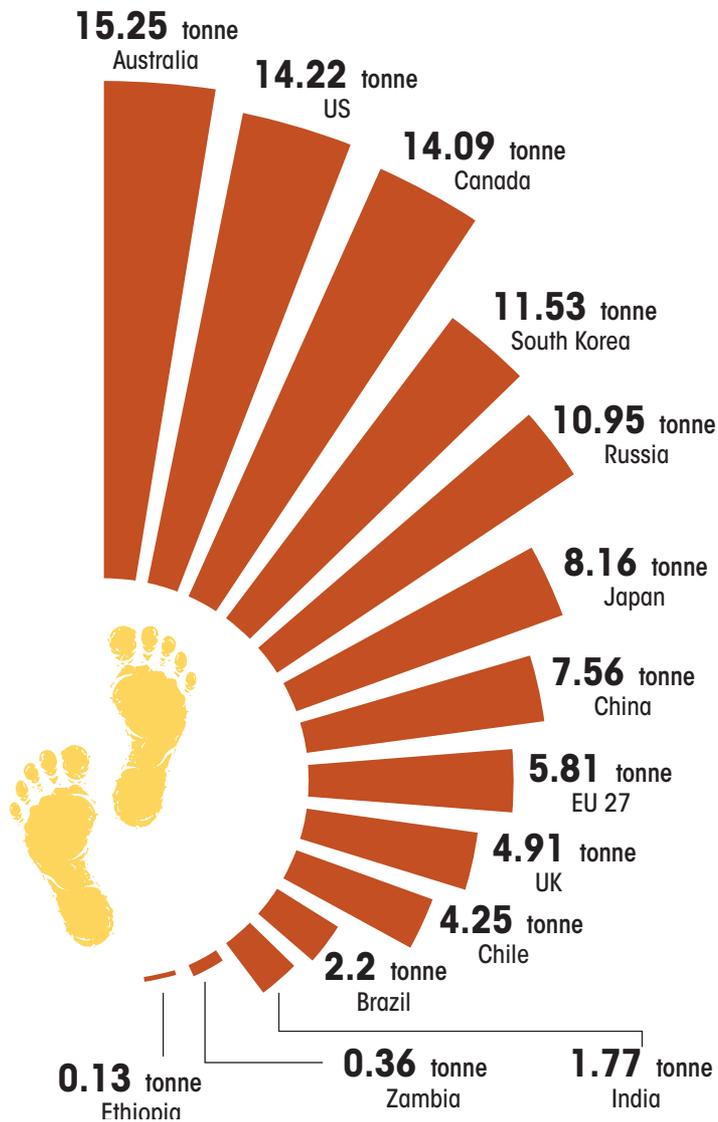
The world emitted 34.81 gigatonne (Gt) of CO₂ in 2020. This is only from the fossil fuel and cement sectors. China alone emitted 31 per cent of the world's total CO₂. Add the US and EU 27 (minus the UK), and the countries account for 52 per cent of the world's CO₂ emissions.

If we add Russia, Japan, UK, Canada and Australia, the share goes up to 62 per cent.

India, which is the fourth largest economy (third, if we do not account for EU 27 as a group), contributed some 2.44 Gt of CO₂ emissions in 2020—compared to China's 10.67 GtCO₂ and USA's 4.71 GtCO₂—and added 7 per cent to the world's CO₂ emissions in 2020. The entire continent of Africa, with 17 per cent of the world's population, contributed less than 4 per cent to global emissions in 2020.

2020 EMISSIONS PER CAPITA

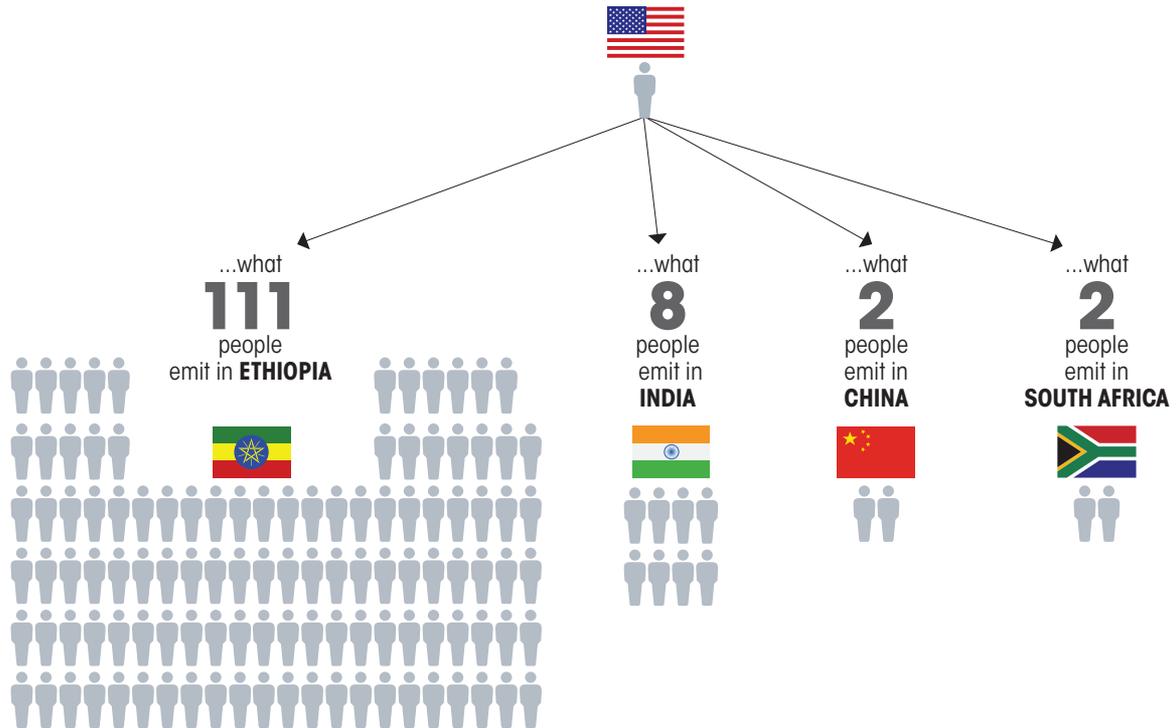
Per capita emissions of USA were eight times that of India in 2020



Source: Our World in Data and World Bank

Seen from another perspective, India and Africa are quite low in the human development index. They need to grow economically, provide energy to their people, industrialize and urbanize. All of this will add to the emissions because CO₂ emissions are still directly linked to a country's gross

WHAT ONE PERSON EMITS IN THE US IS EQUAL TO...



Source: Our World in Data and World Bank

domestic product. And this when the world is running out of the carbon budget—the IPCC 2021 report (Sixth Assessment Report [AR6]) has already declared “code red” and said that humanity is hurtling towards a climate catastrophe.³

We, therefore, have two choices: either accept the climate apartheid, or enhance efforts to ensure economic growth without pollution so that the developing world is given the right to develop. The latter option means funding the transformation in these nations at a scale never done before. In terms of per capita—how much is emitted by each person per year—the differences are even starker and indeed cannot be accepted in a civilized world.

NDC updates

Under the Paris Agreement, adopted in 2015 as an international treaty to limit and cut greenhouse gases,

countries agreed to provide voluntary targets—Nationally Determined Contributions (NDCs)—for how they will limit or reduce emissions. As per the agreement’s “ratcheting mechanism”, countries are expected to submit progressively more ambitious NDCs every five years. Accordingly, countries had to submit their second NDC by late 2020, but most parties to the Paris Agreement did not meet this deadline. The inadequate ambition shown by the countries led to a decision at the 26th Conference of Parties (COP 26) to the UNFCCC to revise them again in 2022, with a cutoff date

of September 23, 2022. According to the UNFCCC’s latest NDC Synthesis report published in October 2022, 39 countries have submitted new or updated NDCs since the previous report. Only 24 countries submitted new or updated NDCs after COP 26.

