

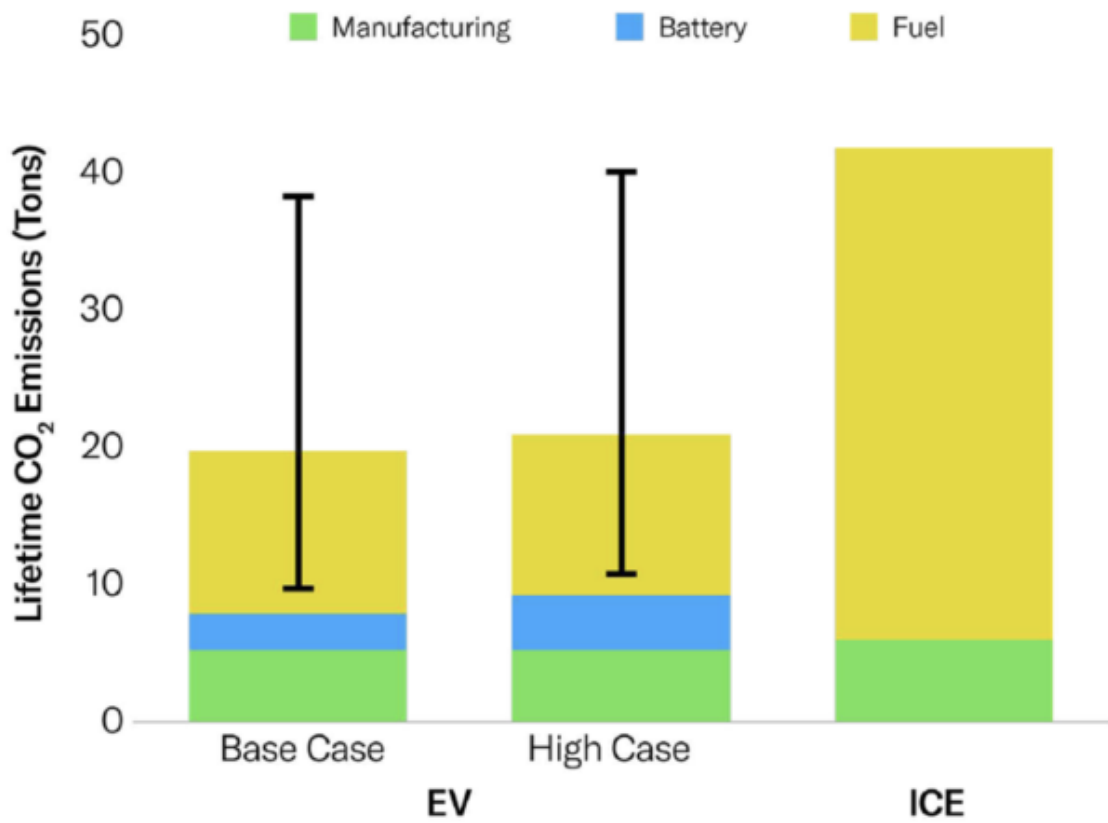
?????2??????CO2????????EV????CO2????????????????????

??1?CO2

??BEV????ICE????????????CO2????????????????

Figure 3

Estimated Life-Cycle Emissions for EVs vs. ICE Cars, per IEA



Source: IEA, "The Role of Critical Minerals in Clean Energy Transitions"

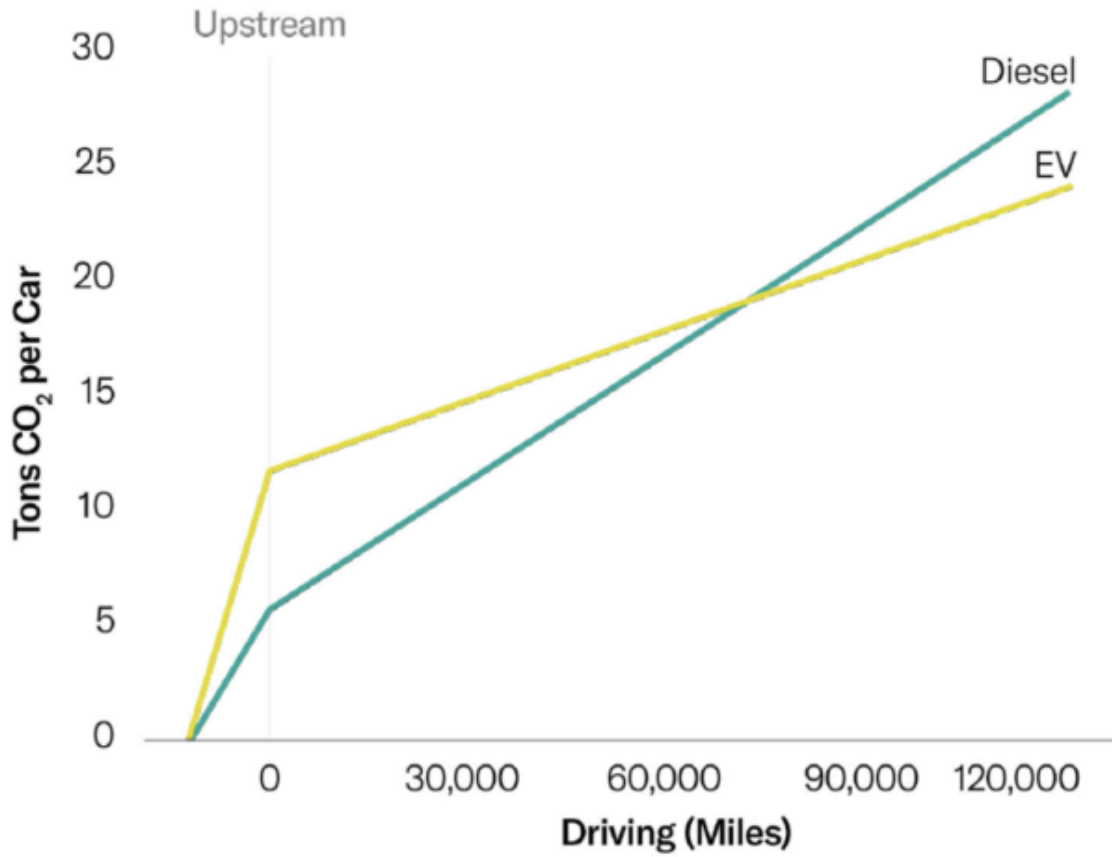
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????IEA??
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????????ICE?EV????????CO2????????????6????????????????????????EV????CO2????????????????
??EV????????????

Figure 4

Life-Cycle Emissions: Volkswagen EV vs. Diesel



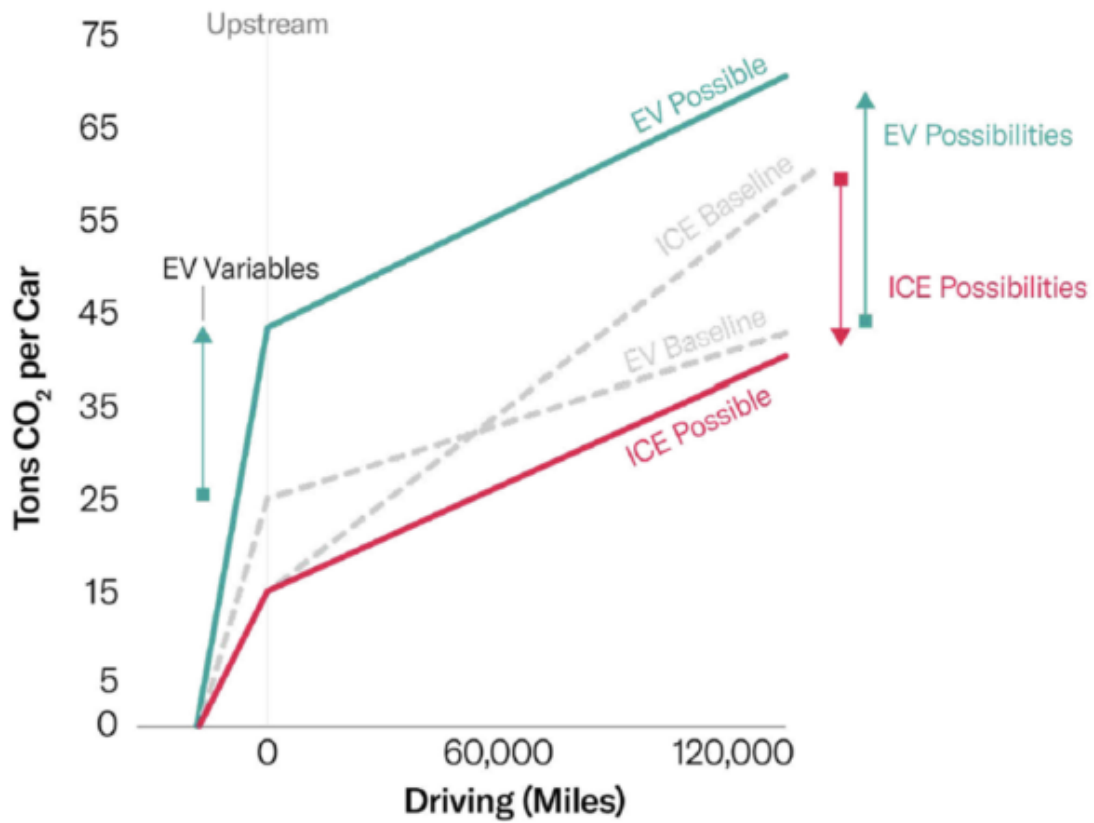
Source: Maciej Neugebauer, Adam Żebrowski, and Ogulcan Esmer, "Cumulative Emissions of CO₂ for Electric and Combustion Cars: A Case Study on Specific Models," *Energies*, Apr. 6, 2022

????????????????EV????????????????EV????CO2????????????????????????????????ICE????????????
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?EV???ICE???CO2????????????????????????????????

Figure 6

EV vs. ICE CO₂ Emissions: Scenarios with Known Unknowns



Source: Author's calculations from multiple data sources in this report; see Appendix

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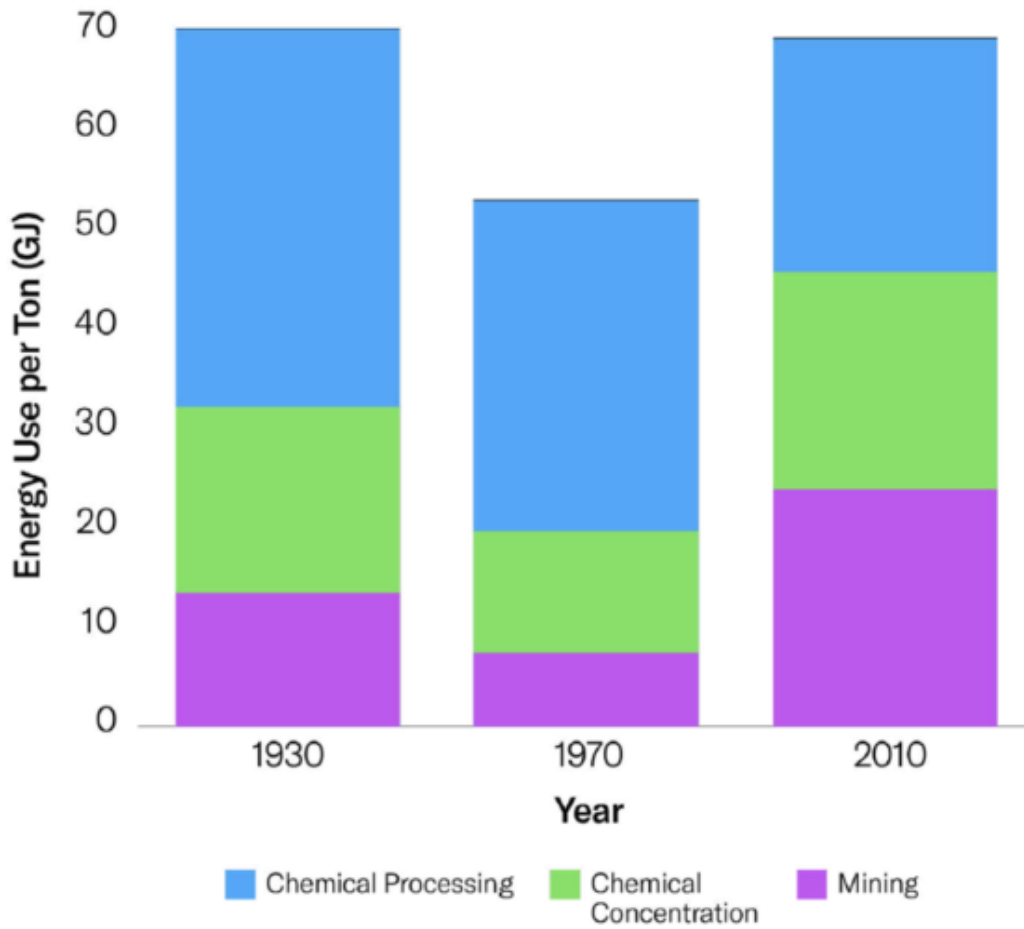
CO₂?????????1????????????????? EV??ICE????????????????????????????????????

