

The Cut X Index

#CUTxPERCENT

Greta put words on it. Here are the numbers.

CutXpercent is an annually updated set of figures that shows what is required to meet the objective of the Paris Agreement. It provides the required annual emissions reductions for the 1.5°C target and the 2°C target, for every nation in the world. This is what it all comes down to.

Everyone has the **Right to Know** these numbers.

A database that breaks down each country's necessary emissions reductions to stay within the carbon budget.



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TEHRA
The Environment and Human Rights Academy

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The purpose of these educational materials is to help young people understand the climate crisis on a systems level through engaging with the topics and foster agency through the skills and techniques of journalism.

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We cannot be held liable for how these materials are used in practice.

These educational resources have been developed to the best of our knowledge, using reliable and widely-recognized sources. While every effort has been made to ensure accuracy and clarity, we cannot guarantee that the materials are free from errors or omissions. Climate change is a field of knowledge that continues to evolve, and teachers and learners are encouraged to consult up-to-date scientific sources (e.g. IPCC, IPBES or national agencies) to complement and enrich these activities.

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Learning objectives

1. Understand the CutX Index and apply its concept to global and national greenhouse gas emissions reduction contexts.

✓ GreenComp alignment:

- Systems thinking
- Critical thinking

Unit guide

This unit is a good follow-up unit to The Carbon Budget unit, as it provides a clear and accessible database for holding countries to account.

Begin by having the students look at the CutX website and discuss based on the opening activity, before showing them the project instructions. For the project, they'll need to look at and make sense of the numbers in the CutX Index, and make a short explainer report to explain what these numbers mean.

Prior to having them complete the project, give a lecture based on the Learn text or have them read the texts themselves.



Watch and discuss

(10 minute activity)

Go to CutXPercent.org and after reading the section under "Greta put words on it. Here are the numbers", watch the video of Kevin Anderson, Professor of Energy and Climate Change and former Director of the Tyndall Centre for Climate Change Research

Discuss the following in pairs and then as a class:

1. Prof. Anderson says that he admires how the younger generation have taken the science and used that to interpret what needs to be done. Why do you think it's important to focus on the numbers and the science, instead of just listening to whether or not states are meeting their pledges under the Paris Agreement?
2. The site states: "Every nation has a different responsibility." Why does it say that? Do you agree or disagree?

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Everyone has the **Right to Know** these numbers.

We demand laws that respect science.
A systemic problem requires a systemic solution.

Every nation has a different responsibility.

[GET YOUR NATION'S CUTx% NUMBER →](#)



And in any case, in order to do their fair share to stay within the 1.5 C budget, they need to reduce their emissions by 87.6% each year (as per 2025).

The report can take the shape of a social media reel, an infographic, a short written article, or a short radio piece.





1. The CutX Index

We have established that the Global North is most responsible for CO₂ emissions, whilst the Global South suffers most from the consequences of these emissions. How do we now move forward from this?

One way is to look at the CutX Index, to find out which countries need to reduce their emissions by a greater amount.

The CutX Index is a database which prescribes emissions reductions for each country based on a fair, per capita distribution of the remaining carbon budget. As it works only with the remaining carbon budget, it does not tackle historic emission differences between countries.

Instead, the CutX Index focuses on the 'bare minimum' that each country needs to achieve before 2030 so that global warming can be limited to 1.5°C or 2°C and catastrophic climate change can be avoided.

The injustices of climate responsibility compared to its effects, and of historic cumulative emissions should also be tackled, using other metrics and concepts, such as climate reparations.

In other words, CutX should not be used as the only tool, but supported with financial and technical aid provided to Global South countries as well as cancelling the money they "owe" to Global North countries.

This debt assumes a particularly unjust dimension when examined in light of how resource extraction in the Global South has historically served the interests of the Global North - both under colonialism and in contemporary forms of economic exchange.

With debt cancellation, money and technology could then be used to help Global South countries transition to renewable energy and adapt to the current and future consequences of climate change that are unavoidable. As will be made clear, most countries, especially those of the Global North, are far from achieving even these 'bare minimum' emissions reductions.