CSE has projected emissions of 45 countries—a mix of developed and developing economies, including EU 27—for 2021–30.⁴ Seventeen out of 45 countries made new NDC submissions to the UNFCCC since our

previous analysis on September 21, 2021, up until October 28, 2022. Eleven countries enhanced their GHG emissions reduction targets, including India.

India submitted its upwardly revised NDC in August 2022, extending two of its previous NDC goals. As per an official press statement, “India now stands committed to reducing emissions intensity of its GDP by 45 per cent by 2030 from its 2005 levels, according to the updated NDC.” The country will also target about 50 per cent of cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030.

Australia, with its change of government, made a significant update to its NDC, extending their target from a 26–28 per cent reduction to a 43 per cent reduction of

If the world achieves the enhanced and conditional NDCs, it would still be emitting close to double the amount of CO₂ the world should be emitting in 2030



greenhouse gas emissions by 2030 below 2005 levels, including land use, land-use change, and forestry (LULUCF).⁵

Brazil announced an NDC update in April 2022, committing to reduce emissions from 2005 levels by 37 per cent in 2025, and by 50 per cent in 2030. But its latest submission is a step-down in ambition compared to its original NDC⁶ (see *Box: Brazil's NDC deception*).

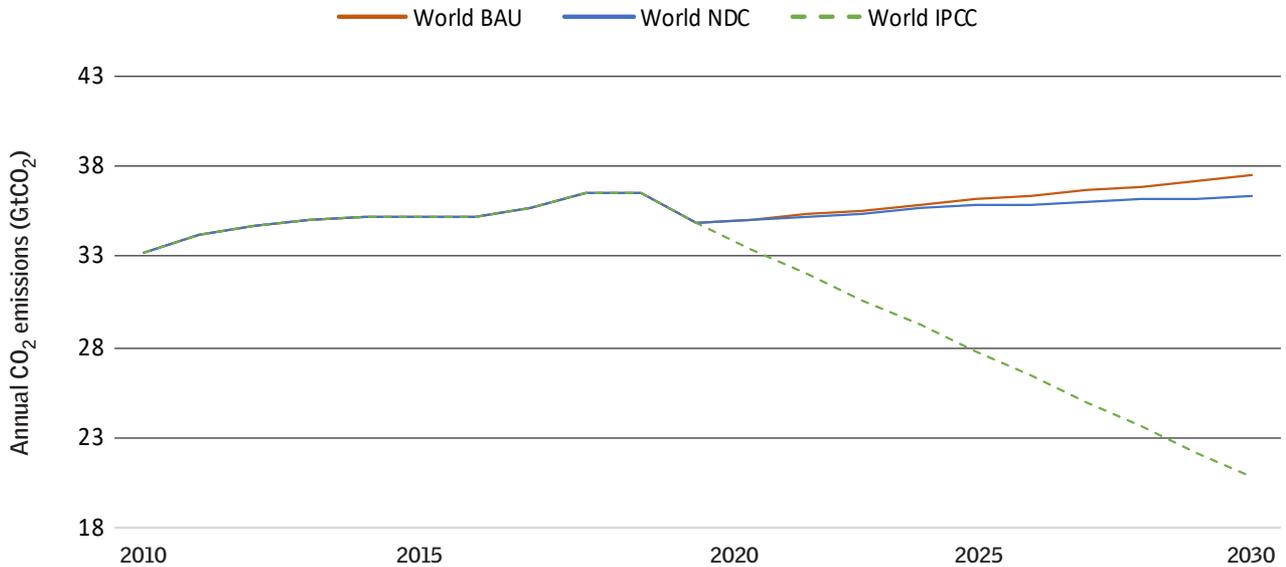
Our analysis reveals that if the world achieves the enhanced and conditional NDCs, it would be emitting 36.30 GtCO₂ in 2030. This is close to double the amount of CO₂ the world should be emitting in 2030. To put it another way, if the NDCs of these 45 countries are fully implemented, the world will emit 356.65 GtCO₂ in 2021–30 as against the

Brazil's NDC deception

According to the Climate Action Tracker, Brazil's original NDC, submitted in 2016, translated both emissions reduction targets into absolute emissions in 2025 and 2030: *"The latest updated NDC does not provide such a translation. Instead, it states that the base year emissions level of 2005 can be compared to the latest inventory, that is, the Fourth National Communication. Our calculations show that in comparison to the original NDC, the change in base year emissions data raises target emissions in 2025 and 2030 by over 70 MtCO₂e. Rather than enhancing Brazil's NDC, changes in the base year have weakened the original target."*

NOT NEARLY ENOUGH

The world will emit 3746 GtCO₂ in 2030 in a business-as-usual (BAU) scenario



available carbon budget of 351.99 GtCO₂ (calculated after deducting 2020 emissions). Under business as usual (BAU), the world would emit 362.48 GtCO₂. Thus, the NDC scenario in 2021–30 is just 5.83 GtCO₂ lower than the BAU scenario.

According to the IPCC’s Sixth Assessment Report (Working Group III), to achieve the 1.5°C goal the world must cut its emissions by 43 per cent compared to 2019 levels by 2030—this would be a 43 per cent reduction of 36.44 GtCO₂ in 2019, amounting to 20.77 GtCO₂ in 2030, if applied to fossil CO₂ emissions data published by the Global Carbon Project.⁷ We are not on track for this.