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Figure 10

Copper Production: Technology Trends in Energy Use per Ton



Source: Nadine Rötzer and Mario Schmidt, "Historical, Current, and Future Energy Demand from Global Copper Production and Its Impact on Climate Change," *Resources* 9, no. 4 (April 2020)

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?????EV???EV????????????????????ICE??EV??
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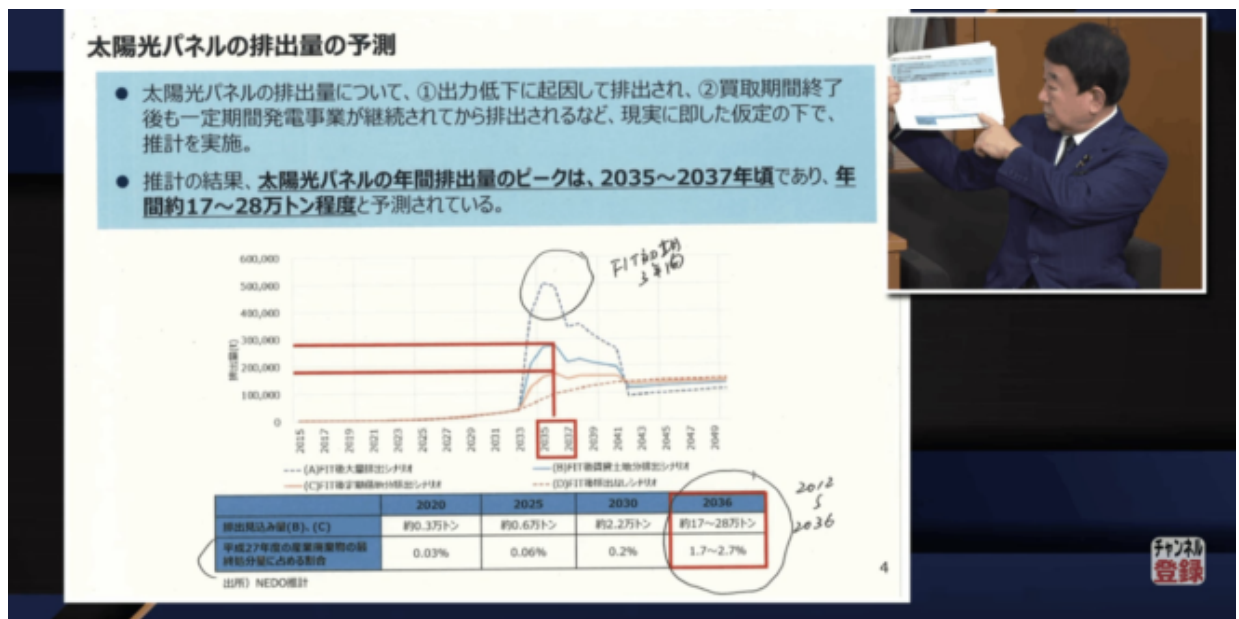
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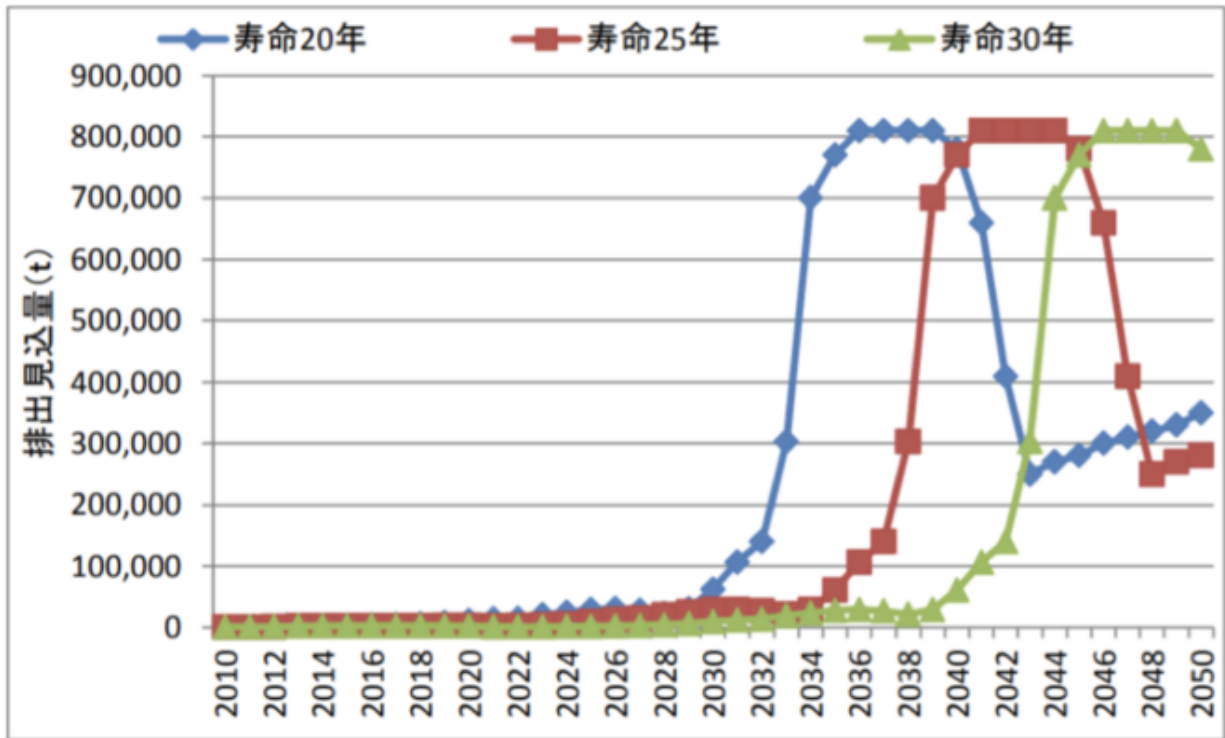


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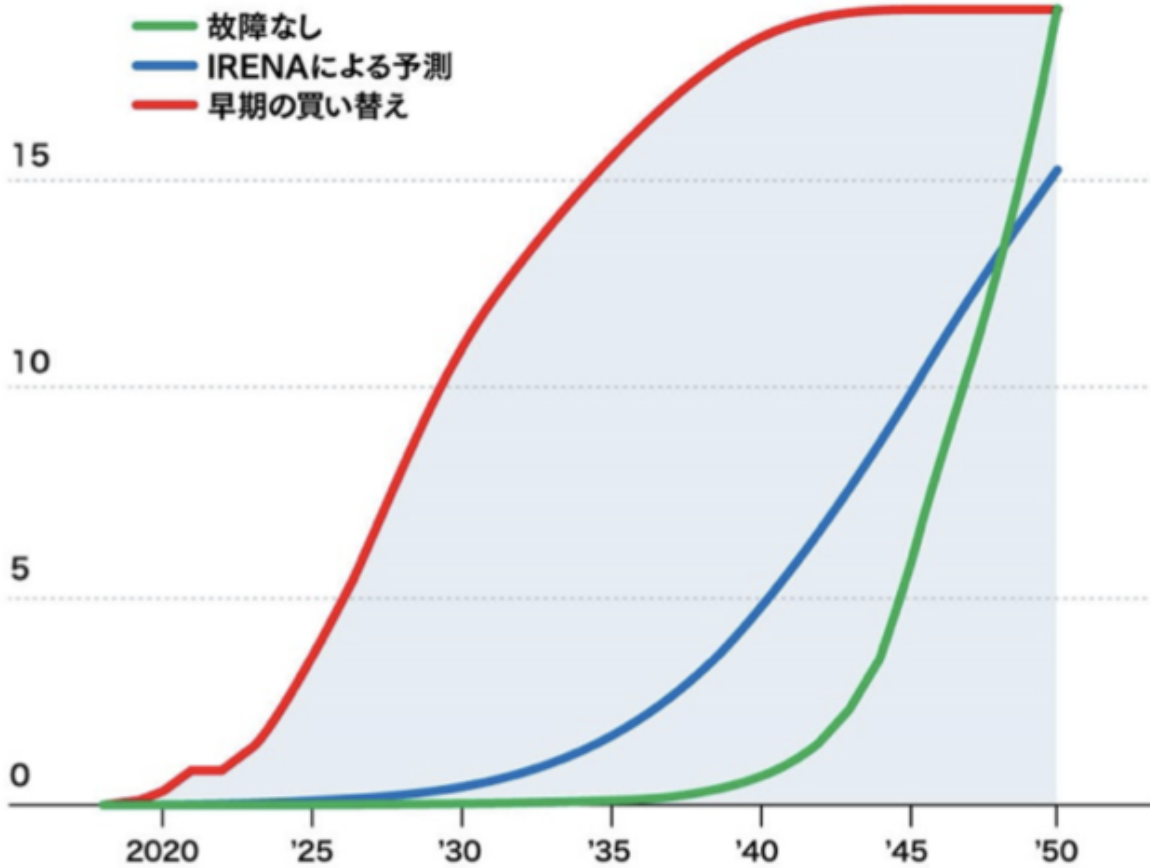
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廃棄物の累計
 (発電容量ベース)

20ギガワット



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1972??PCB????????????????????PCB????????????2001??PCB????
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Posted in ??????????, ??? | [No Comments »](#)

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?? ?? · Tuesday, July 4th, 2023



xijian/iStock

??IEA????????????Net Zero Scenario, NZE????????????

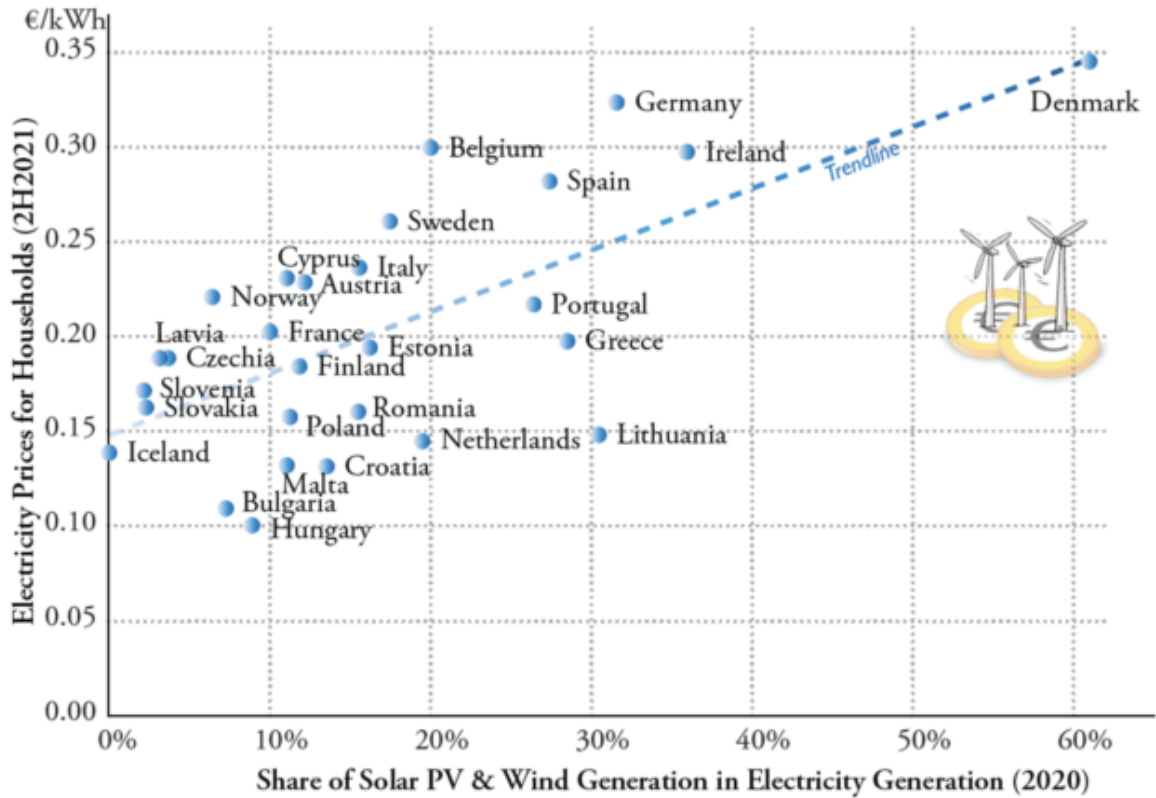
A Critical Assessment of the IEA’s Net Zero Scenario, ESG, and the Cessation of Investment in New Oil and Gas Fields.

