

# Global Energy Policy Research | GEPR

GEPR  
<http://agorajp.com/>

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TSMC vs.

Monday, June 10th, 2024



Hase-Hoch-2/iStock

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AI

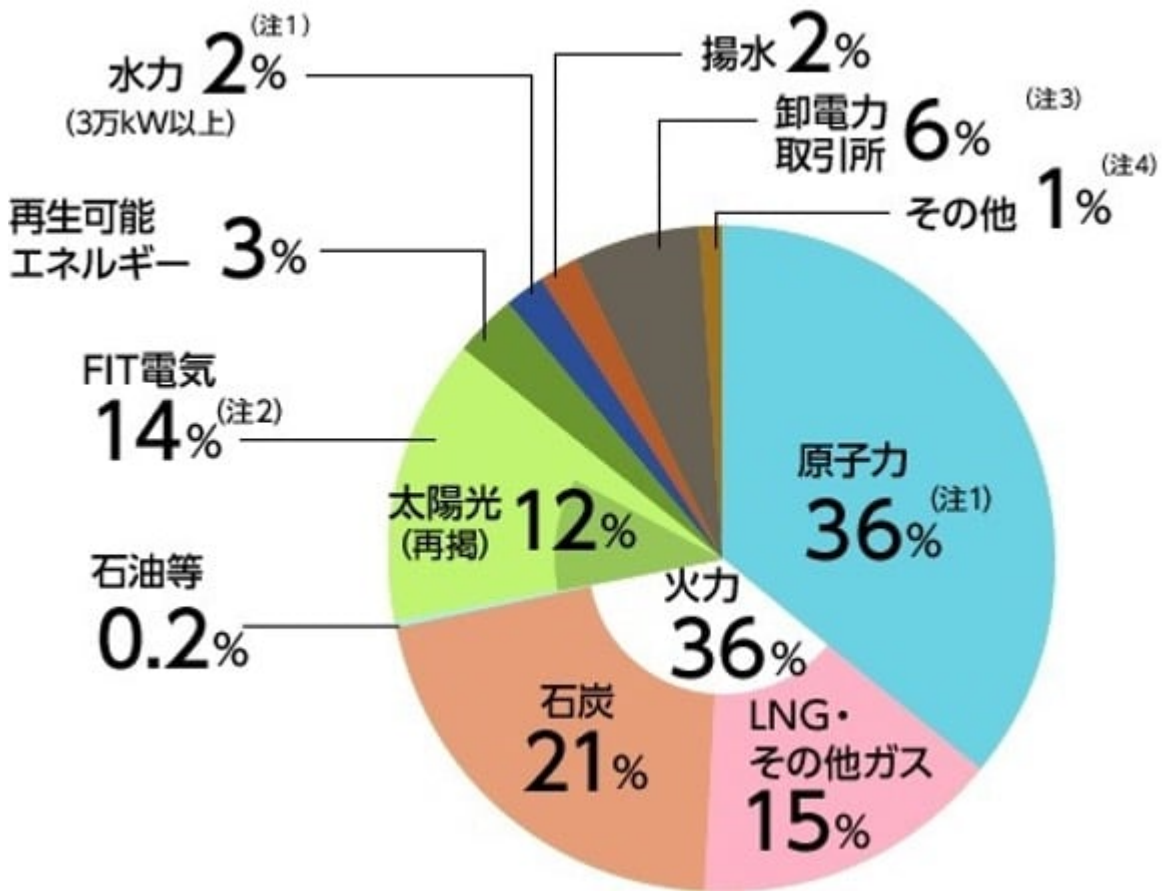
TSMC vs. NTT NEC  
TSMC 2024 vs. 2025

TSMC



TSMC??3??1????????????????????2??  
 ???

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?1????????????2021??  
 ??????????HP????

??2024?4????????????????1kWh??28.78?/kWh????????3??10????  
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????TSMC????????1811?kWh?2021??<sup>22</sup>????????????????????????????20?/kWh??????3.6?/?  
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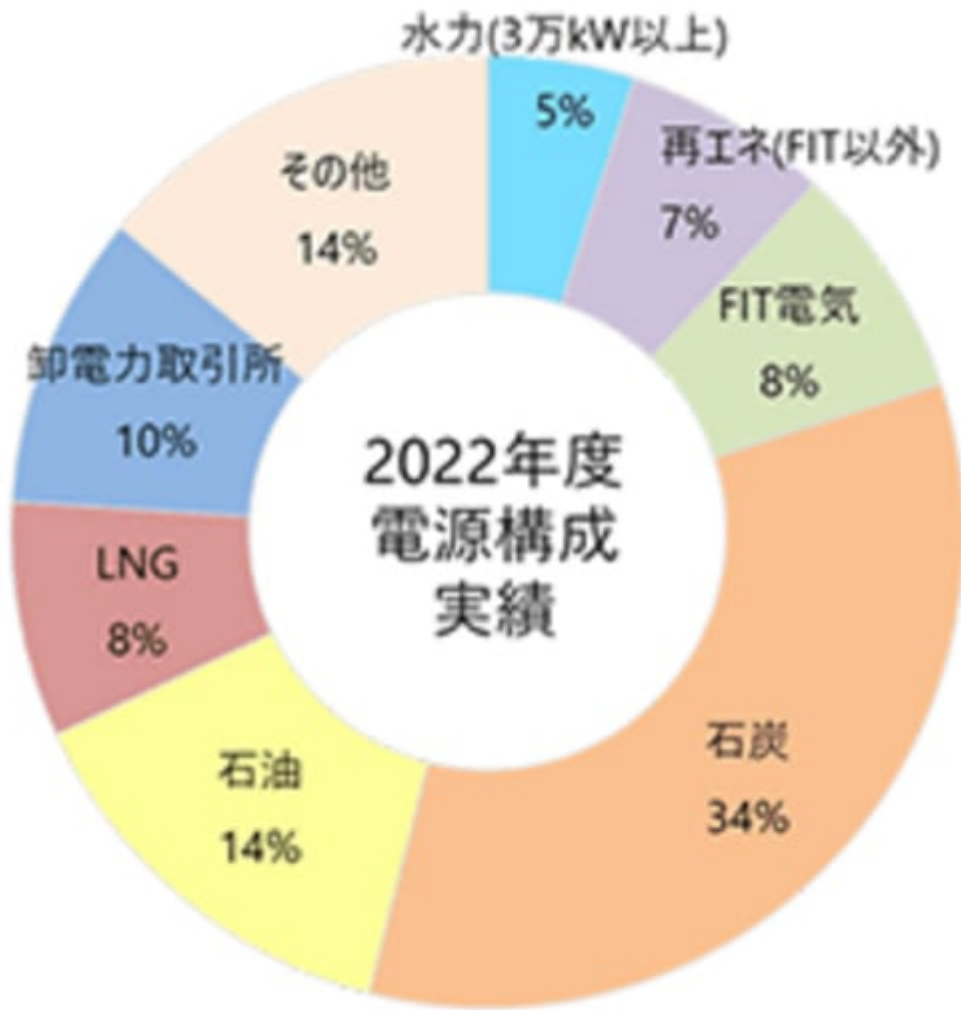
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??3??2????3??1????????????2????????  
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2020年  
HP

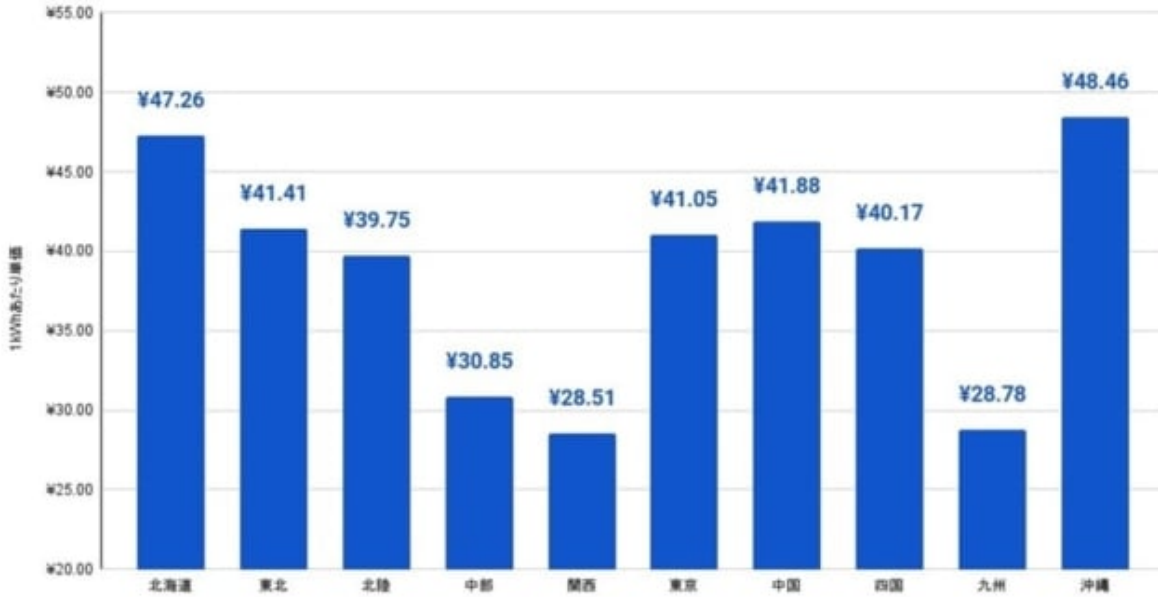
2024年4月1kWh 47.26/kWh  
10月 48.46/kWh

2024年4月1kWh 47.26/kWh  
10月 48.46/kWh

2024年4月1kWh 47.26/kWh  
10月 48.46/kWh

2024年4月1kWh

【地域別】電気料金1kWhあたりの目安単価 (2024年4月以降)



3?1kWh?????????1?

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?2???TSMC?????????Fab18

????5?8??Fab18????????????????????????

Fab18

????5?8?????88?kW??????70?kWh??

70?kWh ×?47.26?28.78?/?kWh?1294?/?

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88?kW????????????

88?kW × 24h × 365??77.0?kWh

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70?kWh/77?kWh?90.9?

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??TSMC??

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?1?1kWh????????????????????????????????

?2??? ?3? ??????????

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

## ????????????????????

?? ?? · Saturday, June 8th, 2024



Tula Kumkrong/iStock

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2050??CO2??????2040??CO2????????????

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???2050??CO2????????

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?1????????????????CO2????????4????????6????????  
CO2????????????????????????????????????

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????47????17????16????9????

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????2030??2040????  
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??CO2????

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

??????2024??

?? ??? ?? · Friday, June 7th, 2024

6?9?????6?9???EU?5????????????????????????????????????27????????????????????720????????????????????99????????????????  
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Sinisa Vidic/iStock

EU????????????????????????????????????EU????????????????????????EU????????????????????????????  
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31????????????????????EU??EU?????  
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EU??  
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??3?  
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????EU????????4????????????????????????????????  
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????????CEO????????????????????????????????E  
U??22??23????18????????????????????  
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Wikipedia??

