Global Energy Policy Research | GEPR

GEPR??
????http://agorajp.com/??
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?? ?? · Thursday, May 8th, 2025

William_Potter/iStock

??????????????????????????????????????2024?1?????????????????????????[21?]?

2022??
????????????????????????

??2040????C?
??????????????????36.9??kWh????????[22?]?

???????2025?????????????????????LNG12.7??/MMBtu???154??/t???80??/bbl??????????6.8??kW

h????[23]?

???????1GW?100?kW??????????????????????18.3?[24]??????????16?kWh????

??????????????????6.8?×16?kWh?110????????????????????????36.9?????590????????????480?
???????????**????????????????????????????????**????????

??????????????????10.8???kW[25]??
??????????????????????????70????????????????????????720???????110???????????6.5?????????
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??**????????????????????????????**

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?1??????????????????????????????2024?1? ?????????
?2???????????????? ????2024?2??
?3?JOGMEC LNG Monthly Report?2025/3??IEEJ Coal Outlook 2025???? JCC ??
?4??WG ???????????????18.3????
?5??WG ??????10.8??/kW

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- ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? 2 0 2 4 - 0 8 - 1 4
  ??????????????????10kW??????????????22.6??/kW???**???8.6???38%??????2.7???12%?**
  ????????
- ???????????????? 90%??WSJ “The Solar Breakthrough…”, 2024-09-03??
- ??????????? JEMA ??????2024 ???? **?40%**?
- ???????????
  8.6×0.90?2.7×0.40=8.82??/kW ? **(8.82) ÷ (8.6?2.7)=0.67?70%**?
- 1GW?100?kW????????????**7.6??/kW × 100?kW=760??**?

? ???3.1??/kW???????????8.2??/kW?????????????????????????

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

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?? ?? · Monday, May 5th, 2025

Leontura/iStock

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

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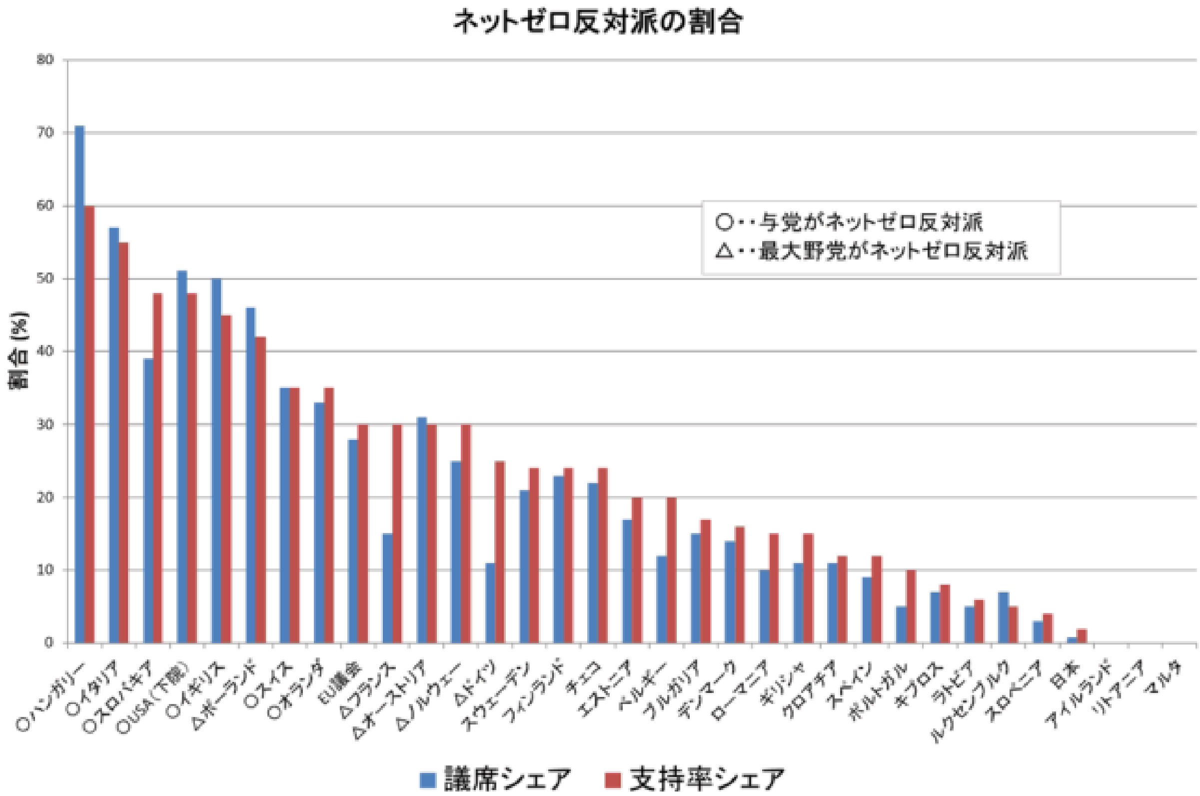

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??AfD???????????????

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??? 2????????????
3????5?????????0.7???????????????????2?????????

??2030?????30????????
????????????????????????????????GX?????????????????????????

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

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?? ?? · Monday, May 5th, 2025

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> 2???10?15???
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NHK??

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??????5??200???????30?…????????????????????

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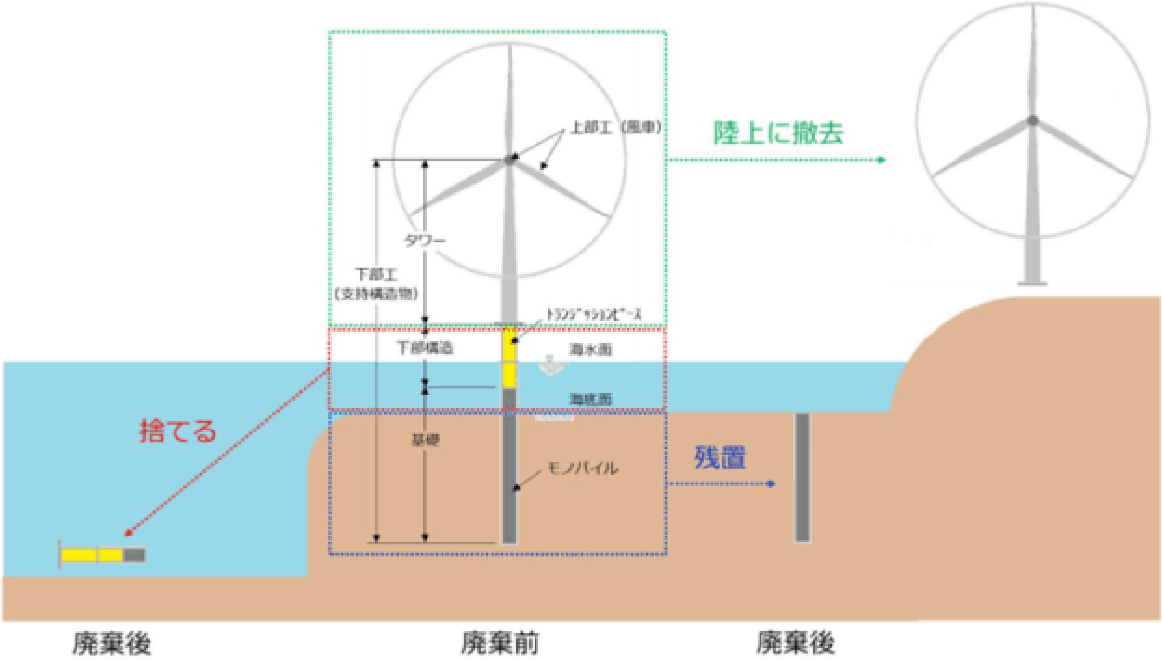

図 5　告示における「残置」と「捨てる」の違い

（着床式洋上風力発電設備の図の出典：洋上風力発電設備に関する技術基準の統一的解説より編集して使用）

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????????????????????????????????????1?????????????????????????????

?????????????????????????????????????? (blackout-news.de)

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> 2024????????????????????????166????832????????????????????????????????2035?????? ????3,052?????????????

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

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

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?SDGs?????????

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

?????????100??Drill Baby Drill?????????

?? ? · Sunday, May 4th, 2025

???????X??

4?29????????????100??100????????????????????
??100????????????100?
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??100?????PR????????????????????????????

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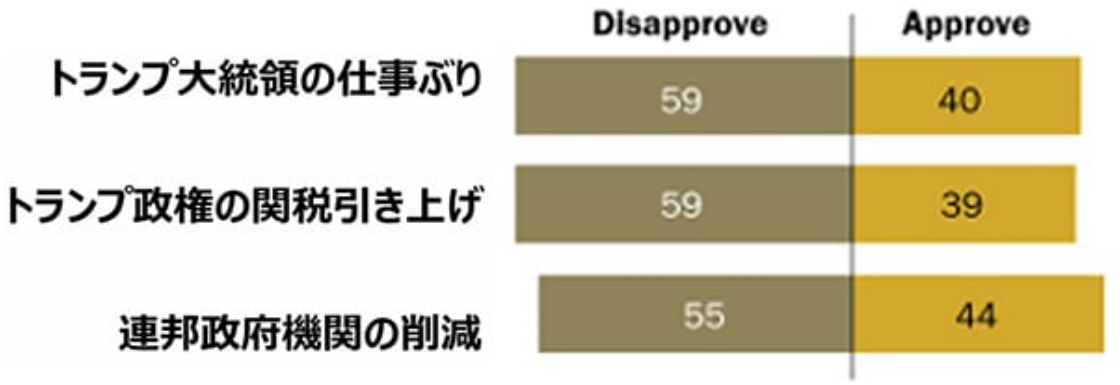
- ??7%????????????????????????
- ???????????????????1????10????????????????????????????

????????????100??
??????????????????????????????????6?4?28????10???????????1??

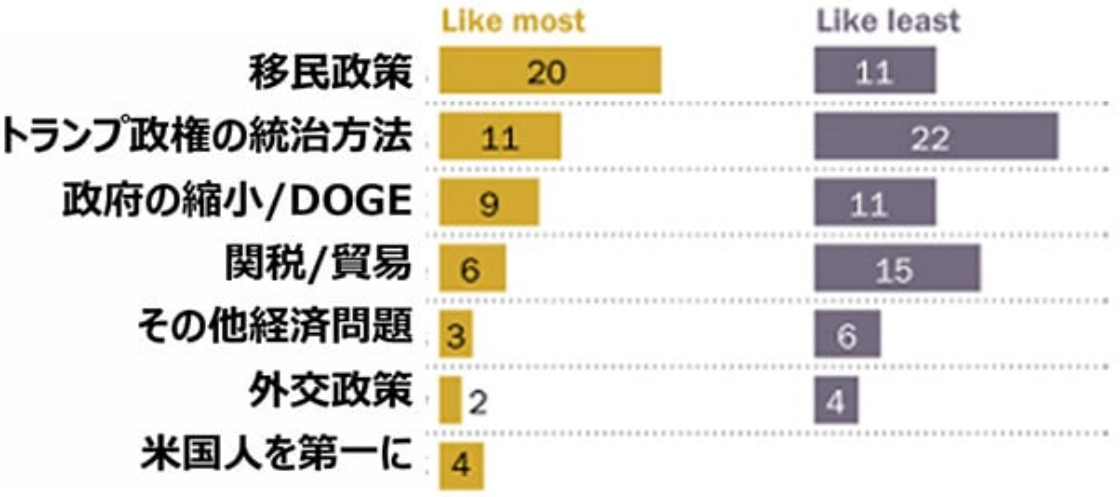
?1??????????????????
???Rasmussen

??????Pew Research Centre
?????100??2??



?2?????????????
???Pew Research Centre

??3??



?3??????????????????

???Pew Research Centre

4?30???????GDP??1?????????????0.3%??

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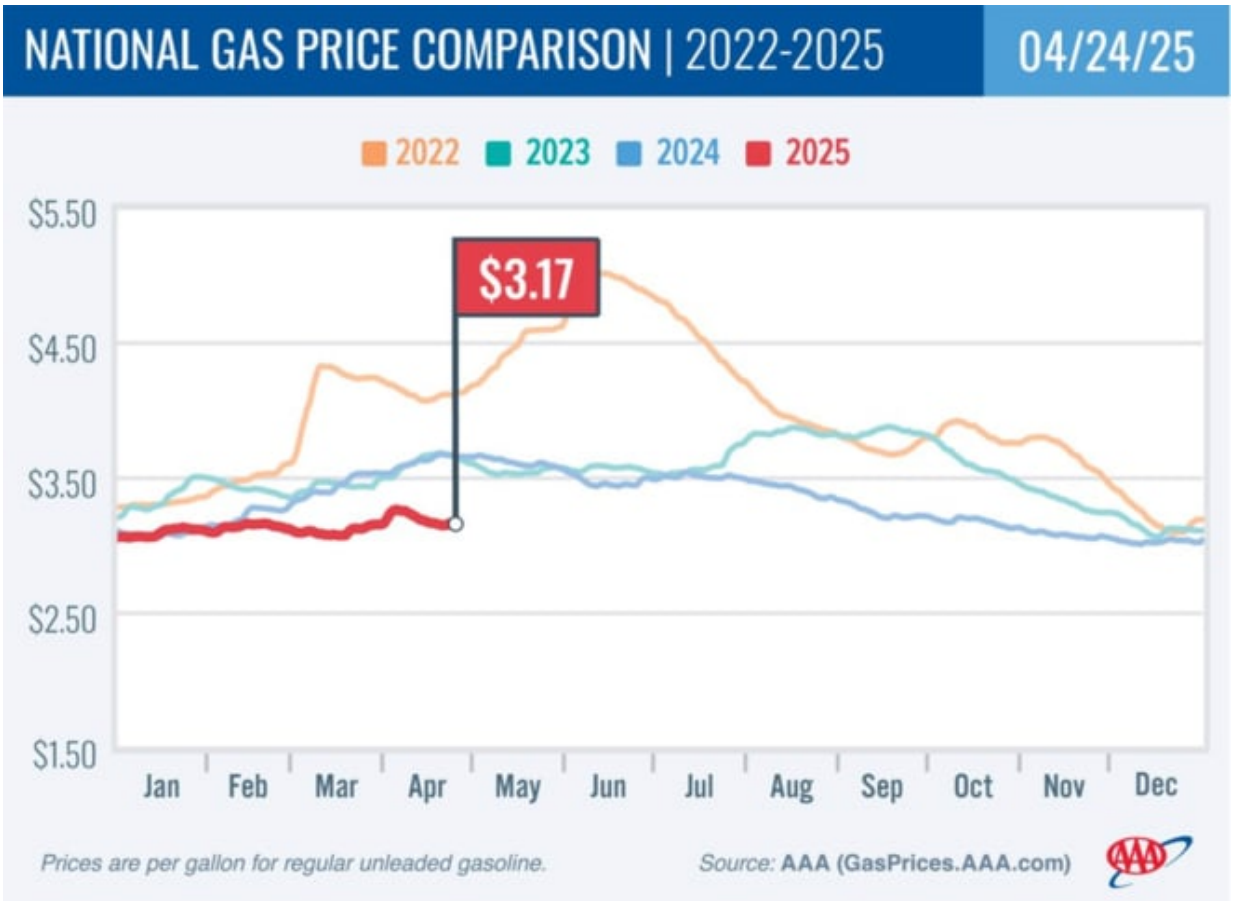

?4?2022?2025???????

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?????????????????????????WTI?????????13??????????????2021?11??COVID?????????????????
?S&P 500 ????????????????????15%????????????????????????????????S&P
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Marrion Oil and Gas?????????????Drill Baby Drill
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??2%??3%????????????????????????????????????
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???????????????WTI??????2025?12????$58???????$51???????

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???????????????????????????????700??????????????????????????2024?3??376??2025?3???290?
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???????????????CEO??????????????2025??1???????2022??1?????????????????????????????????
40??12???????????????????21???????????

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

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?? ?? · Sunday, May 4th, 2025

Elena Merkulova/iStock

??26.?????????????????
??????????????28.6????????????

??2040???????????14?/kWh??????20GW????2000?
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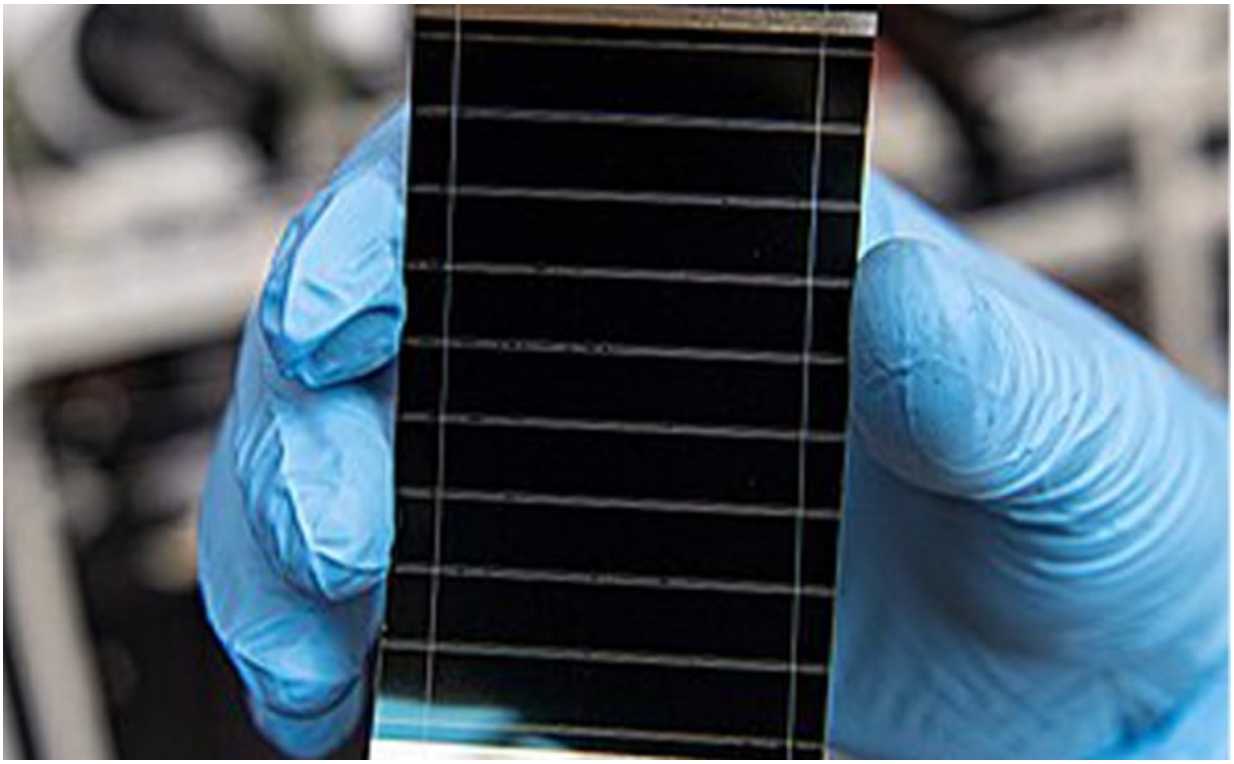

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Wikipedia??