??PV??
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??PV??PV????????????????????????????????
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Figure 46: Solar and Wind Penetration and Electricity Prices in Europe

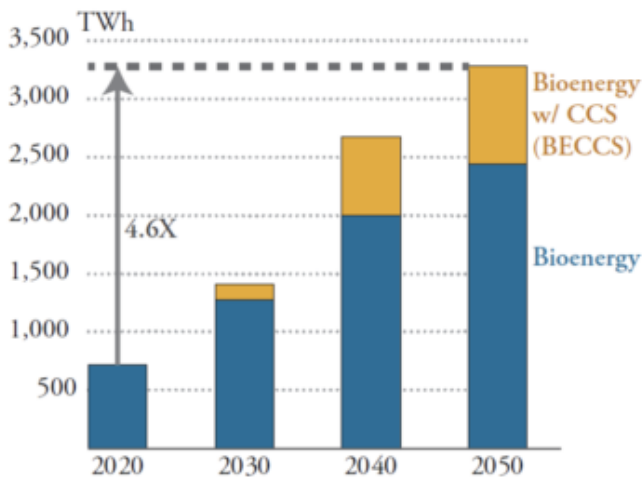


Source: Energy Policy Research, Eurostat, IEA

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IEA?NZE??2050??
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Figure 23. Bioenergy for Electricity Generation in NZE



Source: IEA, Net Zero by 2050 (2021)

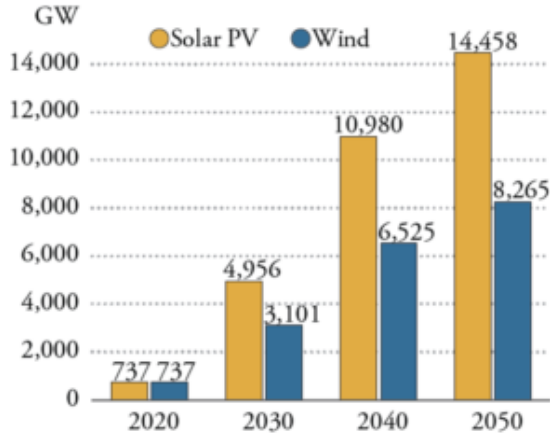
Figure 24. Global Land Requirements for Bioenergy for Electricity Generation in NZE



Source: Energy Policy Research. Land requirement calculations made using FreeingEnergy.

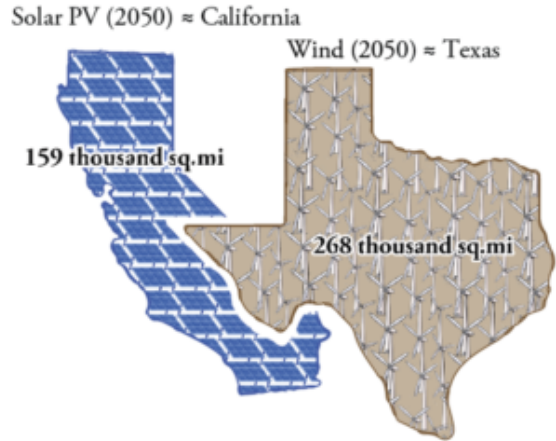
Batt Odgerel, Lucian Pugliaresi, Michael Lynch 38

Figure 25. Global Solar and Wind Capacity in NZE



Source: IEA, *Net Zero by 2050* (2021)

Figure 26. Global Land Requirements for Solar/ Wind Farms in NZE



Source: Energy Policy Research based on NZE
Assumes sufficient/optimal grid infrastructure (transmission, storage) and current rate of efficiency

	万 km2	日本=1
メキシコ	197	5.2
フランス	55	1.5
カリフォルニア	42	1.1
テキサス	70	1.8
日本	38	1.0

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PV???1??
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Posted in ??????????, ???, ????? | No Comments »

????????COP28????????????????????

?? ? · Monday, July 3rd, 2023



CHUYN/iStock

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- 2025?????????GHG?????????2050?????????10?????
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- 2030?NDC?????????GHG?????????LTS?1.5?????2050?????????
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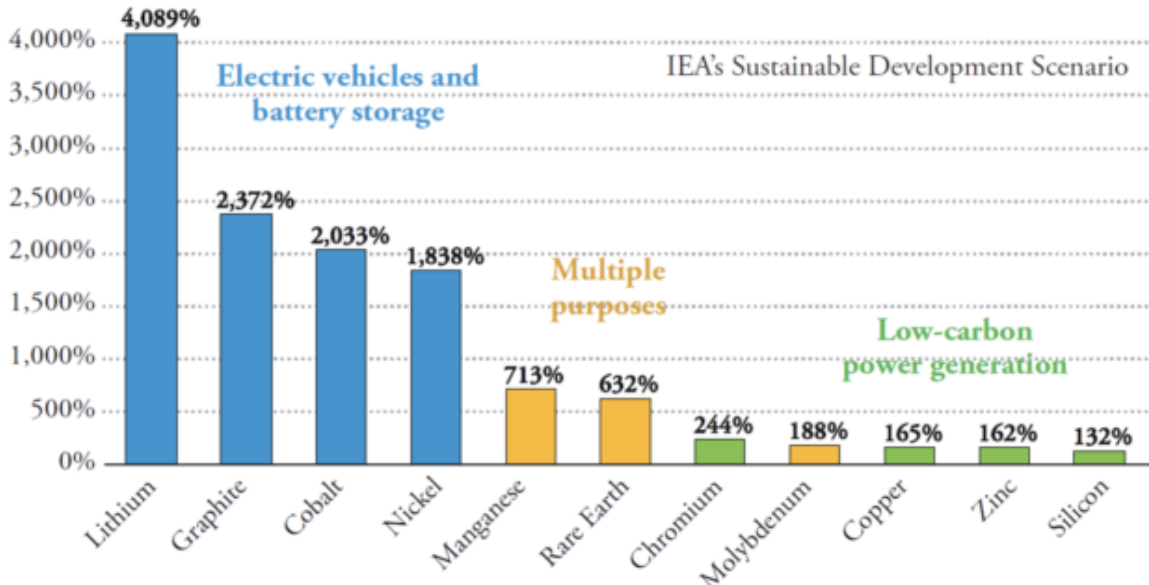
???2024????
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Figure 33. Required Growth of Critical Mineral Supply (IEA's SDS scenario, 2020–40)



Source: Energy Policy Research, IEA, *The Role of Critical Minerals in Clean Energy Transitions* (2021)

EV??60kWh????????????????????????????????
 150??200????????????????????

Table 13. Battery Chemistry by Content, Kg (60 kWh Lithium-Ion)

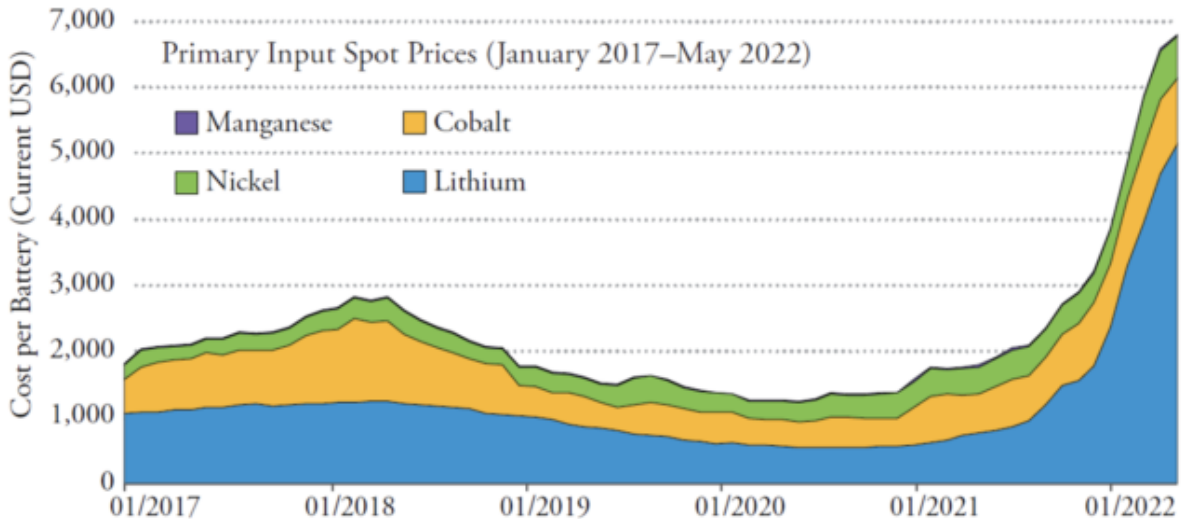
Mineral/Metal	NMC811	NMC523	NMC622	NCA+	LFP
Lithium	5	7	6	6	6
Cobalt	5	11	11	2	0
Nickel	39	28	32	43	0
Manganese	5	16	10	0	0
Graphite	45	53	50	44	66
Aluminum	30	35	33	30	44
Copper	20	20	19	17	26
Steel	20	20	19	17	26
Iron	0	0	0	0	41

NMC811 Nickel (80%) Manganese (10%) Cobalt (10%) **NCA+** Nickel Cobalt Aluminum Oxide
NMC523 Nickel (50%) Manganese (20%) Cobalt (30%)
NMC622 Nickel (60%) Manganese (20%) Cobalt (20%) **LFP** Lithium iron phosphate

Source: Bhutada, G. VC Elements

EV??7000????????????????
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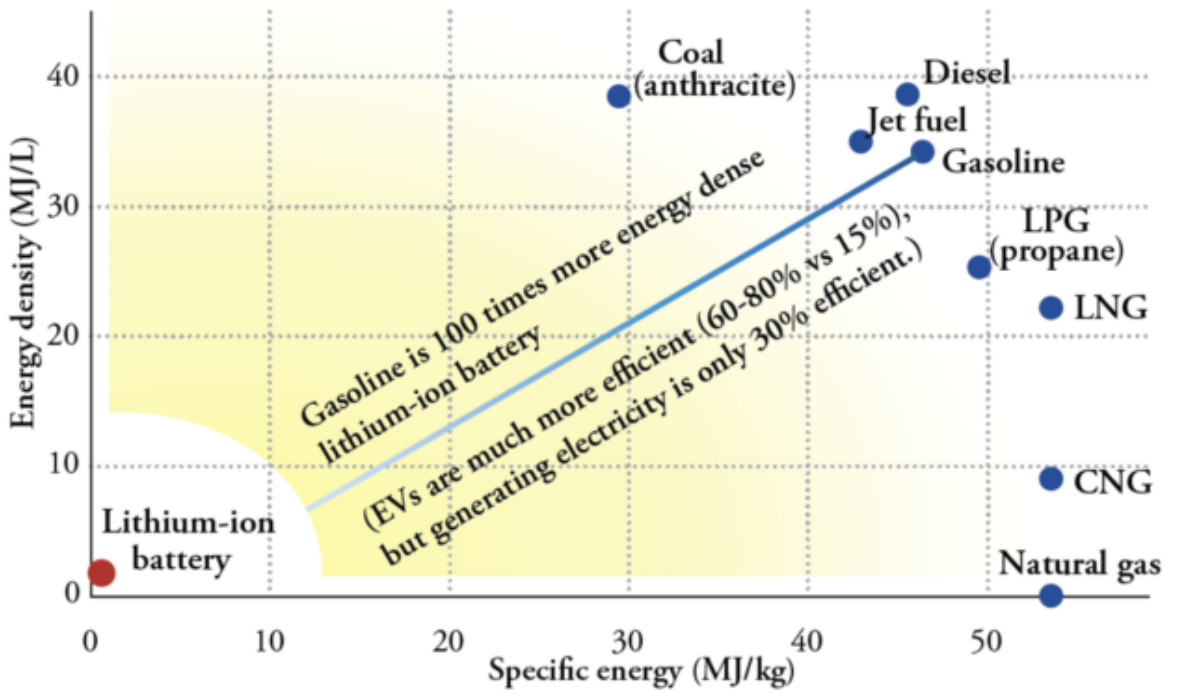
Figure 34. Tesla Battery Cost Based on Monthly Average



Source: Energy Policy Research, LME Monthly Data

EV??
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Figure 35. Energy Densities of Common Fuels, Li-ion battery



Source: Energy Policy Research, various sources

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 2027?2028??