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??EU????????7????????????????21?10??  
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??29??  
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Jorisvo/iStock

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????????? “EU”?“?”????????????3????????????

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2019?????????50.6????????????

??EU???EU???EU????????

Posted in ???, ?? | No Comments »

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?? ?? · Tuesday, June 4th, 2024

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<https://t.co/by4Npp6eZU>

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— ?????? (@Sankei\_news) June 4, 2024

??TF????????????????????  
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???TF?Zoom??

???FIT?40????????????????????

???TF?????4?????2??TF????????????  
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????????????2011????????????FIT????  
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????????????40????????????EU????  
????65????????



2011????65?/kWh?FIT????40????  
?20????

???????????? <https://t.co/iZypBM74D5>

— ??? (@ikedanob) April 18, 2024

2012?12????40????42????20????  
????20????

????2030????44????  
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**????????TF**

2022?3?2????3?17????335????  
????3????

????TF????3????1000????  
????4500????270????67????5????

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3?11????2????FIT????  
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????????TF??2021????6????????????  
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??TF????????????TF????  
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?? <https://t.co/JxGxQd6abK>

— ??? (@ikedanob) March 27, 2024

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??TF????????????????????2023?12?  
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Posted in ??????????, ??? | No Comments »

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?? ?? · Sunday, May 26th, 2024

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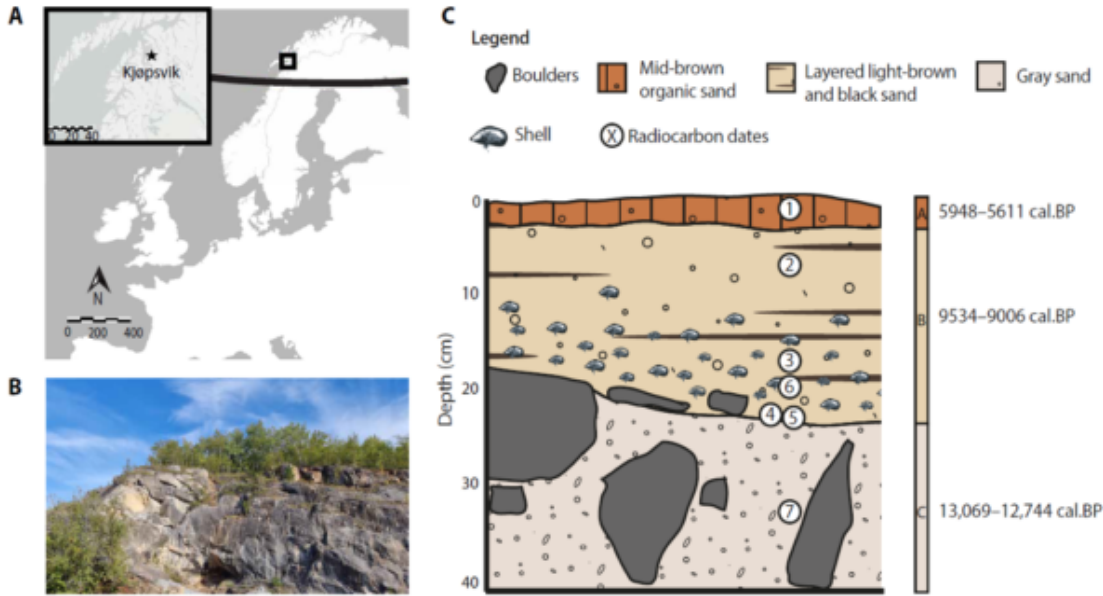


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??DNA??

?????Boilard et al,  
2024??????82????????????DNA????????????????????????????????  
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??45????????  
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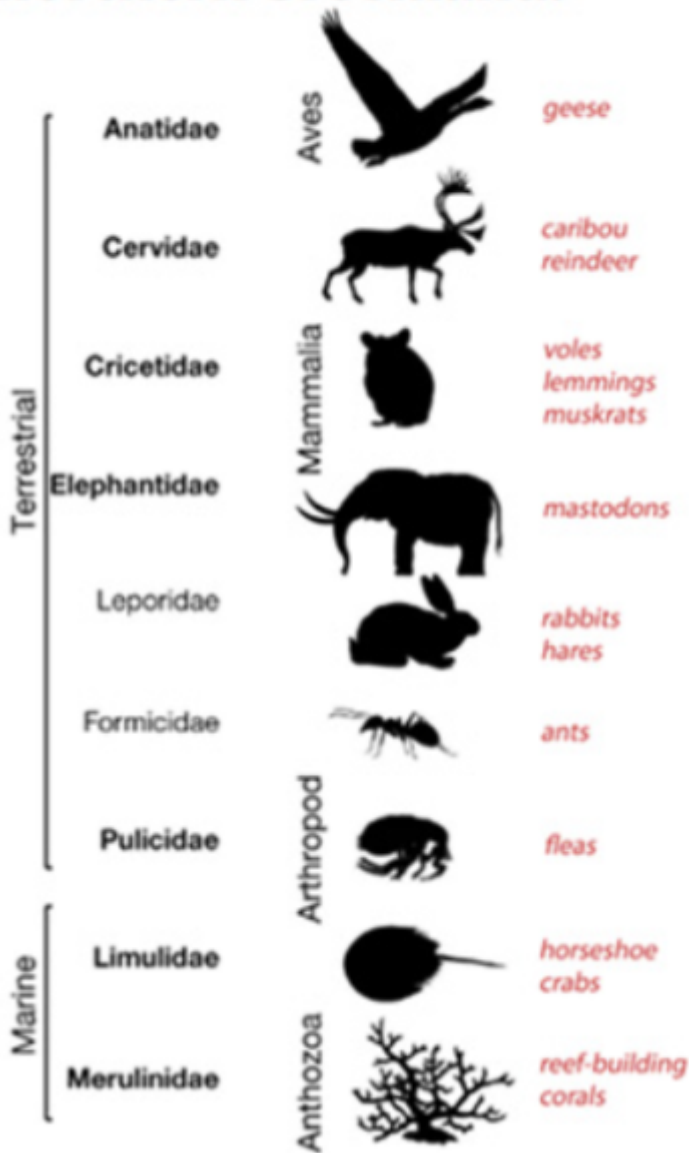




????????????DNA????????????????????????????????360????80????????????????????????11????19????????????????  
 ?????????????????????????????Kjaer et al.2022??



# Fig. 4: Early Pleistocene animals of northern Greenland.



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

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?? ?? · Saturday, May 25th, 2024



KE ZHUANG/iStock

80????????????????2040??

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2022????10kW??  
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Environment??

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??PCB?Poly Chlorinated  
Biphenyl??

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??PCB????????  
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??PCB????????  
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6?14????????????????????



?SDGs????????????????

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

**???0.85?????????5300????????????????????**

?? ?? · Thursday, May 23rd, 2024

????????????????????????????????????3.11????????????????????????7????????????????????????  
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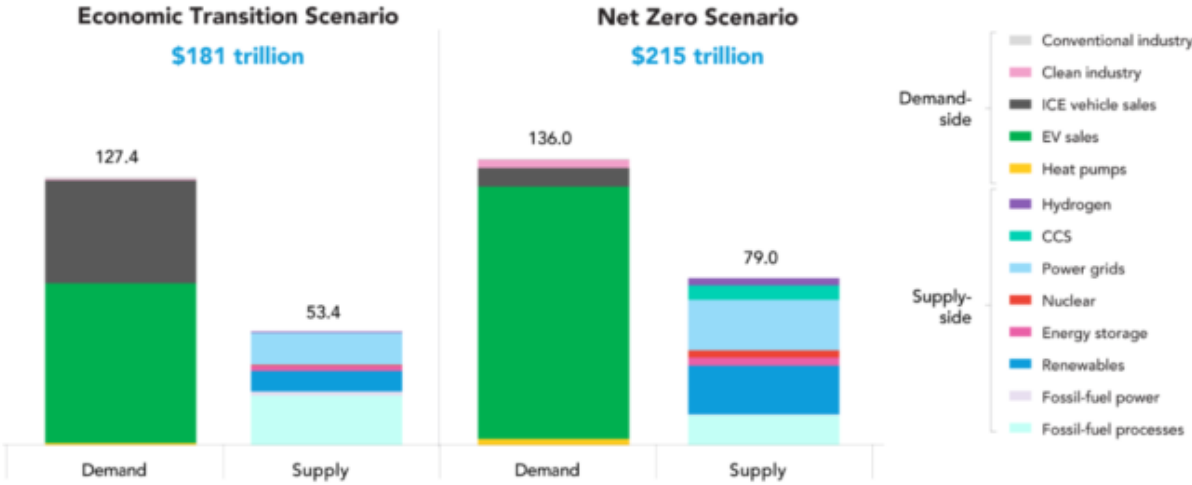
ChatGPT

2050????????????34??

??2050???IEA????????????4.5????30??135?????????????????  
????????????????????????25??34??75300????????



### Global energy investment and spending across 2024-2050, Economic Transition Scenario and Net Zero Scenario



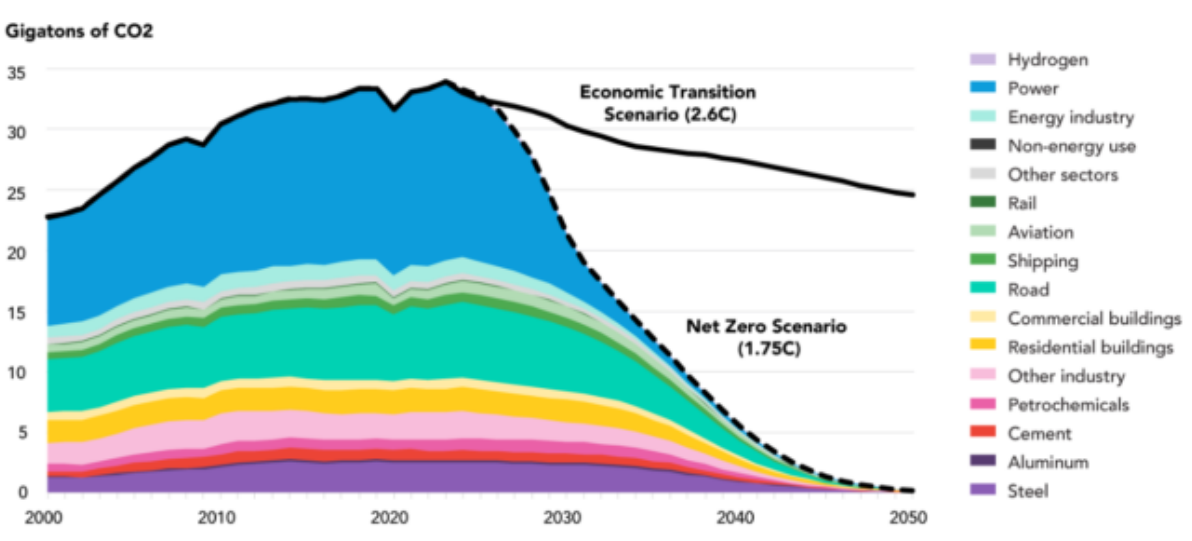
Source: BloombergNEF. Note: ICE is internal combustion engine, EV is electric vehicles. The numbers above the bars indicate cumulative investment and spending figures from 2024 to 2050.