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????????2Wh????????????1?100??????????????kWh???50000??

??kWh??

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???2040????2000??

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

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?? ?? · Friday, May 2nd, 2025

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2023?????CO2?????????????????37.4Gt??????????????10????????1????????33?????????????????2?????13??
3??????7??4??????5??5?????3?????????????????????2.6?????????2??????????????????5??????????60???
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??2024??1?3??????????????????????217????????????????????????
???330??????3??2?????????????????????190??
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??????????????????[?1?]?

??????????????????35?GW????????????????????????????????[?2?]????????????14????????????????????????
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??????????2023??86?????????????[?3?]?

???60????????5??????????????????????——?????2.6??????5??????????

?1?Global Energy Monitor “Boom & Bust Coal 2024” China section

?2?Global Energy Monitor “Boom & Bust Coal 2024” India section

?3?International Energy Agency “Coal 2024 – Analysis and forecast to 2026”

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Posted in ???, ????? | No Comments »

??????????????“????”??????????

?? ?? · Friday, May 2nd, 2025

EyeEm Mobile GmbH/iStock

???SNS?????????

????????????????29????????????GW???????

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???????????global warming?????????????????????????????CO???????????????????????????????????????IPCC??? ???????????????????????????CO????????????????

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IPCC?????????????

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Posted in ???, ????? | No Comments »

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?? ?? · Thursday, May 1st, 2025

yamasan/iStock

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??4?2??????????????????????NANO Nuclear Energy??KRONOS MMR????????????????????????????

©? Nano Nuclear Energy, inc.

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?4??5?????????????????????????
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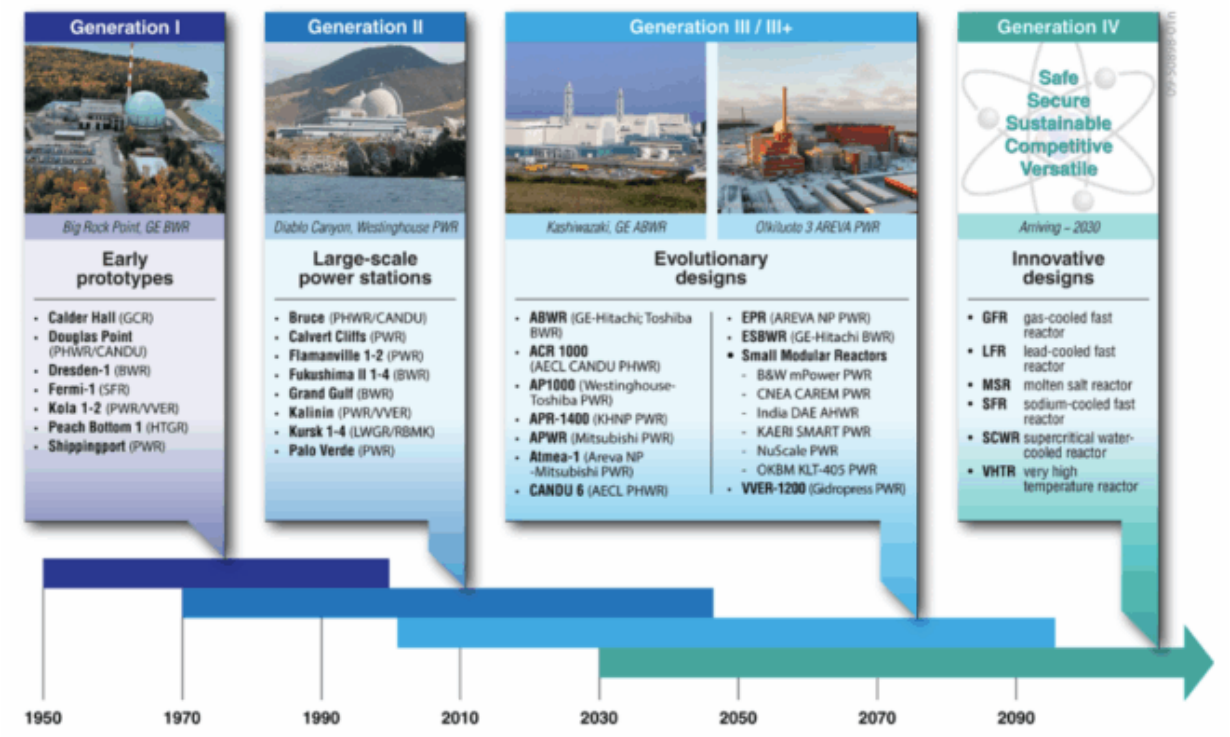
??Self-Consistent Nuclear Energy System?SCNES??????4????????????????????Generation IV International Forum?GIF??????????SCNES??????????????????[?1?]?

???KRONOS MMR™???????????????45MWt?????????????????????????100??1????????????????????????????????????5??????????????????11????????????????????

???????LEU??????????????HALEU???AI????????



?4??????????????

©? Generation-IV International Forum

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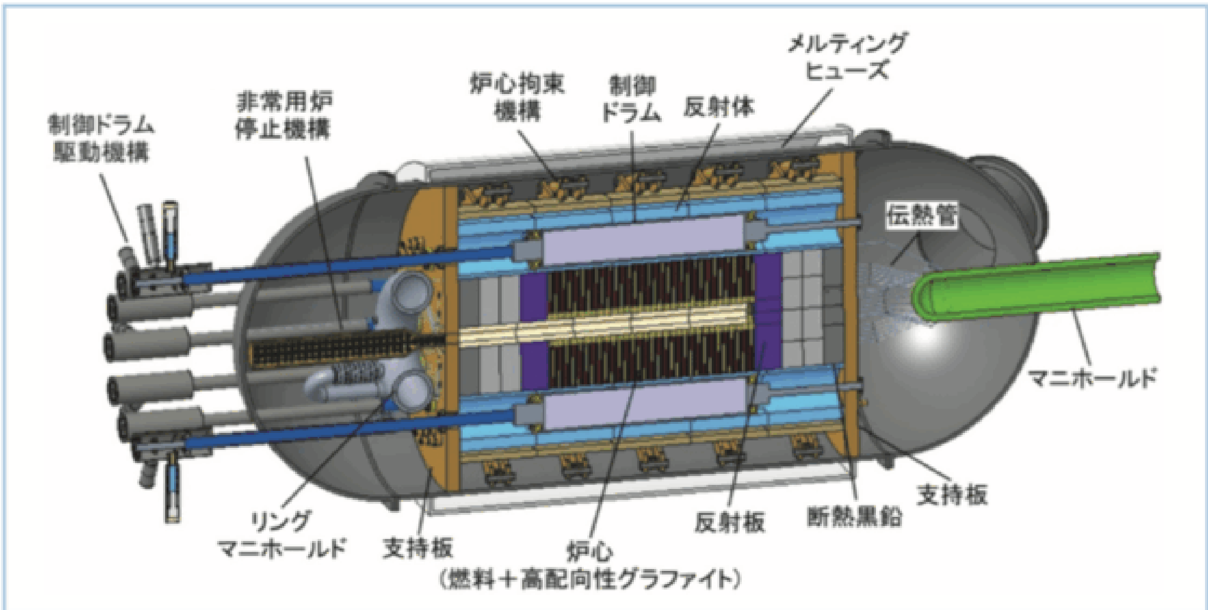

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©?????

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?1?????????????????????1995???????????

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

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

?? ?? · Thursday, May 1st, 2025

Yastaj/iStock

?????????EU?????????????????CBAM?????????????????????????????????????CBAM?????????????
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EU??????BRICS??????????????????

????CBAM???????????????????????????

1. CBAM?????????????????

EU ETS???€80/t-CO????????????????????????CO2????????? × EUETS????????????????? ÷ ??????????????CBAM???????????1??????? 1€ = US$1.10?????

???20%??79%???

CBAM対象品目 (HS4/HS6)	A 典型的埋込排出量 (t-CO_2/t-製品)	B 代表的国際価格 (US$/t)	C CBAMコスト (US$/t)	D CBAM税率 (%) =C／A	補足 排出が少ない場合の税率
鉄鋼（HS 72）	2.0 t/t鋼（高炉材）	900	176	20%	電炉材なら 0.9 t → ≈9%
アルミニウム（HS 76）	12 t/t（石炭火力電解）	2500	1056	42%	ノルウェー水電解 ≈4 t → 14%
セメント／クリンカ（HS 2523）	0.9 t/t	100	79.2	79%	副産石灰石混入で 0.7 t → 62%
窒素肥料（HS 3102）	1.6 t/t	500	141	28%	省エネ改修で 1.3 t → 23%
水素（HS 2804）〈グレー〉	10 t/t-H_2	1400	880	63%	ブルー(CCS) 4 t → 25% グリーン 0 t → 0%
電力（HS 271600）	0.4 t/MWh（ガス発電平均）	110	35.2	32%	水力 0 t → 0% 石炭 0.9 t → 72%

??CBAM???????????

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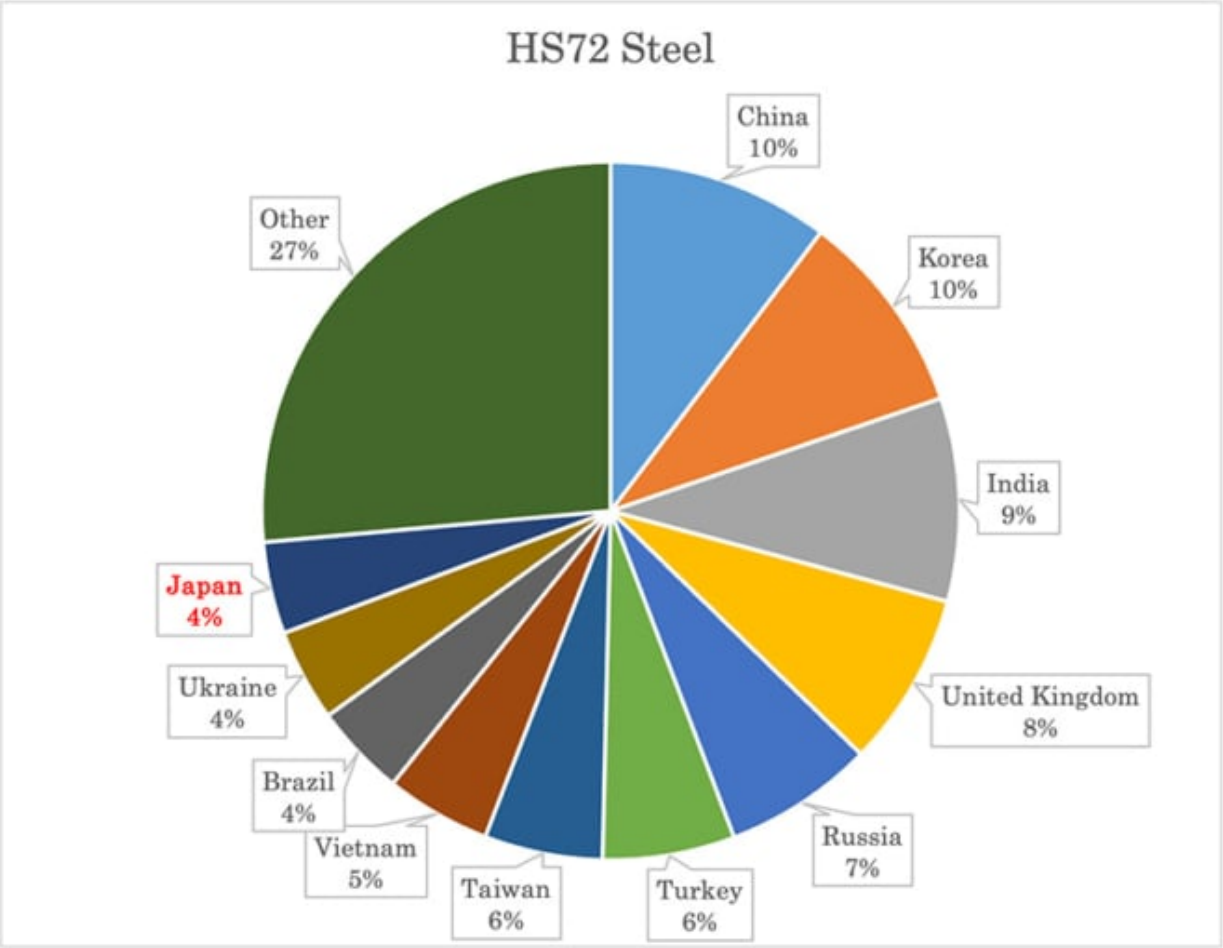
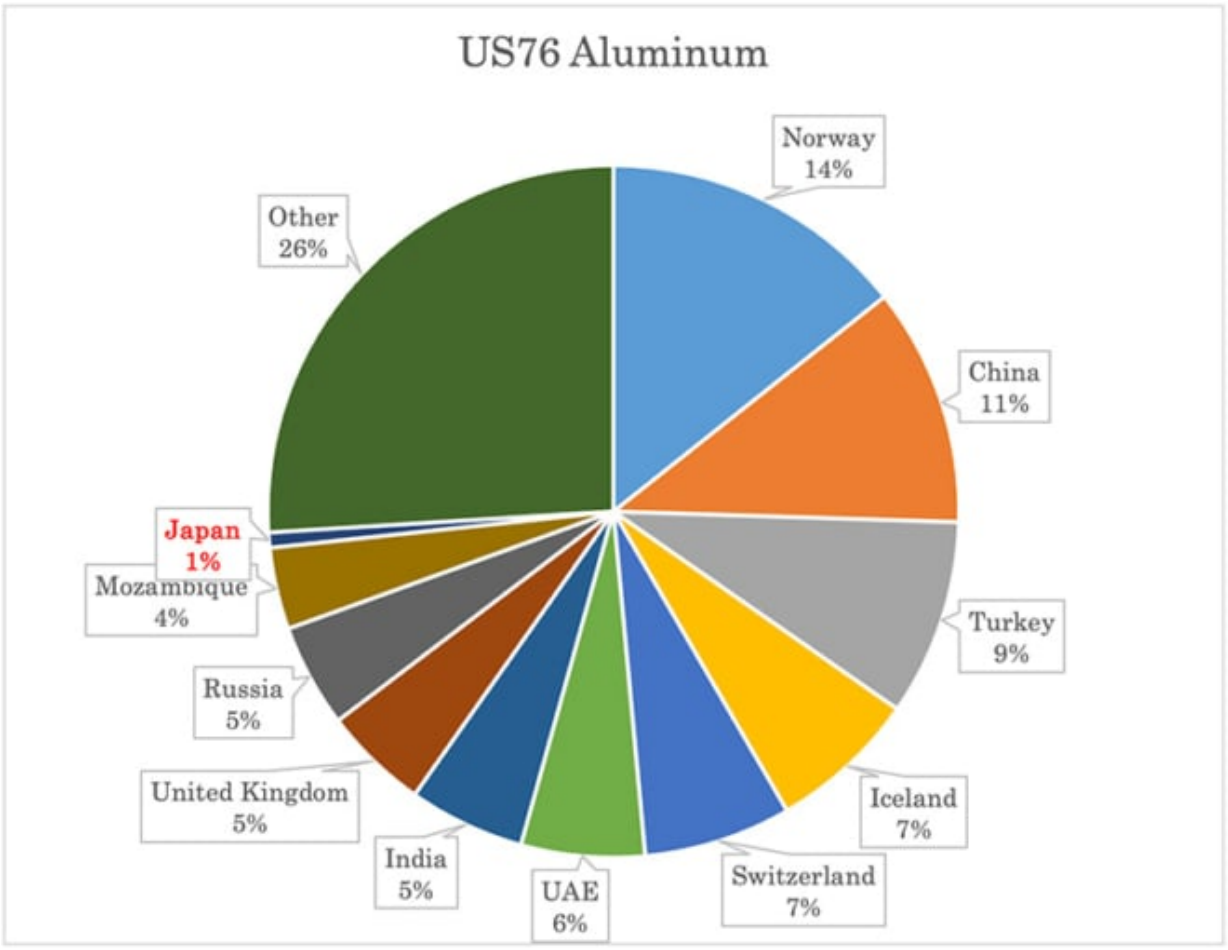
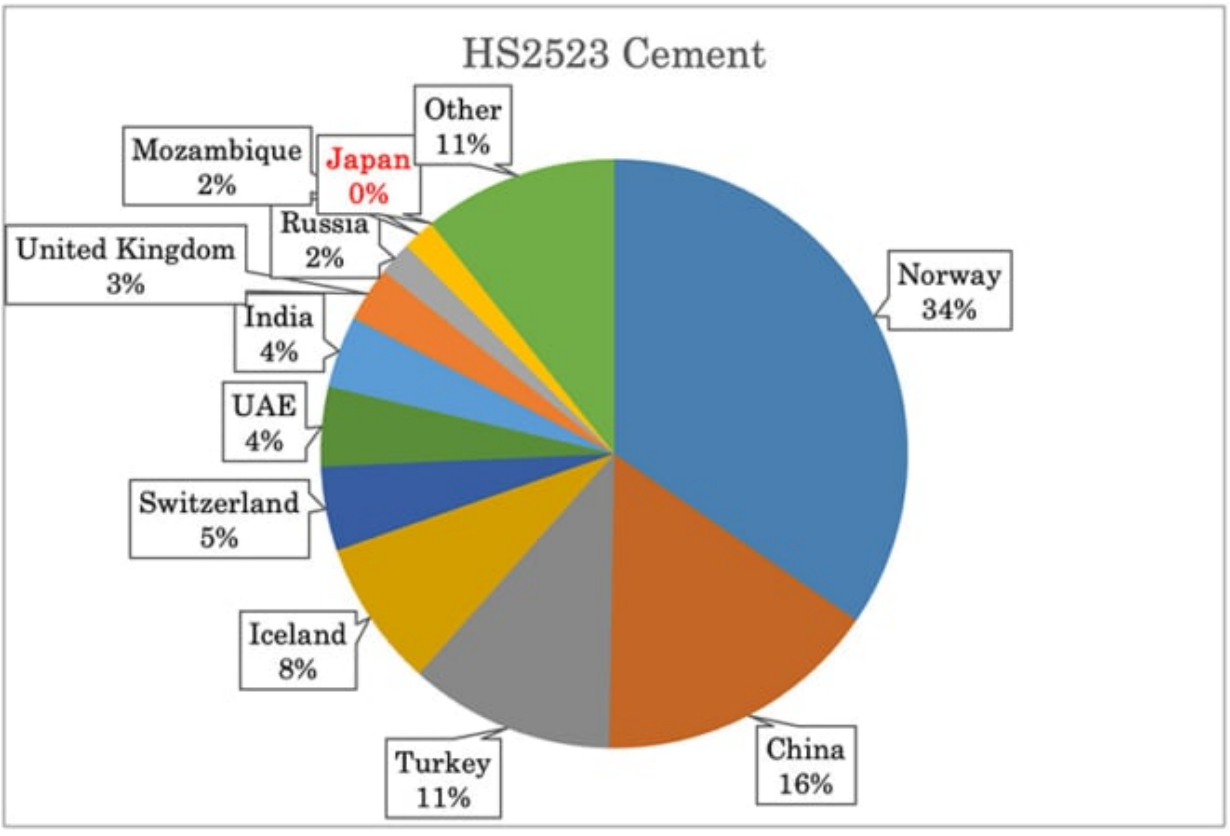
- EU? ??EU????????
- ??LCA????????????????????????
- ETS??? €100/t ???????????????? **1.25?**????