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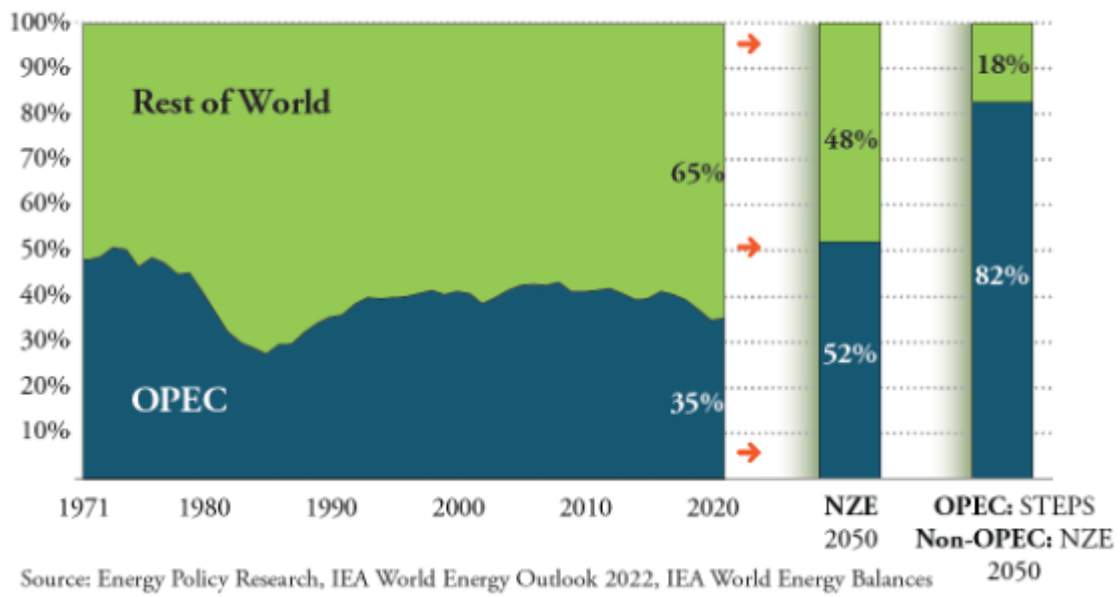
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?? ?? · Sunday, July 2nd, 2023



A Mokhtari/iStock

Figure 17. OPEC Share of Global Oil Production

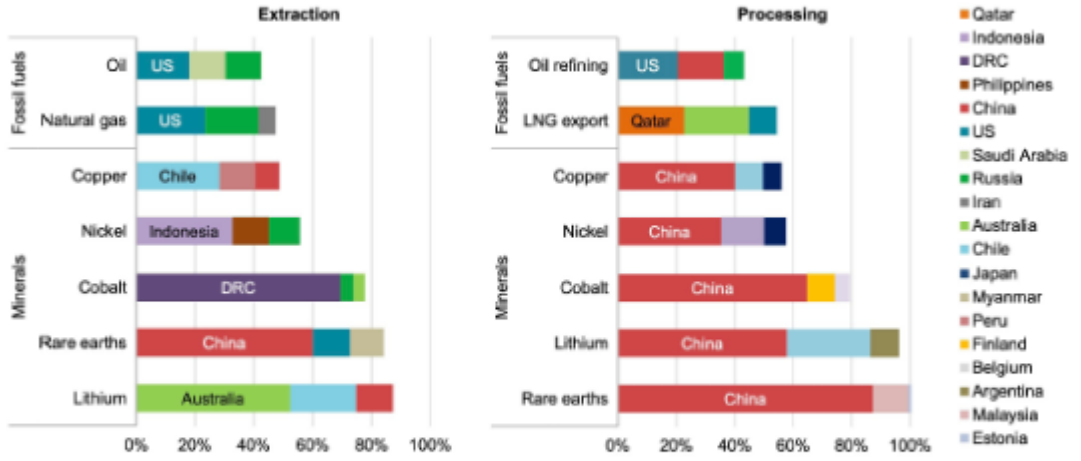


??OPEC??

NZE????????????PV????EV??
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????????????OPEC????PV????EV??

Figure 18. Share of Top Three Producing Countries in Production of Selected Minerals and Fossil Fuels, 2019



Source: IEA, The Role of Critical Minerals in Clean Energy Transitions (2021)

OPEC??NZE??
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?? ?? · Saturday, July 1st, 2023



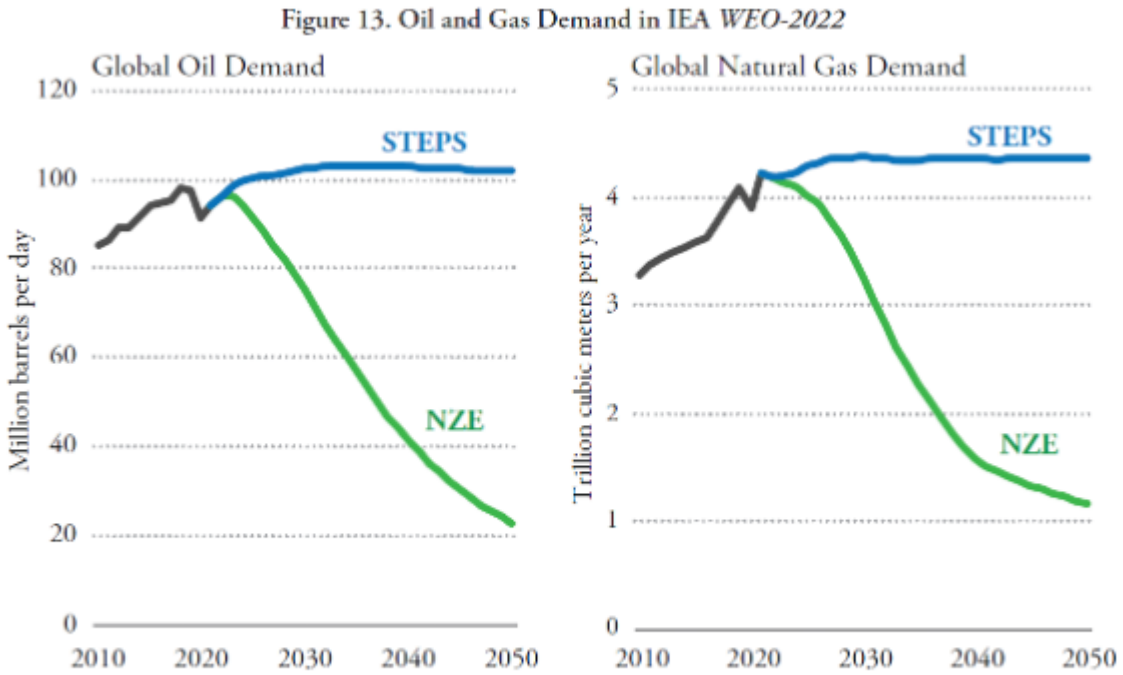
privetik/iStock

????????IEA????????Net Zero Scenario, NZE????????

????????IEA????????ESG??
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A Critical Assessment of the IEA’s Net Zero Scenario, ESG, and the Cessation of Investment in New Oil and Gas Fields.

????????NZE??2050????CO2????????STEPS????????
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Source: Data from IEA, *World Energy Outlook* (2022) & *Outlooks for gas markets and investment* (2023). The data derived and estimated from graphs in the *WEO-2022* and the IEA’s gas report for the G7, as the IEA’s data tables only show scenario data for 2030 and 2050.

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IEA?N
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STEPS??NZE????????????
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Rawf8/iStock

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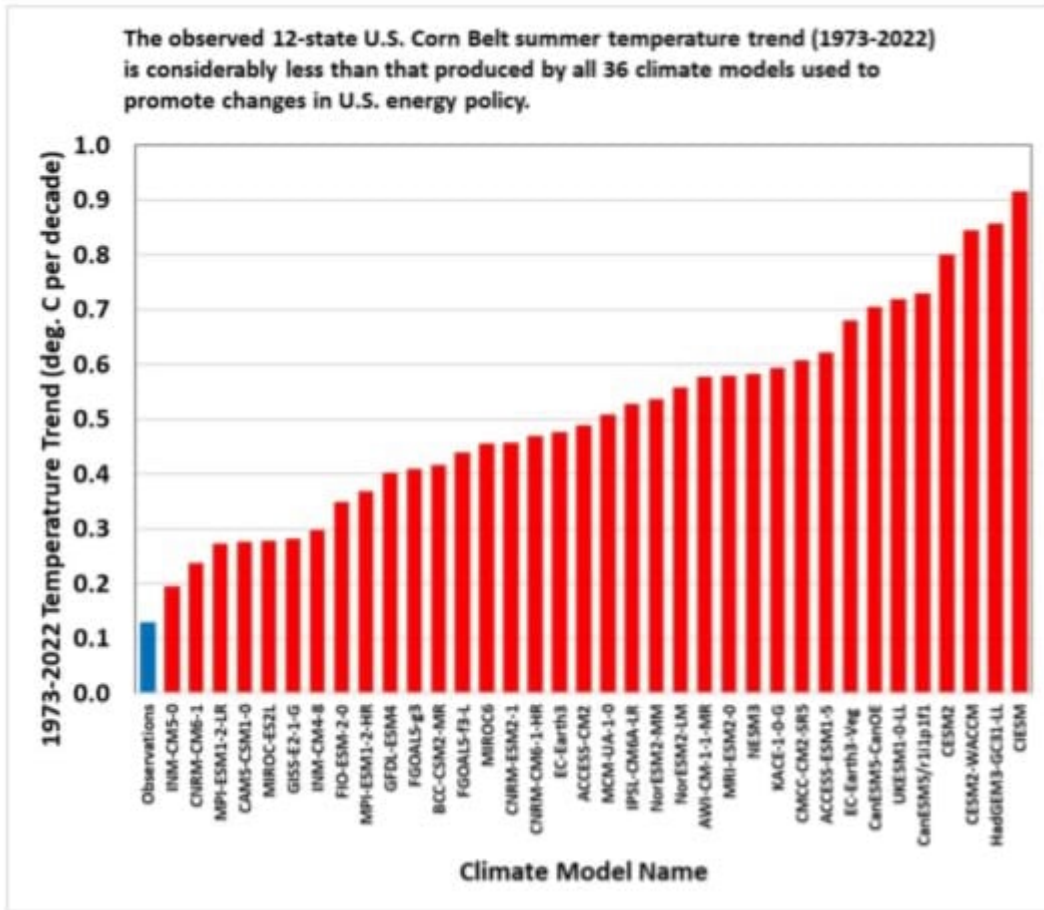
?? ?? · Friday, June 23rd, 2023



feellife/iStock

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?? ?? · Sunday, June 11th, 2023

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BBC???? – ?????20?????????????????????????????????????https://t.co/pF1RfWUM94

— BBC News Japan (@bbcnewsjapan) February 18, 2021

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【参考】今後10年間の火力供給力の増減見通し

- 今後も、主に緊急時に活用されていた石油火力発電設備の廃止が継続する見込み。
- 当面は火力の新設計画も予定されている一方、供給力全体としては減少傾向にあり、稼働率低下や卸電力取引市場の価格の低迷に伴う採算性悪化から、さらに加速する懸念。



注1. 2017~2021年度：新設実績は真源エネルギー「石炭火力発電所一覧」および電気事業便覧（2021年版）、廃止実績は各年度供給計画および各社HP等より。
注2. 2022年度以降（新設）：2022年度供給計画より

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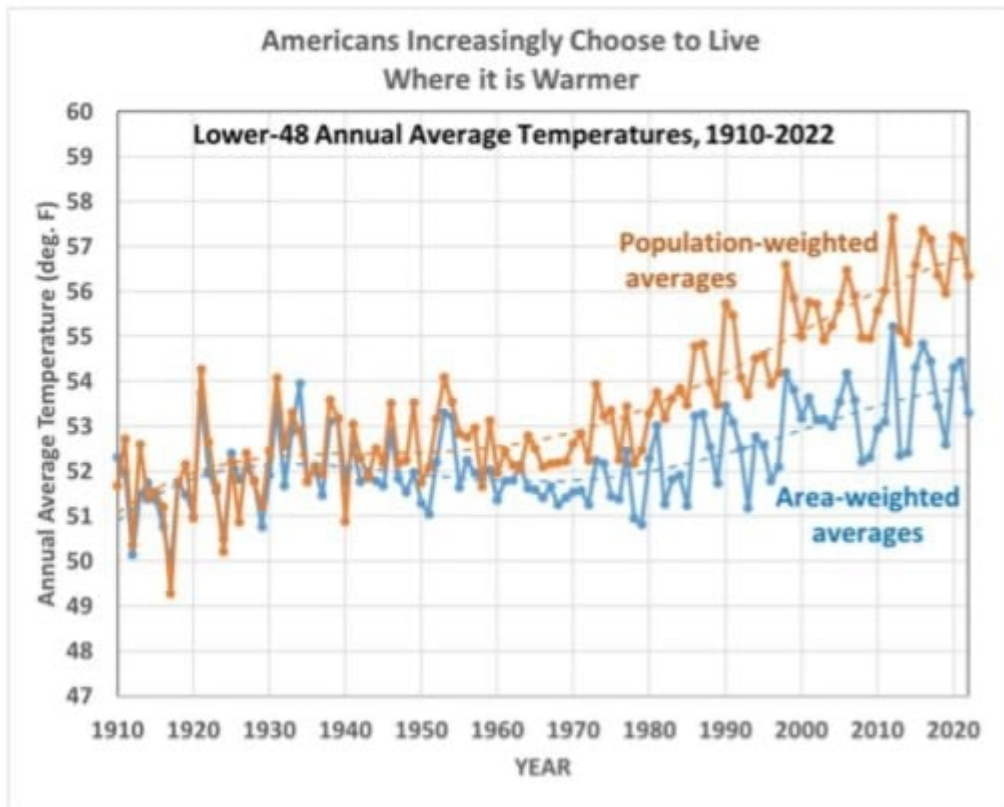
?? ?? · Sunday, June 4th, 2023



