

SUSTAINABILITY & GLOBAL

S1 - Microeconomics and Accounting Fall Semester 2024

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> Pedagogical Objectives

General

«Defining the challenges and concepts of sustainable development at the global level»

Specific

1. Understand the **global sustainability challenges/issues**
2. Explain the limitations of Gross Domestic Product (GDP) as a measure of **sustainable development, well-being or quality of life**
3. Know the **development indicators alternative** or additional to GDP (international + CH) and qualify them according to a “weak” or “strong” sustainability approach
4. Know the principles of **green economy, circular economy, wellbeing economy & doughnut economics**

> **Thematics**

- Reminder of the global sustainability challenges: demography, poverty, inequalities, environmental degradation, public debt, planetary boundaries & **new development paradigm**
- The misuse of gross domestic product (GDP) to measure well-being and quality of life: main limitations
- Other indicators or system of indicators to measure development, such as:
 - HDI, Gross National Happiness
 - System of indicators “MONET 2030” (CH)
 - System of indicators “Measuring well-being” (CH)
 - Ecological footprint
- Green Economy, Circular Economy, Wellbeing Economy, Doughnut Economics

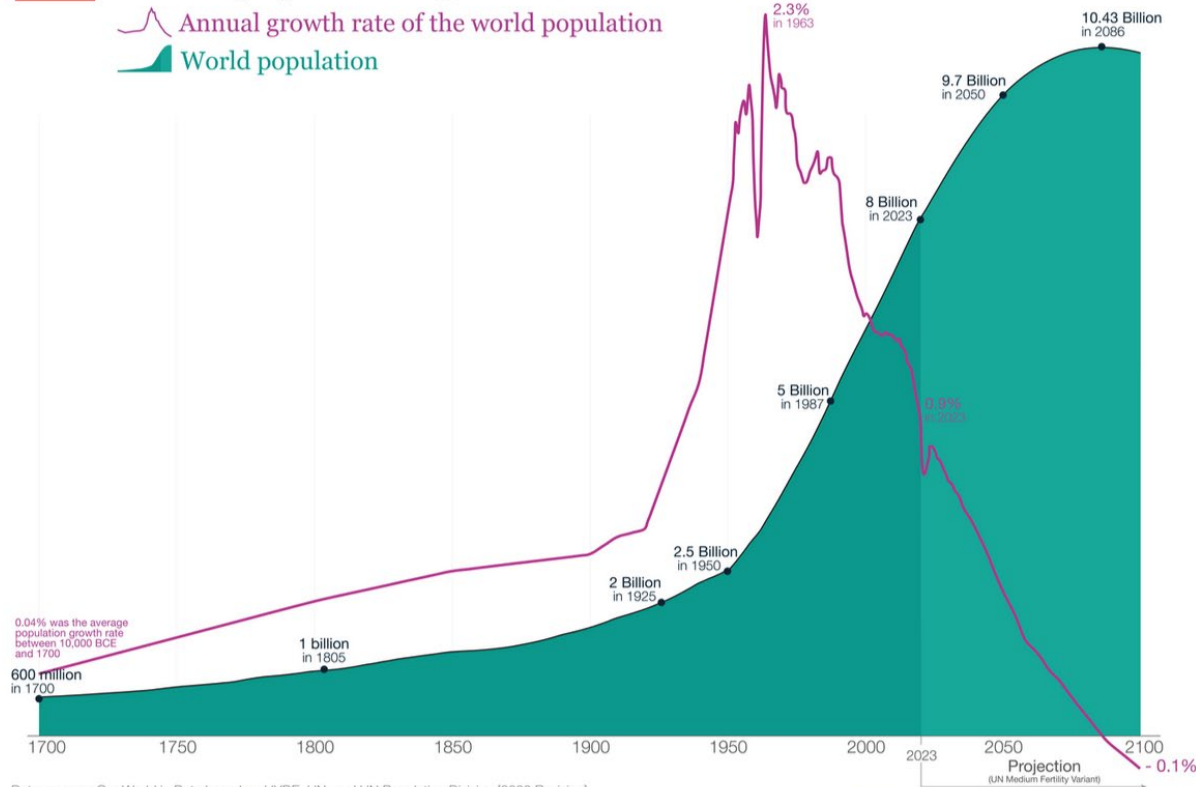
> Exam info - Sustainability Part

- Date: Friday 10.01.2025
- Time: start at 2.30pm in Aula Bellevue (arrival 15 minutes before)
- Duration: 30 minutes
- The exam aims is to evaluate the achievement of the objectives communicated and covers all content (courses, readings, videos)
- Form: written exam on paper, multiple choices and short development questions
- Authorized means: writing material only

A review of global sustainability challenges/issues and more in-depth analysis

World population growth, 1700-2100

Annual growth rate of the world population
World population



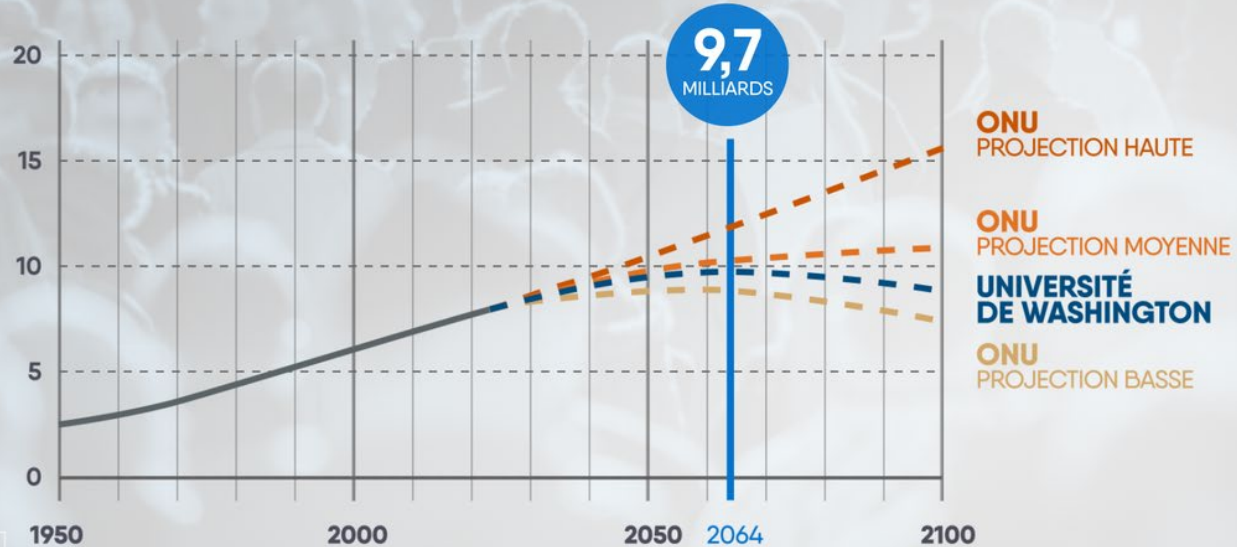
Data sources: Our World in Data based on HYDE, UN, and UN Population Division [2022 Revision]
This is a visualization from [OurWorldinData.org](https://ourworldindata.org), where you find data and research on how the world is changing.

Licensed under CC-BY by the authors Max Roser and Hannah Ritchie.

**Overconsumption
= pressure on
resources**

RTS

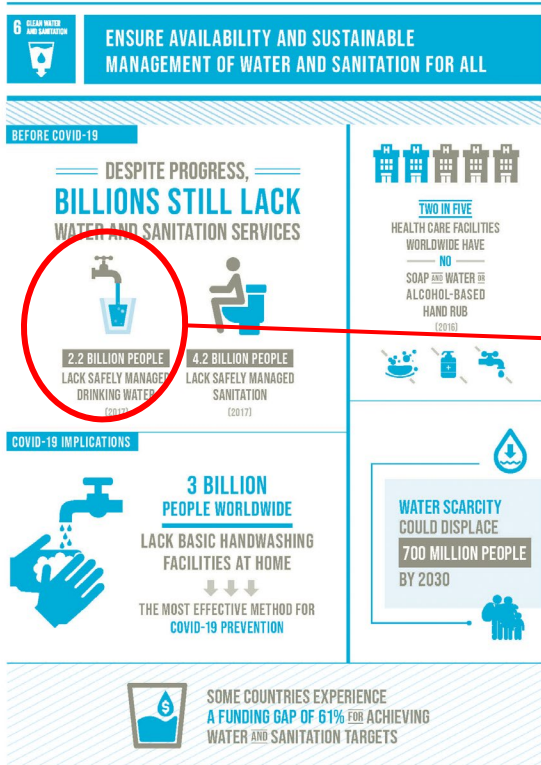
ÉVOLUTION DE LA POPULATION MONDIALE ESTIMATIONS EN MILLIARDS DE PERSONNES



Géo
Politis

SOURCE: ONU - UNIVERSITÉ DE WASHINGTON

Access to vital resources is not guaranteed for all: for example, water ...