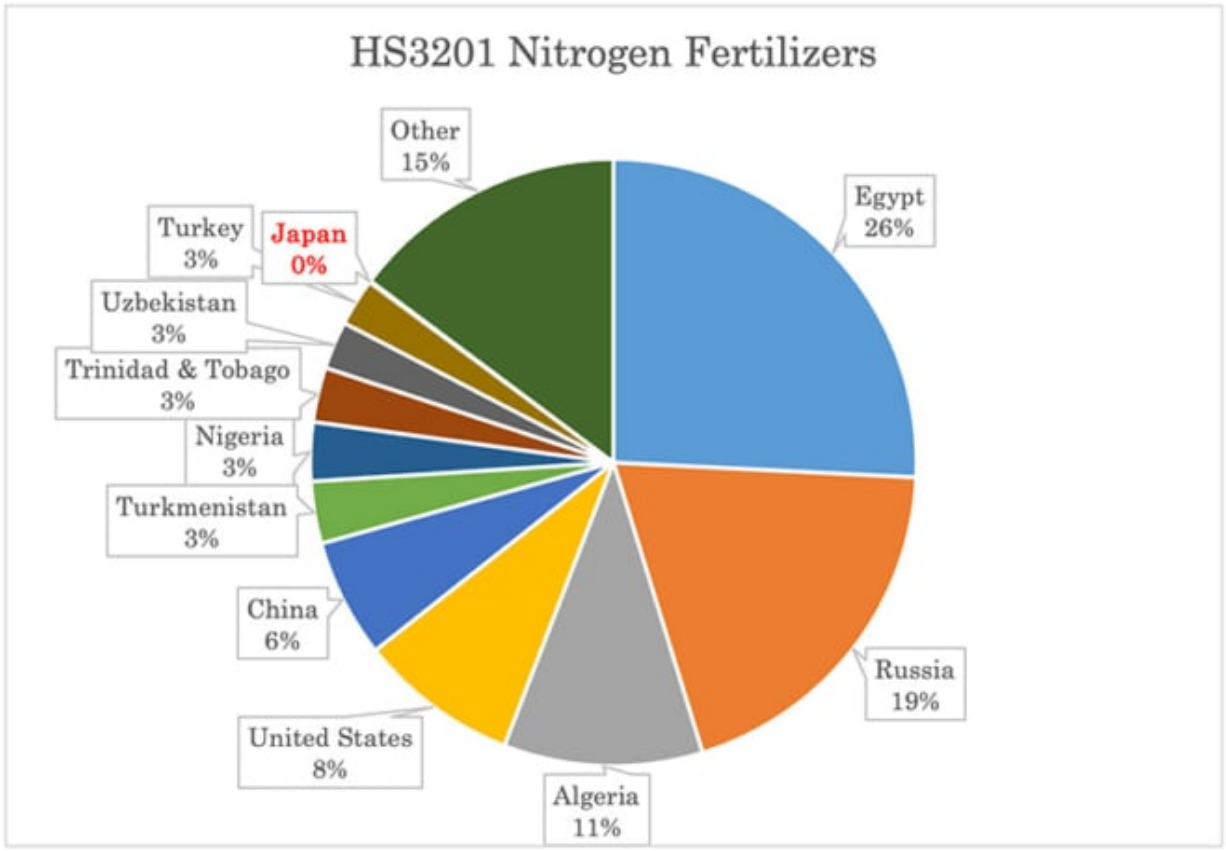
2. CBAM??????????????????

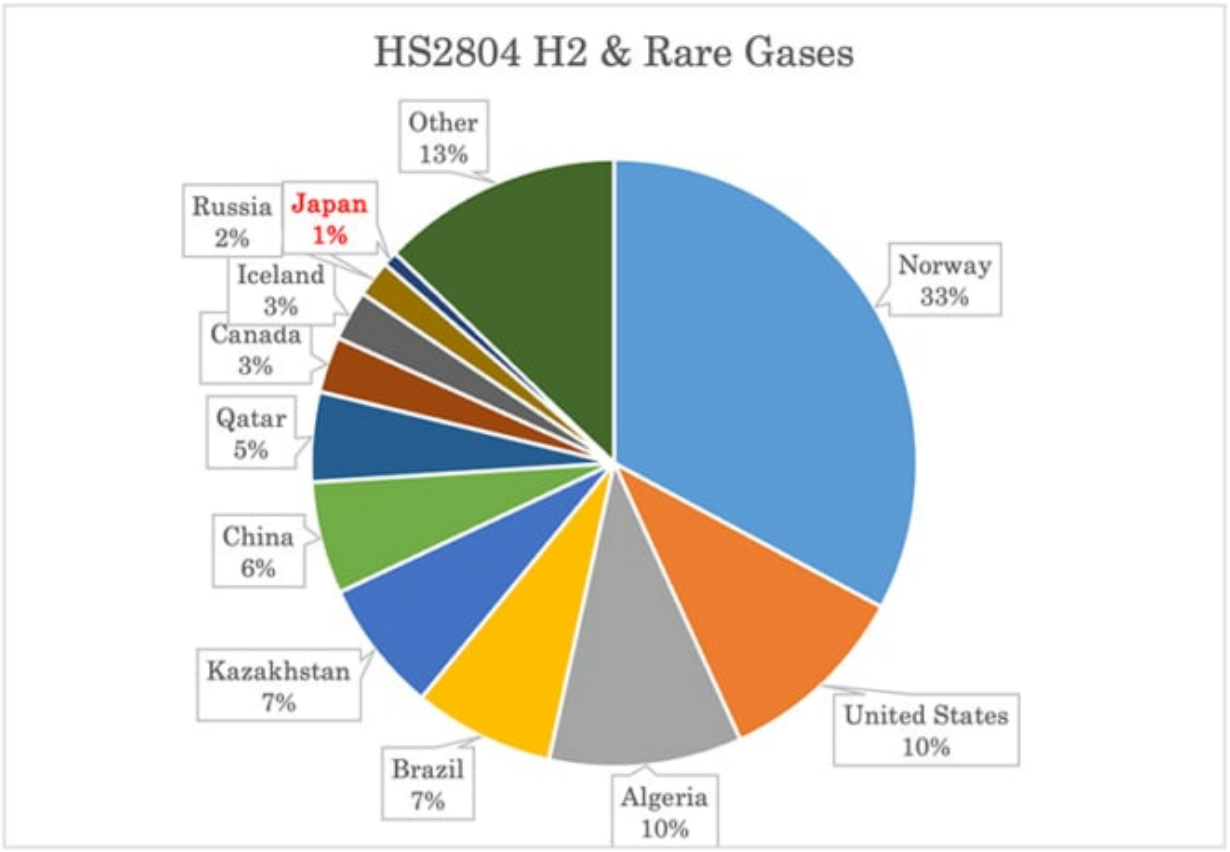
??????????????????????EU???????100??????????????????????6??

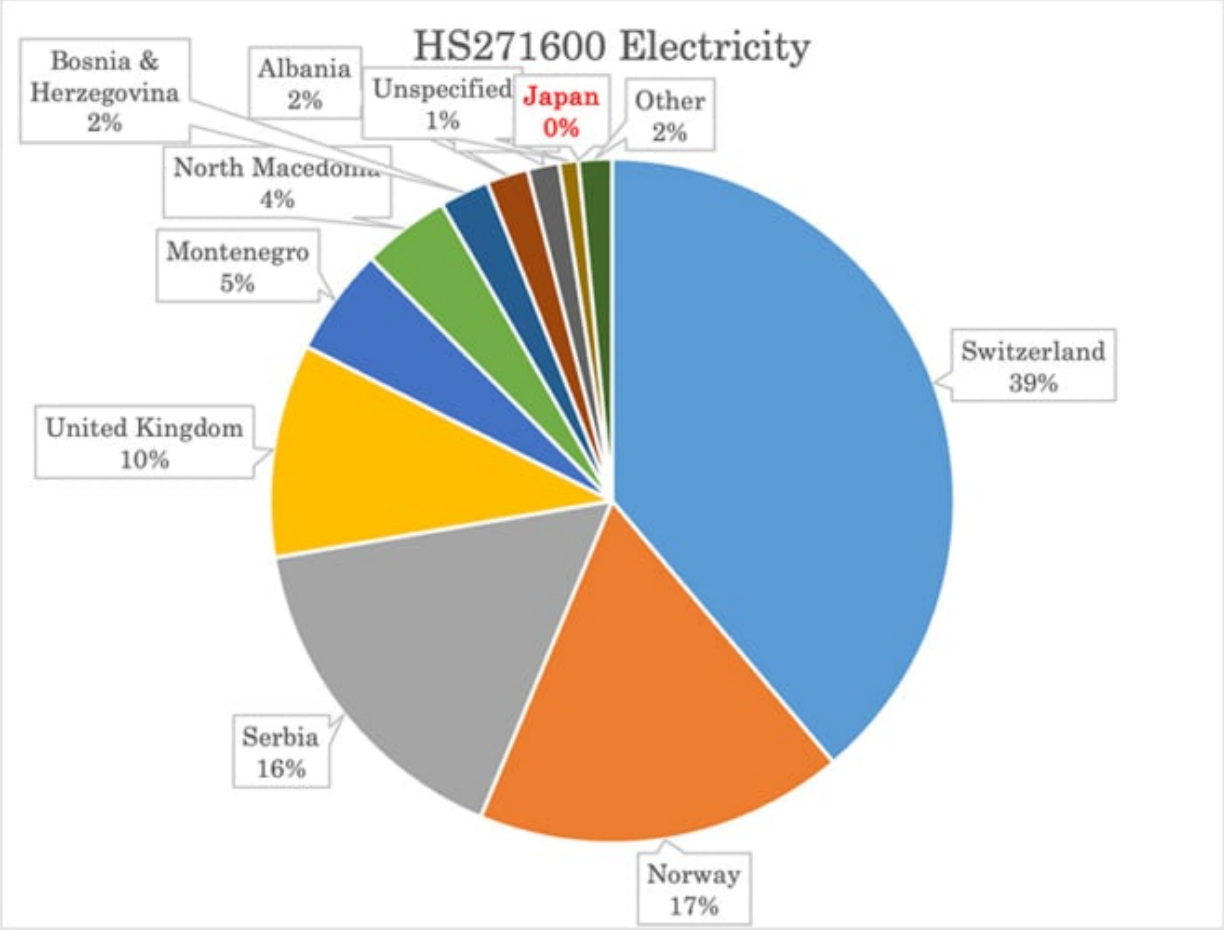



US76 Aluminum
Norway 14%
China 11%
Turkey 9%
Iceland 7%
Switzerland 7%
UAE 6%
India 5%
United Kingdom 5%
Russia 5%
Mozambique 4%
Japan 1%
Other 26%


HS2523 Cement
Norway 34%
China 16%
Turkey 11%
Iceland 8%
Switzerland 5%
UAE 4%
India 4%
United Kingdom 3%
Russia 2%
Mozambique 2%
Japan 0%
Other 11%


HS3201 Nitrogen Fertilizers
Other 15%
Egypt 26%
Turkey 3%
Japan 0%
Uzbekistan 3%
Trinidad & Tobago 3%
Nigeria 3%
Turkmenistan 3%
China 6%
Russia 19%
United States 8%
Algeria 11%


HS2804 H2 & Rare Gases
Other 13%
Russia 2%
Japan 1%
Norway 33%
Iceland 3%
Canada 3%
Qatar 5%
China 6%
Kazakhstan 7%
United States 10%
Brazil 7%
Algeria 10%



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???????????CBAM??????????????????????????????????????

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

EU??????BRICS??????????????????

?? ?? · Wednesday, April 30th, 2025

Nina Borisova/iStock

?????GX??????????????????2026????????????????????GX-ETS??????????????????5?15??????????????????

??????????????????????EU?????????????CBAM???????????????CBAM???EU??????????????CO2????????EU?????????4???82??

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??????????????2025?3?14??????????????

> ?EU?CBAM?“???????”???????????????ETS????????????????????????????????GX?????ETS????????????????????????

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???CBAM???????????????BRICS?????????????????????????EU?????????????????????????????CBAM???????????????

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????????2023??EU?????????47???????43????????43??????????19????11???????

???????????????2.3????????0.7???

? ? ? ? C B A M ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? E U ETS???80???20?????42??????79??????28???????63????

??56???????????

India aims to safeguard steel trade interests from EU carbon levy

?????????EBRD?????????????????????????83???????????

CBAM TRAINING. CASE STUDY – CEMENT INDUSTRY. EGYPT. December 6, 2023.

?????CBAM?????????????BRICS?????????????????????2024?10?????????????BRICS???????????????????????????????????CBAM???????????????

BRICS??????? ?????????????????

?????????????????????????2026?????20????35?????????????????????????

India will take up carbon tax issue ‘very strongly’ with the EU, says Piyush Goyal

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

BRICS????40?????????????6????????????????????????????BRICS?????????EU?????????CBAM??????????????????

??????????????????????????????10??????????400??????????????????CO2????60???CO2?????????????????

????????2050??????????????2013???2030???46??2035???60??2040???73???

??CO2???????????????

2030???46?????????????RITE??????30???

GX??????????????????????????????

??CBAM?????????????????????????????

??????CBAM?BRICS????EU??CBAM???????????

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

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?? ?? · Monday, April 28th, 2025

Floriana/iStock

???2050??????????????2013????????CO2???
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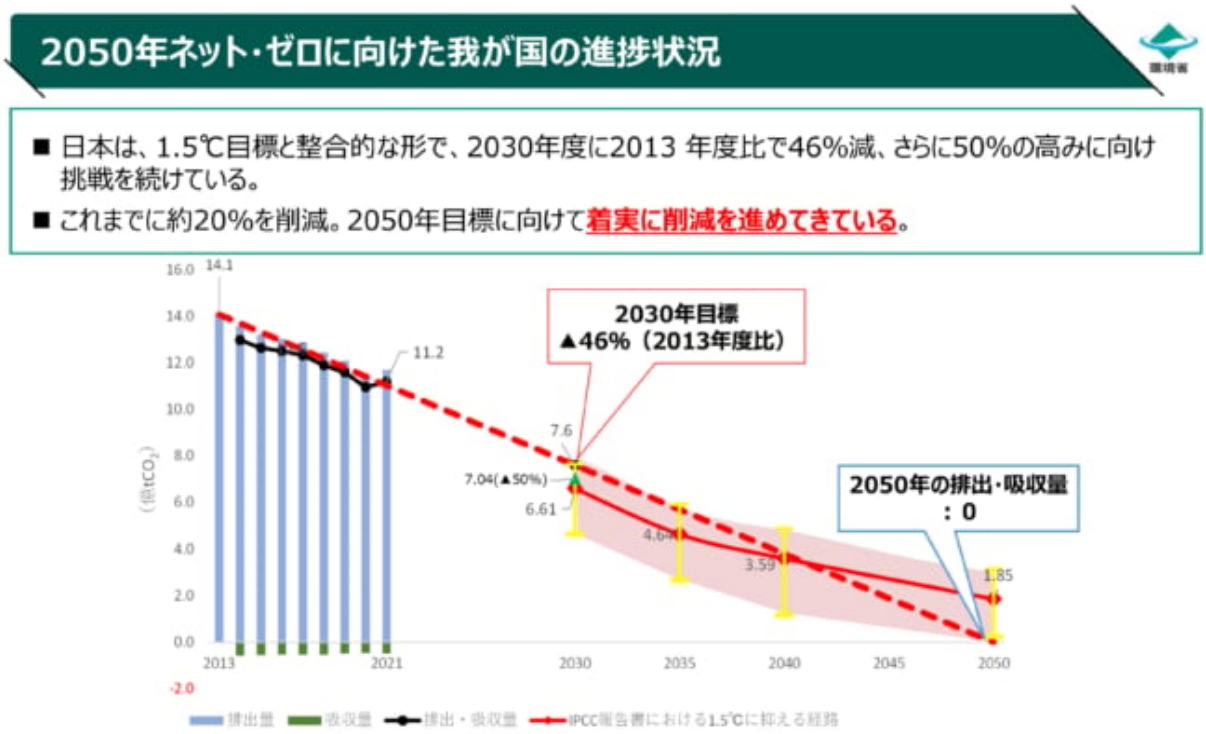

?1??????COP28???? GX??????9???