Darwel/iStock

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?? ? · Monday, May 29th, 2023

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spoooh/iStock

Global Energy Policy Research | GEPR – “The Energy Transition Confronts Reality” 2023 | 123

- **RePower EU**
- **2021**
- **LNG**
- **100**

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??How The World Really
Works????4??
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Shovel??S&P????205
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?? ?? · Sunday, May 28th, 2023



sasun bughdaryan/iStock

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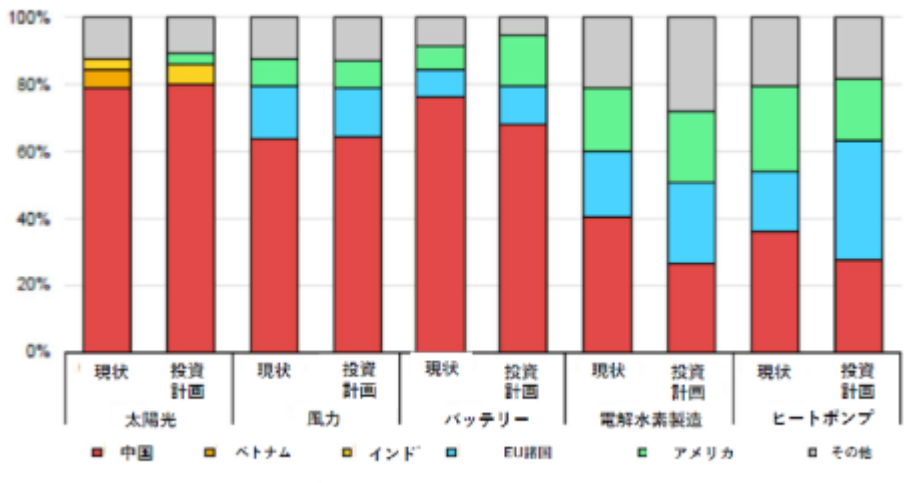
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図3. グリーン技術製造の地域集約度ー現状と将来



出典：The State of Clean Energy Technology Manufacturing, IEA, May 2023

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???Twitter by True Science PEng, DFP, ADFS, MA, MBA

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Posted in [???](#), [????](#) | [No Comments »](#)

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?? ??? · Monday, May 22nd, 2023



Wikipedia??

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Posted in [??](#), [????????](#), [??](#) | [No Comments](#) »

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?? ?? · Saturday, May 20th, 2023

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Allkindza/iStock

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FACT SHEET: Biden-Harris Administration Proposes New Standards to Protect Public Health that Will Save Consumers Money, and Increase Energy Security

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- ????CO₂????2????100????CO₂????????????????????????????????
- EV1????????????12,000????????????????????200????????????????????????????
- ?????????????2032????????????????SUV????????????67????????????????50????????
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- CO₂????????????????????????????????????5000ppm????????????????????1000ppm????????????????
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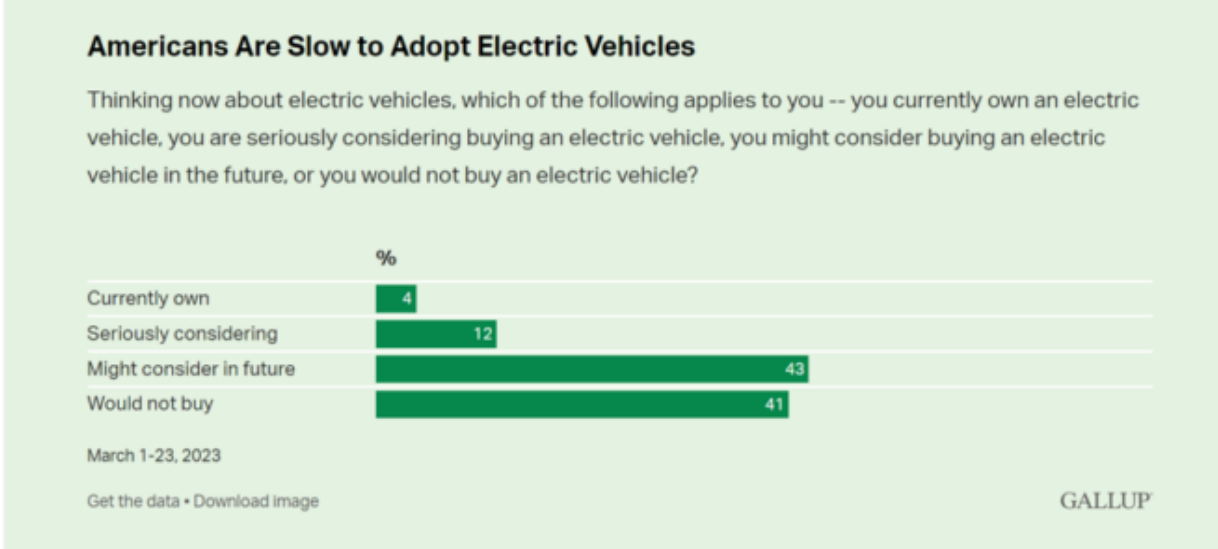
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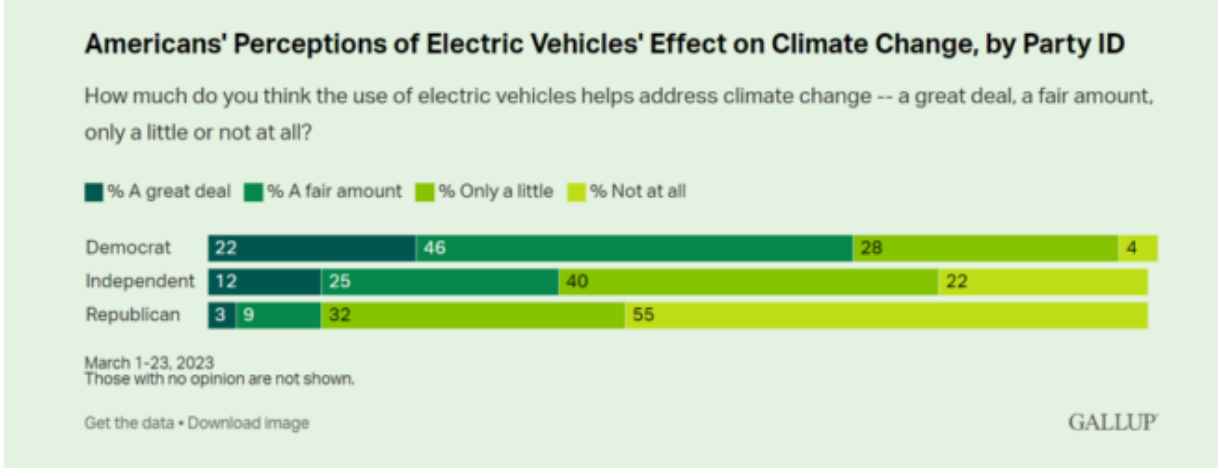
Most Americans Are Not Completely Sold on Electric Vehicles

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- EV????4????12????EV????
- ???43%????EV????41%????



- EV????5????16????58????
- EV????EV????3??2??EV???
- ???55%????32%????
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IPCC?????63????????????????????????????????

?? ?? · Tuesday, May 16th, 2023



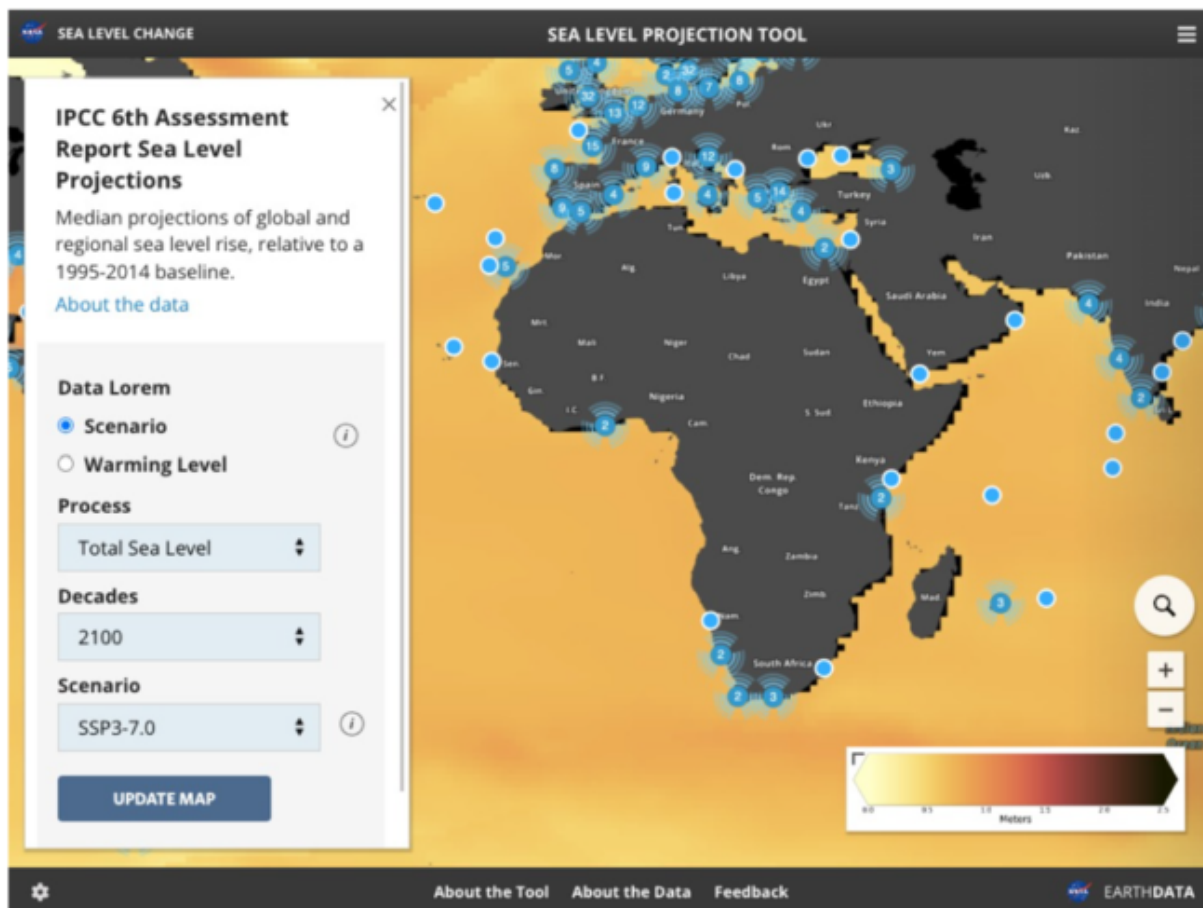
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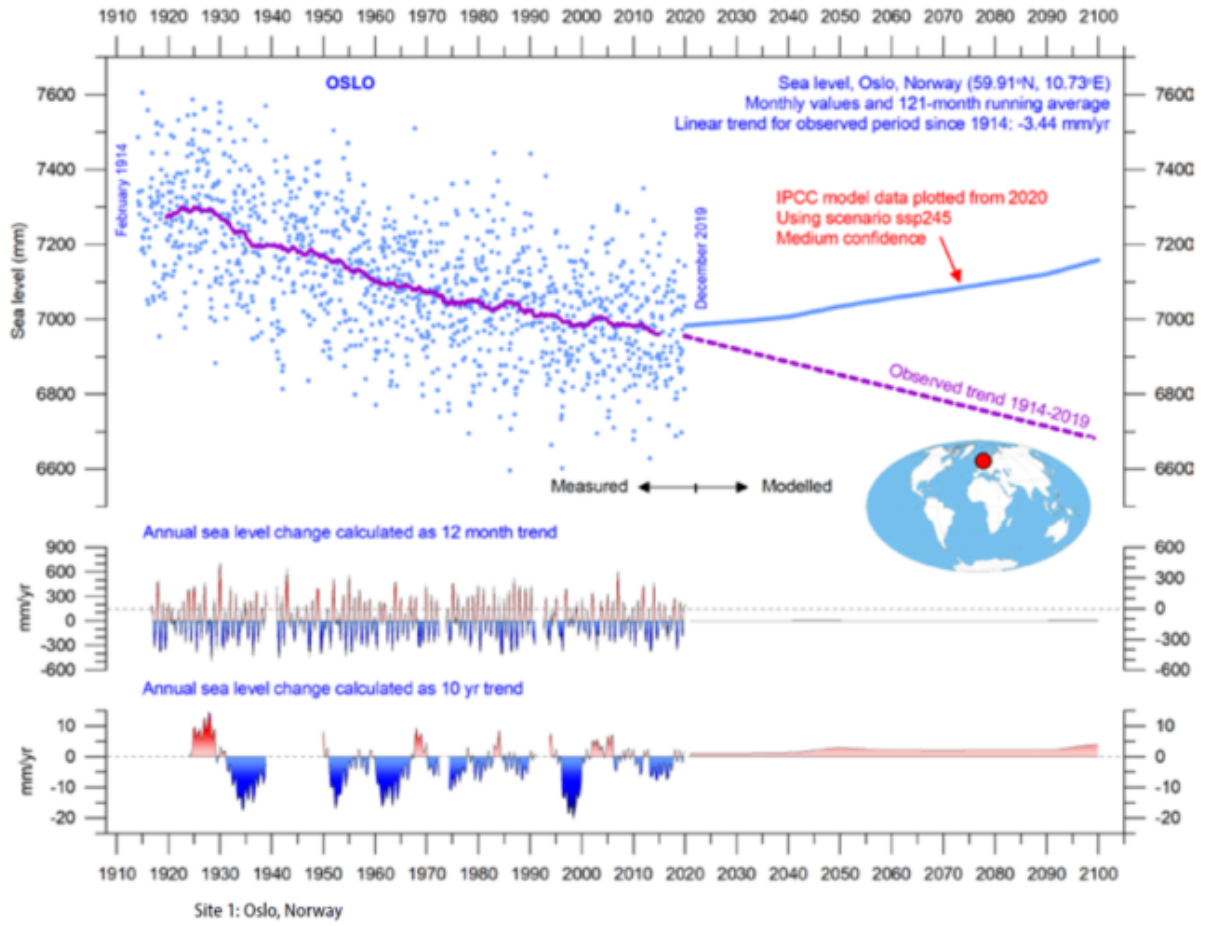
IPCC AR6 Sea Level Projection Tool