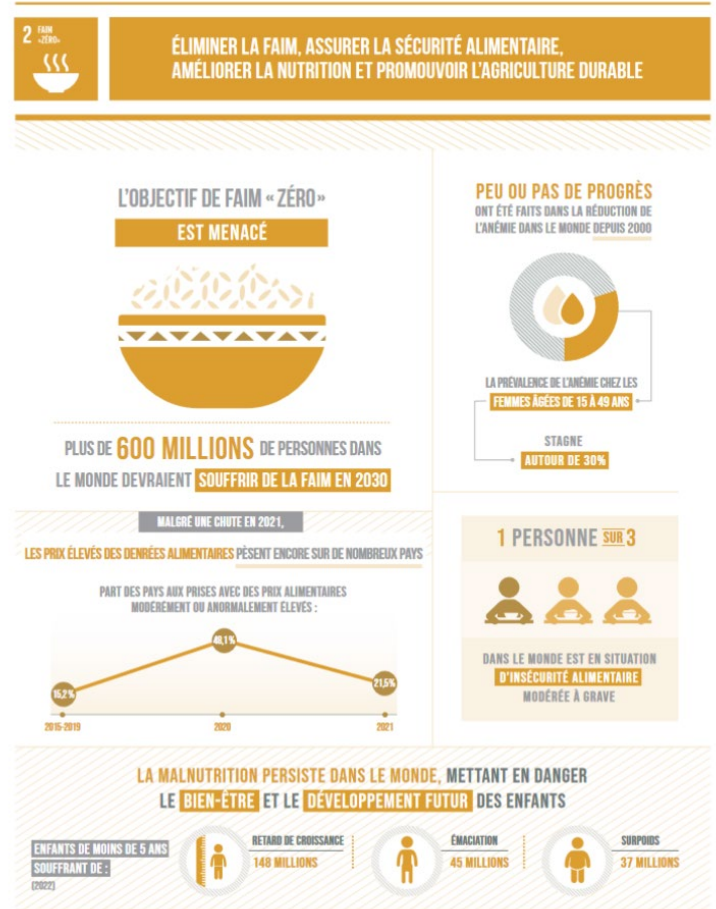
Example of food ...

→ Hunger is mainly the result of **armed conflict**, repeated **economic crises**, **climate change** and the **structural failure** of a profoundly **unequal global agricultural** and food system (Oxfam).

Over 820 million people suffering from hunger; new UN report reveals stubborn realities of 'immense' global challenge



FAO/Miriam Vatsyayana Local school children eat their meals at the Ban Bor Primary School in Xay District, Lao People's Democratic Republic. (14 May 2019)

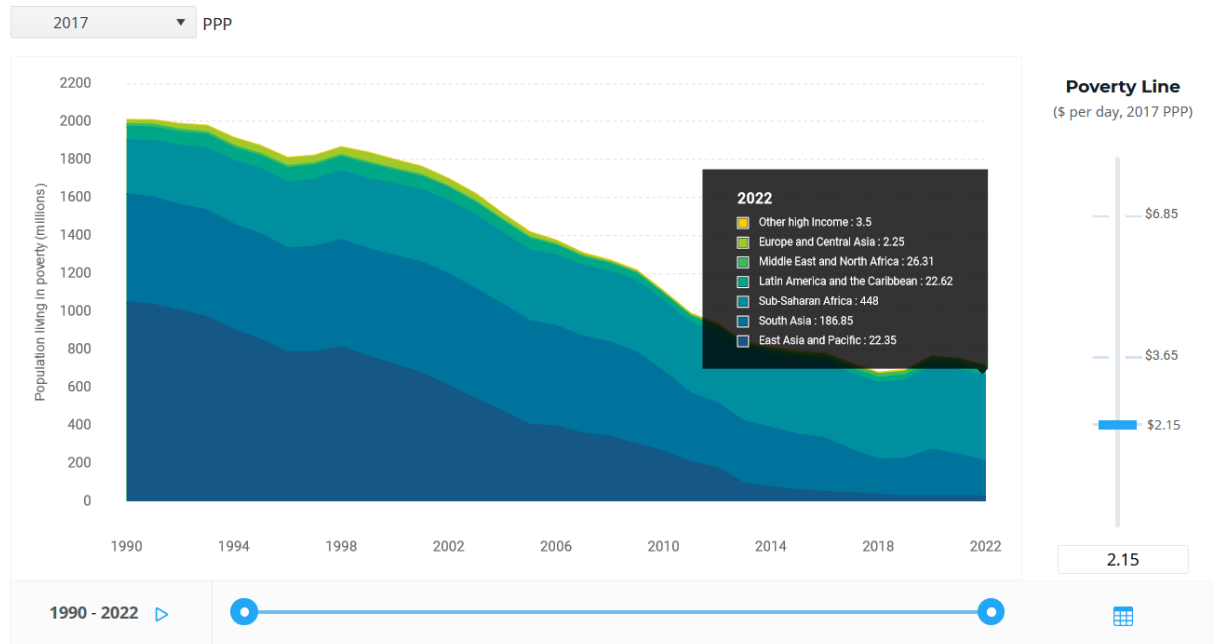


DID YOU KNOW?

712
million

Take a Tour

people lived below the **\$2.15** per day poverty line in 2022

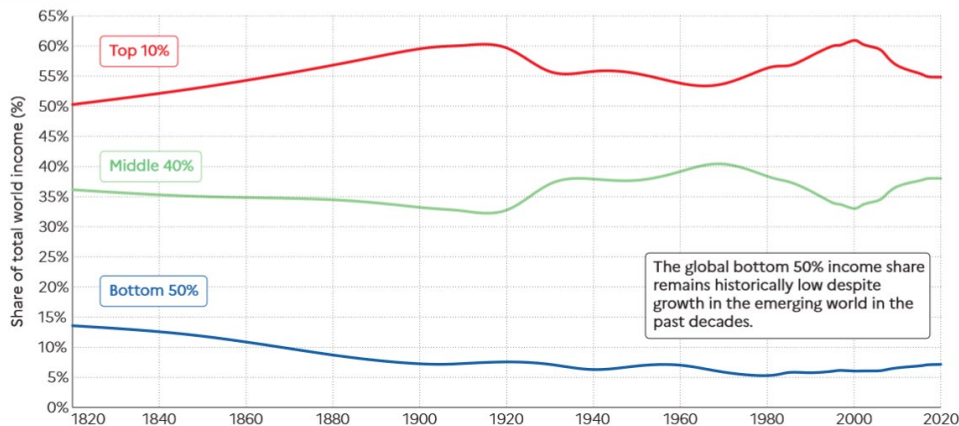


**Since 1990,
extreme poverty
has declined
rapidly worldwide**

\$2.15 is the defined threshold for extreme poverty, but this is not the only possible poverty line measure. \$3.65 reflects poverty lines in lower-middle-income countries, while \$6.85 reflects standards in upper-middle-income countries.

Unequal concentration of wealth: the rich are getting richer

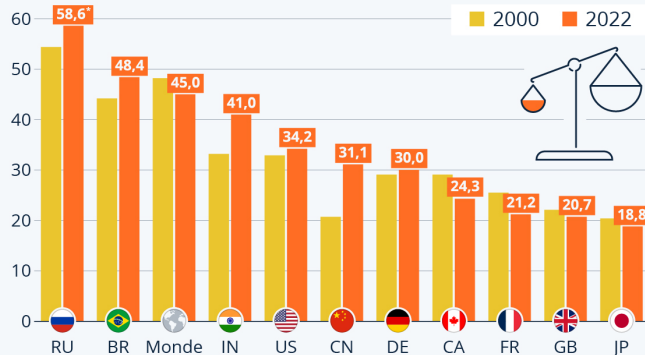
Figure 7 Global income inequality, 1820-2020



Interpretation: The share of global income going to top 10% highest incomes at the world level has fluctuated around 50-60% between 1820 and 2020 (50% in 1820, 60% in 1910, 56% in 1980, 61% in 2000, 55% in 2020), while the share going to the bottom 50% lowest incomes has generally been around or below 10% (14% in 1820, 7% in 1910, 5% in 1980, 6% in 2000, 7% in 2020). Global inequality has always been very large. It rose between 1820 and 1910 and shows little long-run trend between 1910 and 2020. **Sources and series:** see wir2022.wid.world/methodology and Chancel and Piketty (2021).

La part de la richesse captée par les 1 % les plus riches

Part de la richesse nationale détenue par la tranche des 1 % les plus riches dans une sélection de pays, en %



* Donnée de 2021 pour la Russie.

Source : Credit Suisse - Global Wealth Report 2023



statista

Concentration inégale des richesses : Les 1% les plus riches aujourd'hui capteraient 27% du revenu mondial

1



Bernard Arnault/family
\$212.1B

Top 10 Overall

2



Elon Musk
\$194.6B

3



Jeff Bezos
\$192.4B

4



Mark Zuckerberg
\$161.8B

5



Larry Ellison
\$144.0B

6



Warren Buffett
\$128.7B

7



Bill Gates
\$123.1B

8



Larry Page
\$120.3B

9



Steve Ballmer
\$119.2B

10



Sergey Brin
\$115.4B

Top 10 Women



Françoise B. Meyers/family
\$99.5B



Alice Walton
\$64.8B



Julia Koch/family
\$60.1B



Jacqueline Mars
\$39.8B



MacKenzie Scott
\$34.5B



Miriam Adelson/family
\$33.8B



Gina Rinehart
\$30.2B



Savitri Jindal/family
\$30.0B



Rafael A. Diamant
\$29.4B



Abigail Johnson
\$28.6B



INEQUALITY KILLS

The unparalleled action needed to combat unprecedented inequality in the wake of COVID-19

SUMMARY



INEQUALITY KILLS



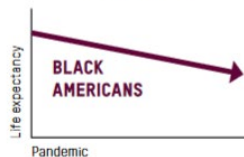
The wealth of the 10 richest men has doubled, while the incomes of 99% of humanity are worse off, because of COVID-19.¹



252 men have more wealth than all 1 billion women and girls in Africa and Latin America and the Caribbean, combined.