??????????????G7???????????2?????????????????????2050?????????CO2????????????????????
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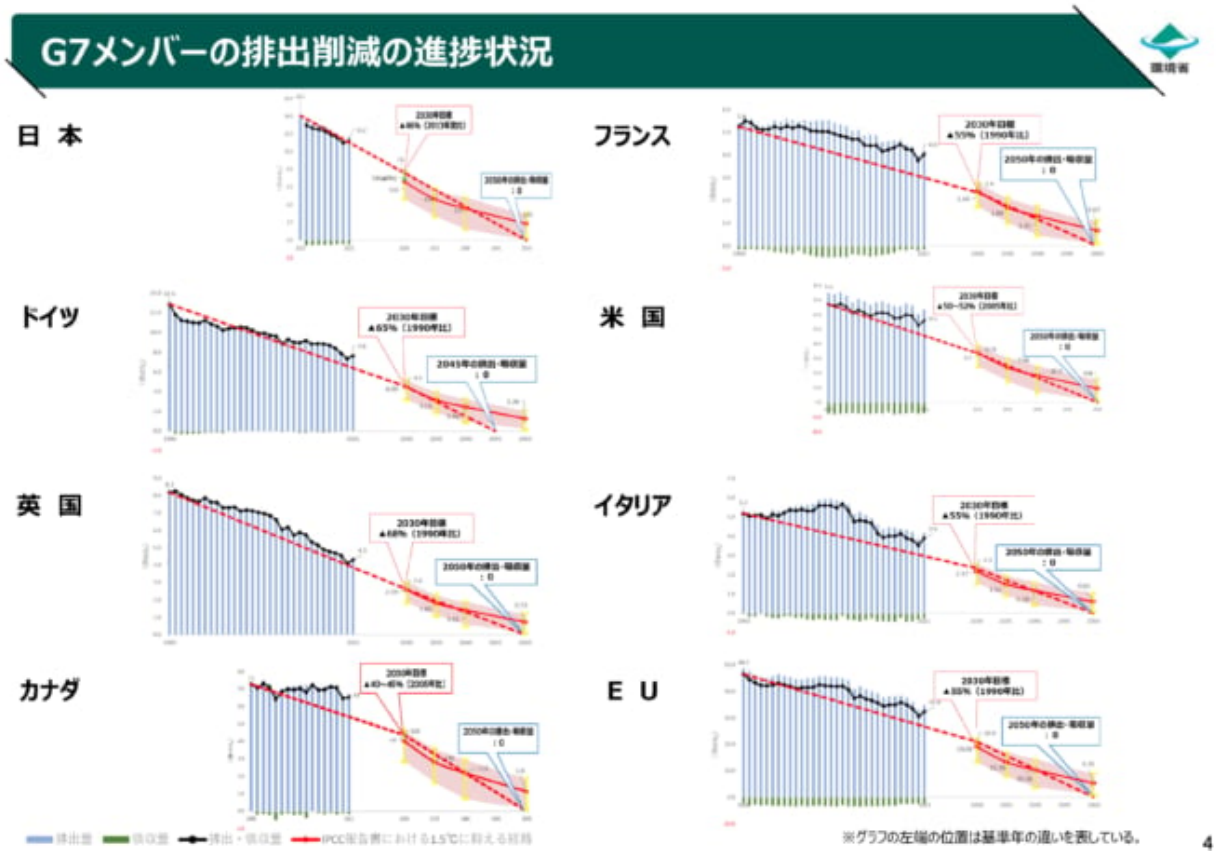

?2??????COP28???? GX??????9???

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??2060??????2070????CO2????????????????????
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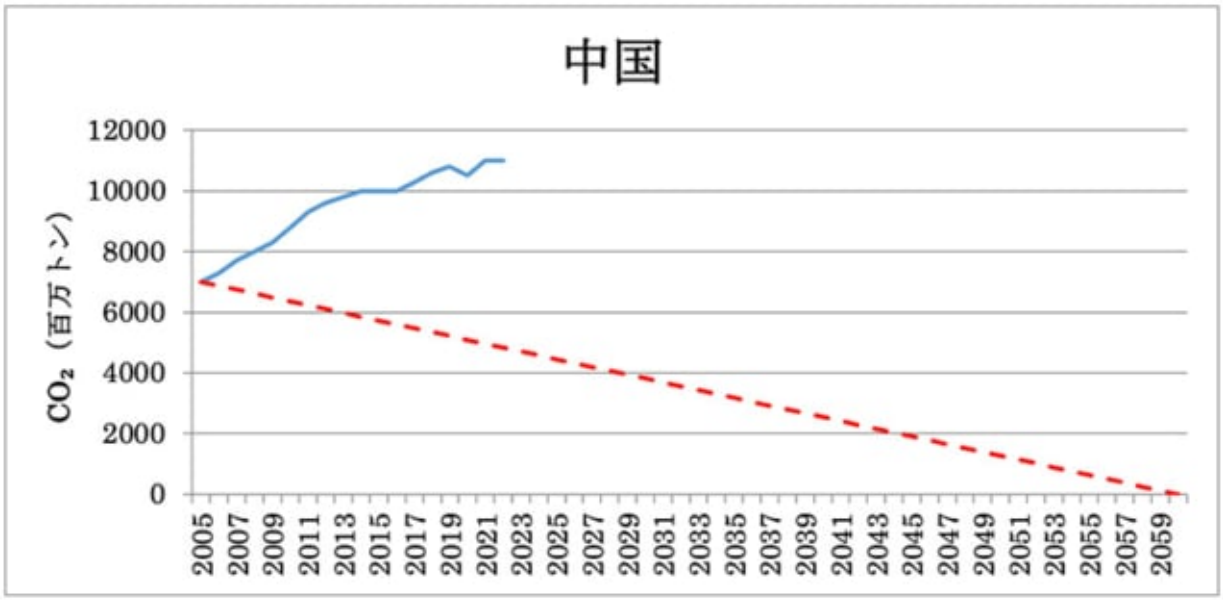

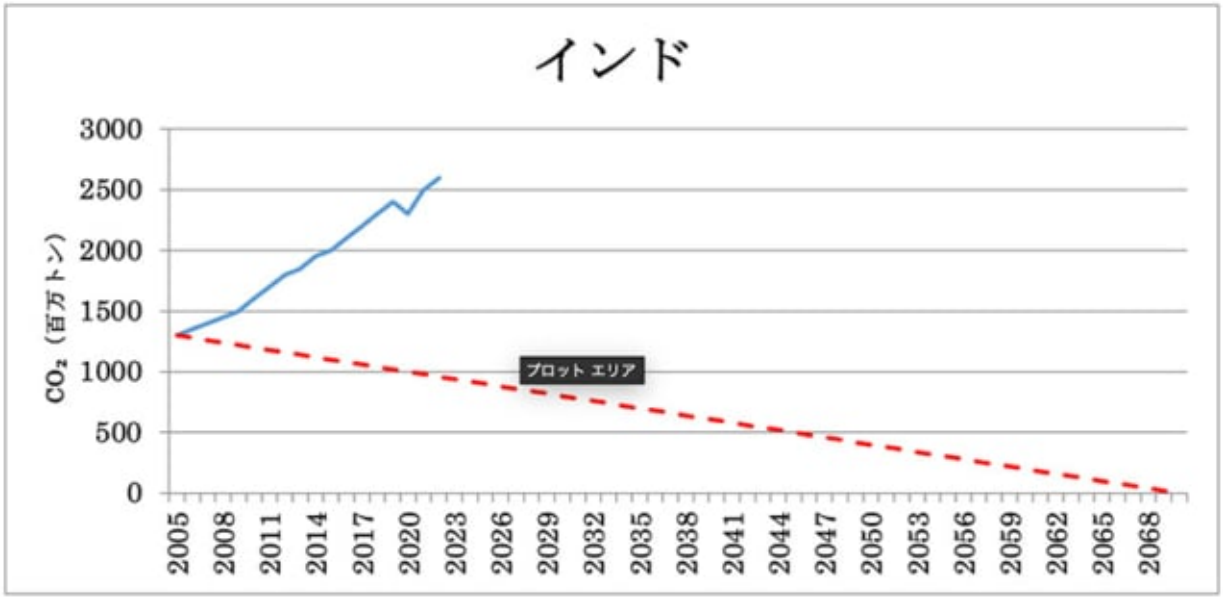

?3????????????????????????
??????????????????OurWorldInData

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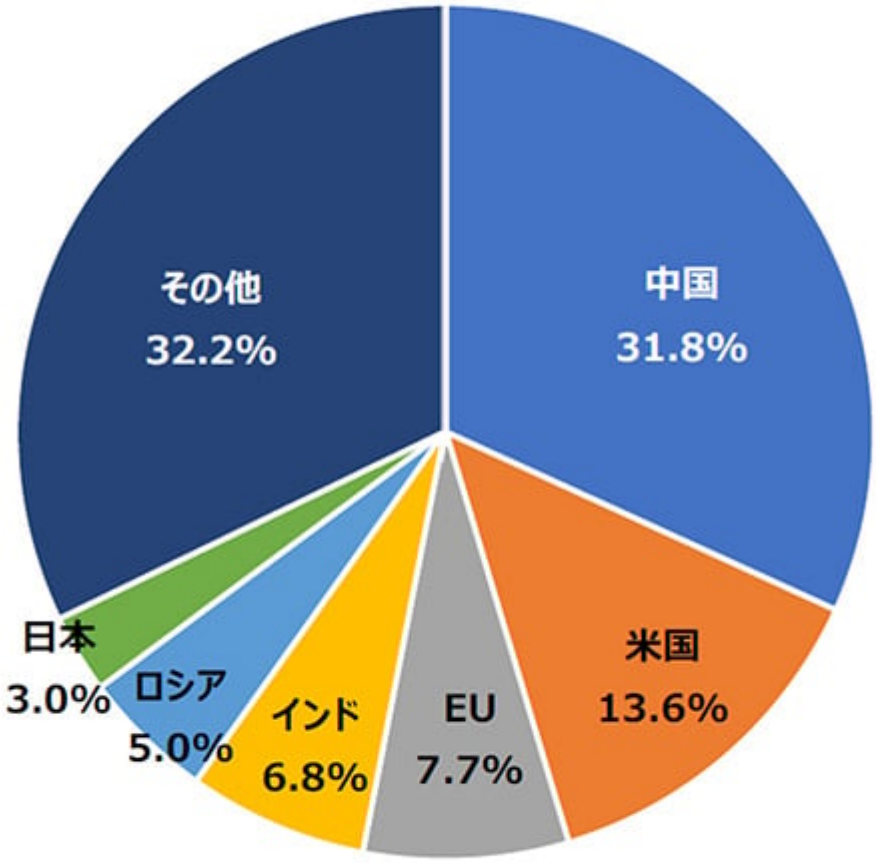
【第131-1-4】2021年のエネルギー起源CO_2排出量（国別）



資料：IEA「CO_2 Emissions from Fuel Combustion」を基に経済産業省作成

?4?????????????????????5????

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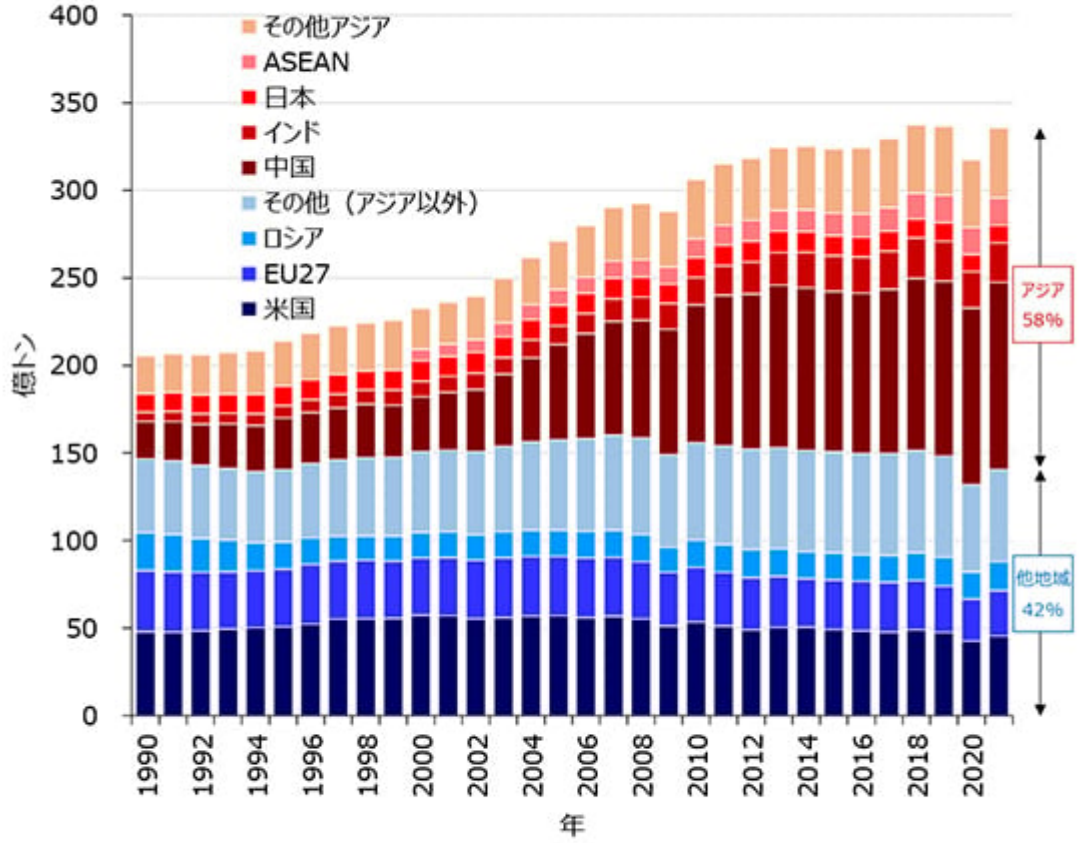
【第132-4-1】エネルギー起源CO_2排出量の推移（主要国・エリア別）



（注）1999年以前の「その他アジア」には、「ASEAN」を含む。
資料：IEA「CO_2 Emissions from Fuel Combustion」を基に経済産業省作成

?5?????????????????????5????

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Posted in ???, ????? | No Comments »

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?? ?? · Monday, April 28th, 2025

menonsstocks

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> ??????????????????????/???????????????????Aspiration Partners?Inc.????????????????????

> ??????????????????????????????1?4500?????????????????????????????????

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|???1?4,500??????????????????? |?????

> ??45????2????????????????1?4500????????????????????????????????

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??10??????????????????????????????Verra???????????????????????????

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> ???10????????DOJ????????FBI????????????????????SEC??????????????CFTC??????????????

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> ???2021?8????CQC???????2????????????????2????????????????????????????CQC????????????????????

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????????????????????????????CO2??
??CO2?1????????????

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?SDGs?????????

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

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?? ?? · Sunday, April 27th, 2025

bymuratdeniz/iStock

??????33??????????????????????????[?1?]?

??2018????????????????????

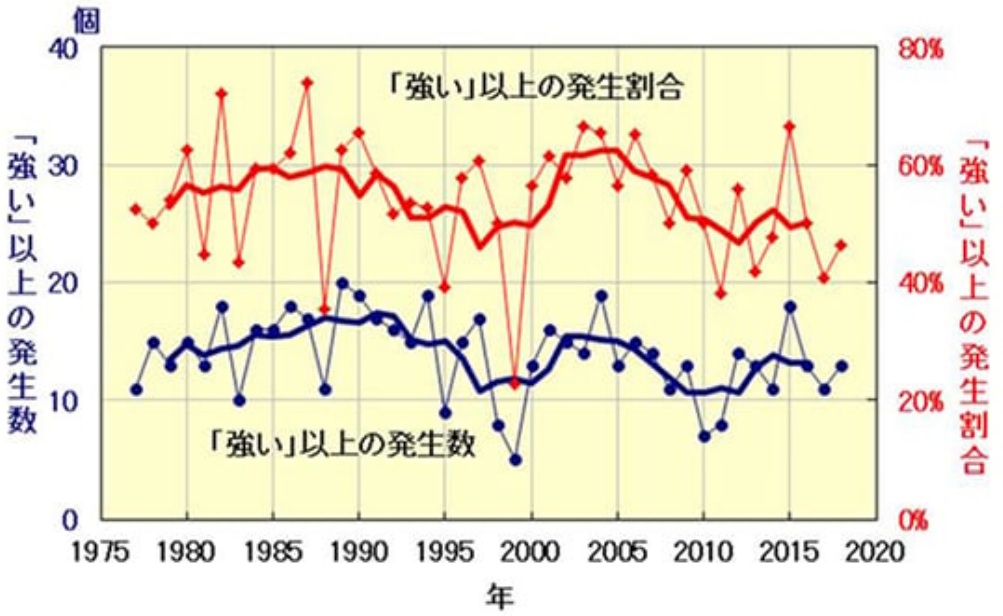

図 2.4-3　「強い」以上の勢力となった台風の発生数と全発生数に対する割合の経年変化

細い実線は、「強い」以上の勢力となった台風の発生数（青）と全台風に対する割合（赤）の経年変化。太い実線は、それぞれの 5 年移動平均。

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???????????2019??