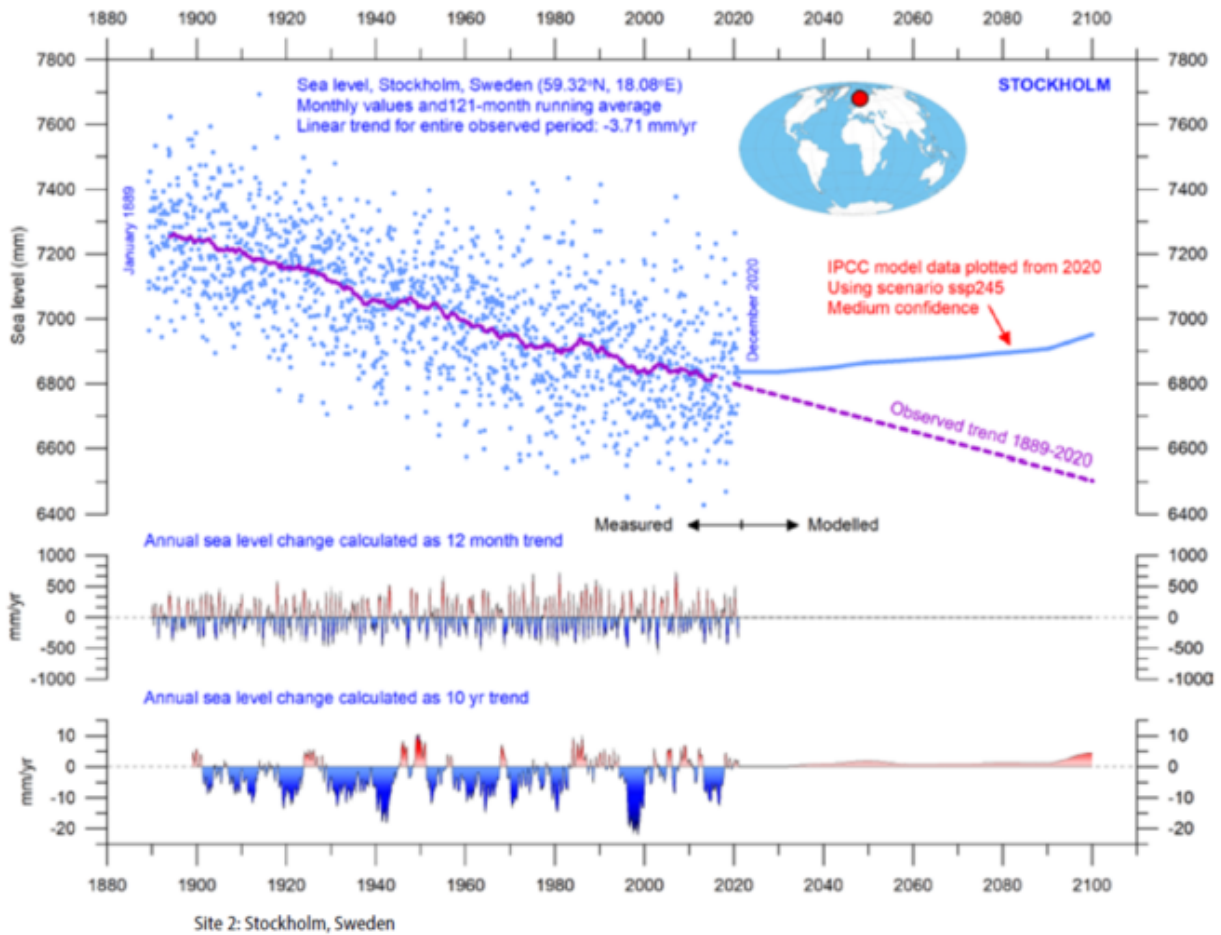
IPCC AR6 Sea Level Projection Tool

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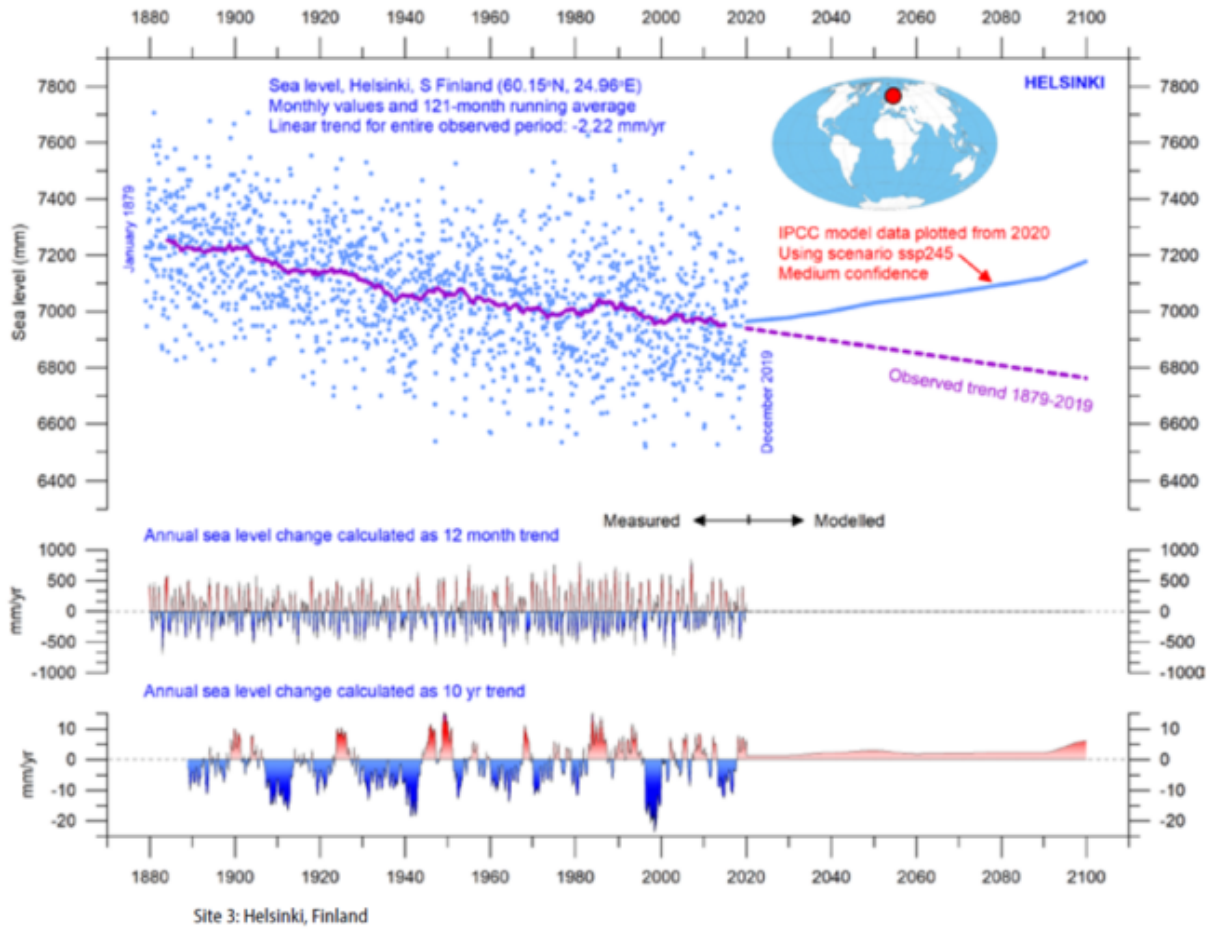
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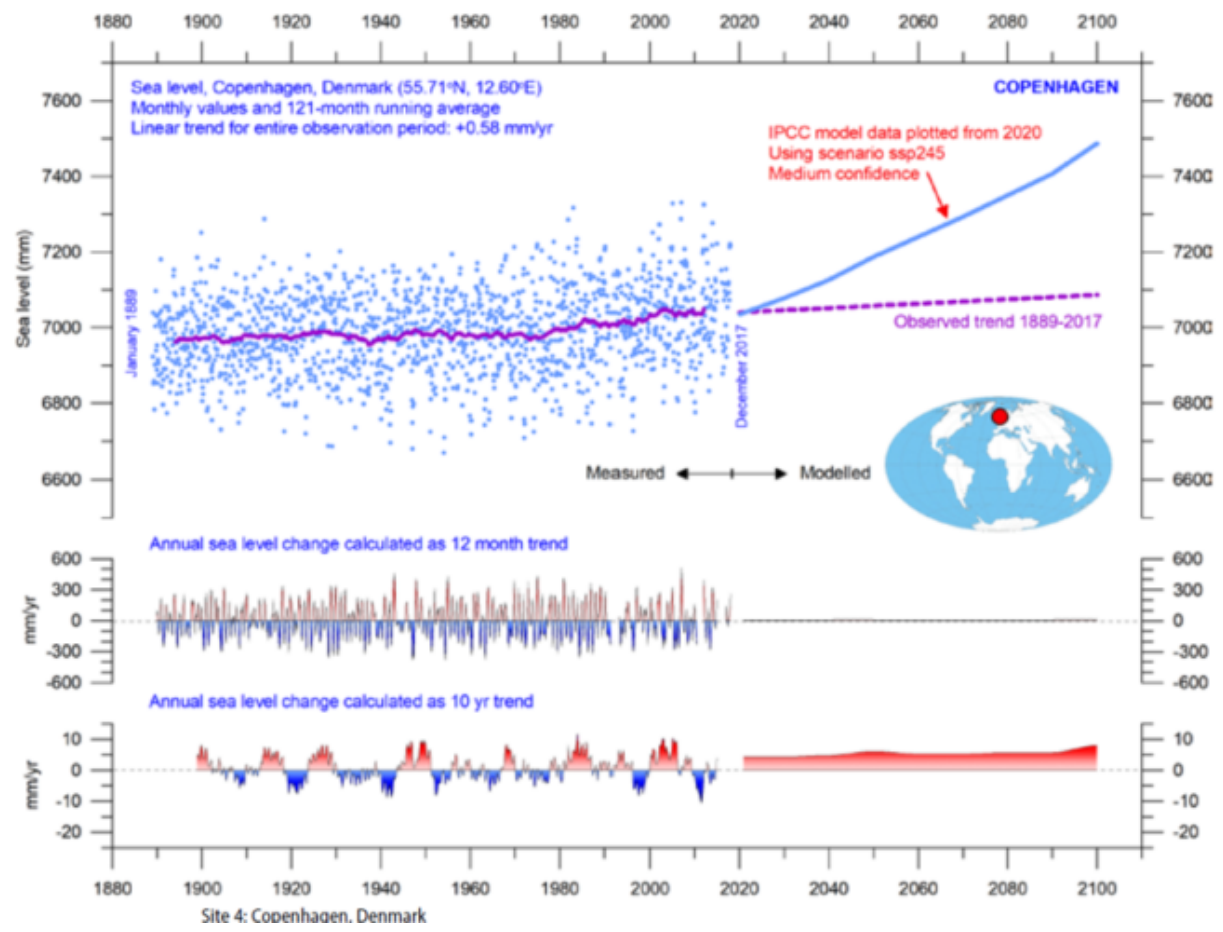
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IPCC?????62????????????