3.4 million Black Americans would be alive today if their life expectancy was the same as White people's. Before COVID-19, that alarming number was already 2.1 million.⁴



Inequality contributes to the death of at least one person every four seconds.²

COUNT THE SECONDS



Since 1995, the top 1% have captured nearly 20 times more of global wealth than the bottom 50% of humanity.³



Twenty of the richest billionaires are estimated, on average, to be emitting as much as 8,000 times more carbon than the billion poorest people.⁵



Social Inequalities, As seen from sky



<https://www.archdaily.com/960023/social-inequality-as-seen-from-the-sky?fbclid=IwAR2CqNhhQo7YSxSmd3UWYquBTXrPYfVvYHGdtesNqVtKYUXyBeNhh0cAYM07A>



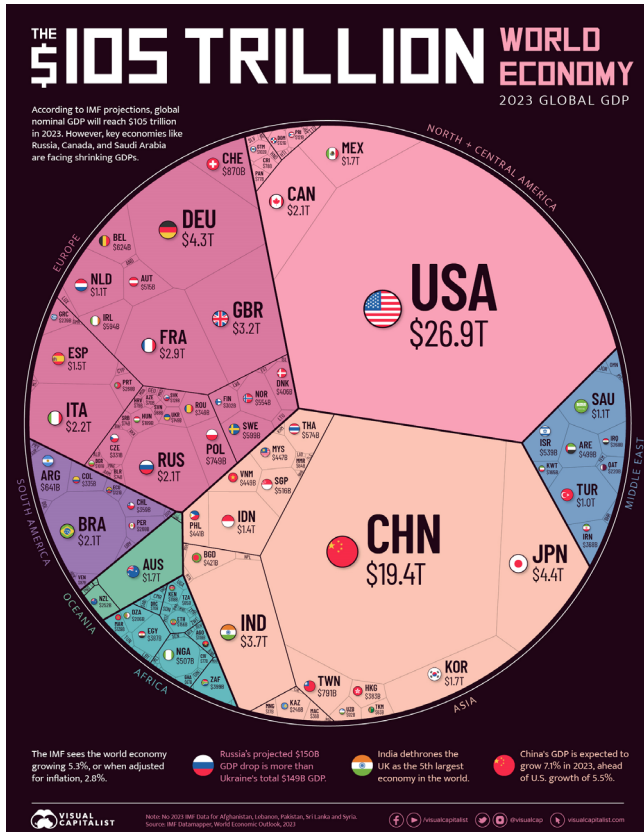
Un pactole à 2520 milliards si on taxe les riches, affirment des ONG



PHOTO NICK IWANYSHYN, ARCHIVES REUTERS

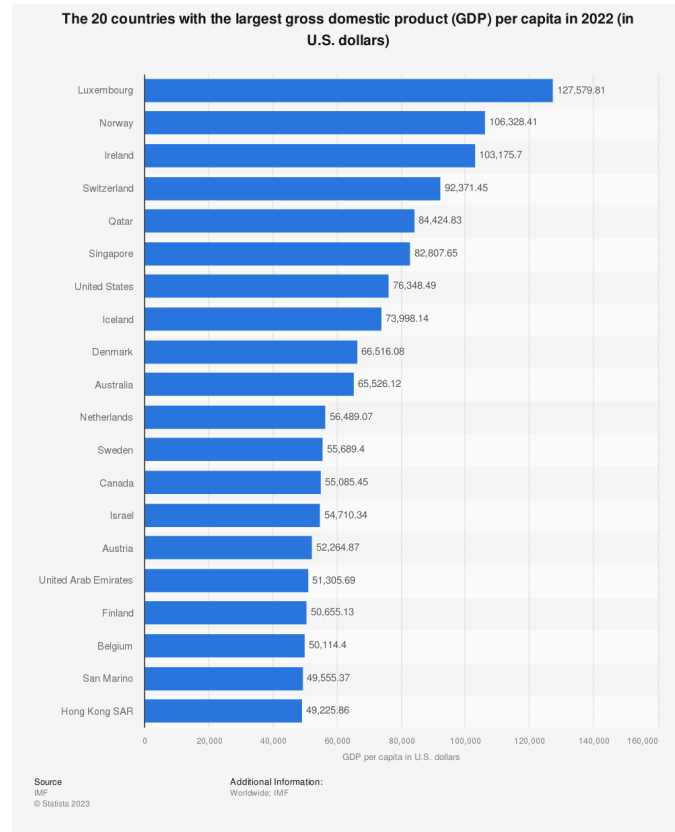
Les ONG proposent la mise en place d'une taxe annuelle de 2 % pour les personnes possédant plus de 5 millions de dollars, de 3 % pour les patrimoines au-delà de 50 millions de dollars et de 5 % après un milliard de dollars, qui permettrait de rapporter chaque année 2520 milliards de dollars.

GDP per country



<https://www.visualcapitalist.com/visualizing-the-105-trillion-world-economy-in-one-chart/>

GDP per capita



<https://www.statista.com/statistics/270180/countries-with-the-largest-gross-domestic-product-gdp-per-capita/>

Total and per capita income in **Purchasing Power Parity (PPP)** for a selection of countries, 2021

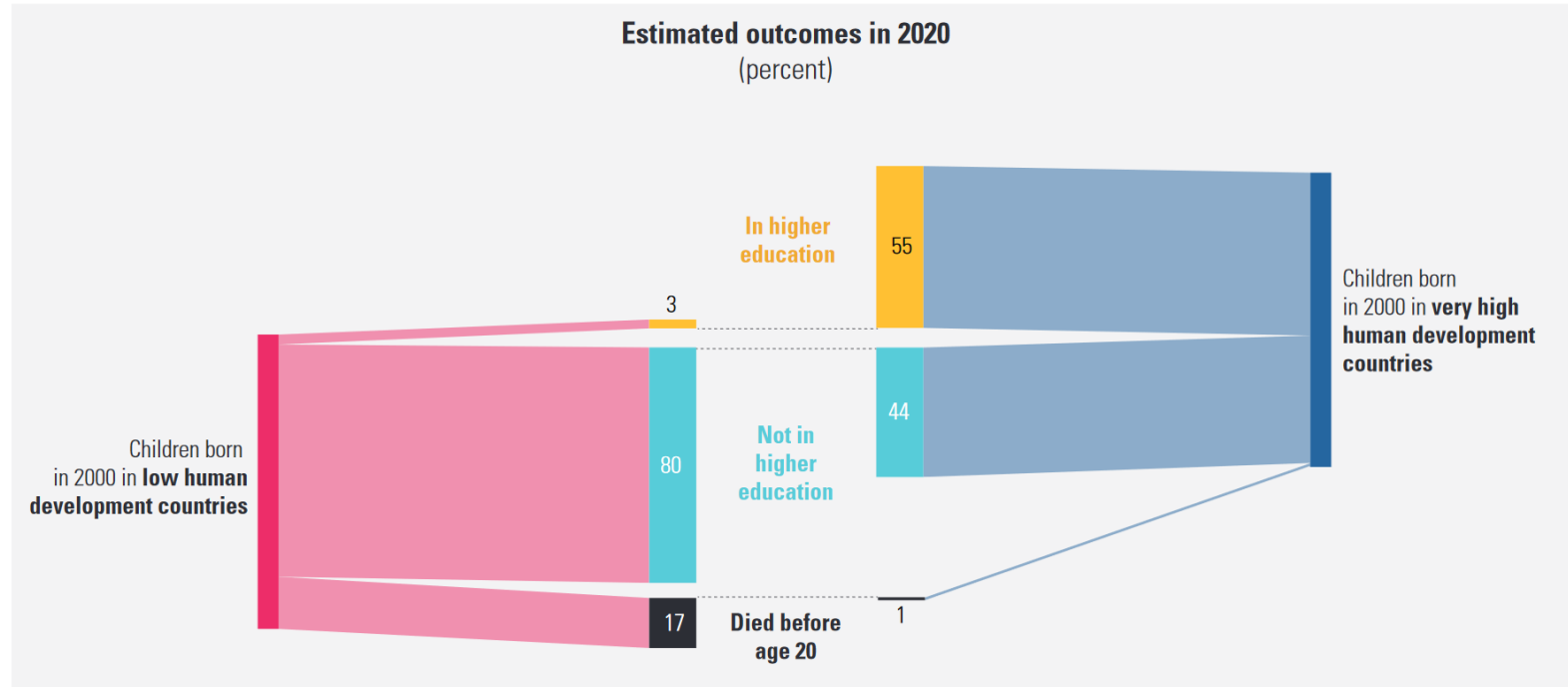
Country	Total Revenue GNI (Mia US\$), PPP	Revenue per inhabitant GNI/hab/year (US\$, PPP)
China	28'620	20'264.6
United States	23'777	71'608.8
India	11'250	7'992.8
Russia	5'598	38'029.9
France	3'728	55'020.2
Nigeria	1'176	5'514.2
Switzerland	699	80'307.7
Qatar	288	107'191.6
Ethiopia	314	2'686.7
Congo	35	1'309.4