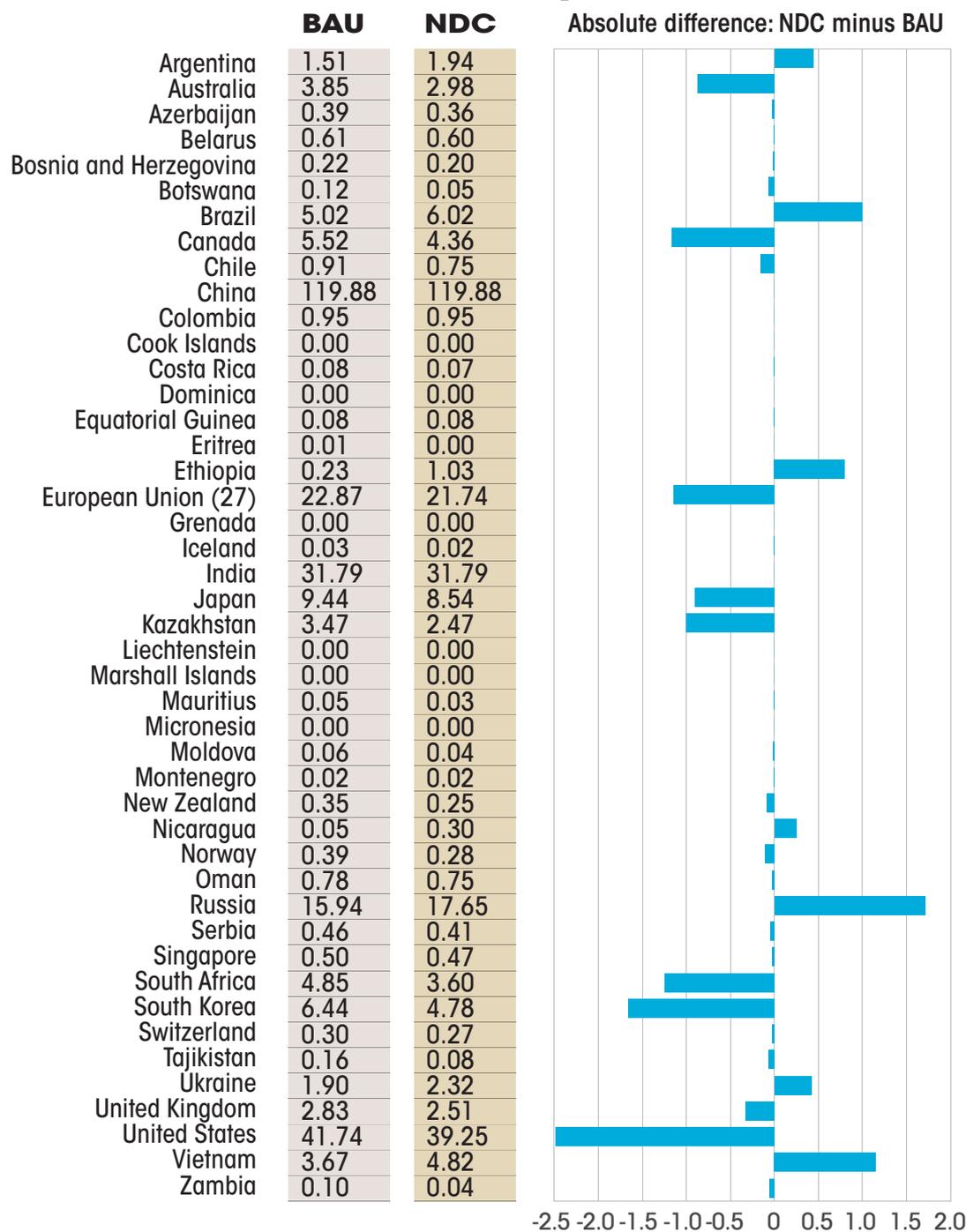
Carbon budget

Most worrying is the impact on the carbon budget—a biophysical threshold of CO₂ that can be emitted to prevent global average temperatures from rising above a certain level. Carbon budgets are constructed on the premise that there is a near-linear relationship between rising global

PROJECTED EMISSIONS FOR THE DECADE

2021–30

Figures in GtCO₂



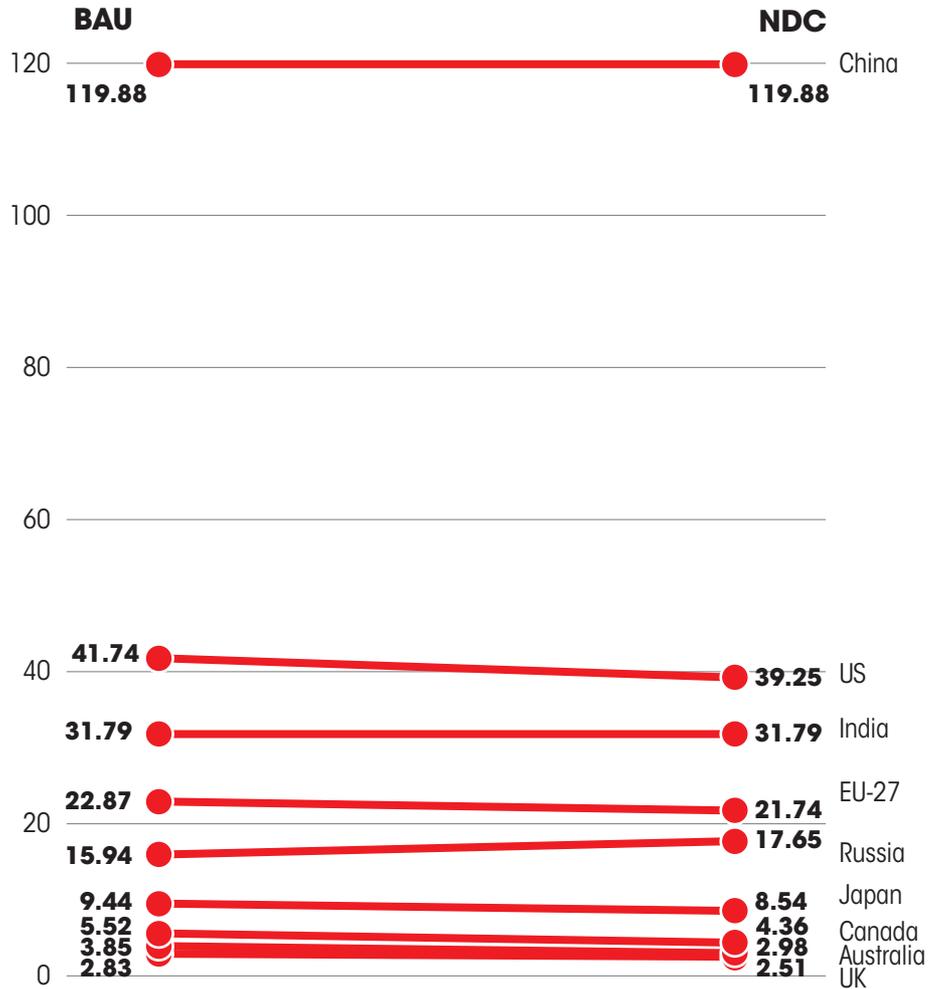
Note: We have assumed constant emissions in “business as usual” (BAU) and nationally determined contributions (NDCs) scenarios in the case of China and India as these countries do not have quantified targets for reduction.

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

PROJECTED EMISSIONS OF TOP EMITTERS 2021-30

Business as usual (BAU) v if Nationally Determined Contributions (NDCs) are achieved

Figures in GtCO₂



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

temperatures and the level of cumulative atmospheric CO₂. The latest IPCC report (AR6) says that starting in 2020, the world is left with a total carbon budget of 400 GtCO₂ for a 67 per cent chance of limited temperatures to 1.5°C.⁸ This carbon budget includes emissions from land use, land-use

REMAINING CARBON BUDGET WILL BE EXHAUSTED IN THIS DECADE

Figures in GtCO₂

World CO₂ emissions (Fossil fuel and cement)	1870–2020	1676.50
	BAU 2021–30	362.48
	NDC 2021–30	356.65
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 CO₂ emissions and reduce the 400Gt budget accordingly for this analysis; BAU: business as usual; NDC: Nationally Determined Contributions

Source: Our World in Data, IPCC and CSE analysis

change and forestry (LULUCF) of roughly 3.3 per cent. If this is deducted, then the world has a remaining carbon budget for fossil fuel emissions of 387 gigatonne (Gt) from 2020 to keep the temperature rise to 1.5°C, as per AR6. This means that once we cross this threshold—whenever we cross it—we are headed towards a temperature rise of more than 1.5°C. It should not be a surprise to learn that the world will exhaust the remaining carbon budget before 2030—even assuming the implementation of the full NDCs by countries.