?? ?? · Monday, May 15th, 2023

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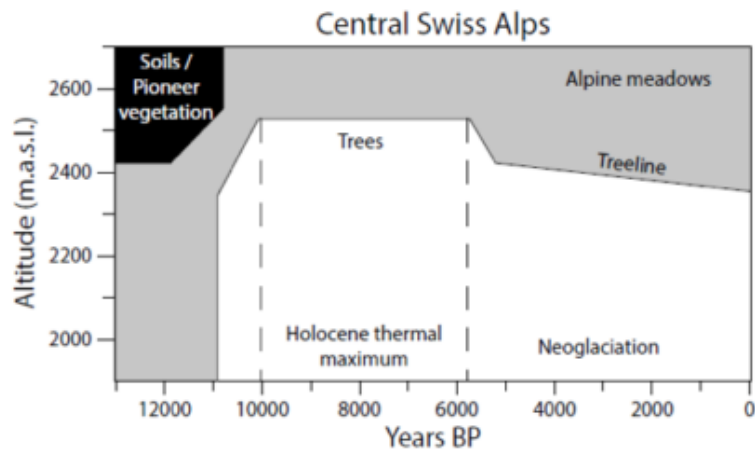


Figure 4: Fluctuations of the treeline in the Swiss Central Alps during the Holocene. The limits of the vegetational zones are placed between the sites according to the presence of the respective vegetation type as inferred by macrofossil analysis. Altitude in meters above sea-level. After Tinner & Theurillat 2003. Current treeline in the Swiss Central Alps is 150-200 m below Holocene Thermal Maximum treeline limit.

??Obliquity??
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 Age??

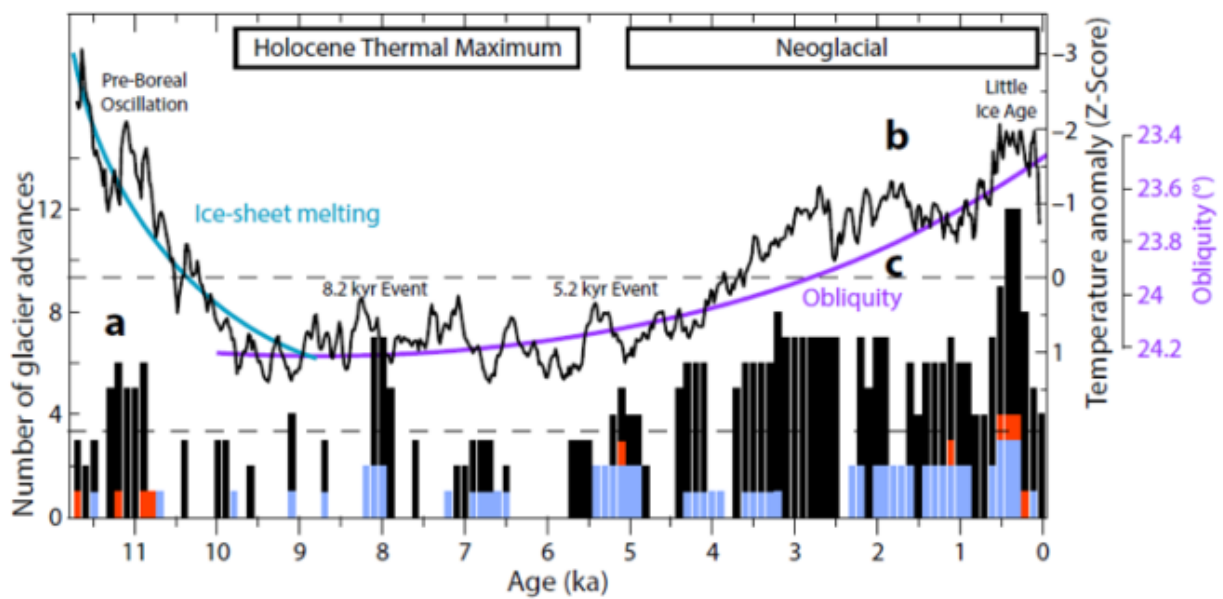


Figure 3: Glacial advances versus temperature (inverted) during the Holocene. a) Number of regions displaying glacier advances at each Holocene century. Black, NH 17 regions; orange, low latitudes single region; ice blue, SH 4 regions. Bottom dashed line, Holocene glacial position average. b) Inverted temperature reconstruction from the same 73 proxies used by Marcott et al. 2013. The reconstruction ends in 1910 and does not include modern warming. Temperature anomaly changes are expressed as Z-score (distance to the mean). Some well-known cooling periods or events are indicated by their accepted names. The period affected by the melting of the extra-Arctic ice sheets is indicated in aquamarine. c) Inverted changes in obliquity. Vinós, 2022, page 55.¹³

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Posted in ???, ????? | No Comments »

IPCC?????61?????????????

?? ?? · Sunday, May 14th, 2023



borchee/iStock

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IPCC??????4??????Snow Cover Extent, SCE??

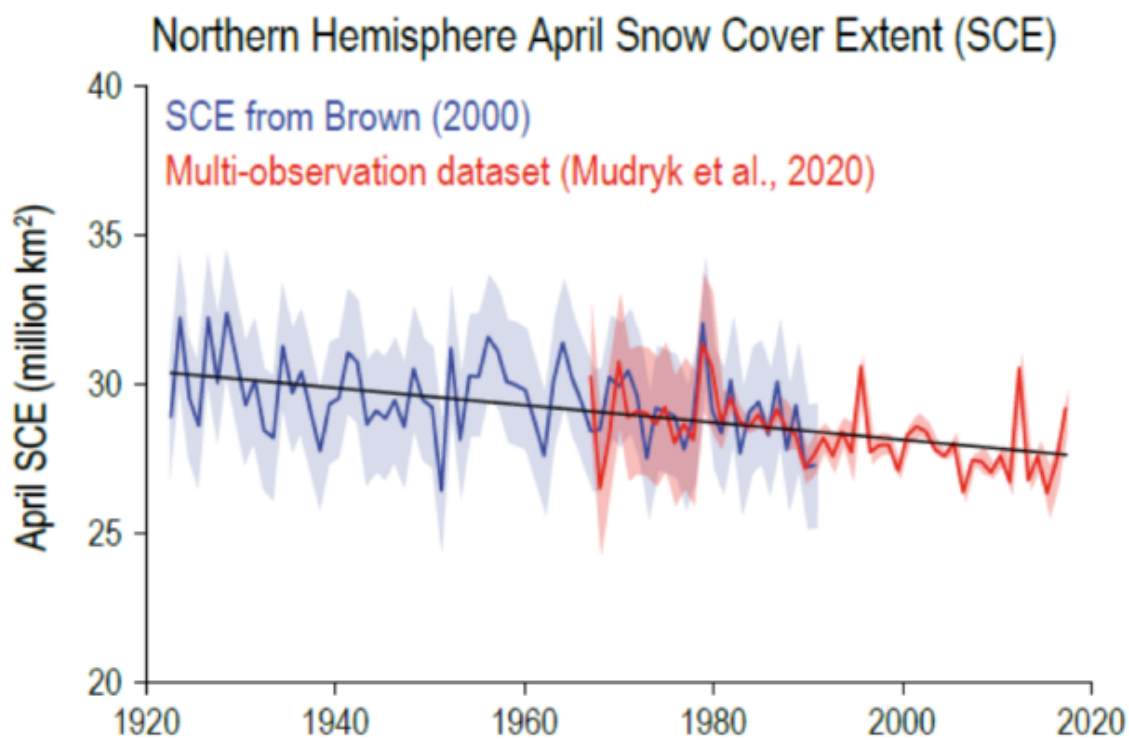


Figure 2: April snow cover extent (SCE) for the Northern Hemisphere. From: AR6, chapter 2.

??IPCC????4??

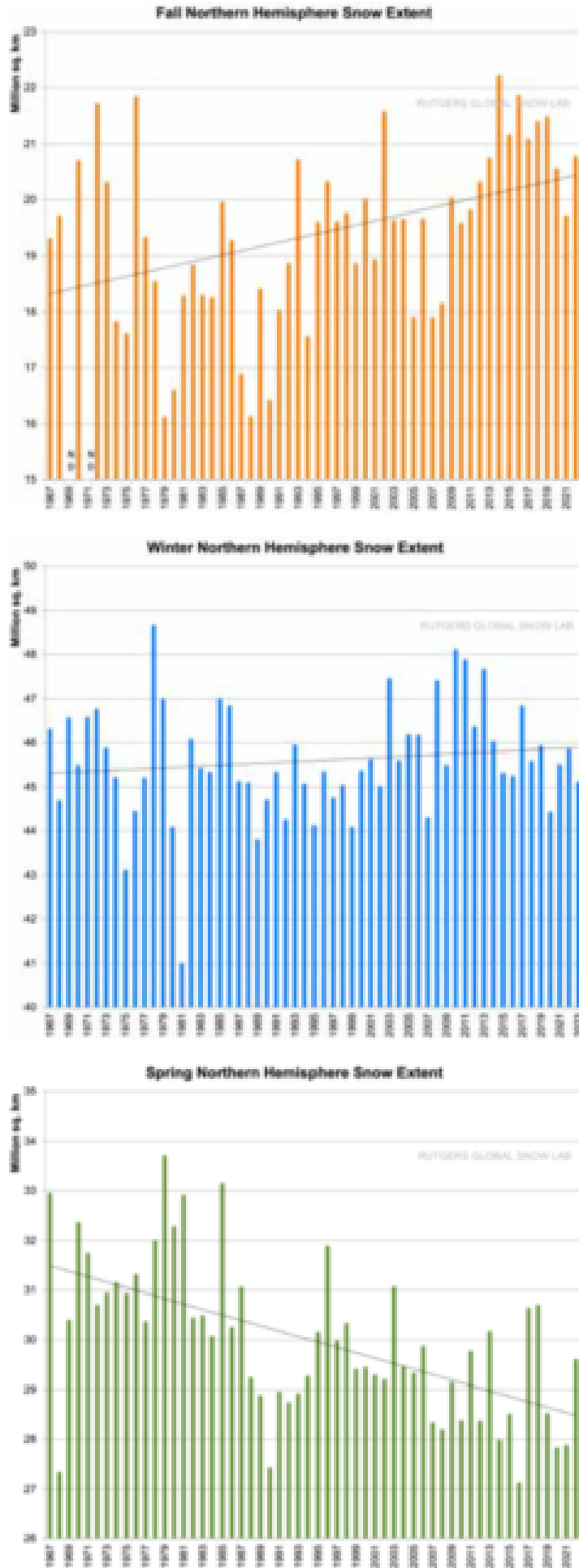


Figure 4: Snow cover extent (SCE) for the Northern Hemisphere for autumn, winter and spring. From: Rutgers Global Snow Lab (2023)