Bloomberg??

????????????????????????????????181????????2050????????????????????????????????????215????????34????????  
????????????????????????????????????

??2050????????2.6????????????????1.75????????????????  
??34????????0.85????????????

### Energy-related emissions and net-zero carbon budget, Economic Transition Scenario and Net Zero Scenario



Bloomberg??

????????????????(C/B)????????1??GDP?9  
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??2050??

?????????2100??2.6?

??2023????????????????  
????????????????????2100??2.6????????????????2050??2??????

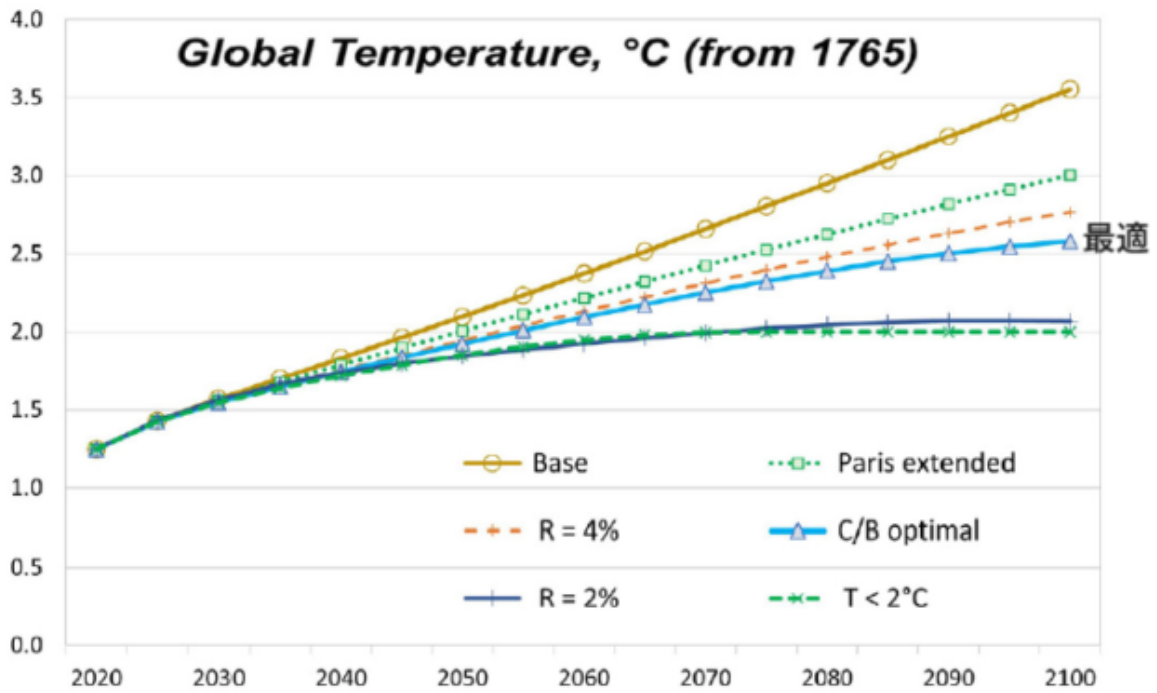


Fig. 3. Global temperature increases in different scenarios.

Barrage-Nordhaus

??125??/??????????59??9000????????????????????????????????????21?  
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**Table 2. Social cost of carbon, alternative scenarios (2019\$/tCO<sub>2</sub>)**

Scenario	Social cost of carbon (\$/tCO <sub>2</sub> , 2019\$)		
	2020	2025	2050
C/B optimal	50	59	125
T < 2 °C	75	89	213
T < 1.5 °C	3,557	4,185	16,552
Alt damage	124	146	281
Paris extended	61	72	159
Base	66	78	175
R = 5%	32	37	74
R = 4%	49	58	107
R = 3%	87	102	172
R = 2%	176	207	302
R = 1%	485	571	695

This table shows the importance of discounting and alternative damage estimates on the SCC. It includes the SCC for the 1.5 °C scenario to indicate the cost induced by the catastrophic loss of output to reach the target. The label "R = X%" is scenario with a constant discount rate of X% per year.

Barrage-Nordhaus

????T?1.5????4185????9000????2100????2.6????2050  
????70????

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??0.85????????????????

??COP28??  
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Posted in ??????????, ??, ???? | No Comments »

# 21????????????LNG????????????

?? ?? · Thursday, May 23rd, 2024



Oleksii Liskonih/iStock

## ????LNG????????

????????EIA????2023????LNG????22??12%????119??????11.9Bcf/d????????  
????????LNG????????

??2000?  
????????????10????2016????????????????????????????LNG????????????LNG????????????23?  
12????LNG???13.6Bcf/d??????????

????????????LNG??2023??LNG?????  
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20??  
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??20????????????????????  
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???21??  
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??COP28????????????????????????????????????  
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??3?4????????????????????????????LNG????????????????????  
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??LNG??  
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????????????????????????????????1????????????LNG????????????????????????????????

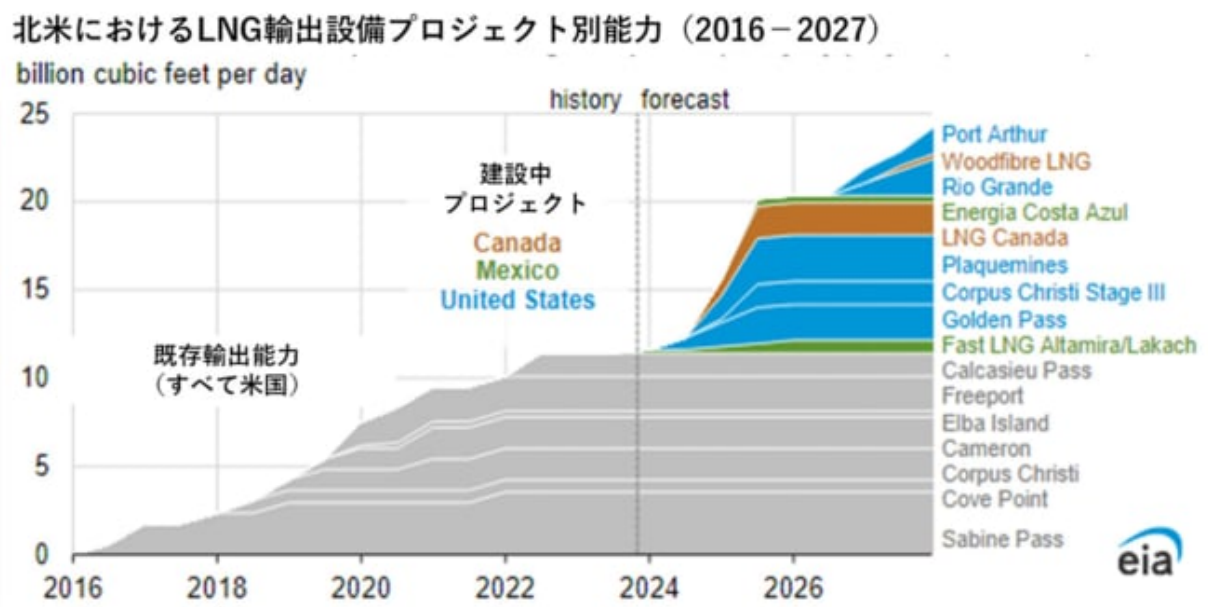
1?26????????????LNG????????????????????????????????LNG????????????????????????????  
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????????????????????LNG????????????23????11.4 Bcf/d????????????????2027????24.3  
Bcf/d??9.7 Bcf/d??2.1 Bcf/d??1.1  
Bcf/d?????



????????????????”Today in Energy”

??LNG????????????????????LNG????????4????????????????????????????

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??LNG??  
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??20????????????????????21????????????????????????????????????

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

**80????????????????????????????????????2040???**

?? ?? · Wednesday, May 22nd, 2024



Voyagerix/iStock

**1. ????????**

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**2. ????????**

??25?30????????????2012????????????FIT??2  
032????20??2015??2,351????2040??80????????

??CIS????????????????  
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2022??????10kW??2????????  
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#### 4. ????

??????????????2040??80??

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??17??7????????????????

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

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?? ?? · Monday, May 20th, 2024

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311????????????????????????????

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<pic.twitter.com/lAsK5AdESg>

— ?????? (@ISOKO\_MOCHIZUKI) May 16, 2024

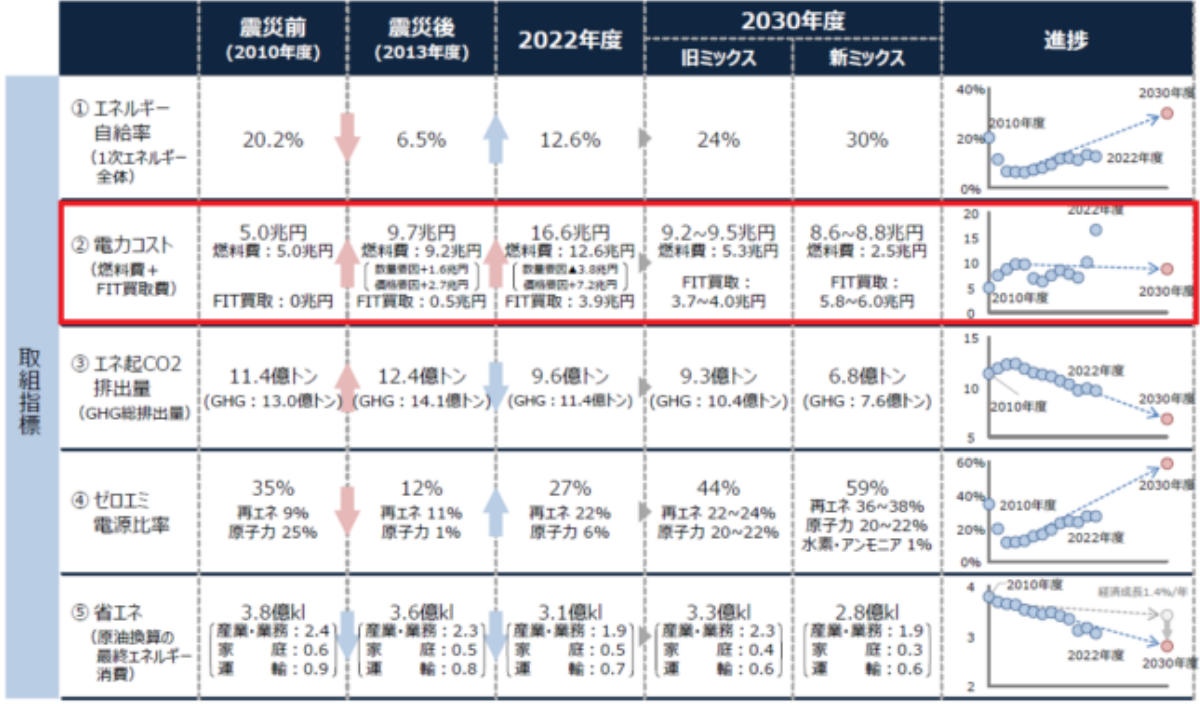
??2????????????Gx??  
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????????GX??10????????????10????????120?kW????????????????????1000  
 ?kW??2030??