<https://databank.worldbank.org/reports.aspx?source=2&series=NY.GNP.PCAP.PP.KD&country>

Human Development Inequalities

FIGURE 2

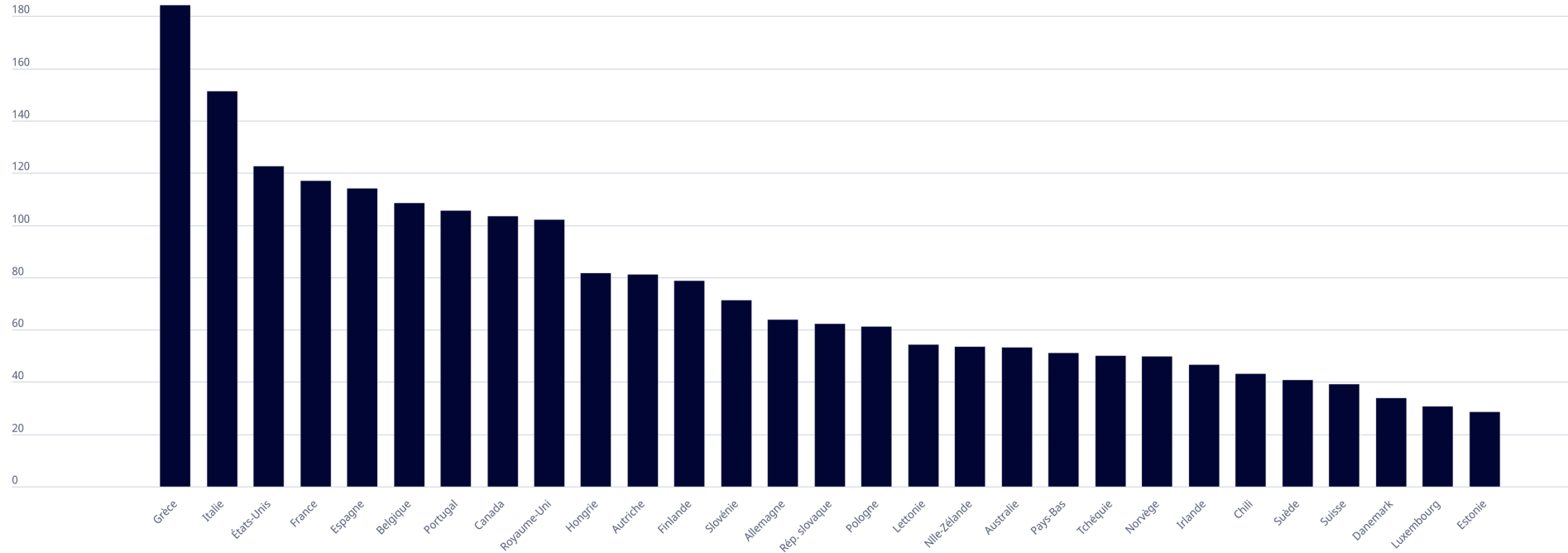
Children born in 2000 in countries with different incomes will have very unequal paths to 2020



Dette des administrations publiques

% du PIB, 2023

200



Source : [OCDE.org](https://www.oecd.org/)

> Public Debt (2020)

Country	GDP (Billions)	Public debt (approx)
Switzerland	600 B	264 B
Canada	1'800 B	2'556 B
Italy	2'500 B	4'600 B
France	3'200 B	4'672 B
United-Kingdom	3'500 B	5'215 B
Germany	4'900 B	3'871 B
Japan	5'300B	13'621 B
United States	20'900B	33'858 B

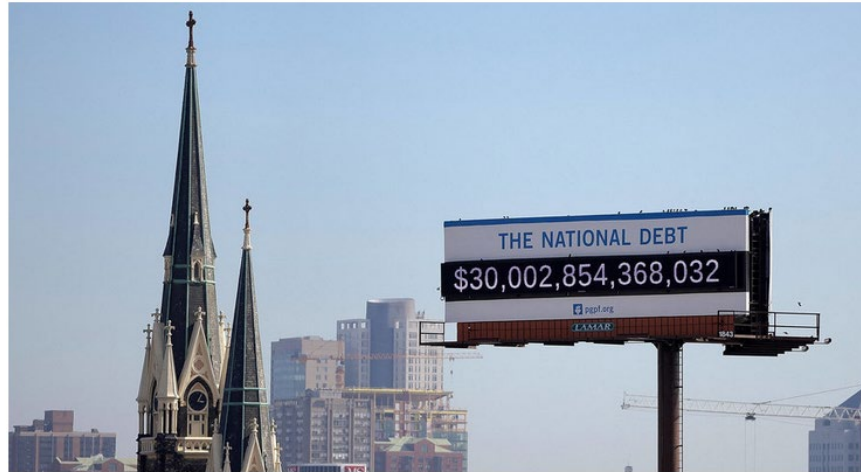
<https://data.oecd.org/chart/6CSH>

OCDE (2022), Produit intérieur brut (PIB) (indicateur). doi: 10.1787/dddb17ae-fr (Consulté le 24 février 2022)

ANALYSE ABONNÉ

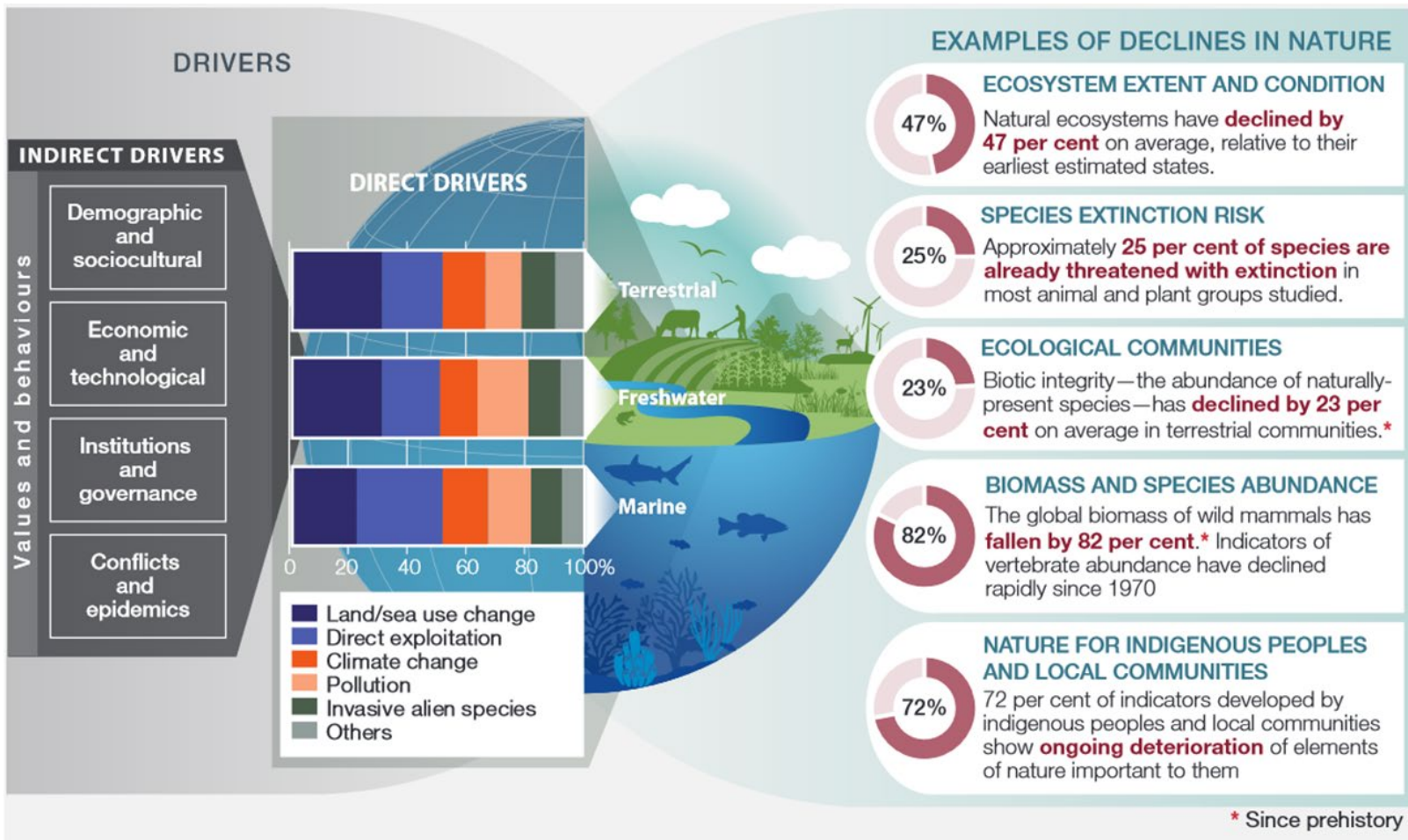
Les Etats-Unis, superpuissance de la dette

ANALYSE. La dette nationale américaine a dépassé le 31 janvier dernier la somme de 30 000 000 000 000 de dollars. Le gouvernement américain est celui qui utilise le plus les marchés financiers pour boucler ses fins de mois



La dette nationale américaine a dépassé les 30 000 000 000 000 de dollars fin janvier 2022. — © Stacy Revere/Getty Images North America via AFP Photo

<https://www.letemps.ch/economie/etatsunis-superpuissance-dette>



Every day, millions of interactions in nature are essential to the health and proper functioning of the planet. The loss of just one small species can have far-reaching repercussions on ecosystems and on humankind.