A protester holds up the Spanish phrase: "Get mining out" during a protest demanding the Constitutional Court declare unconstitutional the proposed executive decree 754, saying it violates federal rights and endangers natural resources in Quito, Ecuador, Monday, Sept. 18, 2023. The decree would turn the current environmental consultation process into an informative briefing, and remove asking locals for permission on resource extraction projects. (AP Photo/Dolores Ochoa)



1.1 Who needs to reduce their emissions and by how much?

As seen below, the 2°C carbon budget is 900 gigatonnes (Gt) CO₂.

This budget is accurate for the start of 2020, and so all emissions emitted since then count towards this budget.

To simplify things, this section will only use this 900 Gt budget.

When the 900 Gt CO₂ budget is divided between all global citizens, everyone is attributed an equal 115 tonnes of CO₂ to emit before they reach their fair share of the 2°C budget.

To calculate the carbon budget of a country, simply multiply that individual budget by the number of people living in it. By looking at how many consumption emissions are currently emitted in that country, we can then also calculate how quickly each country needs to reduce its emissions to stay within its national budget.

Let's apply this to an example.

Pakistan has a population of around 227 million people¹, each with an equal 115 tonne share of the 900 Gt CO₂ budget. Pakistan is therefore attributed just over 26 Gt of CO₂ of the 900 Gt CO₂ budget - 227 million (the number of people) times 115 tonnes (the proportion of the global budget we are all allowed).

Looking at Pakistan's current emissions, we can calculate that to stay within its budget of 26 Gt CO₂, Pakistan must reduce its emissions at a rate of 0.5% per year from 2024 onwards. If it does so, and all other countries do the same to stay within their respective national carbon budgets, global emissions will come to a stop before we reach our 900 Gt CO₂ limit.

However, Pakistan is not one of the highest emitting countries and should not be singled out as having to drastically reduce its emissions.





Switzerland is considered to be one of the most 'developed' countries in the world². It is also considered as a very 'green' country. It has a lot of wealth allowing people to have hybrid and electric cars, solar panels on their houses, access to excellent public transport in a setting of pristine natural beauty. However, when you measure things up on a fair, per capita basis, the climate injustice becomes clear.

Switzerland has a population of only around 8.6 million people, making its fair share of the 900 Gt CO₂ budget only 0.99 Gt CO₂. The average Swiss currently emits 14 tonnes of CO₂ every year – 14 times more than the average Pakistani.

At this rate, an average Swiss would have burned through roughly half of their total personal 115 tonne allowance by early 2024. To stay within its 0.99 Gt CO₂ budget, Switzerland needs to reduce its emissions by 26.9% per year!



Zurich, Switzerland

The CutX Index provides a list of how much each country needs to cut emissions to stay within their fair share of the carbon budget. This list can be found [here](#), and some key extracts are shown on the next page.

The carbon emissions reductions listed in the CutX Index are based on consumption emissions. This ensures that countries which import many products that are made abroad are held responsible for the 'offshore' emissions of these imported products they consume.

The carbon reductions of the CutX Index also do not take into account the use of any carbon removal technologies for past, current or future emissions. Although often included in NDC pledges and climate scenario projections, they remain unjust and technologically and economically unfeasible on the scale required.



Country	Average annual rate of change (2017-2022) (% per year)	Annual reduction required from 1/1/2025 onwards to remain within 1.5 C budget (% per year or tonnes per capita)	Annual reduction required / increase allowed from 1/1/2025 onwards to remain within 2 C budget (% per year)
Switzerland	-0.90%	-27 t/cap	-26.90%
Norway	-4.80%	-87.60%	-8.80%
Singapore	1.60%	-96 t/cap	-30t/cap
Belgium	0.00%	-42 t/cap	-42.70%
South Korea	-0.30%	-24/t cap	-24.40%
United States	-0.10%	-38 t/cap	-38.20%
Vanuatu	6.80%	-2.60%	0.40%
Colombia	1.20%	-9.20%	-2.20%
China	1.90%	-0.5t/cap	-10.60%

Table 1: Table showing some country's average annual rate of change in comparison with their annual emissions reductions required to stay within their fair share of the 300 Gt CO₂ budget for 1.5 C and the 900 Gt CO₂ budget for 2°C. Data from the CutX Index.³



As seen in the table above, high emitting countries need to reduce their emissions faster to stay within their national fair share of the 900 Gt CO₂ budget for 2°C:

Switzerland needs to reduce emissions by 26.9% per year, the USA by 38.2% per year, South Korea by 24.4% per year and so on.

The highest emitting countries have the biggest emissions reduction responsibility, which grows with every year of inaction. This inaction of high emitting countries also has the biggest global impact.