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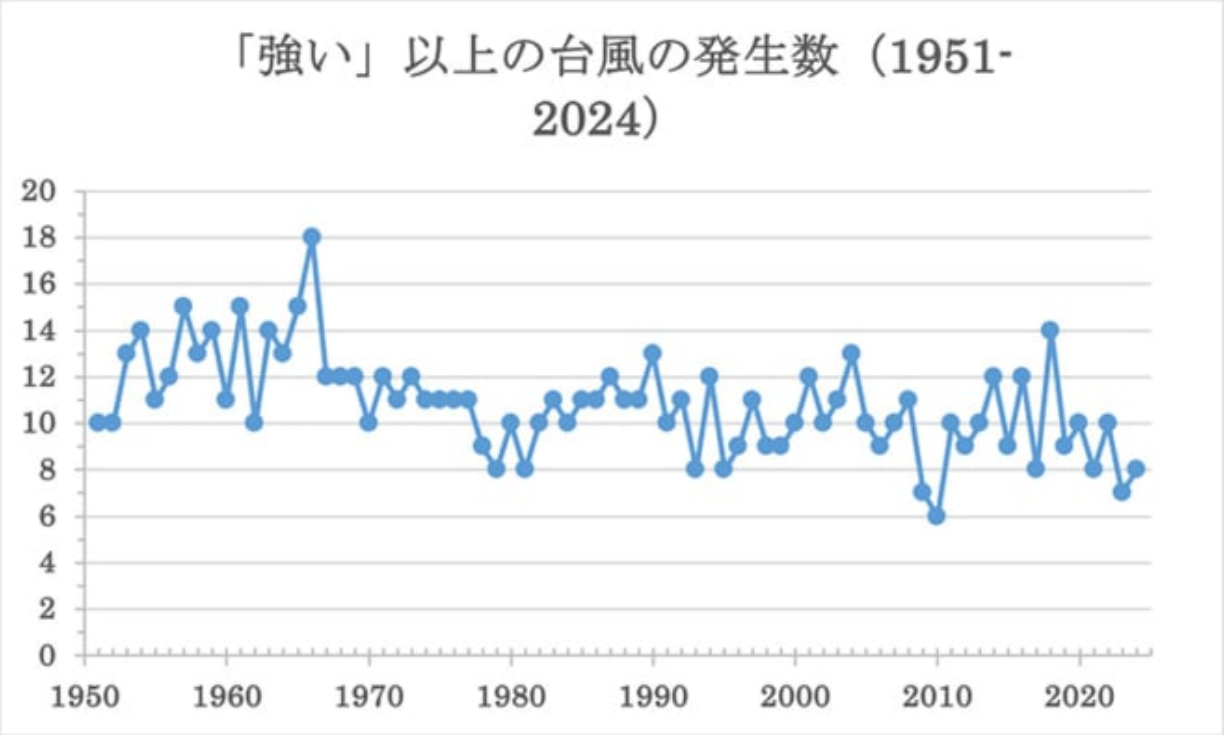

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> ???????1977?2018??????????????????

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?1??10????????????17m/s????????????????????????????
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?2??????????????

?APressure-Based Analysis of the Historical Western North Pacific Tropical Cyclone Intensity Record
?Reliability Analysis of Climate Change of Tropical Cyclone Activity over the Western North Pacific
?Trend discrepancies among three best track data sets of western North Pacific tropical cyclones

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Posted in ???, ????? | No Comments »

??????CO2?????????????

?? ?? · Sunday, April 27th, 2025

Sansert Sangsakawrat/iStock

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CO_2??????????????????????

???????CO_2??????????CO_2??
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??0.04%?CO_2????????????2500????????????????????
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?CO_2??

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CO_2??10cm??????????????
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?????????100km????????????????????????????????CO_2????????????????????????????????????
????CO_2??????????????????????????????????

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??????????????????????????Q&A 181??????????????????2024??

Posted in ???, ????? | No Comments »

??????????PV??????????????????

?? ?? · Saturday, April 26th, 2025

???????SNS??

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??????????9?????[21?]????????????????????

????????8.7???[22?]????GDP?2??????12.2??????????????????????3???????????18.3????????????
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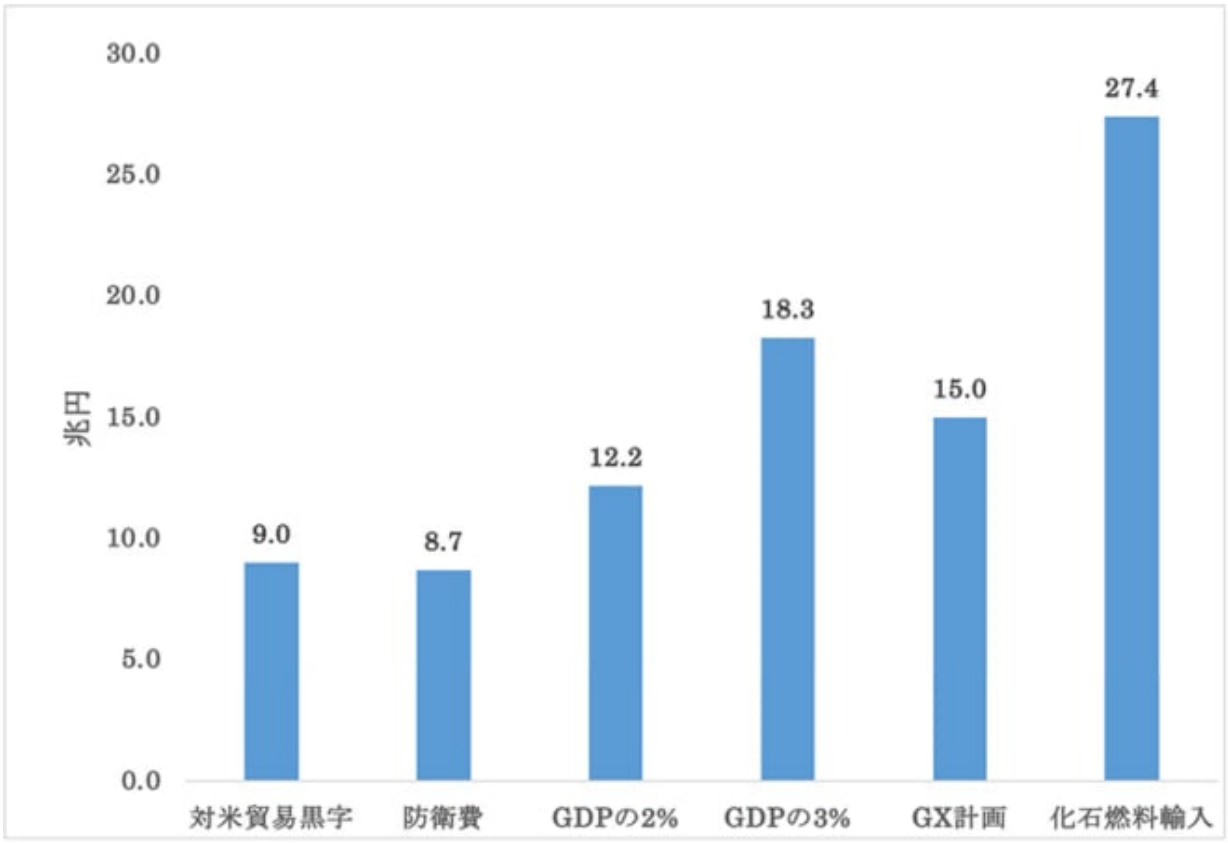

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??????????????????????????????GX??????????????????10??150??????????????????????????15?????

??GX??????????????EV??????????????????????????9?????????????????????6???8??????EV?????????????

???GX????????????????????????????????

??GX??

???????GX??????????????????????????GX??????????????????????????????????????

?????????????RITE????p6???2030?????GDP?????30??????????????????GX??CO2????????????????????????????????????

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?????????????????27.4?????[?23?]?????????????????1.4???????[?24?]?

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???L NG???????????????????????????

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???1?????????????????????2040???3???4??????????????????????????????LNG???????????????????????????????????

?????????????GX??

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?1????? 2025?4?17?????? 2024???2024?4??2025?3????????????????????????????????9?53??????????????????????1????145?????????620?????????

??2024?12?27????????? 2025??????7?????????? +9.4%?+7508????

?3?????HS27?????????1,953?USD × ??????140.5 ?/USD ? 27.4???????????????

品目	億ドル	兆円
原油・石油製品	804	11.3
LNG	470	6.6
石炭	424	6
LPG・その他	255	3.6
合計	1,953	27.4

140.5 ?/USD ???
?????????JETRO?????????2024??

?4?????? 2024?????2025-03-13????????????????? ?
??1-12???????????????HS27?????????????1.35???????????MOF?????????JOGMEC ???????????????????

品目	輸入額（兆円）	主な特徴
LNG	0.78	シェール由来
原油・石油製品	0.42	メキシコ湾軽質油中心、約14-16万bbl/日
LPG	0.11	エチレン原料・家庭用の調達元として定着
石炭ほか	0.02	コークス用が主体

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

??????“???97%”????

?? ?? · Tuesday, April 22nd, 2025

EvgeniyShkolenko/iStock

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???????????CO2?????????????????????????????97????????????????????20????????????????????????????????

??97%????????????????????????????????

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97???????????

?97%????????????????????????????????????2013??11,944??????????abstract???????????97.1%????????????????????????????????????

Consensus on consensus: a synthesis of consensus estimates on human-caused global warming

??CO2??

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??????97??CLINTEL?Climate Intelligence Foundation?????CLINTEL????????????????????????WCD????????????????????????????????

WCD?World Climate Declaration There is no climate emergency

CLINTEL????????WCD??????????????????????????????2025????????1983????????????????????
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??????CLINTEL??97??????????????
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1. ?????????
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2. ??????????97%?????
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3. ??????????
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項目	真正科学（Real Science）	疑似科学（Pseudo-science）
仮説と検証	データや観察に基づく仮説を立て、繰り返し検証・反証を試みる	結論ありきで仮説を立て、反証を避けて理論を維持しようとする
反証可能性	「間違っているかもしれない」という前提に立ち、柔軟に見直す	自説を絶対視し、反証を無視または封じる
データの透明性	使用データや分析手法を公開し、再検証を歓迎する	モデル前提やデータ処理がブラックボックス化しやすい
モデルと現実の関係	モデルは現実の仮説的近似として位置づけられる	モデル結果を現実と同一視し、予測を絶対視する
議論と批判への態度	批判や異論を歓迎し、建設的議論を進める	批判者を「否認論者」「反科学」として排除しがち
科学者の姿勢	実名・専門領域を開示し、根拠に基づく主張を行う	「科学者の多数」として曖昧な合意を強調し、実名が乏しい
社会との関係	科学と政策を区別し、判断材料として提供する	科学を政策正当化の道具とし、「従うべき真理」とする
主な具体例	- CLINTEL の声明 - Lindzen, Happer, Curry らの主張	- 「97%科学者合意」説 - IPCC の RCP・SSP モデルによる悲観的予測の断定

?1??????????????
???RCP?????????????SSP : ????????????

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Posted in ???, ????? | No Comments »

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??? ?? · Friday, April 18th, 2025

mammuth/iStock

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2024?4?????????????OCCT???1???800km?????200?KW??????????

?1??????????????????2???500KV??

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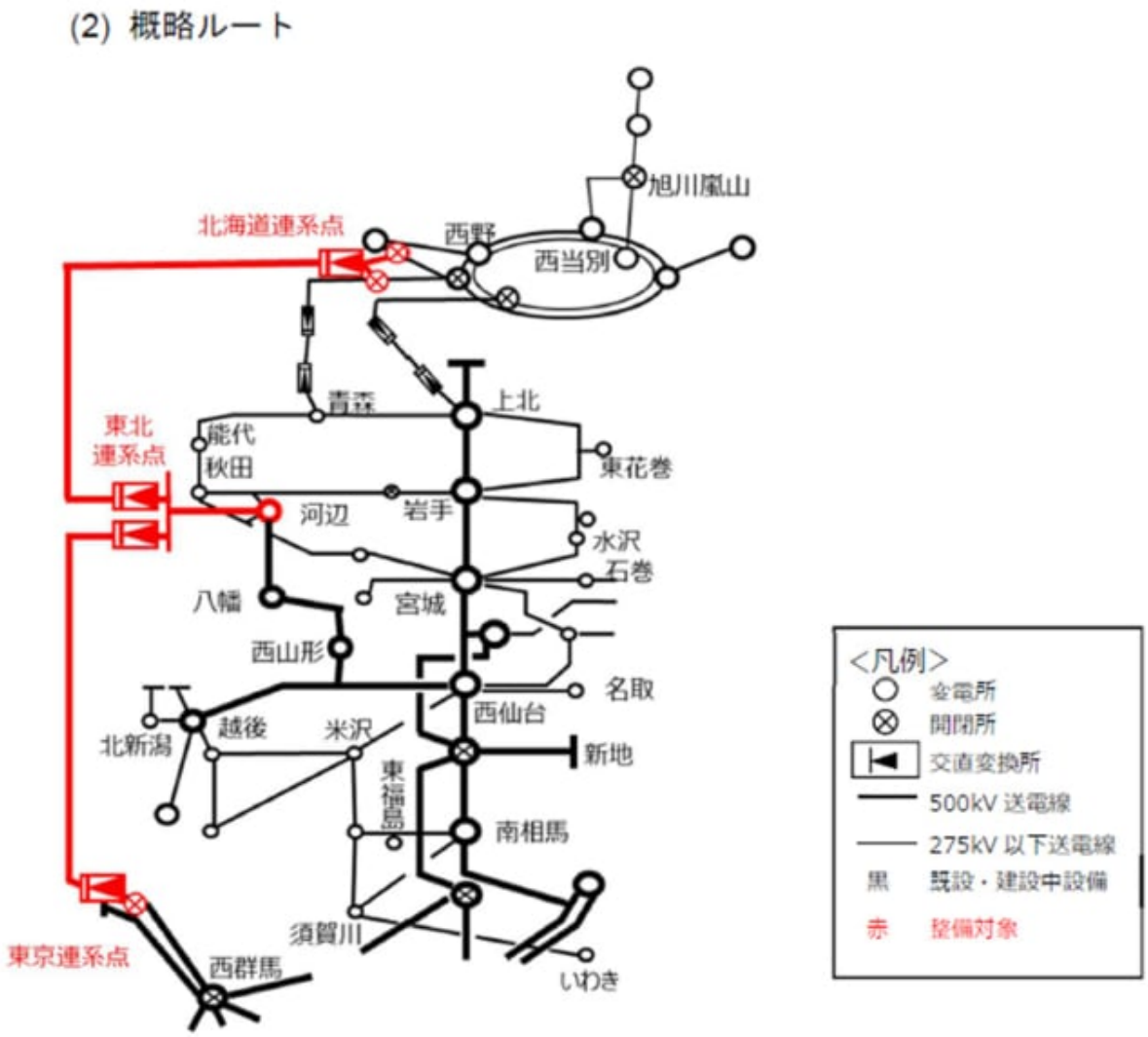

?1 ??????????????????????
OCCT????

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????????????2025?4??????2??????????1??12???
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???????1??????

工事内訳	概算費用
海域工事	8,700億円～1兆1,000億円
陸上工事	4,700億円～　5,100億円
開閉所工事ほか	1,700億円
合計	1兆5,000億円～1兆8,000億円
参考	
約800km275KV送電線建設コスト	4,000億円
（鉄塔間300mとして、鉄塔2,700基と想定）	

?1????????????????????????
OCCT????

??????????????????????????????????275KV???800km?????????300????2,700???????????????????4,000???
??????????????????1/2?1/3????????????

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??1???2????????????????????**?????????????????????**???????????
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??200?KW?????200?KW????????????????????????????
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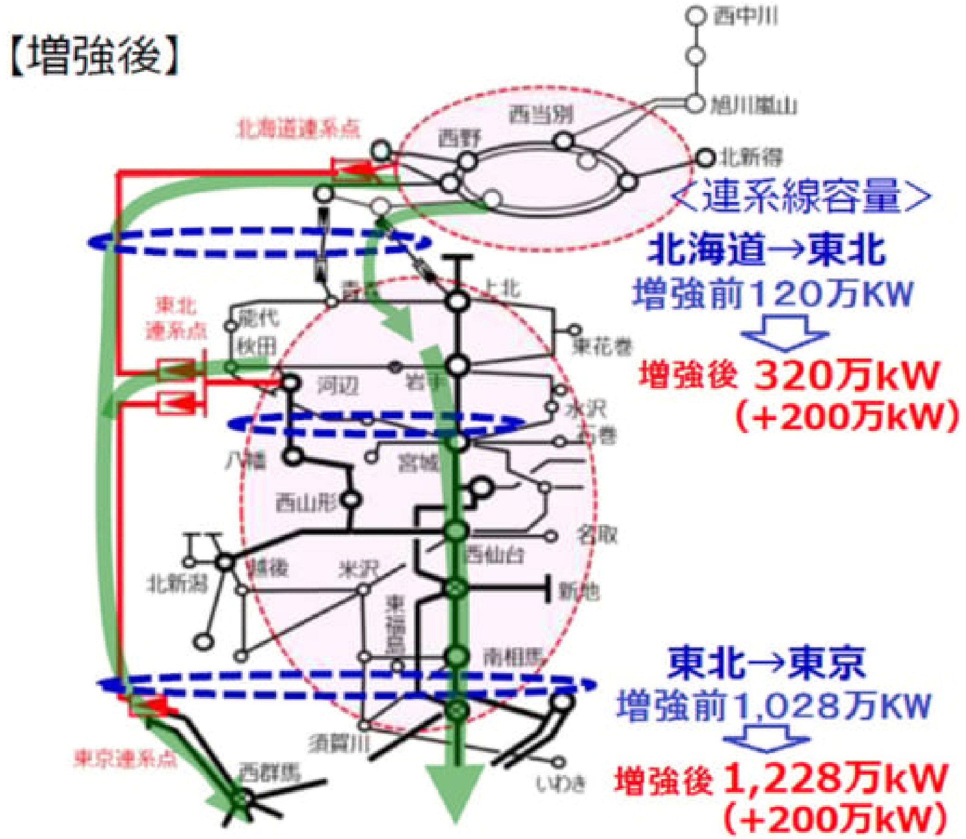
2. ?2?OCCT??1,028

?KW??????????????????????????????????????2??1,228?KW?????????????200?KW?????????????? ???????2??????1.2?????????????????????????????????2????????????????????????LNG???100?KW????????????????????????????????