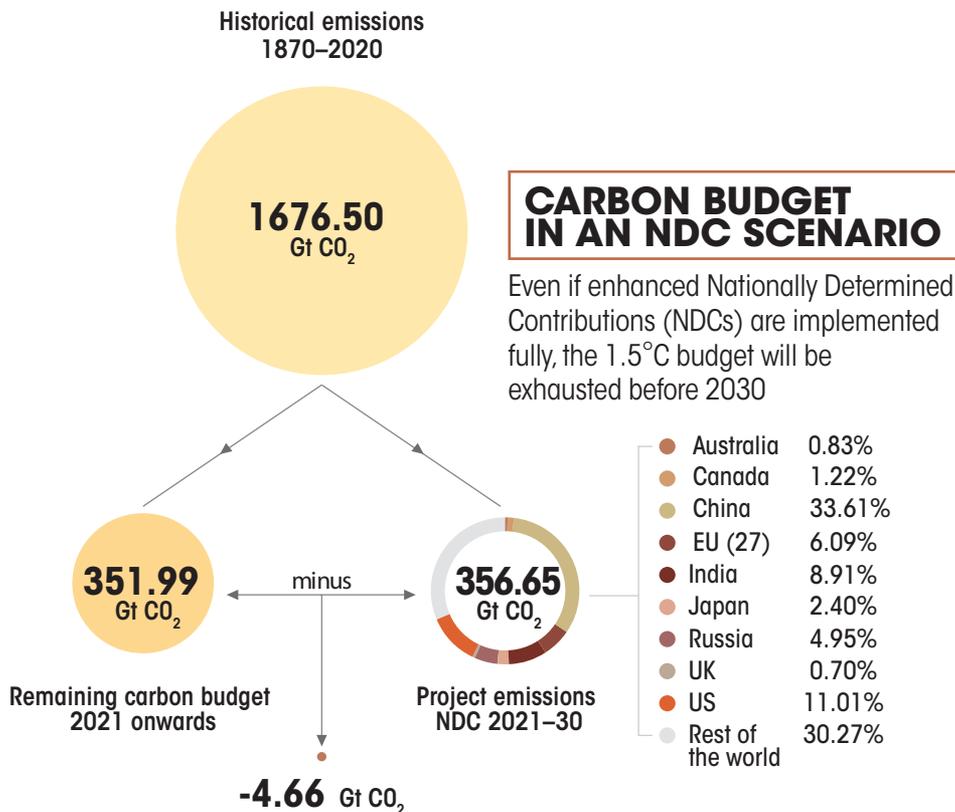
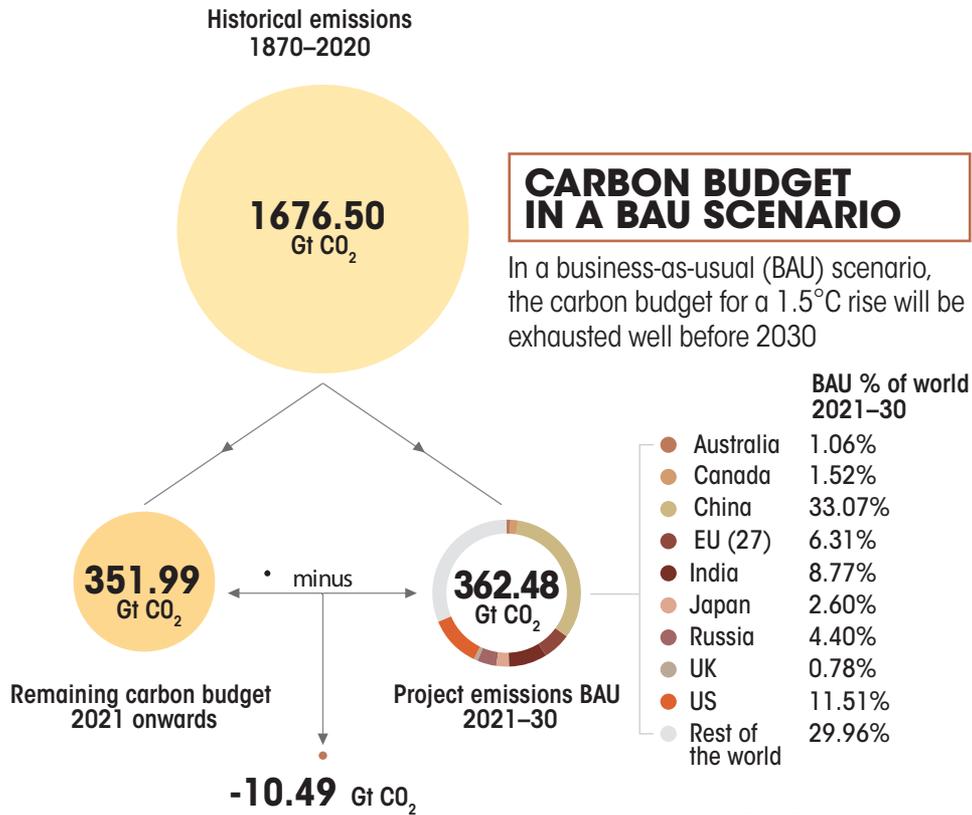
Our analysis suggests that the remaining carbon budget of 351.99 GtCO₂ starting from 2021 (deducting 2020 emissions of 34.81 GtCO₂) will be depleted by 2030 in both a business-as-usual (BAU) scenario and a scenario in which NDCs are implemented.

In a BAU scenario, we exceed the carbon budget by 10.49 GtCO₂ by 2030, and by 4.66 GtCO₂ in a NDC scenario by 2030.

Politics of mitigation at COP 27

The problem is not even a theoretical or moralistic idea. The fact is that roughly 30 per cent of the carbon budget is

MITIGATION AMBITION AND JUSTICE



available for the vast numbers of people in the world who still do not have access to energy and are way down on any human development indicator. Now unless we can tell these billions to stop breathing, or stop development, or stop everything that we know today makes the world economy prosperous, they will emit. As a result, the world will breach the guardrail of 1.5°C.

This is why equity is a prerequisite to an ambitious and effective climate agreement. It is not something that can be diluted, discarded or erased. Dissect, dice and slice the data any which way and the conclusion will be the same—a few countries have appropriated the carbon budget and their accumulated emissions are the cause of the temperature increase, which is taking the world towards catastrophe.

There is the other inconvenient truth that if the rich (including China) polluted yesterday and today, then the remaining world (roughly 70 per cent of the world still needs right to development). This part of the

world cannot be wished away, it cannot be shouted and screamed at and bullied into a low-carbon pathway. This transformation—growing but with the emissions that will further jeopardize the world—will need huge funding and technology support. This is not about charity, but about fixing, in the interests of all, what has been broken.

At COP 27, the focus will rightly be on issues such as climate finance, loss and damage (L&D), and adaptation. In a year of devastating extreme weather events and increasing suffering borne by the developing world from a crisis that they have contributed little to, attention must be paid to correcting historical wrongdoing via increased financing from developed countries, and better adaptation to climate impacts. But the issue of mitigation cannot be sidelined—rather, it must be reinforced through the UNFCCC's principle of common but differentiated responsibilities (CBDR).

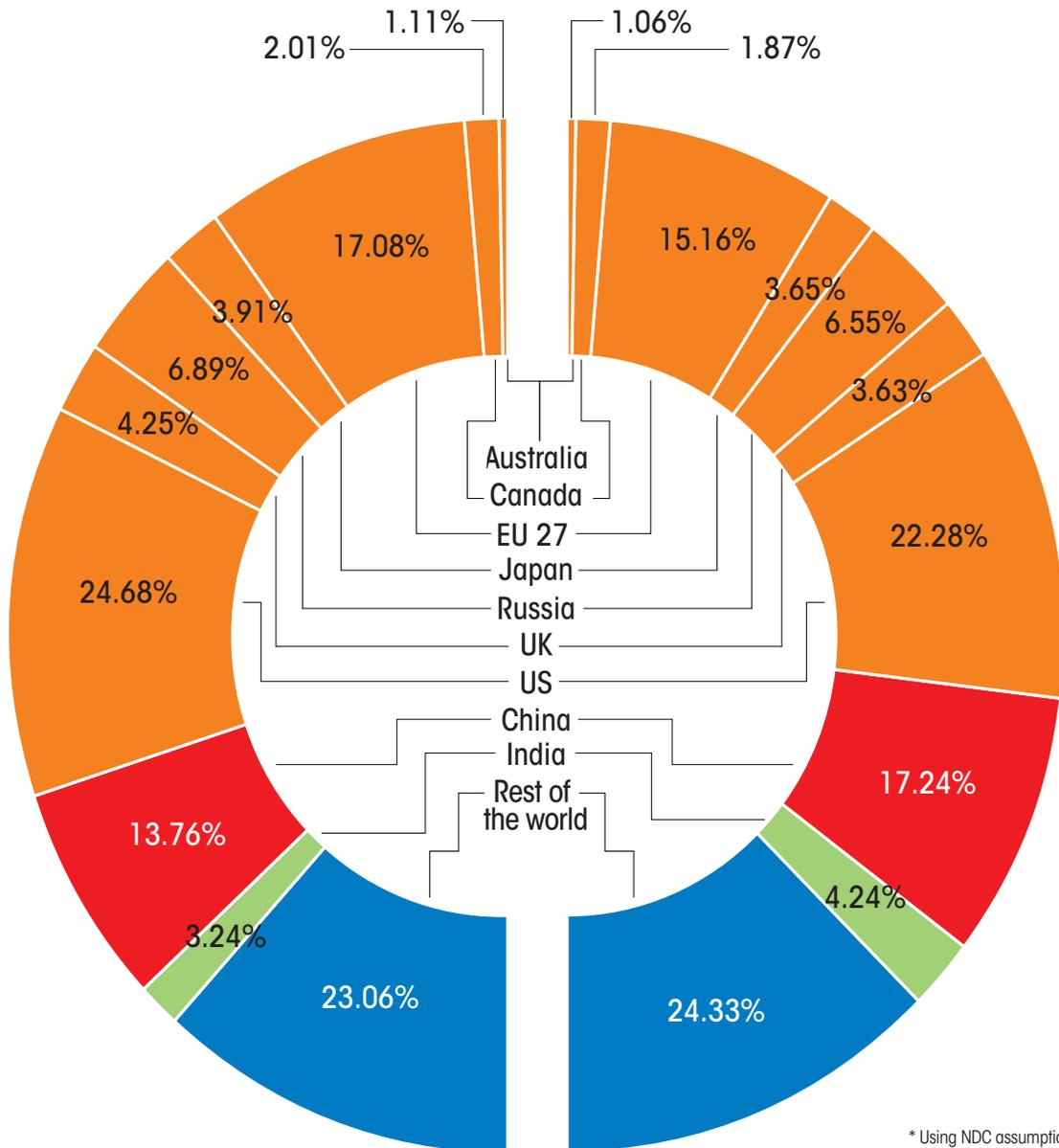
To achieve the 1.5°C goal the world must cut its emissions by 43 per cent compared to 2019 levels by 2030