??FIT????????????????????16.6????2030????8.6?8.8????  
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### 2030年度エネルギーミックスの進捗（全体像）



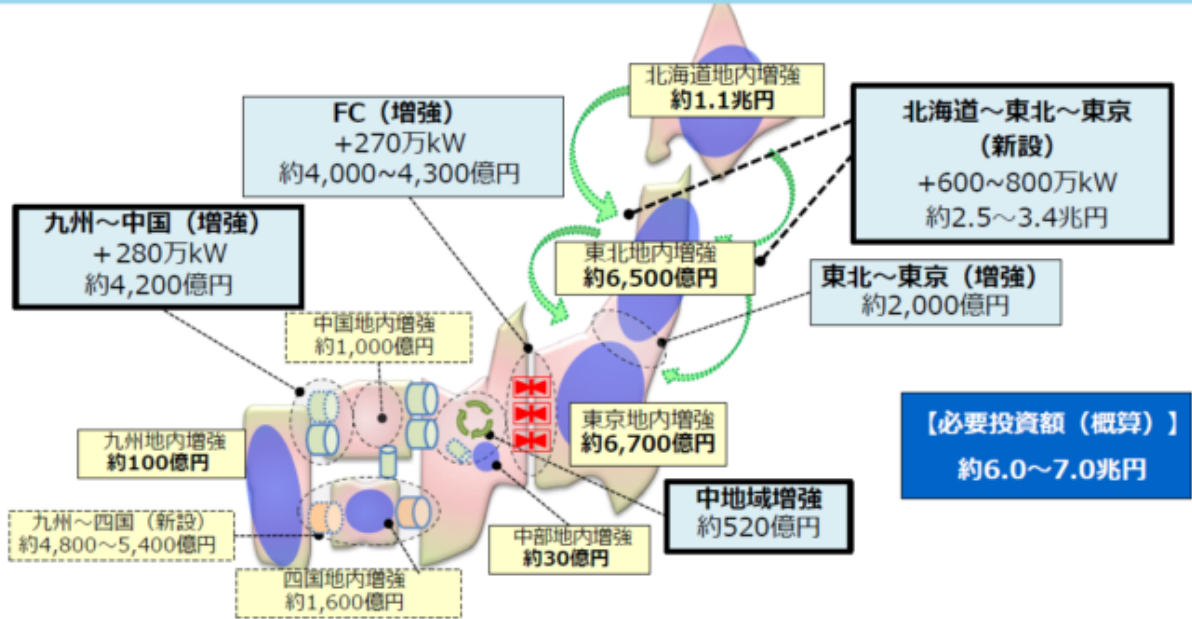
※ 四捨五入の関係で合計が合わない場合がある。  
 ※ 2030年度の電力コストは系統安定化費用（旧ミックス 0.1兆円、新ミックス 0.3兆円）を含む。  
 出典：総合エネルギー統計（2022年度確報）等をもとに資源エネルギー庁作成

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??6?7????????????????????????????????  
 ?????????????????GX??????????????????????????????

# マスタープランに基づく全国規模での系統整備

- 再エネ大量導入とレジリエンス強化のため、電力広域的運営推進機関において、2050年カーボンニュートラルも見据えた、広域連系システムのマスタープランを2023年3月29日に策定・公表した。
- 並行して、北海道～本州間の海底直流送電等について、具体的な整備計画の検討を開始。



(出典) 広域系統長期方針 (広域連系システムのマスタープラン) (電力広域的運営推進機関2023年3月29日策定) のうちベースシナリオより作成

69

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??8.8????????????????  
?????????16.8??????????????????????

?????GX?????????7??23.8????????????1.5????????????????????????  
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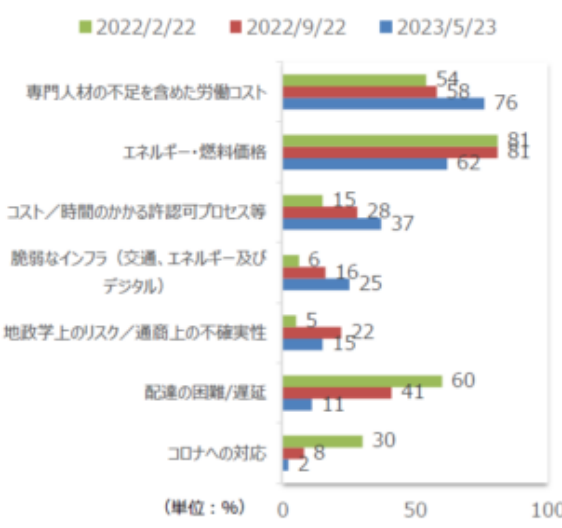
?????GX??  
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## (参考) 産業への影響 (ドイツの事例)

- ドイツでは、ウクライナ侵略以降、エネルギー価格が高騰。ドイツ産業連盟 (BDI) が実施したアンケート結果では、ビジネス上の課題として「エネルギー・燃料価格」を指摘する声が多数。
- エネルギー価格高騰以降、エネルギー集約型産業の生産活動の低下が顕著。

ドイツにおけるビジネス上の課題 (アンケート調査結果)



(出典)「BDI-Blitzumfrage im Frühsommer 2023」を元に経済産業省作成

ドイツにおける生産指数の推移



(出典) Federal statistical agency (Destatis)を元に経済産業省作成

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??2050????????????????????????????1.5????????????????????????

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??LCOE??

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

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?? ?? ? - Saturday, May 18th, 2024





Animaflora/iStock

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draghich/iStock

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Posted in ???, ?? | No Comments »

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?? ?? · Friday, May 17th, 2024



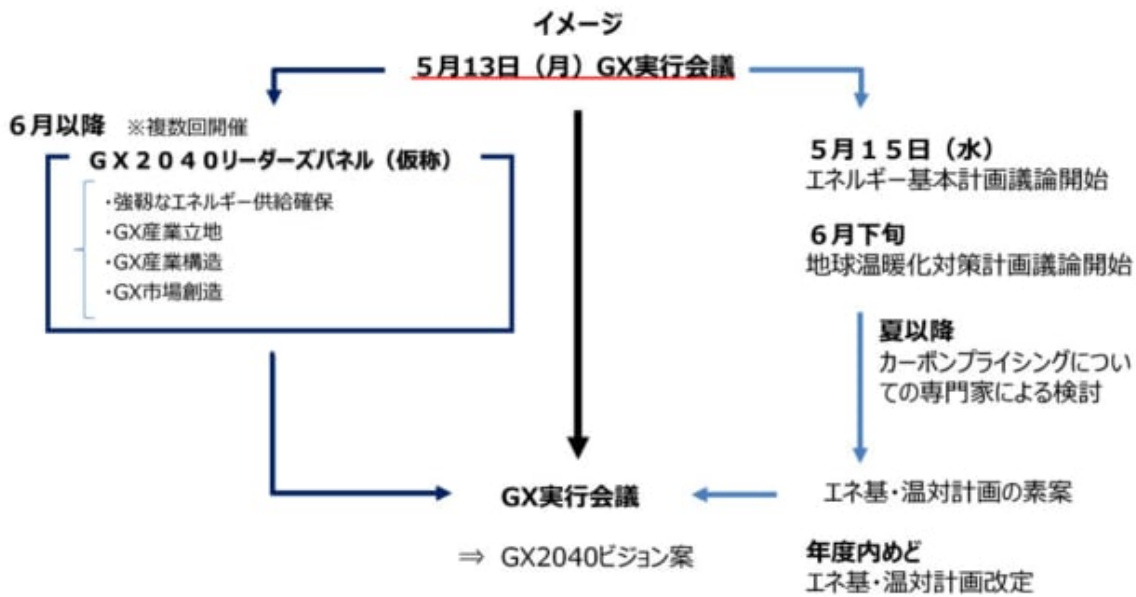
MarioGuti/iStock

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今後の進め方（案）

- 今後、これらの論点について、6月以降『GX2040リーダーズパネル（仮称）』を開催し、有識者から見解を聴取。それを踏まえてGX2040ビジョンにつなげる。
- こうした議論も踏まえ、エネルギー基本計画・地球温暖化対策計画の見直しや、カーボンプライシングの制度設計につなげていく。



11

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2030年度エネルギーミックスの進捗（全体像）

取組指標	震災前 (2010年度)	震災後 (2013年度)	2022年度	2030年度		進捗
				旧ミックス	新ミックス	
① エネルギー自給率 (1次エネルギー全体)	20.2%	6.5%	12.6%	24%	30%	
② 電力コスト (燃料費+FIT買取費)	5.0兆円 燃料費：5.0兆円 FIT買取：0兆円	9.7兆円 燃料費：9.2兆円 FIT買取：0.5兆円	16.6兆円 燃料費：12.6兆円 FIT買取：3.9兆円	9.2~9.5兆円 燃料費：5.3兆円 FIT買取：3.7~4.0兆円	8.6~8.8兆円 燃料費：2.5兆円 FIT買取：5.8~6.0兆円	
③ エネ起CO2排出量 (GHG総排出量)	11.4億トン (GHG：13.0億トン)	12.4億トン (GHG：14.1億トン)	9.6億トン (GHG：11.4億トン)	9.3億トン (GHG：10.4億トン)	6.8億トン (GHG：7.6億トン)	
④ ゼロエミ電源比率	35% 再エネ 9% 原子力 25%	12% 再エネ 11% 原子力 1%	27% 再エネ 22% 原子力 6%	44% 再エネ 22~24% 原子力 20~22%	59% 再エネ 36~38% 原子力 20~22% 水素・アンモニア 1%	
⑤ 省エネ (原油換算の最終エネルギー消費)	3.8億kl 産業・業務：2.4 家庭：0.6 運輸：0.9	3.6億kl 産業・業務：2.3 家庭：0.5 運輸：0.8	3.1億kl 産業・業務：1.9 家庭：0.5 運輸：0.7	3.3億kl 産業・業務：2.3 家庭：0.4 運輸：0.6	2.8億kl 産業・業務：1.9 家庭：0.3 運輸：0.6	

※ 四捨五入の関係で合計が合わない場合がある。  
 ※ 2030年度の電力コストは系統安定化費用（旧ミックス 0.1兆円、新ミックス 0.3兆円）を含む。  
 出典：総合エネルギー統計（2022年度確報）等をもとに資源エネルギー庁作成