?2???????????????
OCCT????

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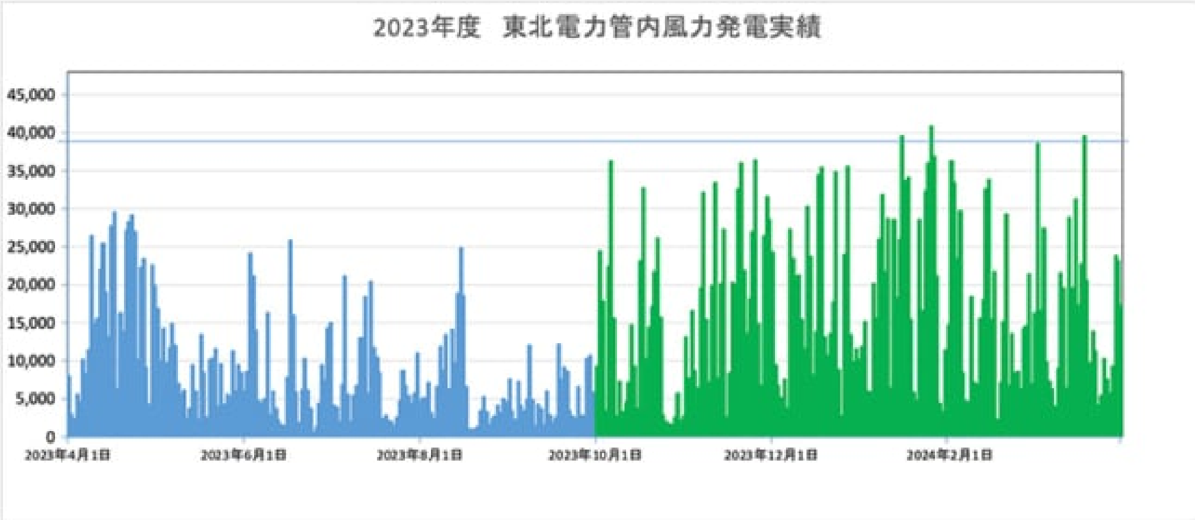
?????????????A???????B???????C??? ??? ???



?3??????????????????????????2023??

????3??20?30%????
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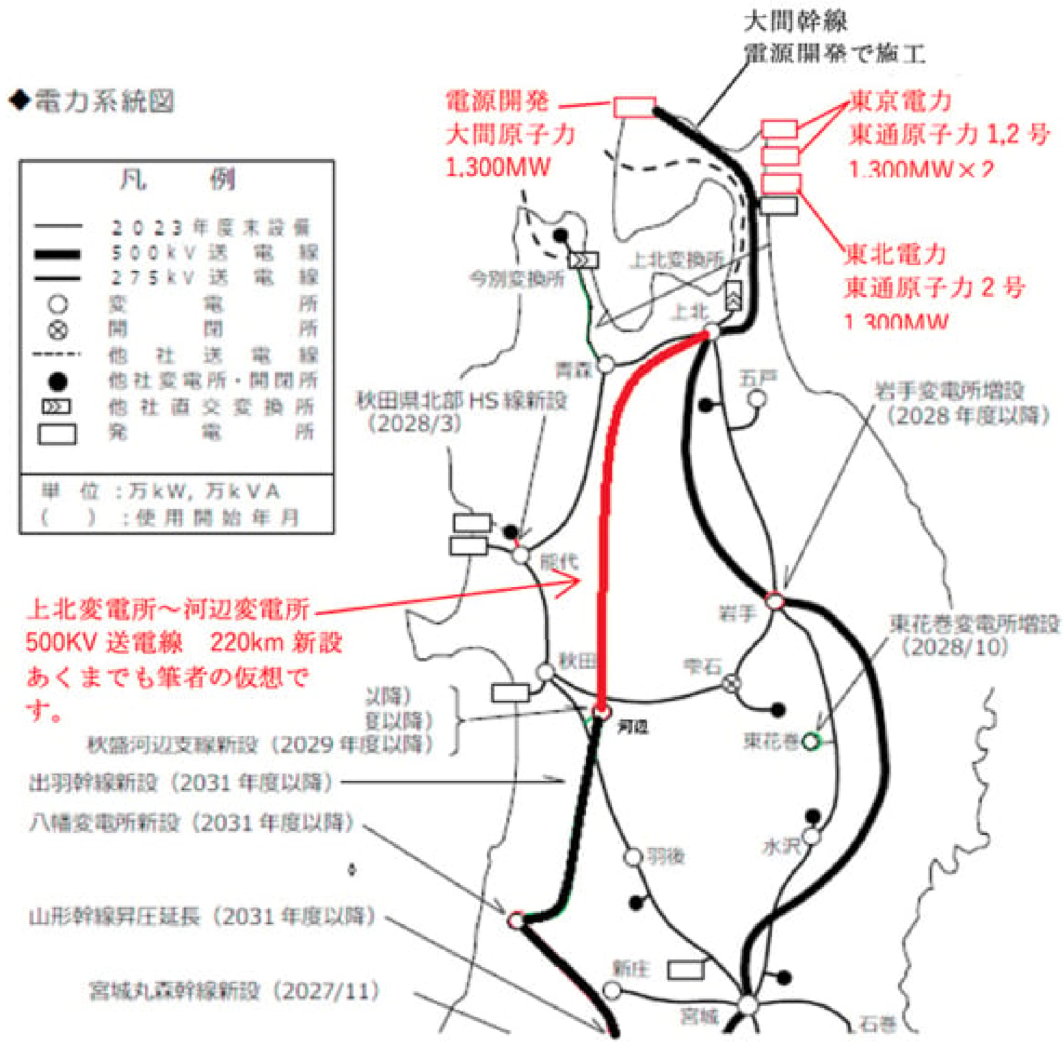
?4?2024???



?4???????????2024?????????????????????????????

????????????????????????????????1????????????1??2???????????2???????????????550?KW??????

??2011??550?KW?????????????????????????????????????

???????????????????550?KW???500KV??????220km???

??????????????????????2,000??????????????2??????????????????????????????????????200?KW????????2,000?????550?KW????????????????????????????????????

??????????550?KW????????????????????????????????????2??

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

?????e-fuel????????????

?? ?? · Thursday, April 17th, 2025

istock-tonko/iStock

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??e-fuel??

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e-fuel????

e-fuel?????H??????????????CO??CO??????????????????????????????????????CO??????????????????????

EU???

EU??2050??????????????????????????????2035????????????CO??

????2023?3??????????????????????????????e-fuel????????????????????????????????????e-fuel??????????????2035???????????

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???????2020????????????2050????????????????????????????????????2035????????????100???????

??????????????????????EV?FCEV????????

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e-fuel??????????????????

e-fuel?????????????????????????????????????700?/L????????? ??????????????????????4????????

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e-fuel????????

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?????2035??????????????????e-fuel??

年度	e-fuel 製造コスト (円/L)	水素価格 (円/Nm³)	備考
2025 年	約 700 円	約 100 円	現在の技術水準。国内製造時のコスト
2030 年	約 300 円	約 50 円	再生可能エネルギーの普及により水素価格が低下
2035 年	約 200 円	約 30 円	技術革新と量産効果によりさらなるコスト低減
2050 年	約 170 円	約 20 円	大規模な生産と技術進歩により安定

e-fuel???????????

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- **??????????????**??168?/L
- **e-fuel?????**: ??
- ?**????**: ??
- **??**:??????????????????????????????????????

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SAF??????

SAF?Sustainable Aviation Fuel?????????????????????????????????????e-fuel????????????????????????????????CO????????????????????????????????

??????????????????????SAF??????????????2025???ANA?JAL????????????????????????????
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???2030???????????10%?SAF?????????????170?kL???????200?kL????????????????????????????
?????????????100?120?/L?????SAF?300?500?/L????????????????????????????

??????????????????????50%SAF????????1??????????????????2????????1????????????????????????????
2035??????????????????1?2????????2050????????????????????????

年度	SAF 製造コストの目標	航空運賃への影響（目安）
2025	300〜400 円/L	現行より数千円高くなる可能性
2030	200〜250 円/L	運賃への影響は 1 割前後に収束の可能性
2050	100〜150 円/L	運賃への影響は最小限、従来と同等もあり得る

???NEDO????SAF???????IATA???

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e -
fuel?SAF??2035??????????????????2050????????????????????
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Posted in ??????????, ???, ?????????? | No Comments »

??ESG????????????

?? ?? · Sunday, April 13th, 2025

photonarrative/iStock

??????????????DWS????????????2700???????????

> ??????????????????DWS????2500?????2700??????????????????????DWS????????????
> ??????????????ESG???DNA?????????????????

> ????????????????????????????DWS?2023?????ESG????????????????????????????????
> ?????????2500?????????????????????????

> 2020????????????????????????????DWS??DW
> S???2021?????????

> ??????????????????DWS????????????????????????CEO??????????????????????

??????????????DWS??ESG????????????????????????????????2023??2025??????80????????????CE
O??

??????????????????2024?6?????????????????????????ESG?????????????????????????

???????Climate Action 100+???ESG?????????????????most radical offenders???ESG???

ESG????????2021???????????3???

???2023?5???2023??ESG?????????????????????ESG???

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?SDGs????????

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

“??”?????????????????????

?? ??? ?? · Friday, April 11th, 2025

DesignRage/iStock

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?????????CDU/CSU????????/?????????????????????????CDU??“??”?AfD??

??1??AfD??????????????????????????3??2??????????????????

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?????????3??2??1000??????????????????????

???“??????????????”????????????????????????Die Weltwoche???2??

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??4??3????????????????????????53????????21??73??

4?9?????????????????????CDU/CSU????????144??16????????????17???????7?????????

??????????????Ipsos????????AfD?????CDU/CSU???????1???????????5????????????????????????

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???AfD?????????????????????????????????????AfD?????????????????

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PS????????????????????2??????????????????????23????????????????

??04?17?????????????????????????
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???EU???????????
??20????????
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??EU?????
??AfD???????????????????????????

??CDU/CSU??????
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??NGO?????????????????

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Posted in ???, ?? | No Comments »

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?? ?? · Wednesday, April 9th, 2025

anyaberkut/iStock

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AZEC????????????12??????????????

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1. ????????????????

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- **????????USC?IGCC??**???
- **CCUS?**???
- **???????**??
- **????????**???????????NOx?????????????????????????????????

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2. ??????????????????????

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3. ???????????????

???AZEC??

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- FIT/FIP??????????????????????
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???????AZEC?“???????????”??

4???????????????

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???????????CCUS??AZEC???

アジアのエネルギー現場に導入する上での現実的課題

技術分野	技術成熟度	現地化の課題	コスト水準	アジアでの導入可能性	コメント
高効率火力発電（USC・IGCC）	◎（商用化済）	インフラ老朽化、資金不足	△（高め）	高（既存火力の代替）	現実的、排出削減ではなく効率向上目的で有効
CCUS（CO_2回収・利用・貯留）	△（実証段階多い）	地質条件、法制度、住民合意、コスト	×（非常に高い）	中（炭素価格導入が鍵）	技術的・経済的ハードル大、国家規模の支援・合意形成が必須
水素インフラ（製造・輸送）	△（部分的実用）	サプライチェーン整備、安全基準	×（非常に高い）	低（インフラ皆無に近い）	現段階では未来技術、パイロット限定が現実的。
アンモニア混焼（発電用途）	○（商用初期）	専用バーナー等技術提供、供給安定性	△（高い）	中（既存石炭火力と組合わせ）	NOx 排出など課題も。コスト競争力は乏しい。

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

??????????????????????????????

??? ?? · Monday, April 7th, 2025

gorodenkoff/iStock

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??30????????????????????????????????????

????????????????2024?4?1??????????????????????33??

??????????????????????14?kW??????????????????????????1????????????170?kW????????????????????????????

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?1????????1????

??2021?12???1????????????????????????????????1??????????3??

?1??

順位	企業	風力発電メーカー	価格（円/kW時）	価格点（120点満点）	事業実現性（120点満点）	合計点（240点満点）
1	三菱商事チーム	GE	11.99	120	82	202.0
2	JERA	GE	17.00	83.7	73	156.7
3	レノバ	ベスタス	24.50	58.7	91	149.7
4	九電みらいエナジー	シーメンス	18.40	78.2	66	144.2
5	日本風力開発	GE	23.00	62.6	78	140.6
					は最高得点	

?1??1??????????????????

??????GE??????????????????????????2????GE??????????????????GE????????????????????????????????
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?2????????????????2????

?2??

2021?12????????????????????????
2022?3????????????????????????
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2022?12??2023?6????????????4???????????????
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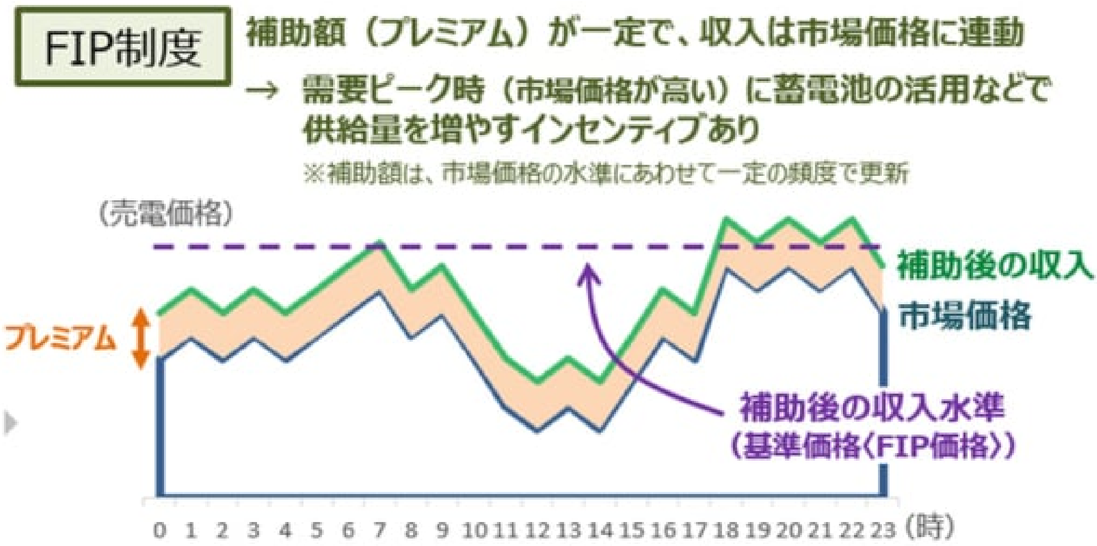

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?460?kW?????????4??30?????????????????? 460?kW × 0.3 = ?138?kW ?????????

??0?80??????????????????????????0?370?kW???

???460?kW???

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

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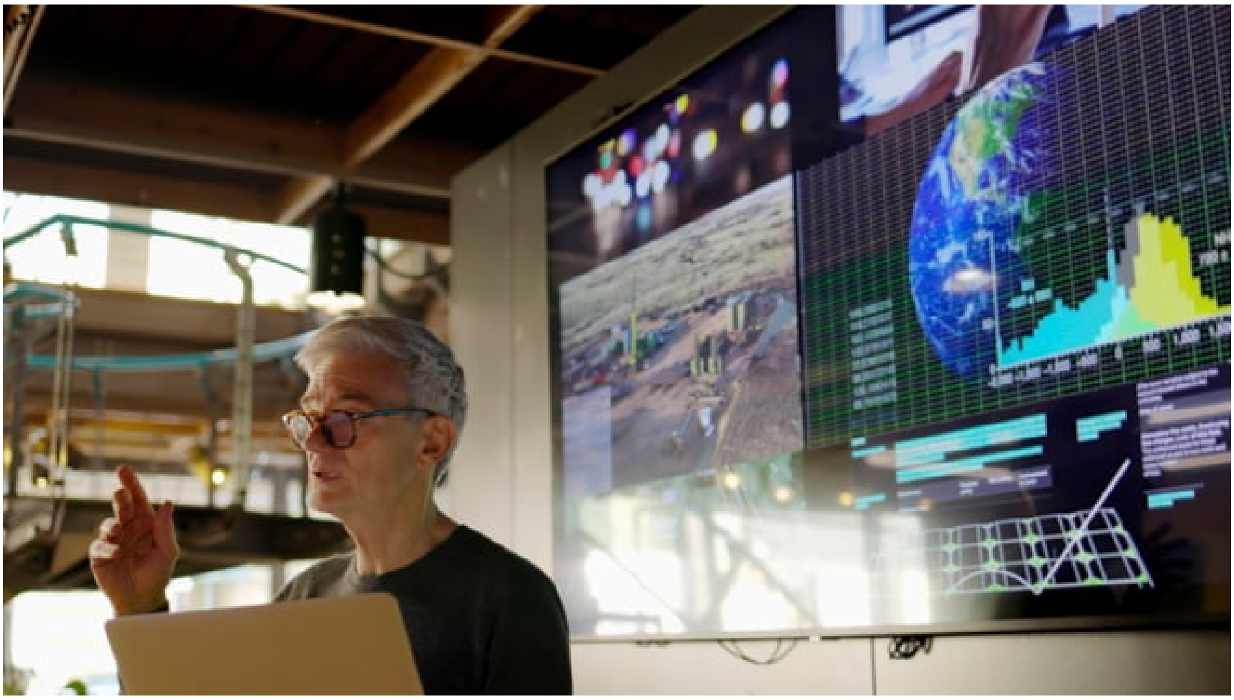

Laurence Dutton/iStock

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??IPCC?????????????GCM?General Circulation Model???

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??RCP??SSP1-1.9?SSP5-8.5????