APPROPRIATION OF WORLD EMISSIONS

% of total world emissions for the given period

1870–2020

1870–2030*



* 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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FACTSHEET

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ANNEXURE 1: CO₂ Emissions of 2021–30 in a BAU scenario (all emissions are in gigatonne CO₂)

Country	2020	2020 % of world	2021	2022	2023	2024
Argentina	0.16	0.45%	0.16	0.15	0.15	0.15
Australia	0.39	1.13%	0.39	0.39	0.39	0.39
Azerbaijan	0.04	0.11%	0.04	0.04	0.04	0.04
Belarus	0.06	0.17%	0.06	0.06	0.06	0.06
Bosnia and Herzegovina	0.02	0.06%	0.02	0.02	0.02	0.02
Botswana	0.01	0.02%	0.01	0.01	0.01	0.01
Brazil	0.47	1.34%	0.47	0.48	0.49	0.49
Canada	0.54	1.54%	0.54	0.54	0.54	0.55
Chile	0.08	0.23%	0.08	0.08	0.09	0.09
China	10.67	30.65%	10.89	11.12	11.36	11.60
Colombia	0.09	0.26%	0.09	0.09	0.09	0.09
Cook Islands	0.00	0.00%	0.00	0.00	0.00	0.00
Costa Rica	0.01	0.02%	0.01	0.01	0.01	0.01
Dominica	0.00	0.00%	0.00	0.00	0.00	0.00
Equatorial Guinea	0.01	0.03%	0.01	0.01	0.01	0.01
Eritrea	0.00	0.00%	0.00	0.00	0.00	0.00
Ethiopia	0.01	0.04%	0.02	0.02	0.02	0.02
European Union (27)	2.60	7.47%	2.54	2.48	2.42	2.36
Grenada	0.00	0.00%	0.00	0.00	0.00	0.00
Iceland	0.00	0.01%	0.00	0.00	0.00	0.00
India	2.44	7.02%	2.56	2.68	2.81	2.94
Japan	1.03	2.96%	1.01	1.00	0.98	0.97
Kazakhstan	0.29	0.84%	0.30	0.31	0.32	0.33
Liechtenstein	0.00	0.00%	0.00	0.00	0.00	0.00
Marshall Islands	0.00	0.00%	0.00	0.00	0.00	0.00

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2025	2026	2027	2028	2029	2030	BAU 2021-30	% of world BAU 2021-30
0.15	0.15	0.15	0.15	0.15	0.15	1.51	0.42%
0.39	0.38	0.38	0.38	0.38	0.38	3.85	1.06%
0.04	0.04	0.04	0.04	0.04	0.04	0.39	0.11%
0.06	0.06	0.06	0.06	0.06	0.06	0.61	0.17%
0.02	0.02	0.02	0.02	0.02	0.02	0.22	0.06%
0.01	0.01	0.01	0.02	0.02	0.02	0.12	0.03%
0.50	0.50	0.51	0.52	0.52	0.53	5.02	1.38%
0.55	0.55	0.56	0.56	0.56	0.56	5.52	1.52%
0.09	0.09	0.09	0.10	0.10	0.10	0.91	0.25%
11.84	12.09	12.35	12.61	12.87	13.15	119.88	33.07%
0.09	0.09	0.10	0.10	0.10	0.10	0.95	0.26%
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00%
0.01	0.01	0.01	0.01	0.01	0.01	0.08	0.02%
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00%
0.01	0.01	0.01	0.01	0.01	0.01	0.08	0.02%
0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00%
0.02	0.02	0.03	0.03	0.03	0.03	0.23	0.06%
2.31	2.26	2.20	2.15	2.10	2.05	22.87	6.31%
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00%
0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01%
3.08	3.22	3.38	3.54	3.71	3.88	31.79	8.77%
0.95	0.94	0.92	0.91	0.89	0.88	9.44	2.60%
0.34	0.35	0.36	0.37	0.39	0.40	3.47	0.96%
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00%
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00%

CONTINUED...

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...CONTINUED

Country	2020	2020 % of world	2021	2022	2023	2024
Mauritius	0.00	0.01%	0.00	0.00	0.00	0.00
Micronesia	0.00	0.00%	0.00	0.00	0.00	0.00
Moldova	0.01	0.01%	0.01	0.01	0.01	0.01
Montenegro	0.00	0.01%	0.00	0.00	0.00	0.00
New Zealand	0.03	0.10%	0.03	0.03	0.03	0.03
Nicaragua	0.01	0.01%	0.01	0.01	0.01	0.01
Norway	0.04	0.12%	0.04	0.04	0.04	0.04
Oman	0.06	0.18%	0.06	0.07	0.07	0.07
Russia	1.58	4.53%	1.58	1.58	1.59	1.59
Serbia	0.04	0.12%	0.04	0.04	0.04	0.05
Singapore	0.05	0.13%	0.05	0.05	0.05	0.05
South Africa	0.45	1.30%	0.46	0.46	0.47	0.48
South Korea	0.60	1.72%	0.61	0.61	0.62	0.63
Switzerland	0.03	0.09%	0.03	0.03	0.03	0.03
Tajikistan	0.01	0.03%	0.01	0.01	0.01	0.01
Ukraine	0.21	0.61%	0.21	0.20	0.20	0.20
United Kingdom	0.33	0.95%	0.32	0.31	0.30	0.29
USA	4.71	13.54%	4.61	4.51	4.41	4.31
Vietnam	0.25	0.73%	0.27	0.29	0.31	0.33
Zambia	0.01	0.02%	0.01	0.01	0.01	0.01
Total of 45	27.34	78.55%	27.55	27.77	28.01	28.26
Rest of the world	7.47	21.45%	7.52	7.56	7.58	7.58
World	34.81		35.06	35.32	35.58	35.84

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2025	2026	2027	2028	2029	2030	BAU 2021-30	% of world BAU 2021-30
0.00	0.00	0.00	0.00	0.01	0.01	0.05	0.01%
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00%
0.01	0.01	0.01	0.01	0.01	0.01	0.06	0.02%
0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01%
0.03	0.03	0.03	0.04	0.04	0.04	0.35	0.10%
0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01%
0.04	0.04	0.04	0.04	0.04	0.04	0.39	0.11%
0.08	0.08	0.08	0.09	0.09	0.09	0.78	0.22%
1.59	1.60	1.60	1.60	1.61	1.61	15.94	4.40%
0.05	0.05	0.05	0.05	0.05	0.05	0.46	0.13%
0.05	0.05	0.05	0.05	0.05	0.05	0.50	0.14%
0.48	0.49	0.49	0.50	0.51	0.51	4.85	1.34%
0.64	0.65	0.66	0.67	0.67	0.68	6.44	1.78%
0.03	0.03	0.03	0.03	0.03	0.03	0.30	0.08%
0.01	0.02	0.02	0.02	0.02	0.02	0.16	0.04%
0.19	0.19	0.18	0.18	0.18	0.17	1.90	0.52%
0.29	0.28	0.27	0.26	0.26	0.25	2.83	0.78%
4.21	4.12	4.03	3.94	3.85	3.77	41.74	11.51%
0.35	0.37	0.40	0.42	0.45	0.48	3.67	1.01%
0.01	0.01	0.01	0.01	0.01	0.01	0.10	0.03%
28.54	28.83	29.14	29.47	29.82	30.19	287.56	79.33%
7.57	7.55	7.50	7.44	7.36	7.26	74.92	20.67%
36.11	36.37	36.64	36.91	37.18	37.46	362.48	100.00%