WHY BIODIVERSITY IS IMPORTANT

The infographic illustrates a cycle of ecological interactions. At the top, an ant carries a seed. A dashed arrow shows the seed being deposited in a nest, where it is eaten and discarded. Another dashed arrow shows the seed germinating into a small plant. A larger tree grows from this plant. A butterfly is shown near the tree, and a person is shown holding soil enriched with nitrogen. A green medical bottle with a red cross is also shown. Dashed arrows connect these elements, showing the flow of seeds, growth, and human use. The background is dark green with faint leaf patterns.

For example, when it takes one of these seeds, it carries the seed back to its nest where it eats part of the seed and discards the rest.

This seed dispersal process helps the tree species by spreading seeds to new locations.

The tree that grows provides many benefits to its ecosystem.

For example, providing habitat for other species.

This tree enriches the soil with nitrogen, which benefits other plants and other organisms in the area.

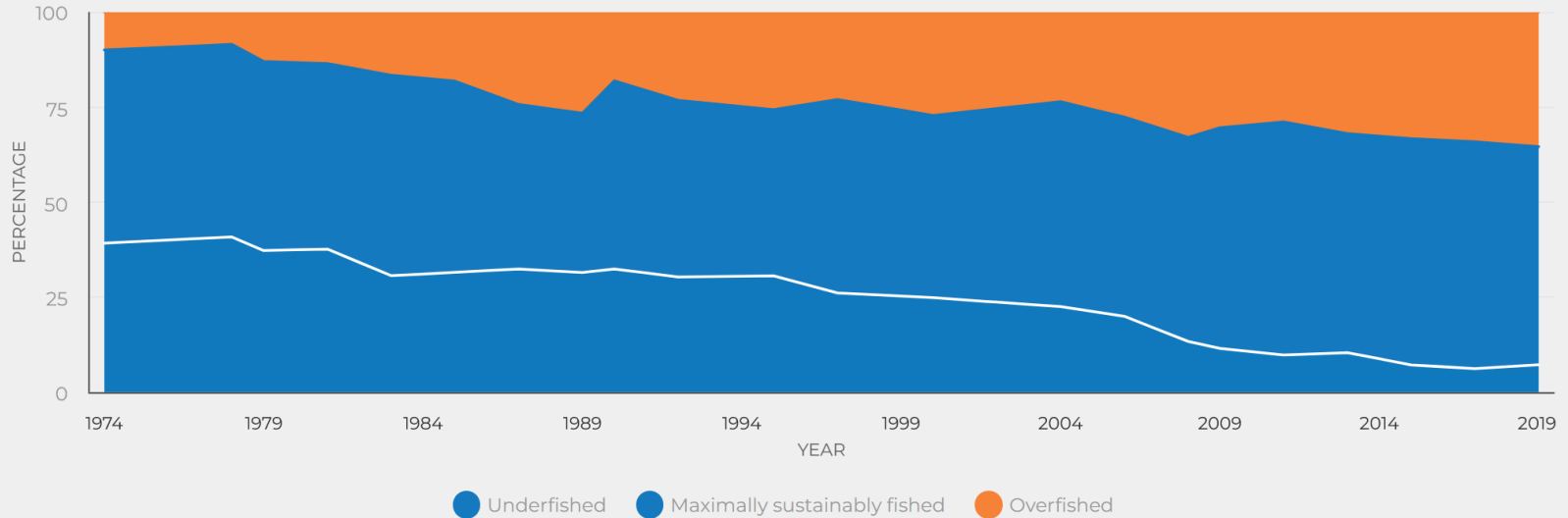
The tree is used by humans in various applications, e.g. pharmaceutical products.

Millions of similar interactions are happening every day for every species, no matter how small. That's why biodiversity is so important!

LEARN WHAT IPBES IS DOING TO ADVANCE BIODIVERSITY KNOWLEDGE AND THE POLICIES NEEDED TO PROTECT IT AT [IPBES.NET](https://www.ipbes.net)

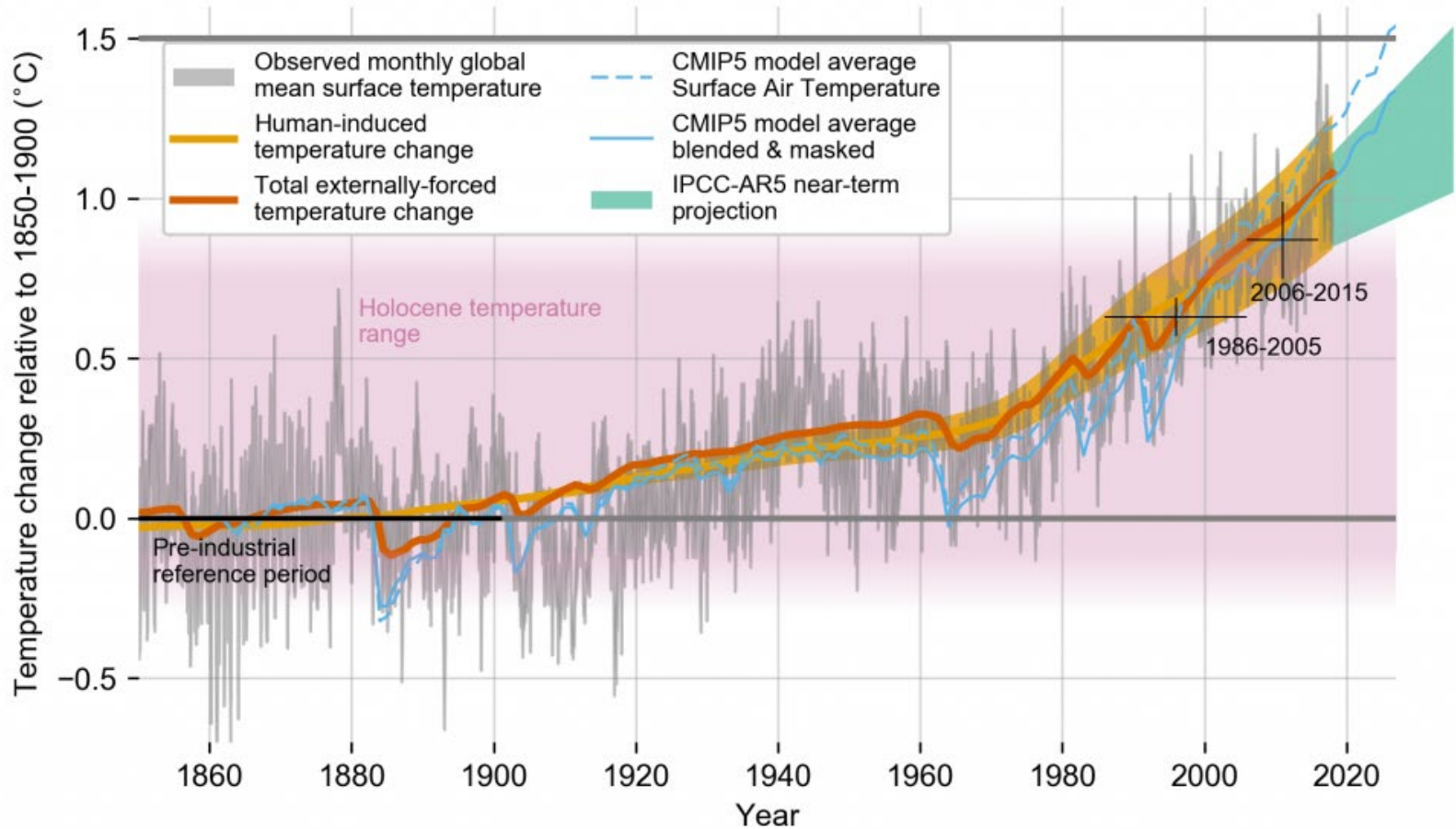
Overexploited natural resources: ex. fish stocks