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??MIT??

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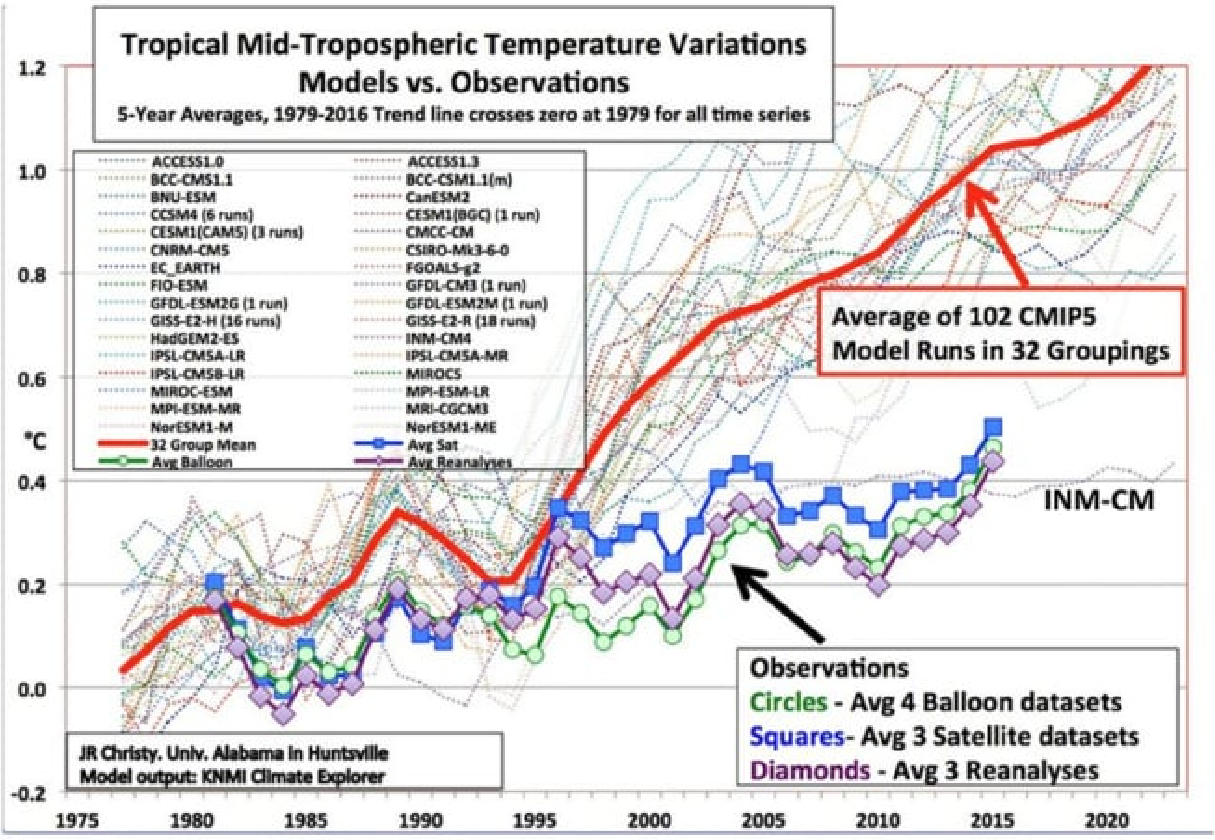
???????????INM-CM????Institute of Numerical Mathematics, Russia???

???Happer & Lindzen??????EPA?????2023?7?19?????1979???2016??????CMIP5??????????????????????????? ???????????????102??????????????????????INM-CM???



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IPCC??? ??????????????????????????????????5???

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???????”The U.N. owns the science of climate”??CO2????????????????EU??

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Posted in ???, ????? | No Comments »

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?? ??? · Saturday, April 5th, 2025

coffeekai/iStock

??????????IEA???????World Energy Outlook?WEO??WEO????????????

??2????????????????IEA?????????????????????IEA???????????WEO2024????????????????????????????

https://agora-web.jp/archives/250202010201.html

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WEO??2021???WEO2021???STEPS?APS?NZE???3??????????????????????????STEPS???????
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?forecat???[?1?]?

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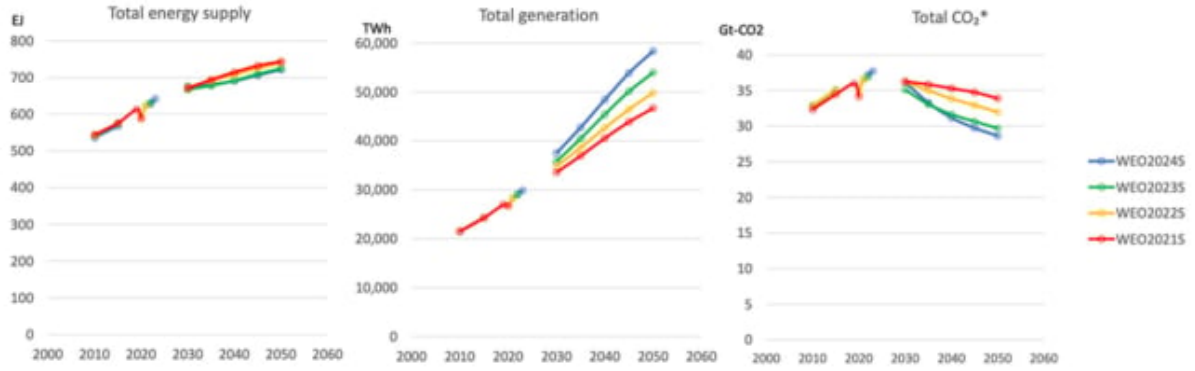
WEO2021?WEO2024?STEPS??????????????????CO_2????????1????



?1?WEO2021?WEO2024 STEPS??????????????????????????CO2??????

??????????CO_2????WEO2021?????????????????down?????????????WEO2021?????????????????
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WEO2021?WEO2024??CO2????????????????????????
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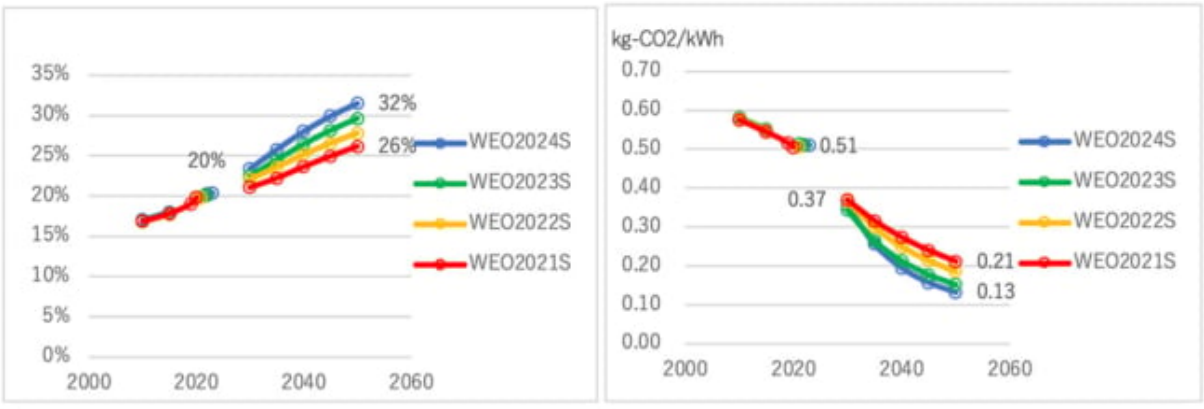
?????????up?CO2????????down??????????????????WEO2021?WEO2024
STEPS????????????????????????????CO_2???????????????2?



?2?WEO2021?WEO2024 STEPS??????????CO2???????

??????????????????up?????WEO2024?2050??32%?WEO2021????2?????????????????????????????????????up???????

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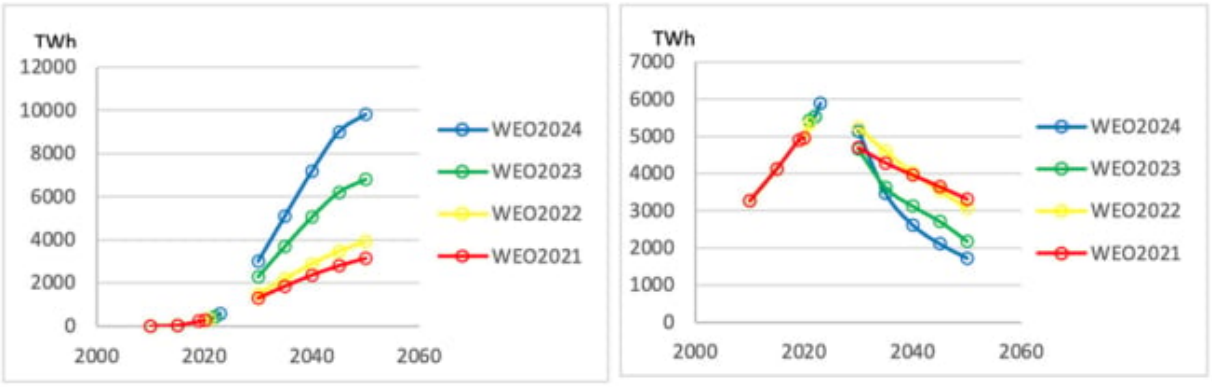

?3 WEO2021?WEO2024 STEPS?????????????????????????????

WEO2022???????????????up????????WEO2024?2050???WEO2021?3?????????????????????????????

??????????????????????????STEPS??2030????????????????????WEO2021?WEO2024?????down????WEO2024??2030???2050?????70%???????????

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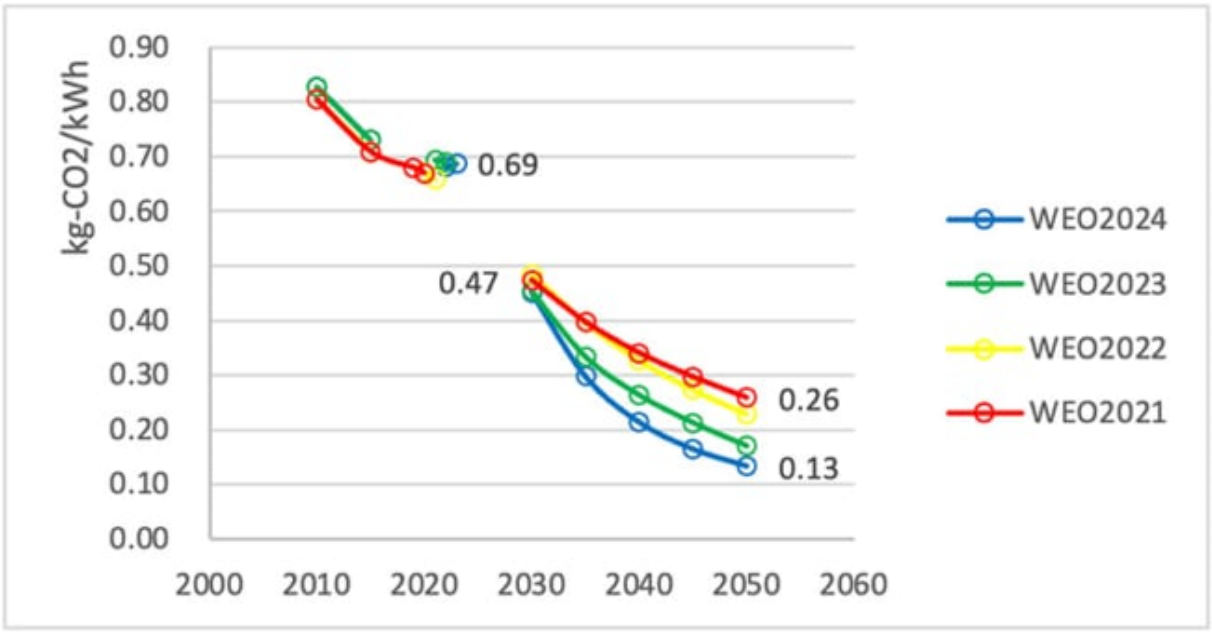

?4 WEO2021?WEO2024 STEPS??????CO2????

????0.7kg-CO2/kWh????????WEO2021?WEO2024?2050????????????????????????????down?????WEO2024?2050??0.13kg-CO2/kWh?WEO2021?1/2????1/5????????2????CO2???????????

???STEPS???????CO2???????????down???????CO2?????????CO2???????down?????????????

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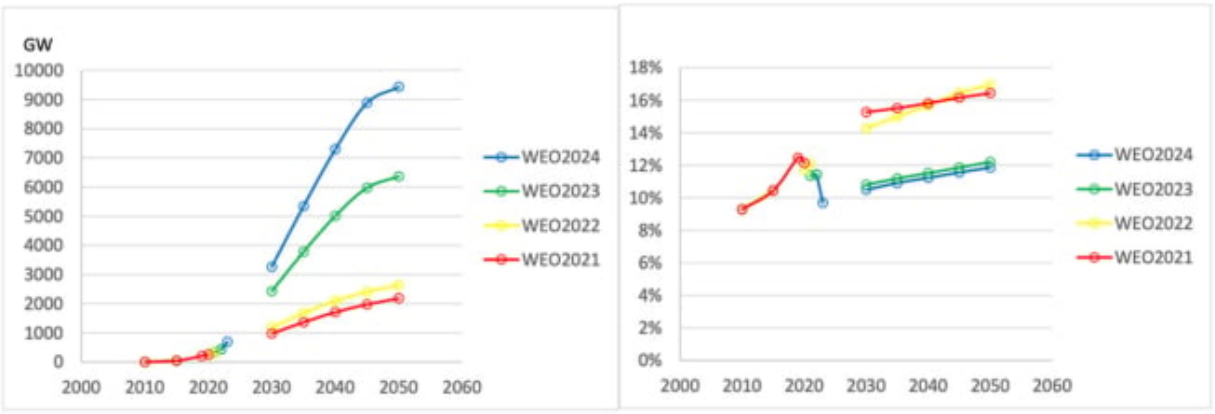

?5 WEO2021?WEO2024 STEPS?????????????????????????

STEPS?????????????up?????WEO2024??2050???WEO2021??4???????????2030????????????3300GW?????????????????????????????????2030????1200GW?????WEO2024 AnnexB?????3?????????????????????[?3?]?

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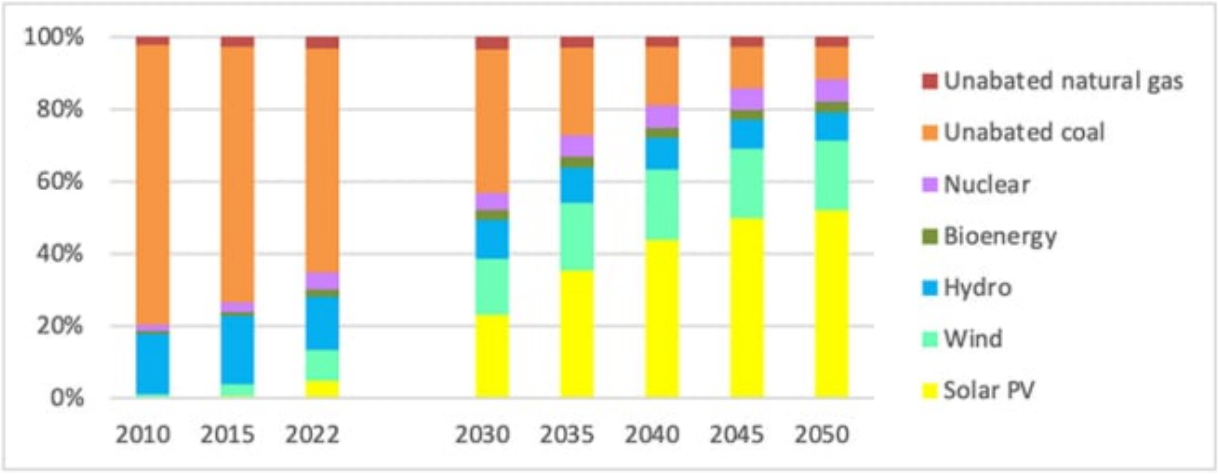
????STEPS??2030?????????????????WEO2024??????????6????????????????????2030???20???2050???50??STEPS??[?4?]?



?6?WEO2024 STEPS?????????????

???WEO???????????forecat????????????STEPS??
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IEA?STEPS??
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forecast??????????????STEPS??????IEA????????????????????????????????????

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IEA, WEO2021_AnnexAExtended_Data
IEA, WEO2022_Extended_Data
IEA, WEO2023_Extended_Data
IEA, WEO2024_Extended_Data

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?1?2100????????????????????STEPS?2.4??APS?1.7???NZE?1.5??????50????????????????3????????2050????????97
???2050???????GDP????3.0?2.7???????????

?2????CO2 ????????????????????????????????????CO2????????????????????????????????

?3?WEO2024???????2030????????????????????????????3??????????????????????