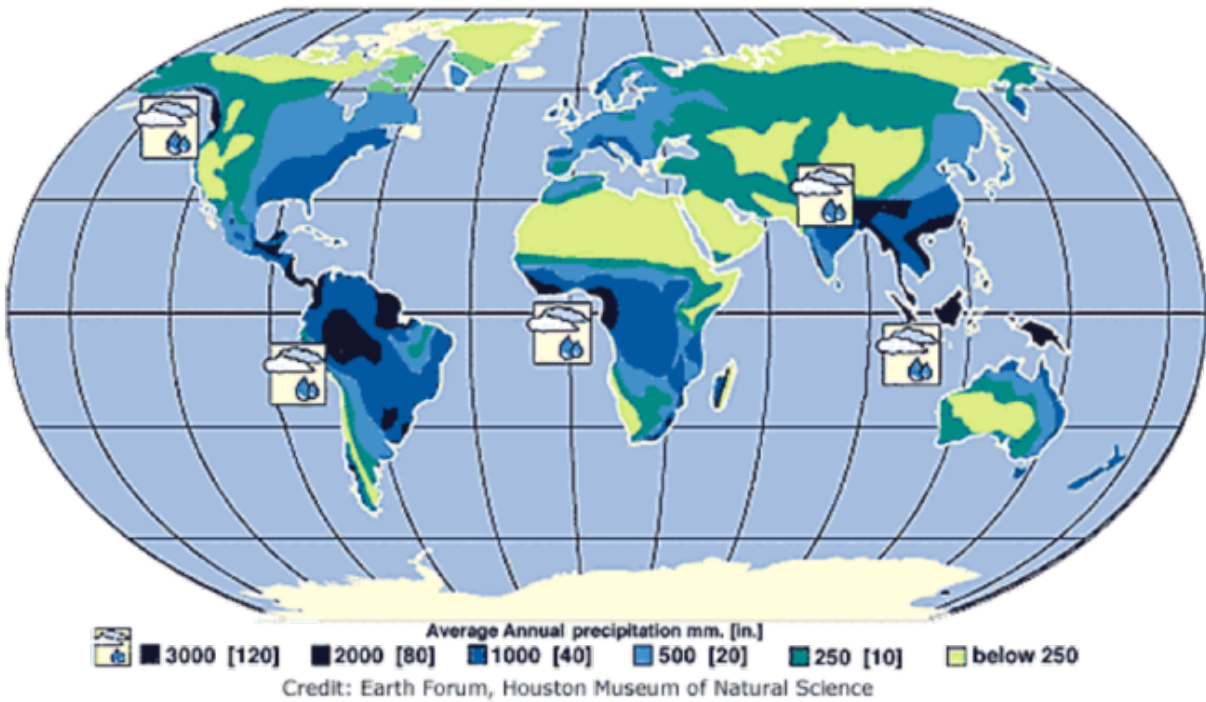
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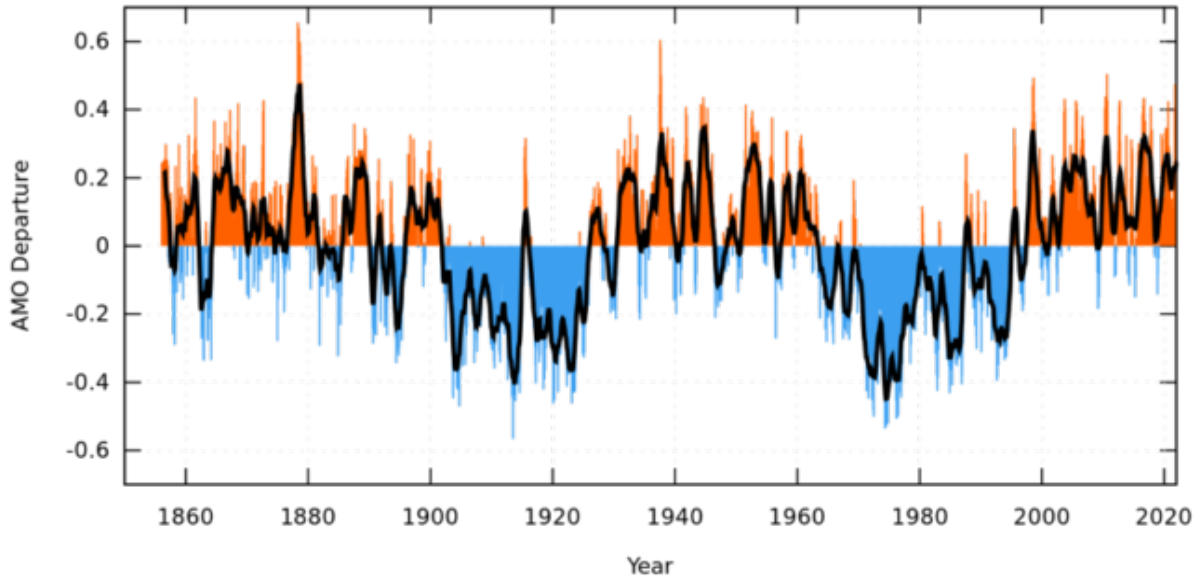
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Monthly values for the AMO index, 1856 - 2022



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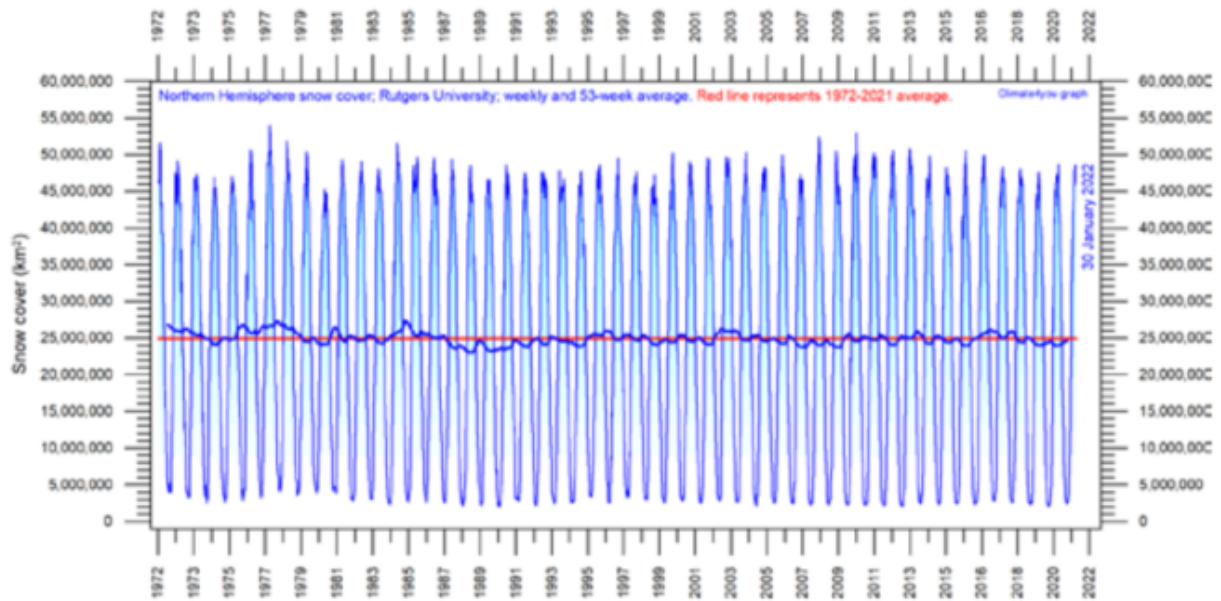


Figure 7: Northern hemisphere weekly snow cover since January 1972 according to the Rutgers University Global Snow Lab (<http://climate.rutgers.edu/snowcover>), the thin blue line is the weekly data, and the thick blue line is the running 53 week average (approximately 1 year). The horizontal red line is the 1972-2021 average. Last week shown: week 1 in 2022. Last figure update: 11 January 2022. Source: Ole Humlum, climate4you.com

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?? ??? ?? · Thursday, May 11th, 2023

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RFK Jr.?2024????????????????

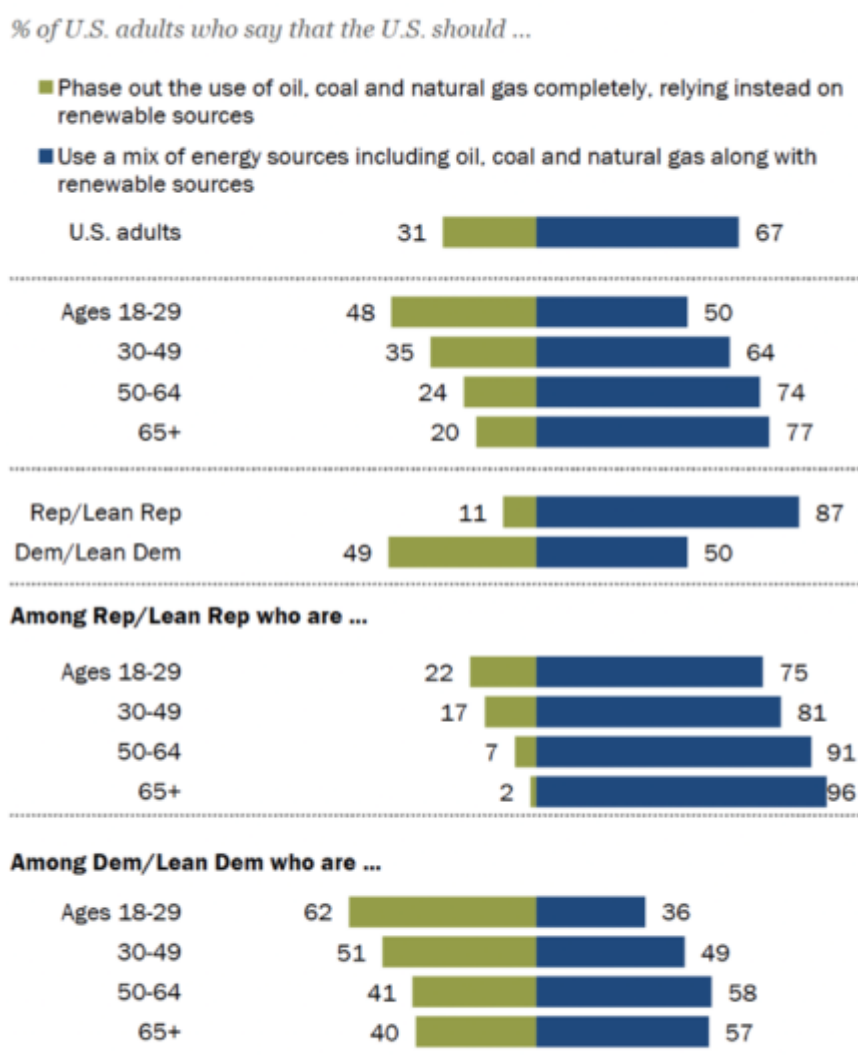
?? ?? · Wednesday, May 10th, 2023

????RFK Jr. Says Climate Change Being Exploited to Push 'Totalitarian Controls'
(theepochtimes.com)?

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Younger U.S. adults more open than older adults to phasing out fossil fuels completely



Note: Respondents who did not give an answer are not shown.
Source: Survey conducted Jan. 24-30, 2022.

PEW RESEARCH CENTER

???What the data says about Americans' views of climate change?Pew Research Center ?

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2023??ESG??????????

?? ?? · Saturday, May 6th, 2023



Kanur Ismail/iStock

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CO2

年	日本	米国
1997年	▲6% (橋本政権)	▲7% (クリントン政権)
2015年	▲26% (安倍政権)	▲26% (オバマ政権)
2021年	▲46% (菅政権)	▲50~52% (バイデン政権)

CO2

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2021 2021 46% 2024 ESG

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SDGs

Posted in ??????????, ??? | No Comments »

EU?EV????????????????????e-fuel????

?? ?? · Sunday, April 30th, 2023



a-image/iStock

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3. EV????????????????????????????????30????????????????????????2????????????????????EV????????????
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??WEF????????????????CO₂??WEF?Sustainable
Development Impact Meetings????????????????????????

UN Secretary for Global Comms says we “own the science” on “climate change,”
and we think that “the world should know it.”

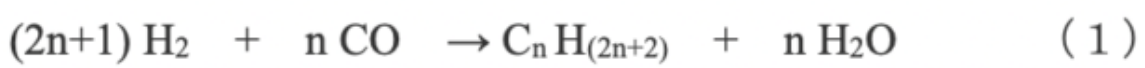
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G7

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Posted in ??????????, ??? | [No Comments »](#)

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?? ?? · Monday, April 24th, 2023



nndanko/iStock

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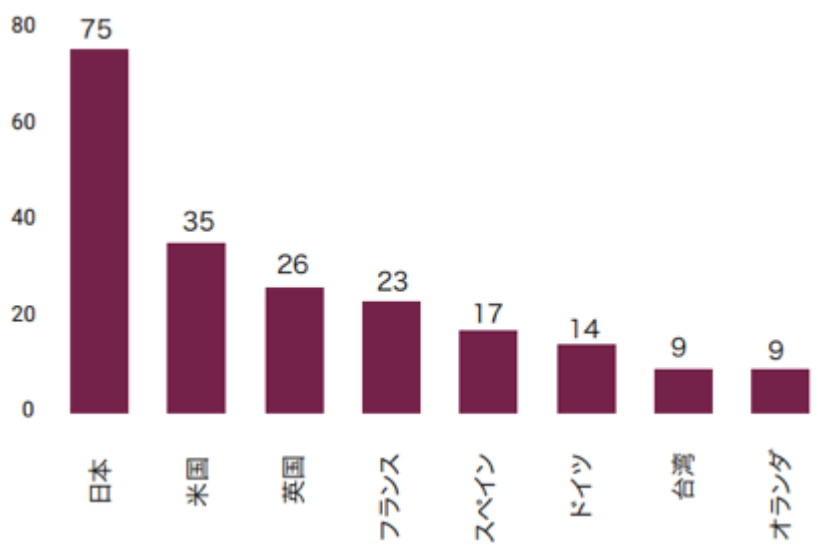
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気候変動 Aリスト 2022

Aリスト国・地域別企業数(上位8か国)



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CDP CO2 CO2 Tier1
 CDP 100%

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CO2

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B社				
C社				
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?? ?? · Sunday, April 16th, 2023



deepblue4you/iStock

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