43

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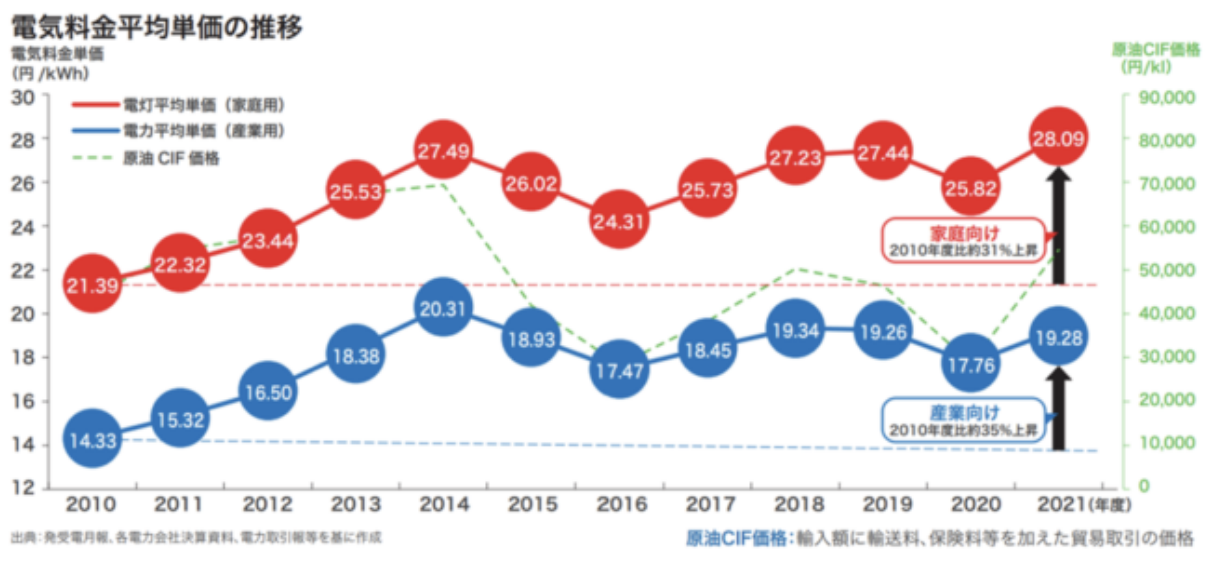
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Posted in ??????????, ??? | No Comments »

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?? ?? · Thursday, May 16th, 2024

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— ????(asahi shimbun? (@asahi) May 14, 2024

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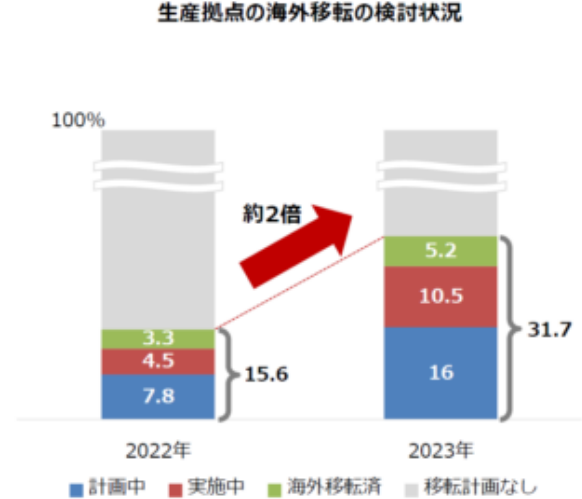
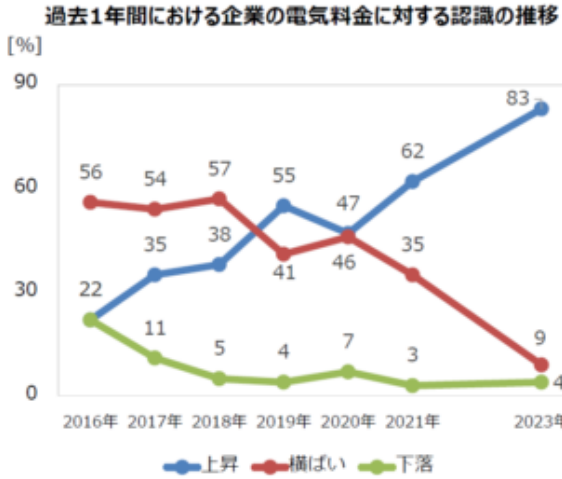
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- ドイツは原発停止、ロシア産ガスの輸入激減などにより過去1年間における電気料金上昇を実感する企業が増加。一方で、生産拠点の海外移転を検討する企業も増加。
- エネルギー政策は企業行動に大きな影響を与える可能性が高く、日本も安定的な価格での電力供給、今後はとりわけ脱炭素電源の安定供給確保は急務。

【ドイツにおける電力価格の高騰と企業の生産拠点の海外移転】



(出所) ドイツ商工会議所「Energiewende-Barometer 2022」及び「Energiewende-Barometer 2023」から作成。ドイツ国内約3,500企業に対するアンケート結果

GX????????

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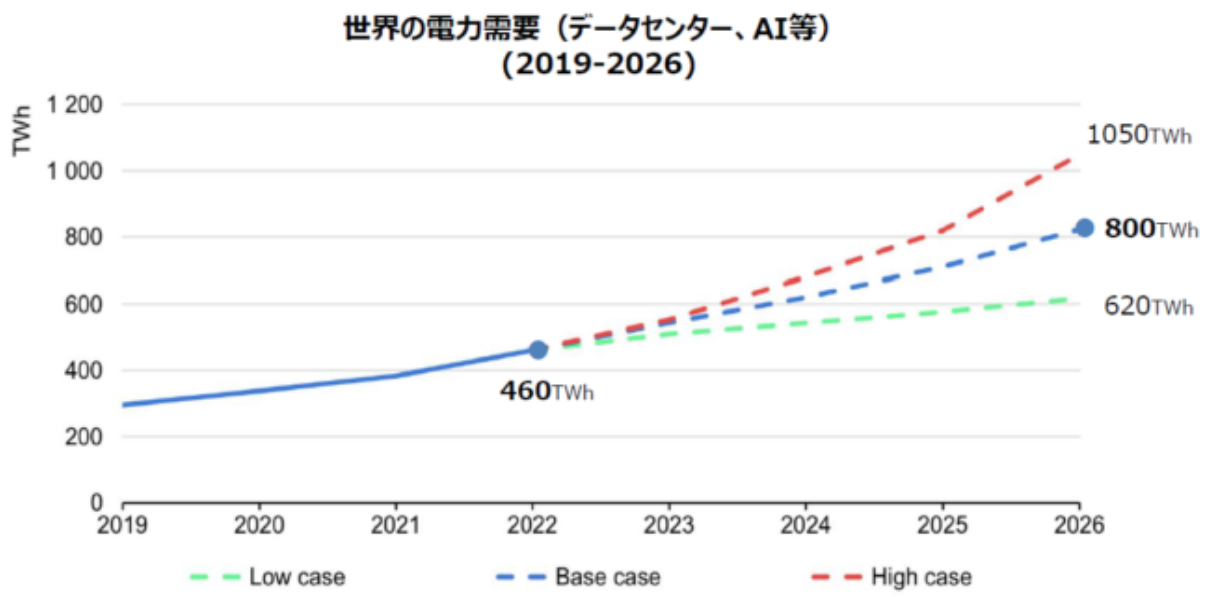
????????????21.7??????9.2????FIT????????????

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????IEA????????

### IEAによる世界のデータセンター、AI等の電力需要の見通し

● IEAによれば、世界のデータセンター、AI等による電力需要は、2022年460TWhから2026年ベースケースで800TWhまで増加する見通し（2024年1月時点）。



(出所) IEA "Electricity 2024" (2024年1月24日公表)

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0.1??

??AI????????????????????????CEO  
??AI????????

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

# G7????????????????

?? ? · Wednesday, May 15th, 2024

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??G7????????1.5??12  
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ipopba/iStock

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

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?? ?? · Tuesday, May 14th, 2024

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Mocho1/iStock

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???<https://www.pnas.org/doi/full/10.1073/pnas.1906691116>

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??2????15.5?????????13????????????0.5???1????????????????  
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?2

???<https://link.springer.com/article/10.1007/s11229-015-0739-8>

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Posted in ???, ????? | No Comments »

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?? ?? · Wednesday, May 8th, 2024



Bet\_Noire/iStock

G7????????????????????

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

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?? ?? · Thursday, May 2nd, 2024



nzphotonz/iStock

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ean energy is boosting economic growth??????

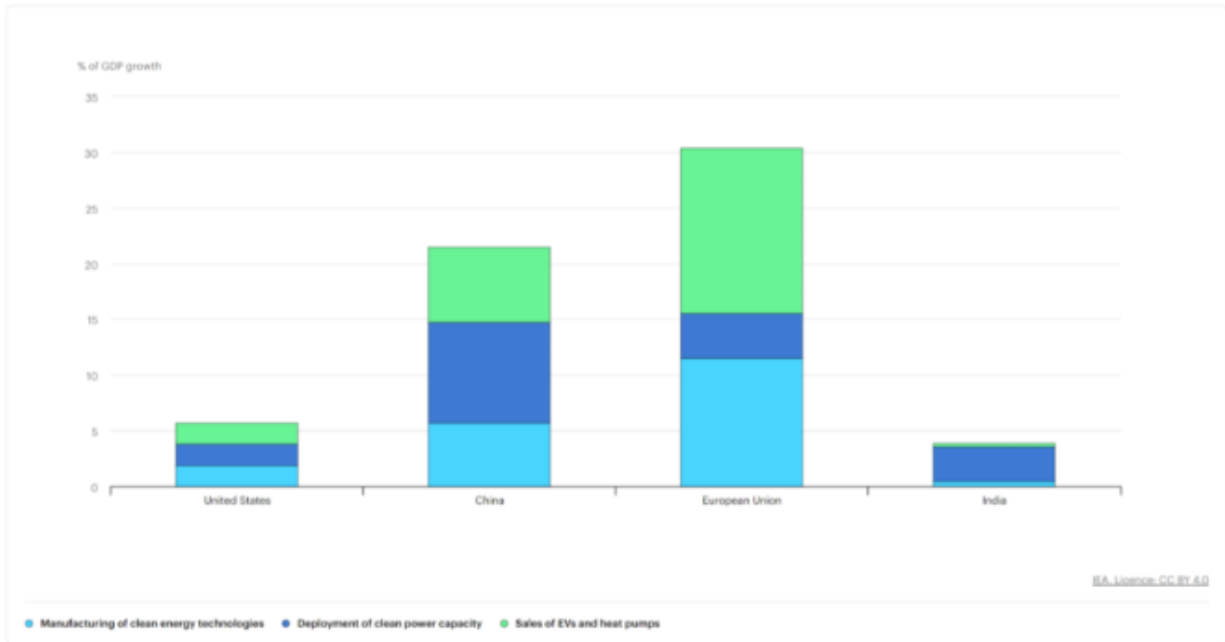
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- 2023????GDP????10??????????????????

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EU?GDP??????0.5????????????3??1????????????0.5?????????EV??  
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??IEA????????

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**Energy Information Has Never Mattered More—So It’s Time to Reform the IEA**



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????????IEA??2021????????????????????2050??  
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????2024?1????????????LNG??