ANNEXURE 2: CO₂ emissions of 2021–30 if NDCs are implemented

Country	NDC	2020	2021	2022	2023	2024
Argentina	Cap net emissions of 349 MtCO ₂ e in 2030	0.16	0.16	0.17	0.18	0.18
Australia	43% reduction of greenhouse gas emissions by 2030 below 2005 levels	0.39	0.37	0.36	0.34	0.32
Azerbaijan	35% reduction in GHG emissions by 2030 compared to 1990	0.04	0.04	0.04	0.04	0.04
Belarus	Reducing its emissions by 35% by 2030 compared to 1990 levels (unconditional), and 40% by 2030 compared to 1990 levels (conditional)	0.06	0.06	0.06	0.06	0.06
Bosnia and Herzegovina	Reduce emissions by 12.8% (unconditional) and 17.5% (conditional) by 2030; 50% (unconditional) and 55% (conditional) by 2050, compared to 2014 levels	0.02	0.02	0.02	0.02	0.02
Botswana	15% reduction in GHG emissions by 2030 compared to 2010	0.01	0.01	0.01	0.01	0.01
Brazil	Reduce emissions from 2005 levels by 37% in 2025, and by 50% in 2030	0.47	0.49	0.52	0.54	0.57
Canada	-40-45% GHG below 2005 by 2030	0.54	0.52	0.50	0.48	0.46
Chile	A goal of 95 MtCO ₂ eq by 2030 excl. LULUCF	0.08	0.08	0.08	0.08	0.08
China	Carbon intensity, peak emissions, non fossil energy and forest stock	10.67	10.89	11.12	11.36	11.60
Colombia	Maximum of 169.44 MtCO ₂ e in 2030	0.09	0.09	0.09	0.09	0.09
Cook Islands	38% reduction by 2020 (unconditional) and 81% reduction by 2030 (conditional) in GHG emission from electricity generation compared to 2006	0.00	0.00	0.00	0.00	0.00
Costa Rica	2030 cap of 9.11 MtCO ₂ e net-emissions and a maximum net-emissions budget of 106.53 MtCO ₂ e from 2021 to 2030	0.01	0.01	0.01	0.01	0.01
Dominica	Reducing its greenhouse gas emissions by 45% below 2014 levels by 2030	0.00	0.00	0.00	0.00	0.00
Equatorial Guinea	20% reduction in emissions by 2030 compared to 2010 levels, in order to achieve a 50% reduction by 2050	0.01	0.01	0.01	0.01	0.01
Eritrea	The government of Eritrea is committed to reduce the CO ₂ emissions from fossil fuels by 4.2% in 2020, 6.2% by 2025 and 12.0% by 2030 compared to the projected BAU of the reference year of 2010. If additional support is availed, it can further be reduced by 12.6% in 2020, 24.9% by 2025 and 38.5 by the year 2030.	0.00	0.00	0.00	0.00	0.00
Ethiopia	Reduce GHG emissions by 14% (unconditional) and 68.8% (conditional) by 2030 compared to BAU	0.01	0.03	0.05	0.06	0.08
European Union (27)	-52.8% GHG below 1990 by 2030 excl LULUCF	2.60	2.52	2.44	2.37	2.29
Grenada	40% reduction of the 2010 emissions levels by 2030	0.00	0.00	0.00	0.00	0.00
Iceland	"Economy-wide net reduction of at least 55% in greenhouse gas emissions by 2030 compared to 1990"	0.00	0.00	0.00	0.00	0.00
India	Emissions intensity, non fossil power, sink	2.44	2.56	2.68	2.81	2.94
Japan	-46% GHG below 2013 by 2030	1.03	1.00	0.97	0.93	0.90
Kazakhstan	15% (unconditional) to 25% (conditional) reduction in GHG emissions by 2030 compared to 1990	0.29	0.28	0.28	0.27	0.26
Liechtenstein	40% reduction in GHG emissions by 2030 compared to 1990	0.00	0.00	0.00	0.00	0.00
Marshall Islands	GHG reduction of at least 45% below 2010 levels by 2030.	0.00	0.00	0.00	0.00	0.00

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2025	2026	2027	2028	2029	2030	NDC 2021-30	% of world NDC 2021-30	BAU 2021-30	% of World BAU 2021-30	Absolute difference NDC-BAU 2021-30
0.19	0.20	0.20	0.21	0.22	0.23	1.94	0.01	1.51	0.42%	0.44
0.31	0.29	0.27	0.25	0.24	0.22	2.98	0.01	3.85	1.06%	-0.87
0.04	0.04	0.03	0.03	0.03	0.03	0.36	0.00	0.39	0.11%	-0.03
0.06	0.06	0.06	0.06	0.06	0.06	0.60	0.00	0.61	0.17%	-0.01
0.02	0.02	0.02	0.02	0.02	0.02	0.20	0.00	0.22	0.06%	-0.02
0.01	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.12	0.03%	-0.07
0.59	0.61	0.64	0.66	0.69	0.71	6.02	0.02	5.02	1.38%	1.00
0.45	0.43	0.41	0.39	0.37	0.35	4.36	0.01	5.52	1.52%	-1.16
0.08	0.07	0.07	0.07	0.07	0.07	0.75	0.00	0.91	0.25%	-0.16
11.84	12.09	12.35	12.61	12.87	13.15	119.88	0.34	119.88	33.07%	0.00
0.09	0.10	0.10	0.10	0.10	0.10	0.95	0.00	0.95	0.26%	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00
0.01	0.01	0.01	0.01	0.01	0.01	0.07	0.00	0.08	0.02%	-0.01
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00
0.01	0.01	0.01	0.01	0.01	0.01	0.08	0.00	0.08	0.02%	-0.01
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00%	0.00
0.10	0.11	0.13	0.14	0.16	0.18	1.03	0.00	0.23	0.06%	0.80
2.21	2.13	2.06	1.98	1.90	1.83	21.74	0.06	22.87	6.31%	-1.14
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.03	0.01%	-0.01
3.08	3.22	3.38	3.54	3.71	3.88	31.79	0.09	31.79	8.77%	0.00
0.87	0.84	0.81	0.77	0.74	0.71	8.54	0.02	9.44	2.60%	-0.90
0.25	0.24	0.24	0.23	0.22	0.21	2.47	0.01	3.47	0.96%	-1.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00