?4??WEO2024???????
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Posted in ???????????, ??? | No Comments »

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?? ?? · Friday, April 4th, 2025

oliver de la haye/iStock

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電源種別	安定性	運転面での柔軟性	備考
原子力	高	低	定常運転が基本
石炭火力	高	低〜中	ベースロード向き
ガス火力（CC）	中	中〜高	調整運転に対応
ディーゼル	低	高	短時間ピーク対応
揚水発電	低	高	ピーク調整用
蓄電池	低	高	短時間の需給調整に有効
水素発電（将来型）	中	中〜高	再エネとの連携用途も期待
風力発電（陸上）	低	低	出力が天候に大きく依存
太陽光発電（メガソーラー）	低	低	昼間限定・出力変動大

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観点	内容
エネルギーシステムの全体設計	ベースロード・ミドル・ピーク・変動の役割分担を明確に
装置設計と運転の整合性	設備の運転制約と寿命設計を前提にした運用計画
市場制度とインセンティブの再設計	変動対応のコストやリスクを適切に反映する市場構造
エネルギー教育の見直し	エネルギー供給の現実的なプロセス理解を普及

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電源種別	主な特徴	運転性（制御性）	長所	短所
原子力	ベースロード電源、出力安定	低（出力変動に不向き）	・CO_2排出ゼロ ・燃料コスト低 ・安定供給	・起動・停止に時間 ・安全・廃棄物問題
石炭火力	ベースロード向け、安価な燃料	低〜中	・大量発電可能 ・安価な安定電源	・CO_2・大気汚染物質排出 ・柔軟性に欠ける
ガス火力（CC）	ミドル電源、柔軟な運転が可能	中〜高	・出力調整が可能 ・比較的クリーン	・燃料価格変動に影響 ・再エネ変動対応には限界
ディーゼル	非常用・ピーク電源	高（即応性あり）	・短時間起動可能 ・小規模設備でも可	・発電コスト高 ・騒音・排ガス
揚水発電	水力の一種、蓄電的な役割	高（短時間で出力変化）	・ピーク調整可 ・即応性◎	・立地制限あり ・建設コスト大
蓄電池	変動追従用、短時間用途が主	高	・即応性◎ ・系統安定化に有効	・コスト高 ・長時間出力が不可
水素発電（将来型）	再エネ余剰電力活用型（将来型）	中〜高（設計による）	・CO_2フリー ・長期貯蔵が可能	・低効率 ・インフラ整備未整備
風力発電（陸上）	自然変動型、地域差大	低	・CO_2ゼロ ・運転コスト低	・出力不安定 ・騒音、景観の問題
太陽光発電（メガソーラー）	変動型（昼間限定）	低	・CO_2ゼロ ・設置が容易	・夜間発電不可 ・設備利用率が低い

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電源種別	設備利用率（%）	LCOE（円/kWh）	FCOE（円/kWh）	安全性・リスク	立地制約	導入の柔軟性
原子力	80	11	14	高（事故時大規模）	高（冷却水・地質）	低（大型・規制厳）
石炭火力	70	13	18	中（公害・微粒子）	中（輸送・排ガス）	中
ガス火力（CC）	60	12	16	中（漏洩・爆発）	低	高
ディーゼル	10	30	40	低〜中	低	高
揚水発電	10	20	32	低	高（地形・水資源）	低
蓄電池	5	25	38	低	低	中
水素発電（将来型）	30	30	45	中（H2 漏れ）	中（設備・貯蔵）	中
風力発電（陸上）	25	11	22	低	高（風況・地形）	中
太陽光発電（メガソーラー）	17	10	28	低	低（平地）	高

??????????LCOE?FCOE????????????????????
?LCOE?Levelized Cost of Electricity?????????
?FCOE?Full Cost of Electricity?????????

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

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?? ?? · Thursday, April 3rd, 2025

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?? ?? · Wednesday, April 2nd, 2025

mesh cube/iStock

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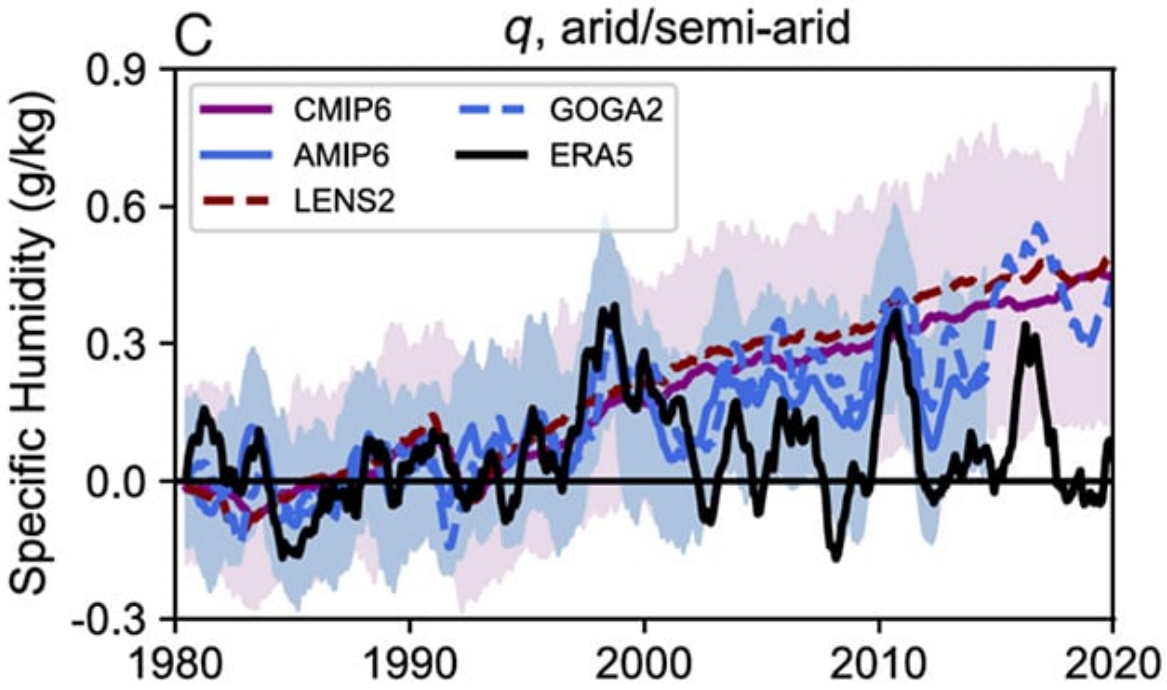

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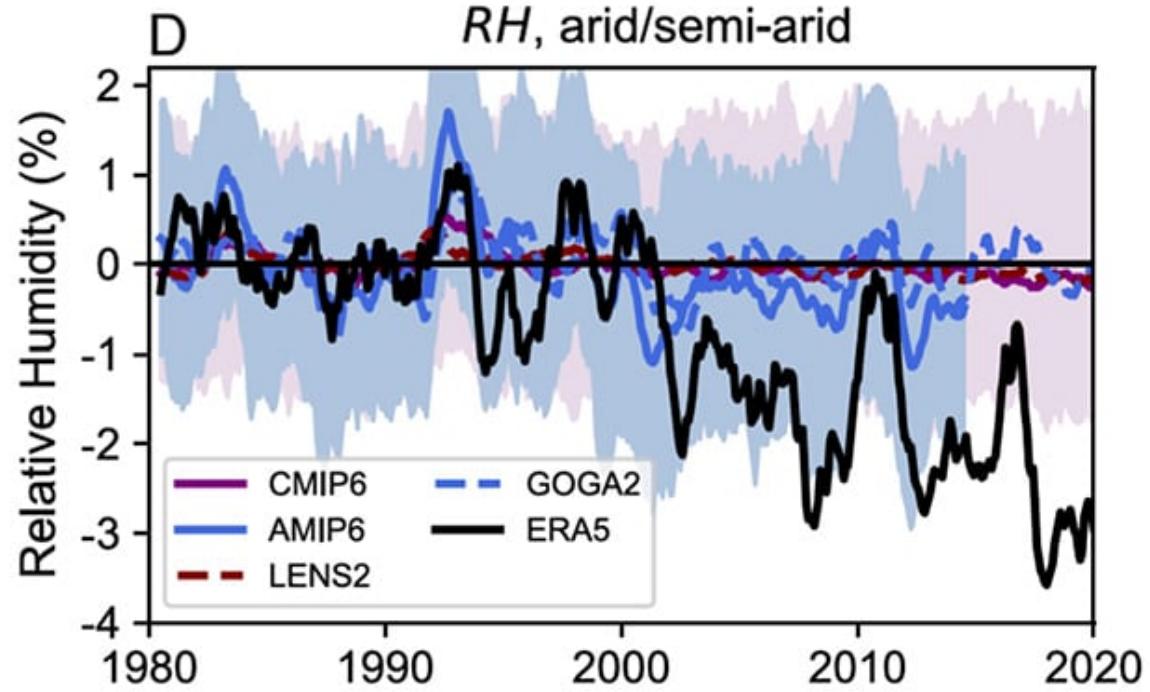

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?? ? · Tuesday, April 1st, 2025

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IRA?????????????????21??7?8??CCUS??

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

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?? ?? · Tuesday, April 1st, 2025

ByoungJoo/iStock

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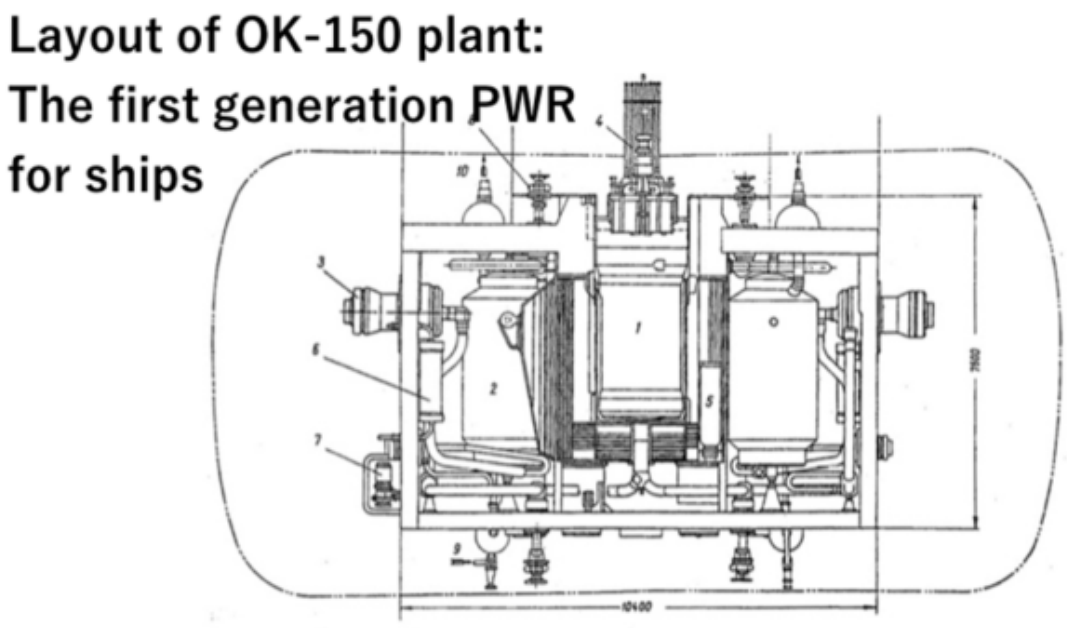

Fig. 6. Layout of the OK-150 plant. 1: Reactor, 2: Steam generator, 3: Main circulation pumps, 4: Control rod drives mechanism, 5: Filter, 6: Cooler, 7: Emergency cooling pump, 8: Primary circuit pressure relief valve, 9: Feedwater inlet, 10: Steam outlet (Reistad et. al., 2006).

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Nuclear Naval Propulsion

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Posted in ???, ?? | No Comments »

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wen ya/iStock

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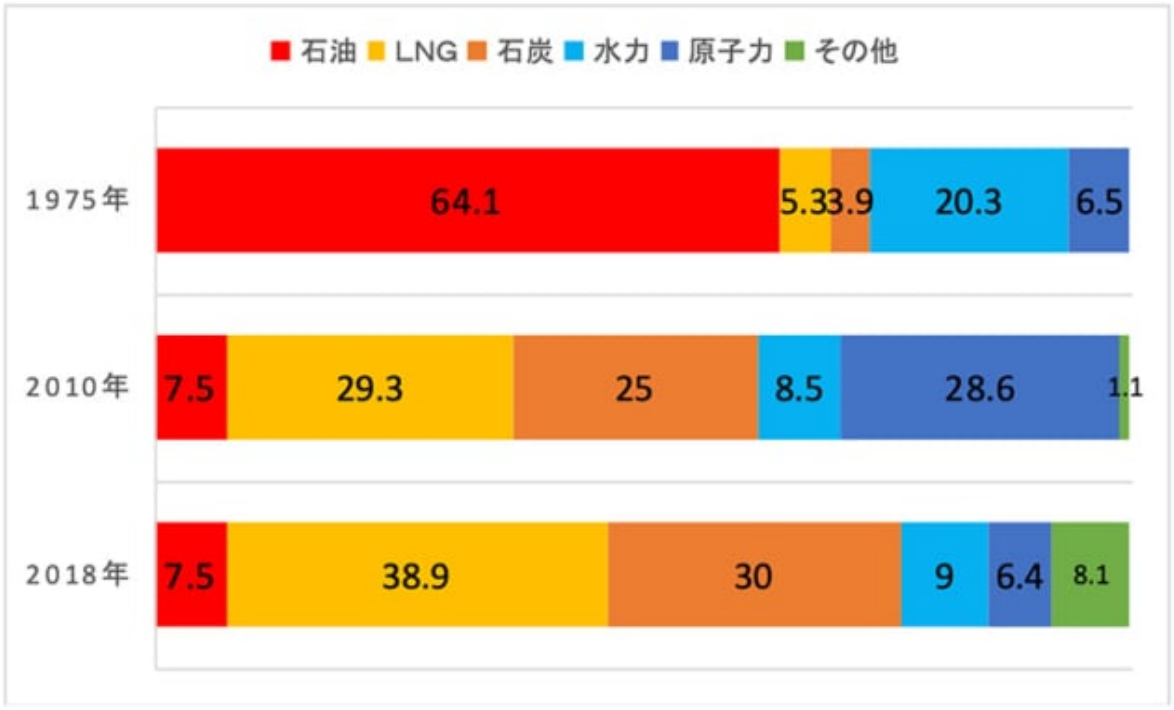

?1 ??????????????????

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?7?????????????2040???????3?5??LNG???????????
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??2030????80%
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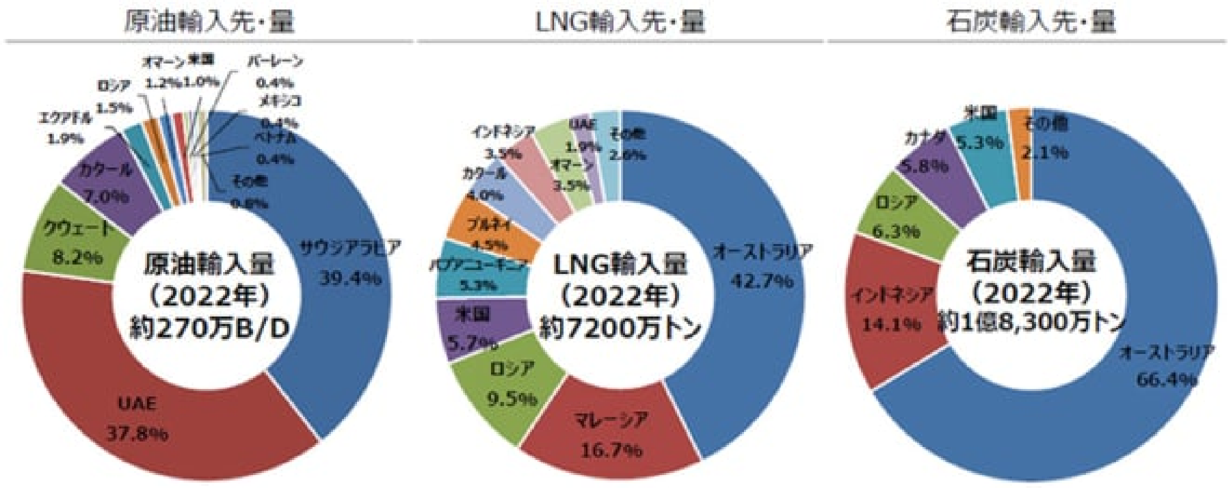

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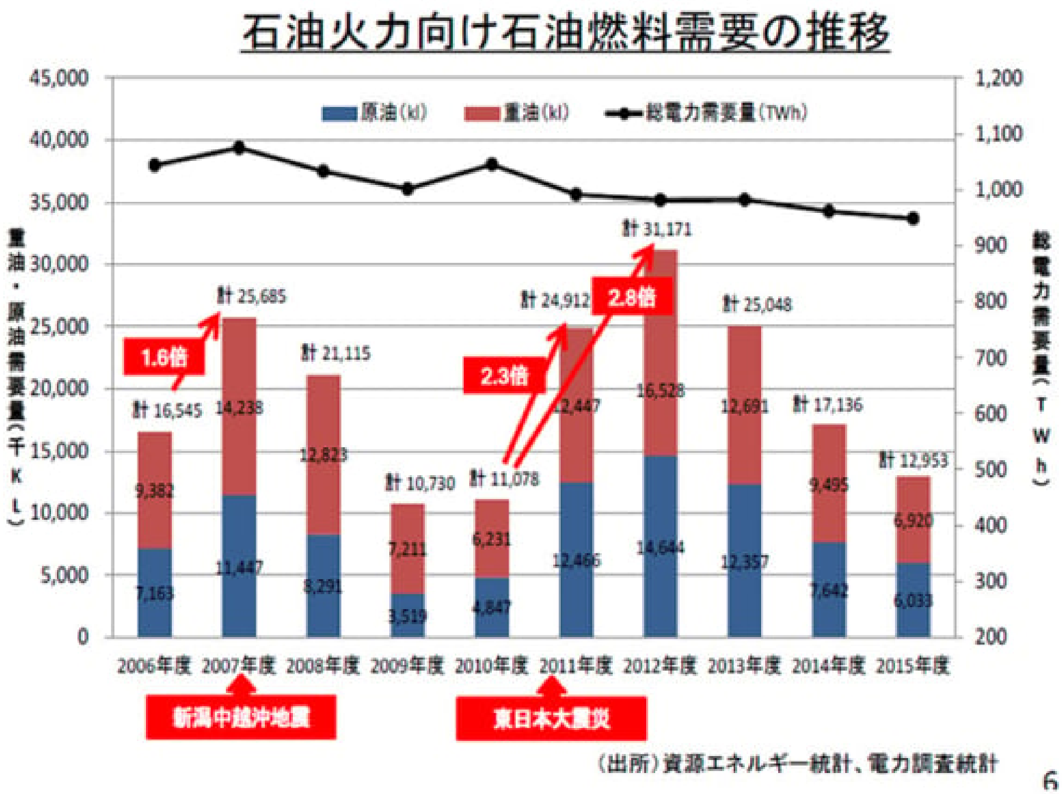

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