WSJスクープ エネルギー

# How the Rockefellers and Billionaire Donors Pressured Biden on LNG Exports

President's decision to halt new export terminals follows an intense campaign by environmental groups funded by wealthy contributors

By [Benoît Morenne](#) and [Andrew Restuccia](#)  
2024年2月9日 12:10 JST

日本語に戻る

THE WALL STREET JOURNAL

??IEA????????????????



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IEA??

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

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?? ?? · Wednesday, May 1st, 2024



Koldunov/iStock

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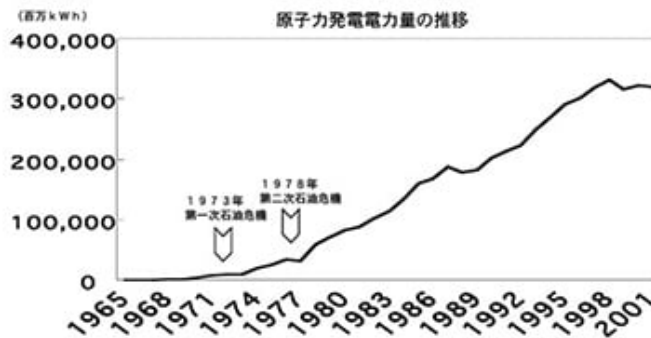
????????????????2004????????????????ISEP????????????2004??ISEP????????  
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# 19兆円の請求書

—止まらない核燃料サイクル—

## 日本における原子力発電の位置付け

現在日本の電気の約3割は原子力発電に依存



\*本ペーパーは原子力発電そのものの是非を問うものではない  
(脱原発は中長期的課題)

19??????

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2011.03.27??



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

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?? ? · Tuesday, April 30th, 2024





8. ?????1?????????EU?2020?20?????0.03??2050????/1.5??0.17????????????????  
????2??R?D??11?????????
9. ???1800????????  
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10. ??2015??970??
11. ?????????????3????????????????????????1????????????87????????46????????65????  
??350????????420????????  
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2015??17?SDG????????????5-7????????2018????????COP28????????2050  
????????2030????????4.3????????2050????5????????????

??IPCC1.5????????????  
?SDG????????????????????????

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

## ??

????????IEEI? · Friday, April 26th, 2024



bombermoon/iStock

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????2050????????1,470 TWh ????431TWh???????????? ????84?????  
(PV?708TWh????????257+271TW?)????????????118TWh?8????1180?kWh??17?????  
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kW????????????????????

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??1180?kWh??2000?kW????????????  
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??24?3?27????????

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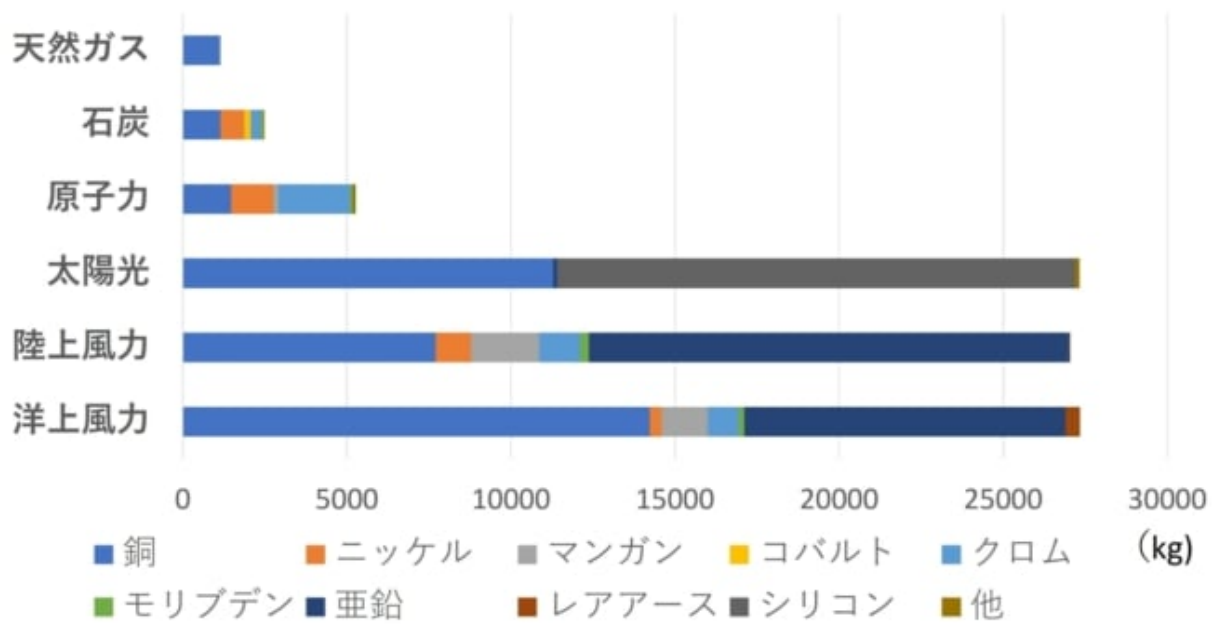
??NATO????????????????3????????????????  
??2020??EU????????????????????????

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??2021????????????????????????????????????  
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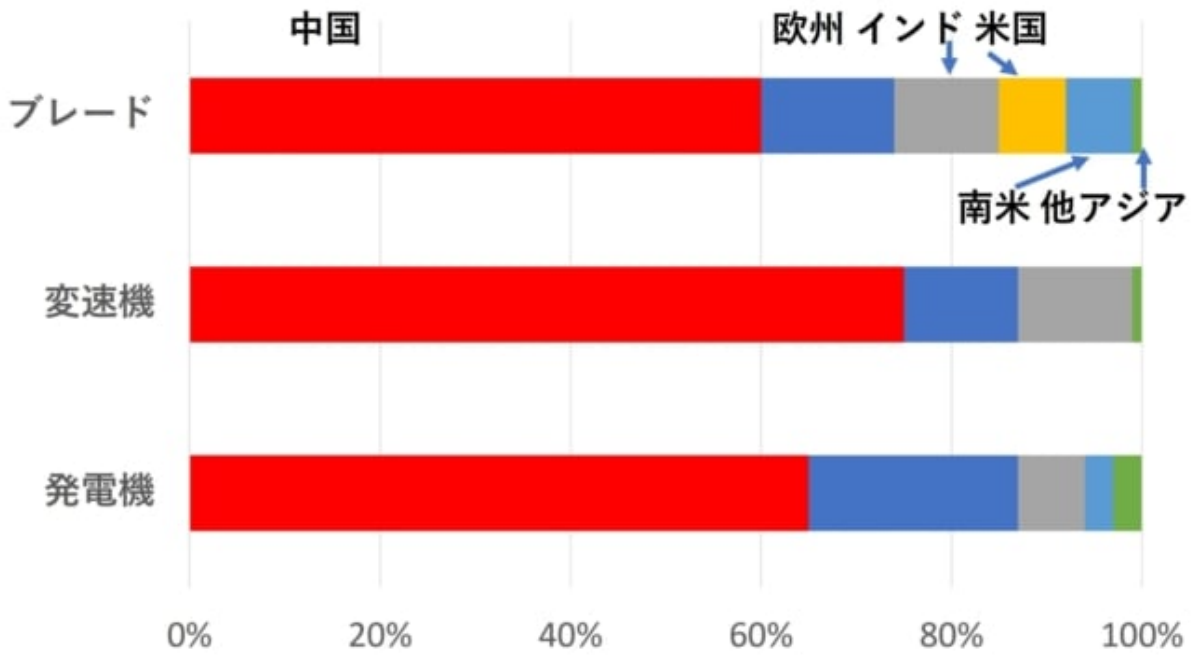
### 図-1 発電設備に必要な鉱物量



注：年間700万kWhの発電に必要な鉱物  
 設備利用率：洋上45%、陸上30%、  
 太陽光20%、他80%

出典：国際エネルギー機関資料から作成

## 図-2 風力発電設備国地域別製造能力



注：2022年の製造能力

出典：GWEC

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??100????????????????????

????????????????????? 2024?4?22??

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

**?????...??????SDGs??????????**

?? ?? · Thursday, April 25th, 2024





manbo-photo/iStock

**????SDGs????????????????????????????**



????22??2030????????????????SDGs??????  
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???SDGs?3????????15??SDGs????????????????  
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**2030?SDGs???????????**



???SDGs????????????2030????????????????SDGs??

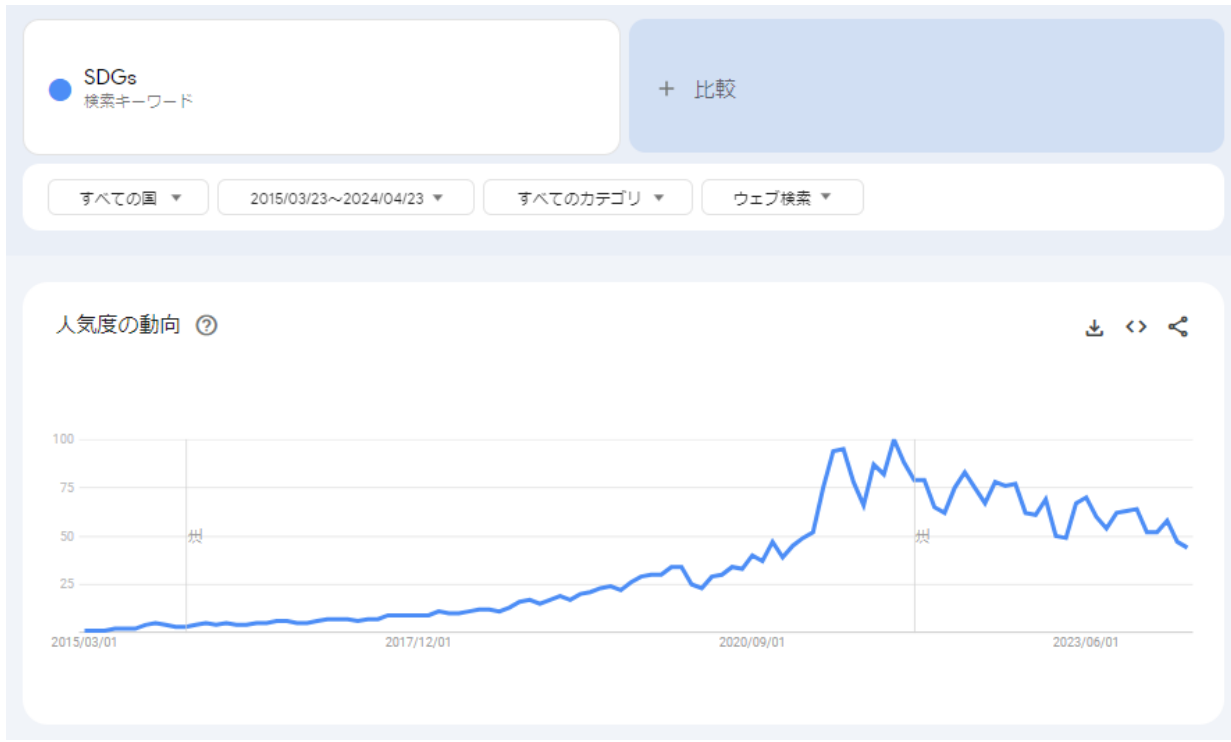
31????SDGs??