For instance, if the USA fails to fulfil its NDC pledges (even if they are not proactive enough), the probability of going over 2°C of warming increases by a significant 8%⁴. Considering that the USA has now left the Paris Agreement, this scenario is becoming very likely.

2.2 The importance of using consumption-based emissions

By using consumption-based emissions to balance out differences in where products are produced and consumed, and by using per capita emissions to balance out population differences between countries, the highly consumptive patterns of the Global North quickly become obvious.

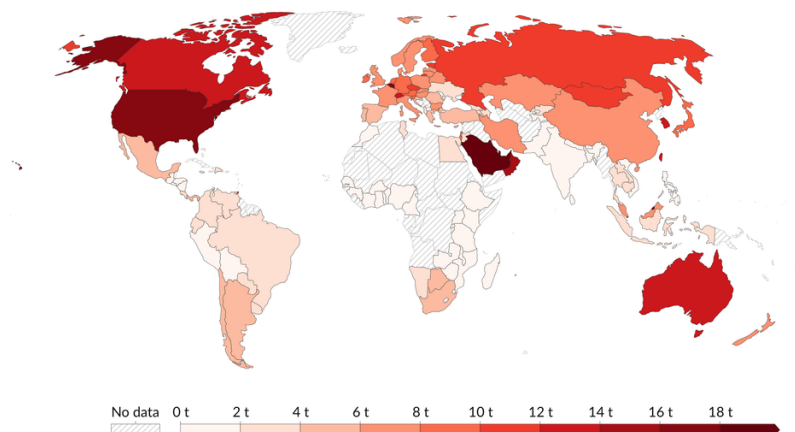
Countries in the Global South that commonly have a large population and that do not consume as many products as they produce and export are often portrayed in the media as 'the big emitters'.

This is especially true for countries such as China and India. However, when using consumption-based per capita emissions, we can see that to keep to their fair share of the budget China and India only need to reduce their emissions by 10.6% and 1.8% per year respectively, compared to Switzerland's 26.9% and the USA's 38.2%.

Per capita consumption-based CO₂ emissions, 2022

Consumption-based emissions¹ are national emissions that have been adjusted for trade. It's production-based emissions minus emissions embedded in exports, plus emissions embedded in imports.

Our World
in Data



Data source: Global Carbon Budget (2024); Population based on various sources (2024)
OurWorldinData.org/co2-and-greenhouse-gas-emissions | CC BY



Using consumption-based per capita emissions also gives some Global South countries space to actually increase their current emissions without overstepping their national budgets. These countries include the Democratic Republic of Congo and Rwanda who can increase their annual emissions every year by 0.2% and 3.0% respectively and still be within their fair share of the carbon budget.

These emissions are much needed to build essential infrastructure such as hospitals, roads, sewage systems and schools. However, they are not sufficient to allow these countries to develop their economies to the level of the wealthiest, highest emitting countries. For this reason, Global South countries and the climate justice movement require climate reparations, such as transfer of financial and technological resources and debt cancellation, from the Global North to the Global South.



A Quichua woman plays a horn during a demonstration of Indigenous people of different ethnic groups in front of PetroEcuador in Quito, Ecuador, Thursday, May 16, 2019. They are demanding that the government refrain from extracting natural resource from their soil. The Waorani won an early court victory recently to stop oil extraction. (AP Photo/Dolores Ochoa)



The required annual emissions reduction rates of the highest emitting countries also highlight why it is so unlikely that global warming will be kept to below 1.5°C.

The biggest emitters would have had to bring their emissions to a grinding halt in 2020, which has already passed, to stay within their share of the 1.5° C warming budget. However, emissions only increased year on year. The highest emitting countries would now not only have to bring their emissions to zero immediately but also actively remove CO₂ from the atmosphere.

As mentioned, this task is currently technologically and economically impossible on the scale required and often unjust.