Global trends in the state of the world's marine stocks, 1974-2019

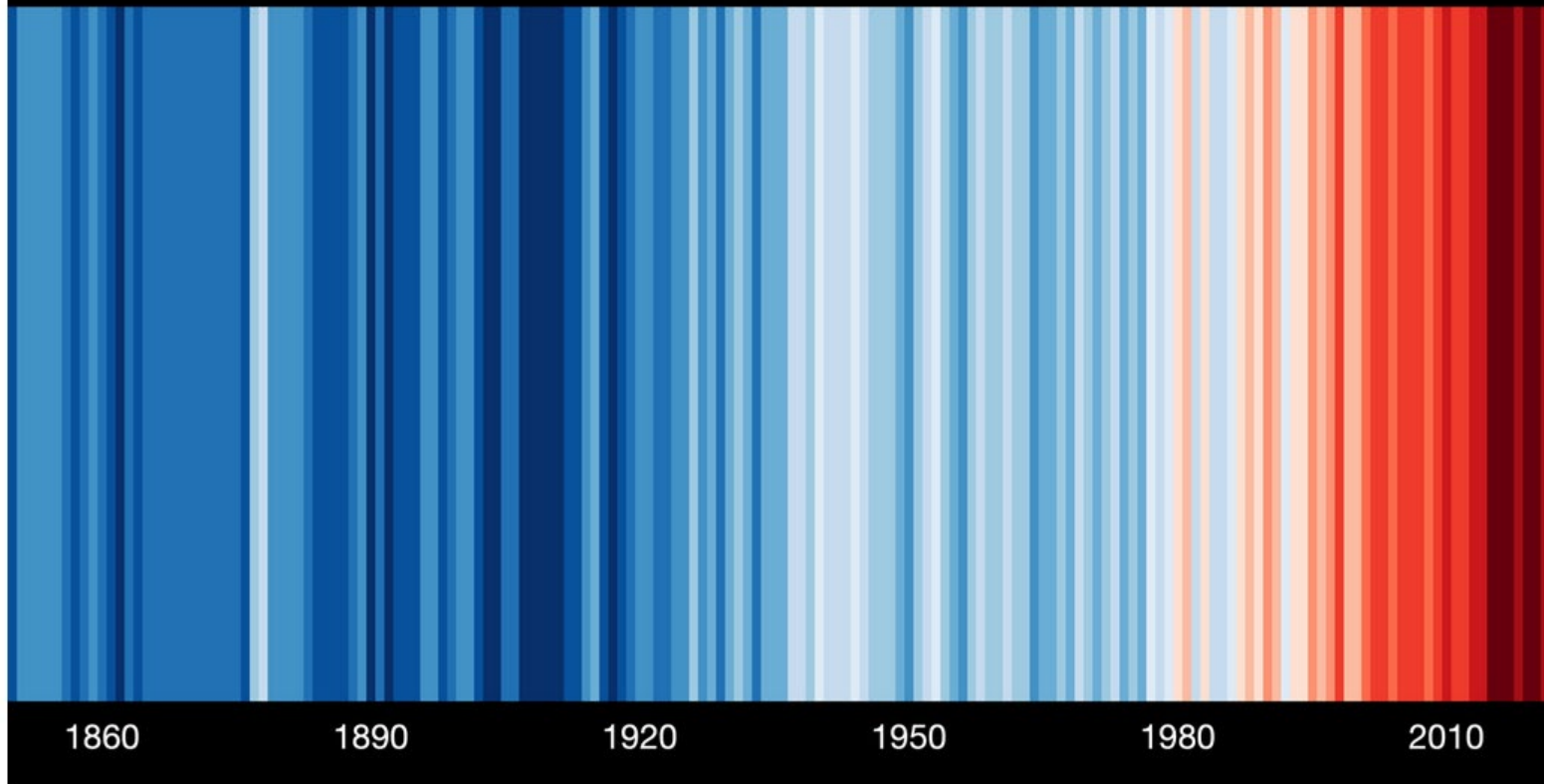


SOURCE: FAO.

<https://www.fao.org/interactive/state-of-fisheries-aquaculture/2022/en/>



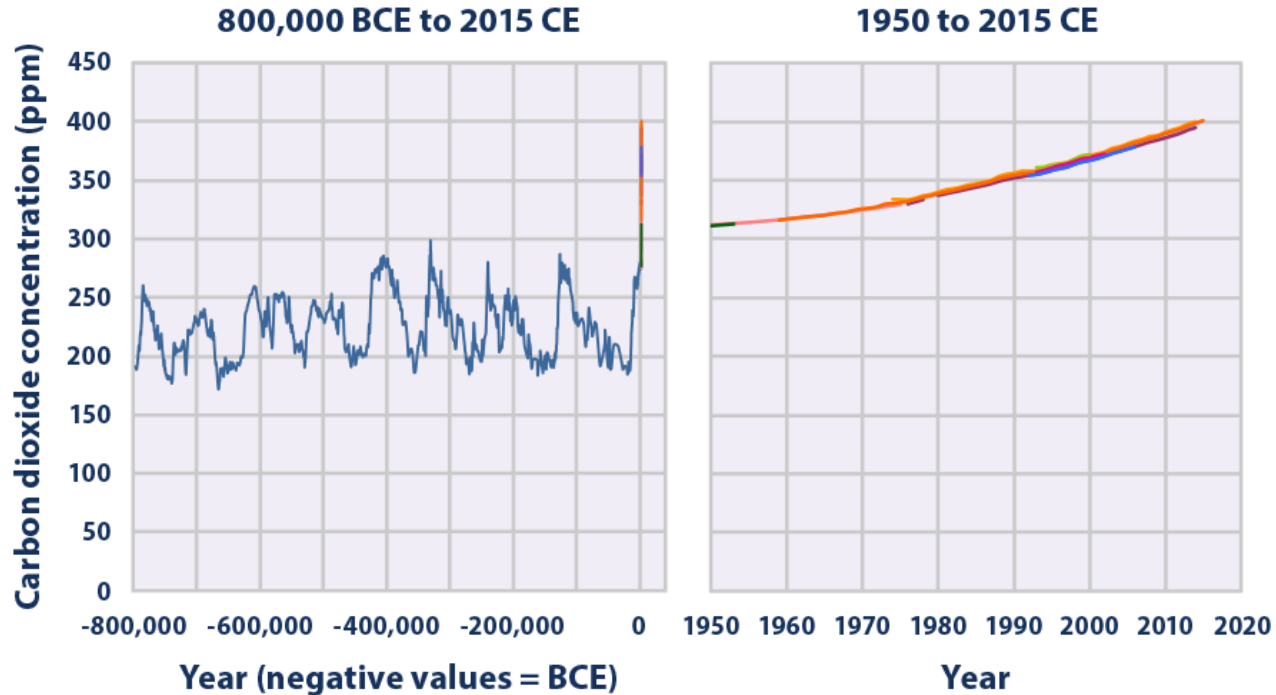
Global temperature change (1850-2021)



L'évolution de la température globale dans le monde depuis 1850. [#ShowYourStripes]

<https://www.rts.ch/info/sciences-tech/environnement/13546097-les-warming-stripes-un-graphique-simple-pour-visualiser-le-rechauffement-climatique.html>

Global Atmospheric Concentrations of Carbon Dioxide Over Time



Data source: Compilation of 10 underlying datasets. See www.epa.gov/climate-indicators for specific information.

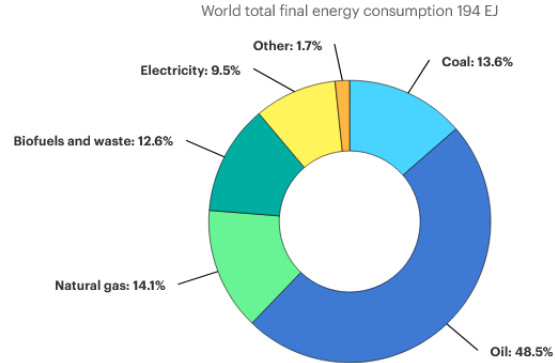
For more information, visit U.S. EPA's "Climate Change Indicators in the United States" at www.epa.gov/climate-indicators.

Dependence on fossil energies is real...