????SDGs17????SDGs????SDGs????SDGs????  
??CSR????SDGs????ESG??  
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??SDGs????????????????????200??300????????????????????????????????  
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????????SDGs????SDGs????????????????????.....???

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????2022?6?8????????2024?4?23????????2021????????



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

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?? ?? · Wednesday, April 24th, 2024



FotografieLink/iStock

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Ball????????????CO2????????????????????95????????????????????

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5,000ppm????????????CO2??  
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$$N_1 = -D_{12} \frac{dc_1}{dx}$$

N : 単位断面積、単位時間当たりの移動モル量[mol/(m<sup>2</sup>・s)]

D<sub>12</sub> : 成分2に成分1が拡散する場合の相互拡散係数[m<sup>2</sup>/s]

dc/dx : 濃度勾配[(mol/m<sup>3</sup>)/m]

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Posted in ???, ????? | No Comments »

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?? ?? · Tuesday, April 23rd, 2024





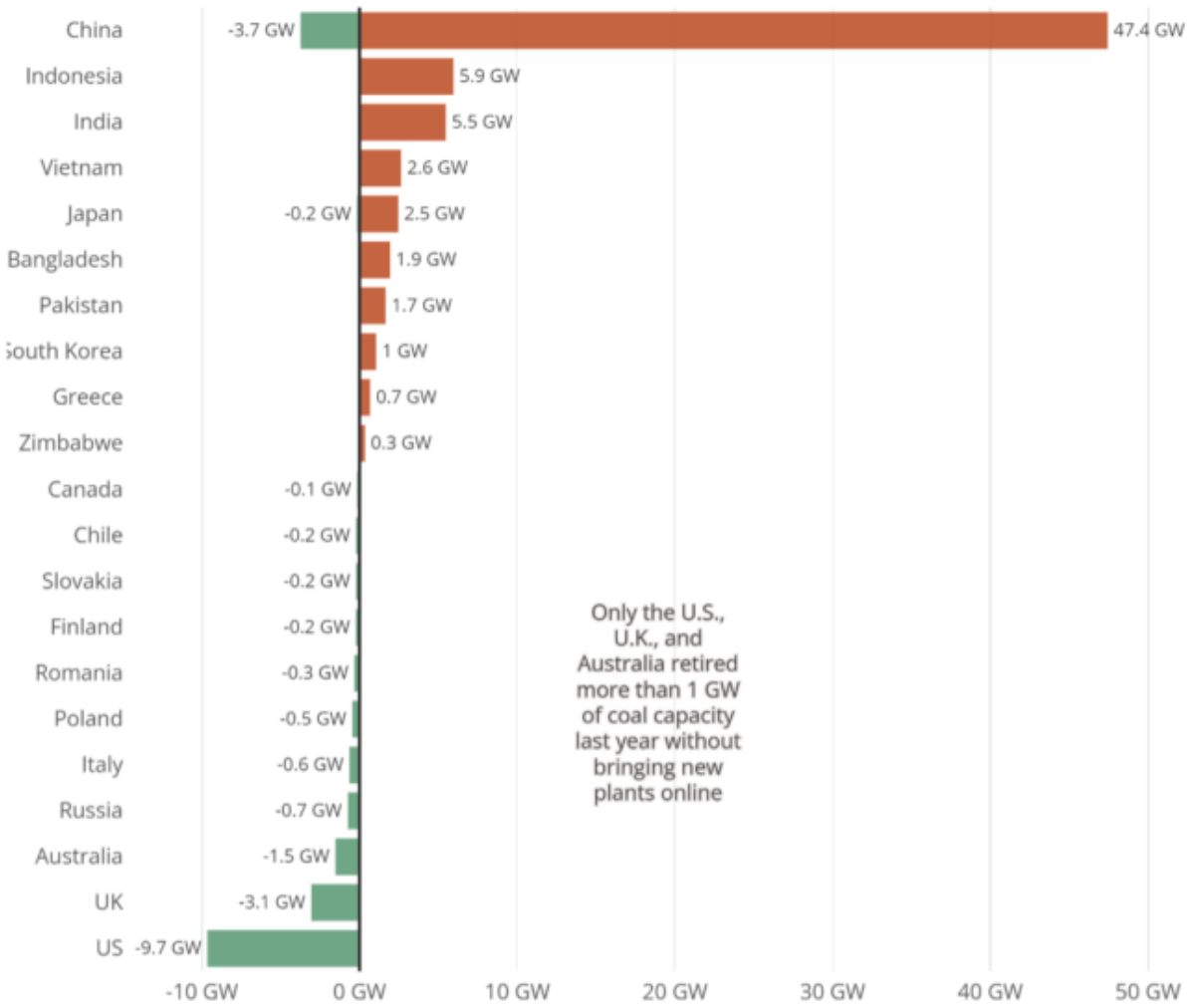
Andrzej Rostek/iStock

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??2023??1??47??????4700??????????

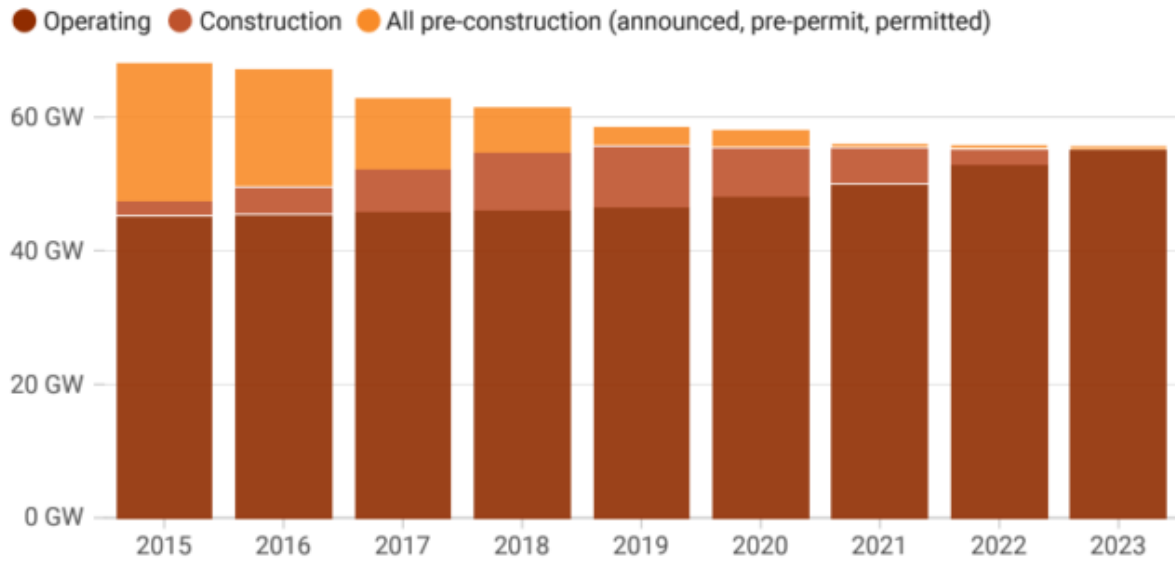
Newly **added** and **retired** operating coal-fired power capacity in 2023, in gigawatts (GW)



????????????????????55??

### Figure 38: Japan increased its coal power capacity in 2023, and a coal plant proposal remains under consideration

Coal-fired power capacity in Japan by status, in gigawatts (GW)



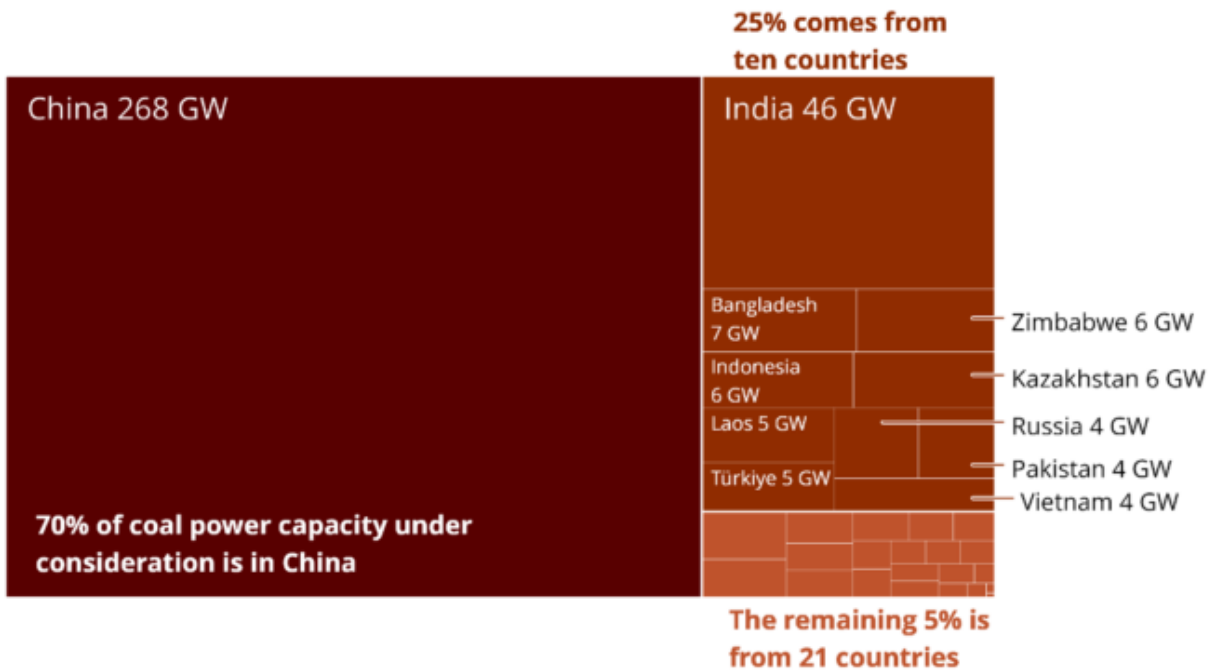
Source: Global Coal Plant Tracker, January 2024



??268????????????????????5?????