For instance, Belgium currently emits around 17.9 tonnes of CO₂ per person per year. To stay within its 1.5°C budget, Belgium would have to reduce its annual emissions by 42 tonnes of CO₂ per capita per year, starting in 2025. This means that they would have to cut their emissions to zero and then extract another 24.1 tonnes of CO₂ per person (reduction needed (42t CO₂/cap) minus the current emissions (17.9 t CO₂/cap) to compensate for the overshoot that exists.⁵

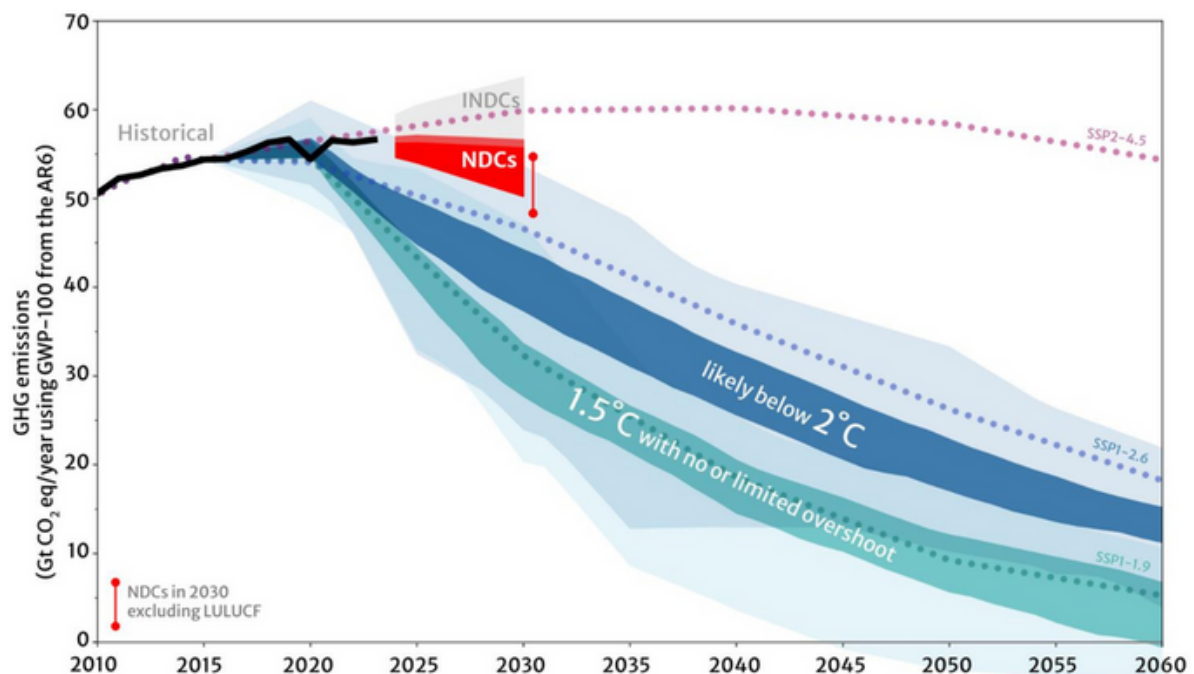


Figure 2: Global GHG Emission Trends Under Updated NDCs. Source: UNFCCC (2025b).⁶



1.3 Leading by example?

As seen in the last section, high-emitting countries have the biggest task ahead when it comes to reducing emissions and staying within their fair share of the global carbon budget. These countries should be leading the way in reducing carbon emissions and taking their responsibility seriously.

Yet, when looking at globally submitted NDCs, it becomes clear that low-emitting countries with the least responsibility to reduce emissions are often those that submit the most ambitious and effective pledges.

The UN's website⁷ explains how NDCs work and gives some examples of who is leading the way in global emissions reductions. This list of leading countries are however not the highest emitters, as the list comprises Chile, Colombia, the Dominican Republic, Jamaica, Morocco, Nepal, Panama, Rwanda and Vietnam.

These countries have a per capita annual emission rate of between 0.2 and 5 tonnes of CO₂, and only need to reduce their emissions by an average of 2.9% per year (and in the case of Rwanda can even increase their emissions by 3% a year) to stay within their fair share of the 900 Gt CO₂ budget.

The absence of high emitting countries from this list shows us that the highest emitting countries are not pulling their weight. The CutX Index data also contains a list of all the current emissions reductions pledges made by all countries, which further highlight this lack of leadership from the highest emitting countries. For instance, Singapore's 1.1% reduction pledge falls way short of its annual decrease of 30 tonnes per capita responsibility to stay within its fair share of the 900 Gt CO₂ budget.