Share of world total final consumption by source, 1973

[Open](#)

EJ

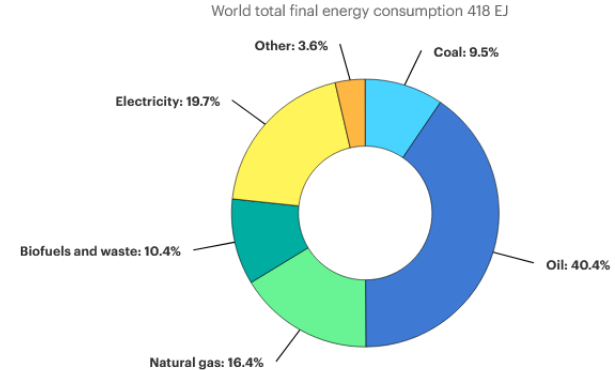


[IEA. Licence: CC BY 4.0](#)

Share of world total final consumption by source, 2019

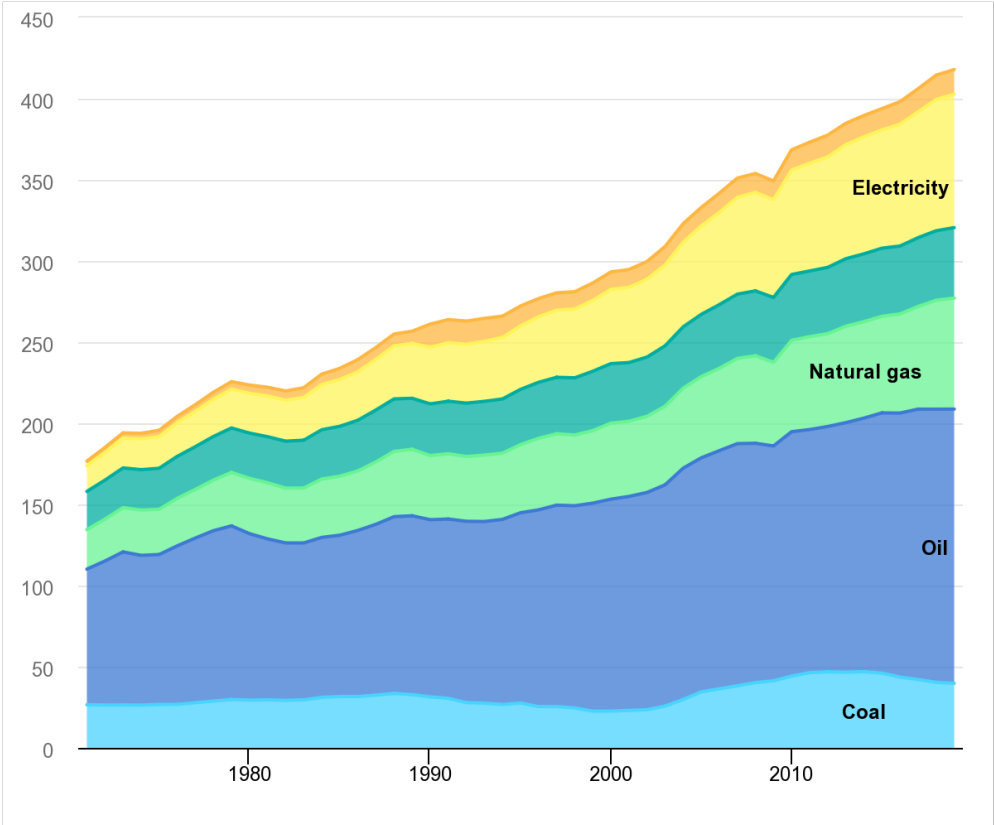
[Open](#)

EJ



[IEA. Licence: CC BY 4.0](#)

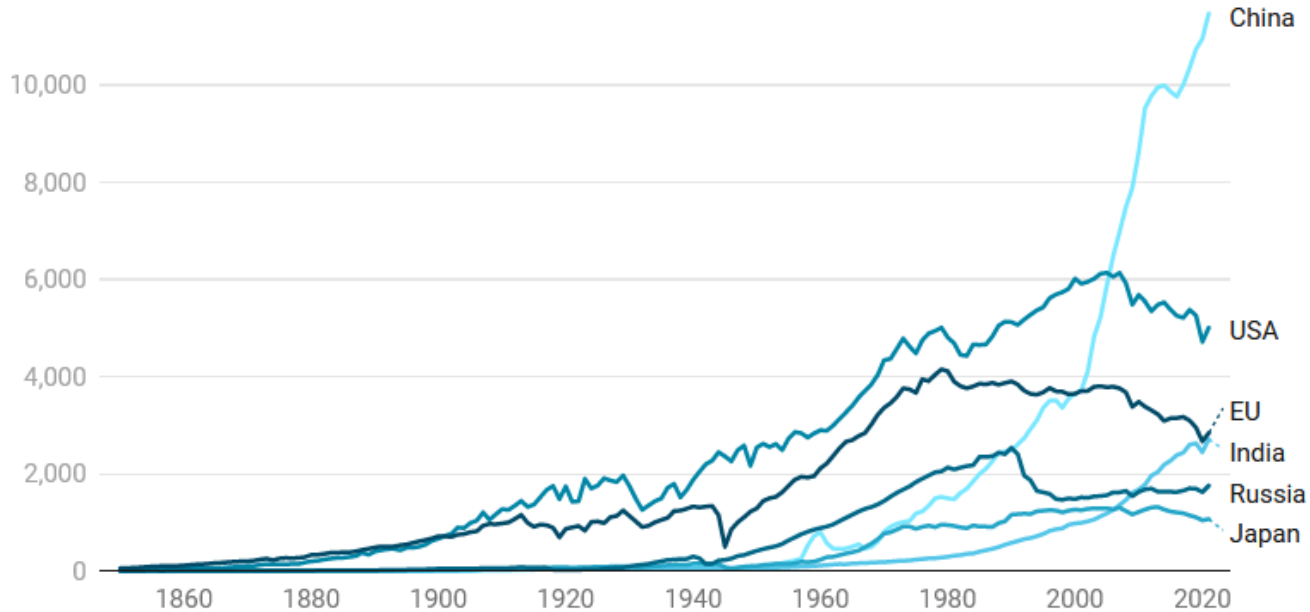
Dependence on fossil energies is real...



<https://www.iea.org/reports/key-world-energy-statistics-2021/final-consumption>
<https://www.iea.org/reports/key-world-energy-statistics-2021/final-consumption>

Top emitters, 1850-2021

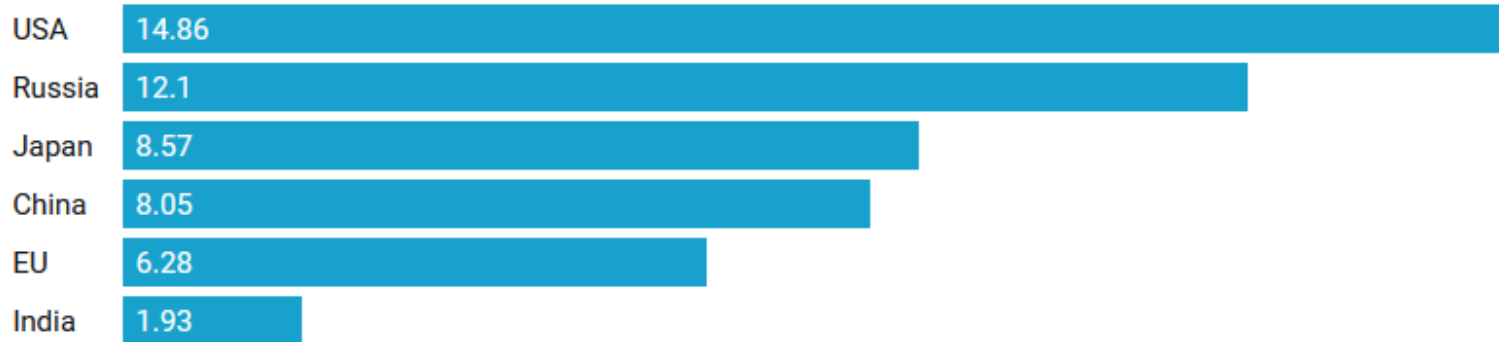
Carbon dioxide emissions from burning fossil fuels, flaring, and cement production, in millions of metric tons.



Source: [Global Carbon Project](#) • [Get the data](#) • Created with [Datawrapper](#)

Per capita emissions

Metric tons of carbon dioxide per person, 2021

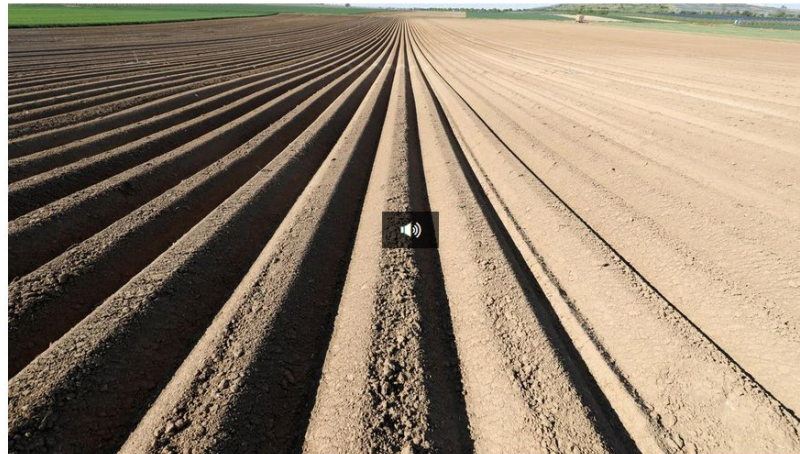


Source: [Global Carbon Project](#) • [Get the data](#) • Created with [Datawrapper](#)

Environnement Modifié le 29 avril 2024 à 15:08

Partager

Le réchauffement climatique fera baisser la croissance de 19% d'ici 2050, selon une étude



Impact du réchauffement climatique sur croissance économique mondiale / La Matinale / 1 min. / le 29 avril 2024



<https://www.ledevoir.com/photos/galleries-photos/les-caricatures-de-godin/1091745>



from November 11 to 22, 2024, the meeting will focus on the adoption of a new common financing target for investments in global climate protection. To follow...