### China and ten other countries account for 95% of coal power capacity under consideration

Coal-fired power capacity in pre-construction stages (announced, pre-permit and permitted)



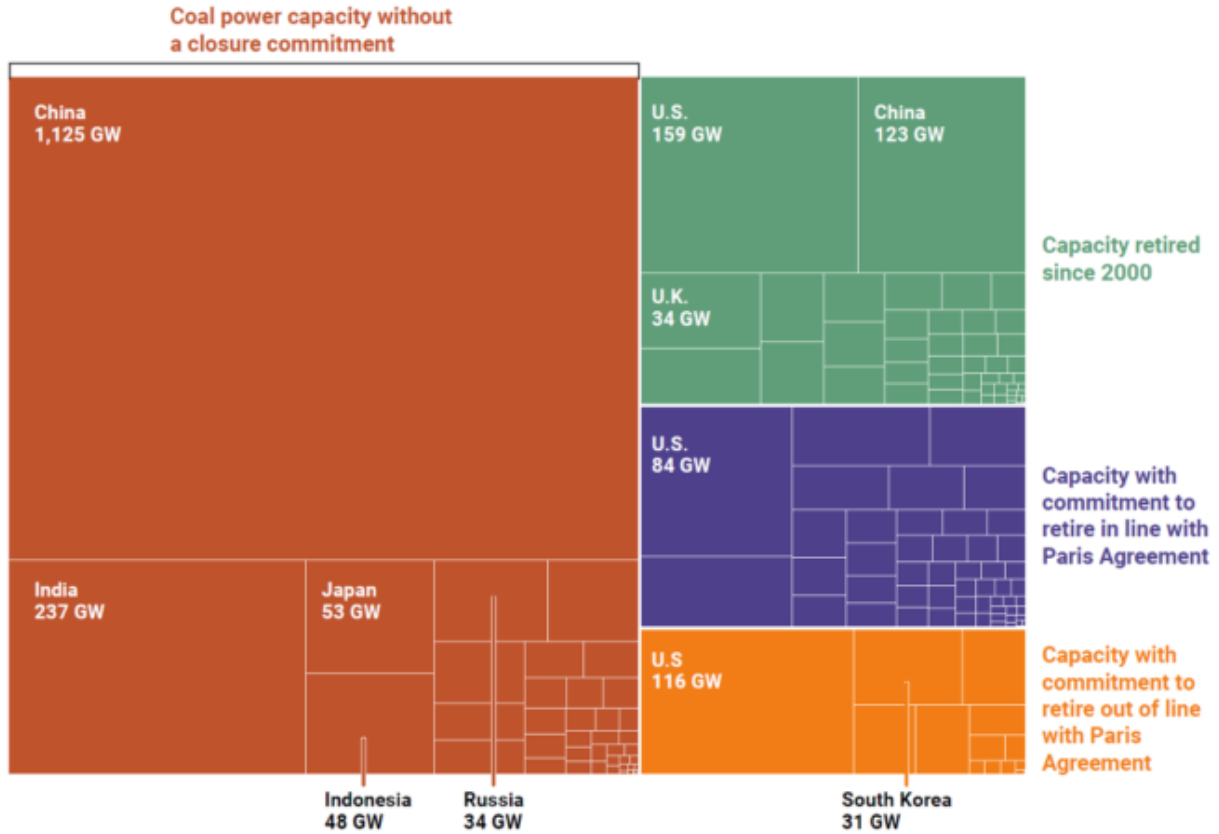
Source: Global Coal Plant Tracker, January 2024



????????????????????????????1125????????????????????????????53????????20????????

Figure 15: Most coal power capacity needs closure commitment

Coal-fired power capacity by phaseout status, excluding net zero commitments



Source: Global Coal Plant Tracker, January 2024



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

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?? ?? · Tuesday, April 16th, 2024

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2012??????40??????

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Jian Fan/iStock

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%????????????CO<sub>2</sub>????????????????????????????CO<sub>2</sub>????????????????????????

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Posted in ???, ????? | No Comments »

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?? ?? ? - Friday, April 5th, 2024



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????23?12????????????????????????????????????EU??  
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- ?????????????????CAA????CWA????NEPA????EP  
CA????
- ?????????????????
- ?????????USMCA????

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- ?????????UNFCCC?IEA?IREN????
- ?????????30????LNG????
- ?????FTA????FTA????
- ?????????
- ?????????
- ?????????75????
- ?????????

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1. ?????????
2. ?????????
3. ?????????
4. ?????????
5. ?????????
6. ?????????IEA?IRENA????

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????????????????????Day1????????LNG????

????????3700????????IRA????????  
????????IRA????????  
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????????JUSEP????????LNG??CCUS????????

????G7????

????Day????????1.5????

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????46??2050????

????NDC  
(Nationally Determined  
Contribution)????

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

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?? ?? · Saturday, March 30th, 2024



Zbynek Pospisil/iStock

????GX????????????????????GX??  
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????????????????????????????????Net zero????Net????????????????????????????????

????????????????????????CO<sub>2</sub>????neutral????????????????????????????????????  
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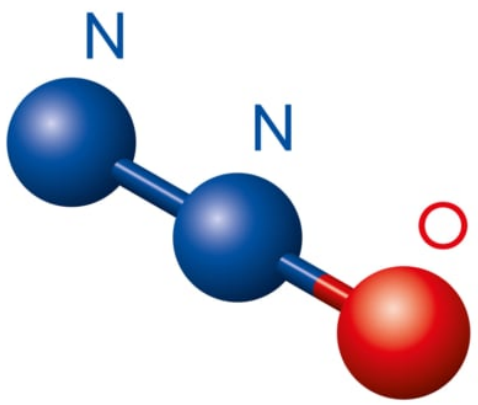
????????????????????????????????EV????????????????????????????????????  
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????????????????????????????????????300????????????????  
 1750????????????????????????270ppb????????????????2022?????  
 ?????????335.8ppb?0.3358ppm??????

2021????2022????????????????1.4ppb?0.0014ppm????????  
 ?????????????2.2ppm??????

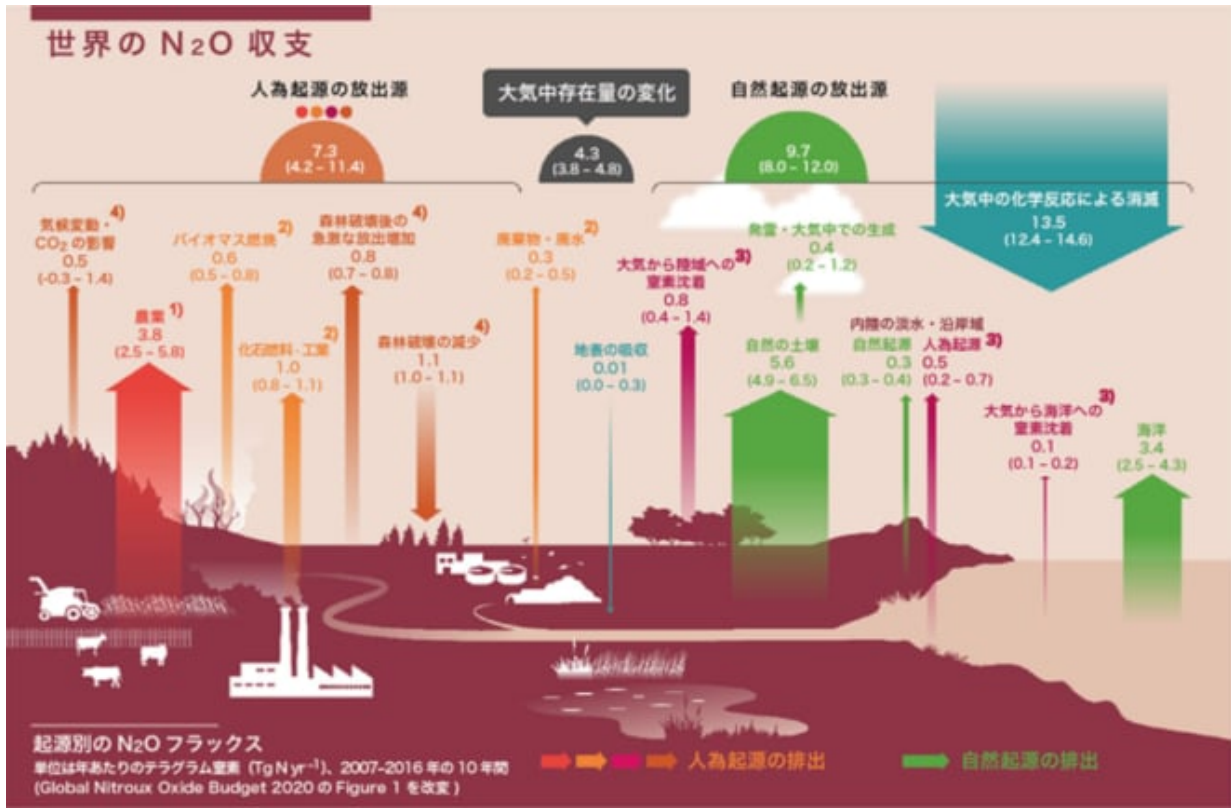
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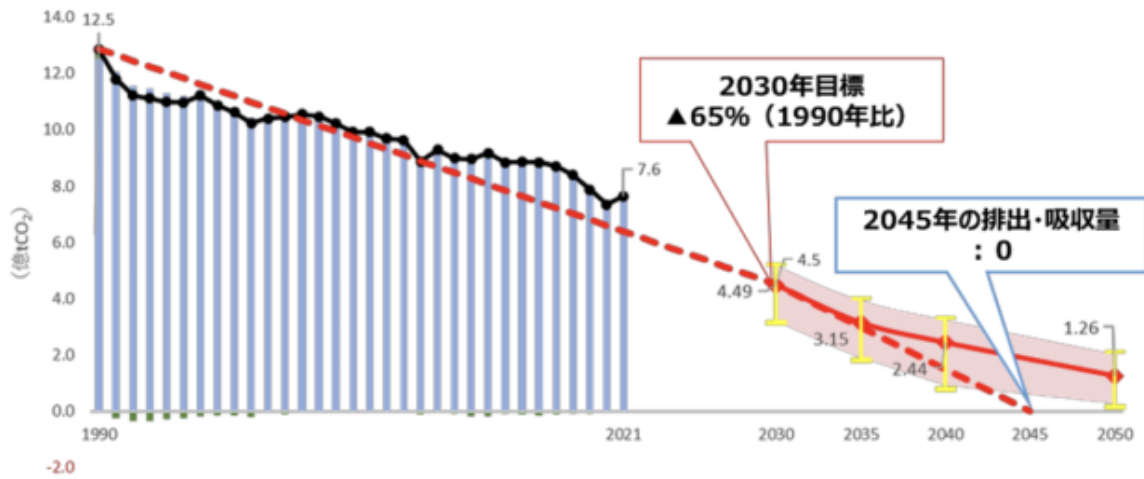
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 PeterHermesFurian/iStock



©????????

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 ???COP28????GX?????9?????????2023?11?28??

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IMF?????????2024?1????<sup>22</sup>?????2023?????GDP?????????????????0.3%????????????????????  
 ??????GDP?????????????????2.5%?????0.8%??1.9%?????0.5%??1.1%??G7????????????????  
 ??????

23?4???2.2%?????4????????????<sup>23</sup>????????????  
 ?????????????????????

????????????????????????????????23?????????3540?????????4?????????????2018?????????4240????  
 ???16.5%??700????????????????????1?????CO2?????2????????????????CO2?????????1400????  
 ??????????2???????

??BASF????????????????????????  
 ???2600????????????  
 ??????????????????100????????????????????????

????????????????????????????2018??2023??5????10%????????????????????????????20%????????<sup>24</sup>??  
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 ??????LNG??

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