Visitors walk beneath the "Supertrees" during a light and sound show at Gardens By The Bay in Singapore, Monday, July 17, 2023. The giant structures are meant to mimic real life trees by providing shade from the sun while also capturing the sun's energy using solar panels at the top. They range in size from the tallest, at around 50 meters (164 feet), down to 25 meters (82 feet) tall. The structures are part of Singapore's vision of being "a city in a garden." (AP Photo/David Goldman)



2. The importance of clear data for accountability

Data clarity is missing for the climate crisis. Current national emission trends and pledges to reduce them are buried in vague and relative promises.

The most prevalent example of this is seen in the NDCs which are very often expressed as a promise to reduce emissions by a certain percentage by 2030 relative to 1990 levels.

There are two main issues with such relative pledges, both of which will be demonstrated through the case study of Canada's NDC.

Canada has pledged to cut emissions by 40-45% below 2005 levels by 2023 and in December of 2023 has further announced a target to reduce GHG emissions by 45-50% by 2035.

In 2005 Canada emitted around 759Mt CO₂. With the 40-45% target, Canada

needs to bring down emissions to 420-455 Mt CO₂ by 2030. In 2023, the country's emissions were around 694Mt CO₂, a reduction of around 8.5% during the 18 years between 2005 and 2023⁸.

At this pace, reaching 40-45% reductions below 2005 by 2030 is extremely unlikely.

One of the issues with NDC pledges is that there are no intermediary 'checkpoints' before the promised end goal. This means that there is no limit to the amount of CO₂ emitted right up until the (not legally binding) deadline of 2030.

If there are no checkpoints, it becomes more difficult to keep governments accountable with fulfilling their pledges. Canada could continue to claim progress, while continuing to emit high levels of GHGs, and even expanding oil production, such as approving the crude oil Trans Mountain pipeline⁹.



Light rain falls as protesters opposed to the Trans Mountain Pipeline expansion project arrive at a park just below a construction site at the company's Burnaby Terminal tank farm, after marching in Burnaby, B.C., on Wednesday, March 10, 2021. (Darryl Dyck/The Canadian Press via AP)

Another issue is that the percentage based targets lack clarity and context. Only by doing some research and digging into the complex, detailed NDC document can we find information that helps translate the pledges into absolute CO₂ emissions numbers.

Using only the statement 'a reduction in CO₂ emissions of 40-45 percent by 2030 compared to 2005 levels' we cannot tell how many tonnes of CO₂ a country has emitted, is currently emitting, or is pledging to emit. Subsequently, we do not know if they will keep to their fair share of the carbon budget either.

A percentage reduction by 2030 compared to 1990 levels is the standard phrasing of NDCs. These vague, relative pledges ultimately do not allow for an easy and accessible overview of global carbon emission trends and responsibilities.

The CutX Index, along with its simplicity, can be a very powerful tool in holding countries accountable and clearing up the data obfuscation of NDCs. The transparency and accountability of the CutX Index should be commonplace in the climate crisis.

One way in which these numbers could be brought to the forefront of global attention is through the use of media and journalism.

The key data presented through the CutX Index and the concepts behind it can help people understand the urgency of the climate crisis through the carbon budget, how best to divide up that budget globally and subsequently by how much each country needs to reduce their emissions to stay within their fair share of the budgets.

In contrast to most existing global national climate pledges, the CutX Index sets out the national annual emissions reductions necessary to avoid catastrophic climate change.

These reductions are based on absolute emission data and numbers, not obfuscating relative percentages changes.



Endnotes

1. 2020 population statistics used to coincide with the carbon budget start date
2. UNDP, 2024: Human Development Insights. Full list available at <https://hdr.undp.org/data-center/country-insights#/ranks>
3. cutxpercent.org
4. Liu and Raftery (2021): Country-based rate of emissions reductions should increase by 80% beyond nationally determined contributions to meet the 2 °C target
5. For comparison the current largest single carbon removal plant in the world can extract a total of 4,000 tonnes of CO₂ a year - barely one 50th of Belgium's (which contains only 0.15% of the world's population) annual emissions
6. Reconnecting Climate Governance With Sustainable Development: Evidence From Three Decades of COP1–COP29 - Scientific Figure on ResearchGate. Available from: https://www.researchgate.net/figure/Global-GHG-Emission-Trends-Under-Updated-NDCs-Source-UNFCCC2025b_fig4_396901626 [accessed 3 Nov 2025]
7. <https://www.un.org/en/climatechange/all-about-ndcs#countries>
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