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Country	NDC	2020	2021	2022	2023	2024
Mauritius	Reduce GHG emissions by 40% by 2030 compared to BAU (6900 ktCO ₂ e)	0.00	0.00	0.00	0.00	0.00
Micronesia	28% (unconditional) up to 35% (conditional) reduction in GHG emissions by 2025 compared to 2000	0.00	0.00	0.00	0.00	0.00
Moldova	70% (unconditional) and up to 88% (conditional) reduction in GHG emission in 2030 compared to 1990	0.01	0.00	0.00	0.00	0.00
Montenegro	Economy-wide GHG emission reduction target of 35% by 2030 compared to base year (1990) emissions, excluding LULUCF	0.00	0.00	0.00	0.00	0.00
New Zealand	Reduce net greenhouse gas emissions to 50% below gross 2005 levels by 2030	0.03	0.03	0.03	0.03	0.03
Nicaragua	69 MtCO ₂ e in 2030 or 10% reduction compared to BAU (77 MtCO ₂ e)	0.01	0.01	0.01	0.02	0.02
Norway	At least 50% and towards 55% reduction in greenhouse gas emission by 2030 compared to 1990 levels	0.04	0.04	0.04	0.03	0.03
Oman	Oman commits to reduce GHG Emissions by 4% (unconditional) and 7% (conditional) by 2030 compared to BAU (125.254 MTCO ₂ e)	0.06	0.06	0.07	0.07	0.07
Russia	-24% GHG below 1990 by 2030 excl LULUCF	1.58	1.61	1.65	1.68	1.71
Serbia	13.2% reduction in GHG emissions by 2030 compared to 2010	0.04	0.04	0.04	0.04	0.04
Singapore	Singapore's NDC is an economy-wide absolute GHG emissions limitation target to peak its GHG emissions at 65 MtCO ₂ e around 2030. Singapore's GHG emissions in 2030 are expected to amount to no higher than 65 MtCO ₂ e.	0.05	0.05	0.05	0.05	0.05
South Africa	In 2030, annual GHG emissions will be in a range from 350-420 Mt CO ₂ -eq	0.45	0.44	0.42	0.40	0.39
South Korea	Reduce GHG emissions by 40% by 2030 compared to 2018 levels (727.6 MtCO ₂ e)	0.60	0.58	0.55	0.53	0.51
Switzerland	Reduce greenhouse gas emissions by at least 50% by 2030 compared to 1990 levels	0.03	0.03	0.03	0.03	0.03
Tajikistan	Not exceeding 80-90% (amounts to 1.7-2.2 tCO ₂ e per capita) (unconditional) of 1990 level by 2030; achieve 65-75% (amounts to 1.2-1.7 tCO ₂ e per capita) (conditional) of 1990 level by 2030	0.01	0.01	0.01	0.01	0.01
Ukraine	65% reduction below 1990 levels by 2030	0.21	0.22	0.22	0.22	0.23
United Kingdom	-69% GHG below 1990 by 2030 excl LULUCF	0.33	0.32	0.30	0.29	0.27
USA	-43-50% GHG below 2005 by 2030 excl LULUCF	4.71	4.57	4.43	4.28	4.14
Vietnam	Reduce total GHG emissions by about 9% compared to the BAU scenario	0.25	0.30	0.34	0.38	0.42
Zambia	Zambia commits to reduce its GHG emissions conditionally by at least 25% (under limited international support) and towards 47% (with substantial international support) compared to 2010 levels	0.01	0.01	0.01	0.01	0.00
Total of 45		27.34	27.46	27.59	27.73	27.88
Rest of the world		7.47	7.52	7.56	7.58	7.58
World		34.81	34.98	35.14	35.30	35.46

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2025	2026	2027	2028	2029	2030	NDC 2021-30	% of world NDC 2021-30	BAU 2021-30	% of World BAU 2021-30	Absolute difference NDC-BAU 2021-30
0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.05	0.01%	-0.01
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.06	0.02%	-0.02
0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.01%	-0.01
0.03	0.02	0.02	0.02	0.02	0.02	0.25	0.00	0.35	0.10%	-0.09
0.03	0.03	0.04	0.04	0.05	0.05	0.30	0.00	0.05	0.01%	0.25
0.03	0.03	0.02	0.02	0.02	0.02	0.28	0.00	0.39	0.11%	-0.11
0.07	0.08	0.08	0.08	0.08	0.09	0.75	0.00	0.78	0.22%	-0.03
1.75	1.78	1.82	1.85	1.89	1.92	17.65	0.05	15.94	4.40%	1.71
0.04	0.04	0.04	0.04	0.04	0.04	0.41	0.00	0.46	0.13%	-0.05
0.05	0.05	0.05	0.05	0.05	0.05	0.47	0.00	0.50	0.14%	-0.03
0.37	0.35	0.34	0.32	0.30	0.28	3.60	0.01	4.85	1.34%	-1.25
0.49	0.47	0.45	0.42	0.40	0.38	4.78	0.01	6.44	1.78%	-1.66
0.03	0.03	0.03	0.02	0.02	0.02	0.27	0.00	0.30	0.08%	-0.03
0.01	0.01	0.01	0.01	0.01	0.01	0.08	0.00	0.16	0.04%	-0.07
0.23	0.23	0.24	0.24	0.24	0.25	2.32	0.01	1.90	0.52%	0.42
0.26	0.24	0.23	0.21	0.20	0.19	2.51	0.01	2.83	0.78%	-0.33
4.00	3.85	3.71	3.57	3.42	3.28	39.25	0.11	41.74	11.51%	-2.49
0.46	0.50	0.54	0.59	0.63	0.67	4.82	0.01	3.67	1.01%	1.15
0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.10	0.03%	-0.06
28.04	28.21	28.40	28.60	28.81	29.03	281.73	0.79	287.56	79.33%	-5.83
7.57	7.55	7.50	7.44	7.36	7.26	74.92	0.21	74.92	20.67%	0.00
35.61	35.76	35.90	36.04	36.17	36.30	356.65	1.00	362.48	100.00%	-5.83

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MITIGATION AMBITION AND JUSTICE

ANNEXURE 3: Per capita emissions

Country	Population 2020	Population 2030	Emissions 2020 in tonne
Argentina	45,376,763	49,237,000	156,978,063
Australia	25,693,267	28,062,000	391,891,928
Azerbaijan	10,093,121	10,654,000	37,720,462
Belarus	9,379,952	9,160,000	57,445,417
Bosnia and Herzegovina	3,280,815	3,127,000	21,417,961
Botswana	2,351,625	2,774,000	6,518,934
Brazil	212,559,409	223,852,000	467,383,500
Canada	38,037,204	40,925,000	535,822,990
Chile	19,116,209	19,458,000	8,117,1490
China	1,411,100,000	1,430,161,000	10,667,887,453
Colombia	50,882,884	53,417,000	89,104,941
Cook Islands			
Costa Rica	5,094,114	5,468,000	7,907,389
Dominica	71,991	73,000	139,250
Equatorial Guinea	1,402,985	1,874,000	10,265,267
Eritrea			
Ethiopia	114,963,583	144,944,000	14,664,773
European Union (27)	447,479,493	442,626,000	2,598,575,259
Grenada	112,519	116,000	294,834
Iceland	366463	389000	2,935,990
India	1,380,004,385	1,503,642,000	2,441,792,313
Japan	126,261,000	119,584,000	1,030,775,384
Kazakhstan	18,755,666	20,660,000	291,335,929
Liechtenstein	38,137	39,000	141,012
Marshall Islands	59194	65,000	151,282
Mauritius	1,265,740	1,266,000	3,979,358
Micronesia	115,021	127,000	147,500

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MITIGATION AMBITION AND JUSTICE

Emissions BAU 2030 in tonne	Emissions NDC 2030 in tonne	Per capita 2020	Per capita BAU 2030	Per capita NDC 2030
145,377,200.4	225,134,640	3.46	2.95	4.572
379,226,016	220,312,668.8	15.25	13.51	7.851
40,061,673.2	33,765,657.25	3.74	3.76	3.169
63,389,345.78	62,213,826.6	6.12	6.92	6.792
22,002,779.82	18,831,279.3	6.53	7.04	6.022
1,928,291.44	3,855,879.65	2.77	6.95	1.390
53,100,730.6	711,880,000	2.20	2.37	3.180
564,832,183.6	354,507,195.4	14.09	13.80	8.662
99,941,534.65	70,300,000	4.25	5.14	3.613
13,146,367,772	13,146,367,772	7.56	9.19	9.192
99,118,233.3	9,928,6561.54	1.75	1.86	1.859
8,042,118.111	6,741,400	1.55	1.47	1.233
171,136.888	96,729.6	1.93	2.34	1.325
7,165,709.44	5,493,068.8	7.32	3.82	2.931
31,800,990.73	175,380,000	0.13	0.22	1.210
2,051,877,787	1,825,720,939	5.81	4.64	4.125
392,346.8267	156,086.4	2.62	3.38	1.346
2,747,571.067	1,011,511.35	8.01	7.06	2.600
3,881,578,021	3,881,578,021	1.77	2.58	2.581
876,870,144.2	709,939,619.5	8.16	7.33	5.937
397,651,028.9	210,910,464.8	15.53	19.25	10.209
100,967.5881	119,380.8	3.70	2.59	3.061
196,154.0871	74,562.4	2.56	3.02	1.147
5137,717.161	3,063,600	3.14	4.06	2.420
227,727.0411	83,356	1.28	1.79	0.656