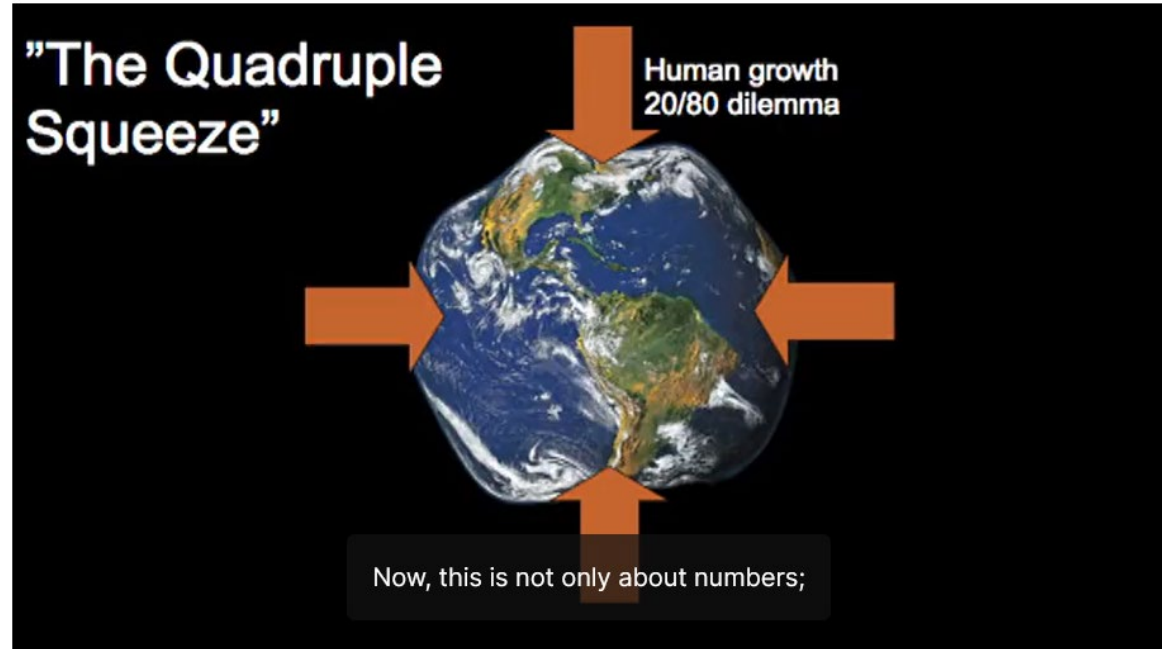
<https://cop29.az/en>



In 2023, in Dubai with a controversial presidency

<https://www.20minutes.fr/planete/cop/4060515-20231104-cop28-dubai-sultan-al-jaber-president-conference-climat>

2009
Development of the concept of the 9 planetary boundaries as a secure operating space for humanity

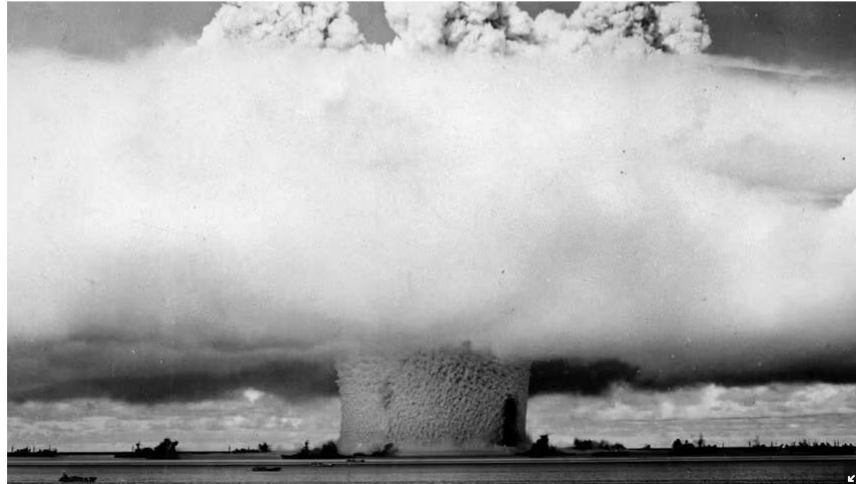


Dr. Johan Rockström presentation, vidéo 17'53"

https://www.ted.com/talks/johan_rockstrom_let_the_environment_guide_our_development?subtitle=en&geo=fr

L'anthropocène en tant qu'époque géologique a été invalidé

Une instance des sciences stratigraphiques a voté contre le choix controversé d'un groupe de géologues – présenté après des années de travail – d'inscrire l'anthropocène comme époque dans l'échelle des temps géologique avec un début dans les années 1950

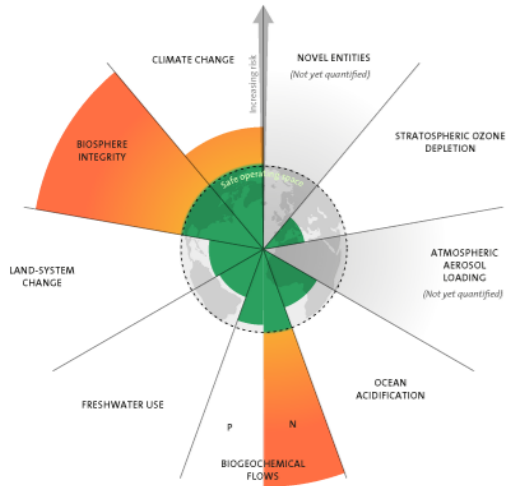


A partir de la moitié du XXe siècle, les essais atomiques – comme cette bombe expérimentale américaine en 1946 dans les îles Marshall – déposent des éléments radioactifs enregistrés dans les sédiments de lacs. — © US National Archives / Roger Viollet

https://www.letemps.ch/sciences/l-anthropocene-en-tant-qu-epoque-geologique-a-ete-invalide?utm_term=Autofeed&utm_medium=Social&utm_source=Facebook&fbclid=IwAR36c6PCtcFNapiUVEv6o-j41gqubrJV9f-Y0i6Q4tSKC6Z4J58rMb0xVBw_aem_ASRQwweykZ8PjvP7i10EaBpfdXLFsL_eSdcmL7viemDsiW1IniueOjX4nqx_ey_3_ksQDDMxja5ap1v7b-Ckxvko#Echobox=1709840313

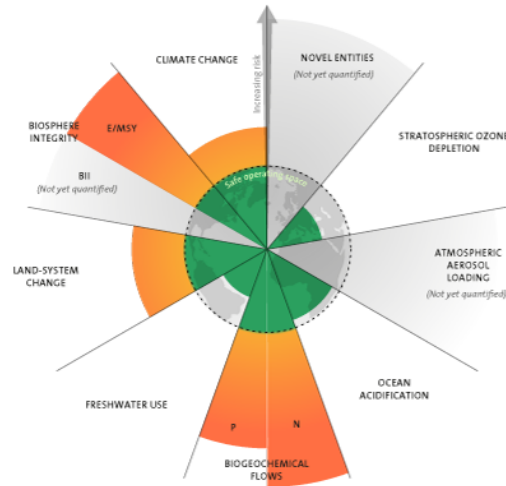
The evolution of boundaries since 2009 ...

2009



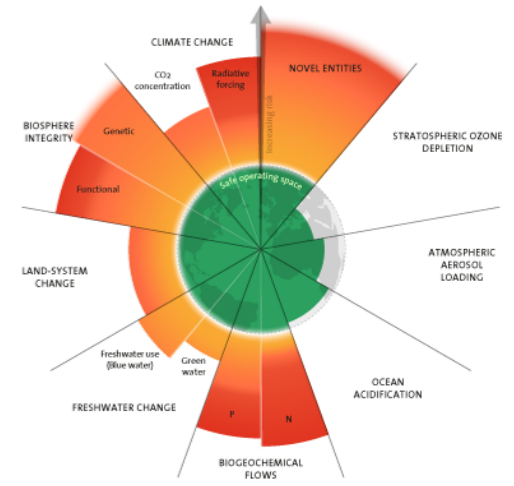
3 boundaries crossed

2015



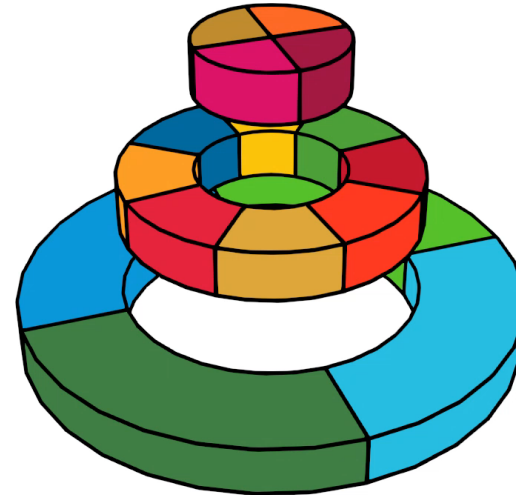
4 boundaries crossed

2023



6 boundaries crossed

The Sustainable Development Goals



2016 : From the concept of the 9 boundaries to a new representation (wedding cake) of the SDGs illustrating a new development paradigm:

«The economy is at the service of society, enabling it to evolve within the planet's safe operating space »

<https://stockholmuniversity.app.box.com/s/8fz5zazt6ng13xss6ksvj42yaf7mo97n>