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MITIGATION AMBITION AND JUSTICE

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Country	Population 2020	Population 2030	Emissions 2020 in tonne
Moldova	2,620,495	2,480,000	5,146,876
Montenegro	621,306	616,000	2,309,894
New Zealand	5,090,200	5,429,000	33,475,158
Nicaragua	6,624,554	7,392,000	5,073,650
Norway	5,379,475	5,803,000	41,283,000
Oman	5,106,622	5,936,000	62,162,570
Russia	144,073,139	140,864,000	1,577,136,041
Serbia	6,899,126	6,465,000	43,135,397
Singapore	5,685,807	5,801,000	45,503,904
South Africa	59,308,690	65,956,000	451,957,087
South Korea	51,836,239	51,435,000	597,605,055
Switzerland	8,636,561	9,139,000	32,298,333
Tajikistan	9,537,642	11,557,000	9,447,656
Ukraine	44,132,049	41,195,000	213,908,873
United Kingdom	67,081,000	69,421,000	329,578,911
USA	331,501,080	348,075,000	4,712,770,573
Vietnam	97,338,583	104,164,000	254,303,169
Zambia	18,383,956	24,326,000	6,572,938

NOTES

The above 45 countries have been selected since their NDCs have percentage reduction targets of emissions for 2030 and are quantifiable.

BAU emissions for 2021–30 have been projected based on the median annual rate of change of the past decade (2010–20).

This analysis uses only annual production-based carbon dioxide (CO₂) emissions from the burning of fossil fuels for energy and cement production published by the Global Carbon Project. Land use change and consumption emissions are not included.

DATA SOURCES

CO₂ emissions: Our World in Data based on Global Carbon Project; BP; Maddison; UNWPP <https://ourworldindata.org/co2-and-other-greenhouse-gas-emissions>

NDCs

Climate Watch: https://www.climatewatchdata.org/ndcs/country/ARG/full?document=second_ndc-EN

Climate Action Tracker: <https://climateactiontracker.org/climate-target-update-tracker-2022/>

UNFCCC NDC Registry: <https://unfccc.int/NDCREG>

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MITIGATION AMBITION AND JUSTICE

Emissions BAU 2030 in tonne	Emissions NDC 2030 in tonne	Per capita 2020	Per capita BAU 2030	Per capita NDC 2030
6,476,887.896	3,333,484.68	1.96	2.61	1.344
2,173,857.898	1,245,062.65	3.72	3.53	2.021
35,404,599.28	18,785,519.5	6.58	6.52	3.460
5,356,069.083	51,060,000	0.77	0.72	6.907
37,170,928.95	17,837,269.63	7.67	6.41	3.074
93,265,631.19	86,199,802.8	12.17	15.71	14.522
1,608,346,151	1,919,223,274	10.95	11.42	13.625
48,860,984.75	39664,497.77	6.25	7.56	6.135
53,070,246.68	48,100,000	8.00	9.15	8.292
512,516,106.4	284,900,000	7.62	7.77	4.320
683,698,235.2	380,960,440.8	11.53	13.29	7.407
28,401,370.61	22,518,754.71	3.74	3.11	2.464
22,360,756.52	7,093,153.9	0.99	1.93	0.614
171,409,633.5	247,040,497.2	4.85	4.16	5.997
249,082,868.2	186,148,644.4	4.91	3.59	2.681
3,765,039,514	3,280,562,742	14.22	10.82	9.425
480,247,594.1	668,220,000	2.61	4.61	6.415
13,742,123.22	1,358,166.34	0.36	0.56	0.056

AGENDA FOR CLIMATE ACTION

SUNITA NARAIN

Climate justice is not a theoretical or moralistic idea. The fact is that roughly 30 per cent of the carbon budget is available for the vast numbers of people in the world, who still do not have access to energy and are way down on any human development indicator. Now unless we can tell these billions to stop breathing, or stop development, or stop everything that we know today makes the world economy prosperous, they will emit. As a result, the world will breach the guardrail of 1.5°C.

This is why equity is a pre-requisite to an ambitious and effective climate agreement. It is not something that can be diluted, discarded or erased. Dissect, dice and slice the data any which way and the conclusion will be the same—few countries have appropriated the carbon budget and their accumulated emissions are the cause of the temperature increase, which is taking the world towards catastrophe.

There is the other inconvenient truth that if the rich (including China) polluted yesterday and today, then the remaining world (roughly 70 per cent of the world still needs right to development).

Agenda for effective and ambitious climate action

First, not to work to erase the reality of climate injustice, but to embrace it for the future. In 1992, at the Rio Conference, when the UN Framework Convention on Climate Change was agreed upon, it was built on the principle of common but differentiated responsibility. This simply meant that the already rich countries would reduce, create space for the emerging world to grow and the emerging world would grow differently with enabling funds and technology. But in the next 30 years, the single biggest effort has been to undermine,

and to finally erase, the principle of equity from climate negotiations. The 2015 Paris Agreement, which was lauded by all, removed the last vestige of historical responsibility from the text. Climate justice was relegated to a footnote.

The second agenda is to stop proselytization about net zero emissions—it only deepens inequity and delays action. IPCC says the world must be net zero by 2050 and halve the emissions by 2030 over its 2010 levels to stay below 1.5°C. If the world has to be net zero by 2050, then the differential must apply, and the industrialised must be net zero by 2030 at the very latest. We need clear plans for 2030 from all, particularly from the emitters of the past and the present.

The third agenda has to be about turning the spotlight on China. For long, China has hidden behind the Group of 77—developing countries—and not made its real intention clear. In this coming decade, China will occupy 30 per cent of the available carbon budget; it has no absolute emissions reduction target. In this long game, its intent is to gain “equivalence” with the rest of the big polluters by 2030. This means there is no space left for the rest of the world to grow. This is unacceptable. China today is yesterday’s US and it is difficult to see how the world will call it out.

The fourth agenda is finance—real, tangible and at the scale of the transformation needed. For long this promise has been lost in the imagery. This is what has led to the breakdown in trust between countries. This agenda is linked to discussions on market-based mechanism. Currently the effort is to find creative ways to “buy” cheap emission reductions from the developing world. It is a redo of the disastrous Clean Development Mechanism, but the intent is the same. This will only add to the crisis of climate change.

The fact is today the world—including India and countries in Africa—need to act to reduce emissions. Instead of cheap carbon offset options, the market mechanism must formulate a way to fund transformational and expensive options in these countries. This means it needs to be

designed, with a floor on the price of the cost of abatement that this mechanism will fund. This means not just talking the talk, but running the walk.

The fifth agenda is the near-stuck discussion on “loss and damage”. We are seeing huge devastations, caused by weird weather events. With each repeated disaster, people lose their ability to cope—to live in their repeatedly hit and devastated region; they get increasingly impoverished; and increasingly desperate. This adds to their insecurity and to the insecurity of the world. Climate change is a great leveler. So, it is time for an effective agreement to underwrite the losses and damages and to hold the polluters responsible. It’s time for polluters to pay.

Agenda for India

The question is what do we do in India. We are victims of climate change impacts—we know this and IPCC reconfirms that we will see the worst of the devastation of this increasingly warming world. We are the world’s third highest emitter of greenhouse gases (fourth if we take EU-27 as a group) but the scale of our past, current and future emissions is not comparable to the big polluters—not in terms of total amount or in terms of per capita.

India can and must ramp up our actions to combat climate change—because we have the advantage of doing things differently and also, we have the reason to do this for our own benefit—clean air and clean energy. We must be strident on the need for global action; stress on the inequity of inaction; and show leadership in not just walking, but running the talk. It is a tall order given the fact that emissions of carbon dioxide are still directly linked to economic growth. But it is the order of the times we live in.

Climate change is an existential threat. We know that now. It is time we acted with this knowledge, in the interests of all.