

Global Energy Policy Research | GEPR

GEPR?
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http://agorajp.com/
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202210098

?? - Saturday, January 7th, 2023

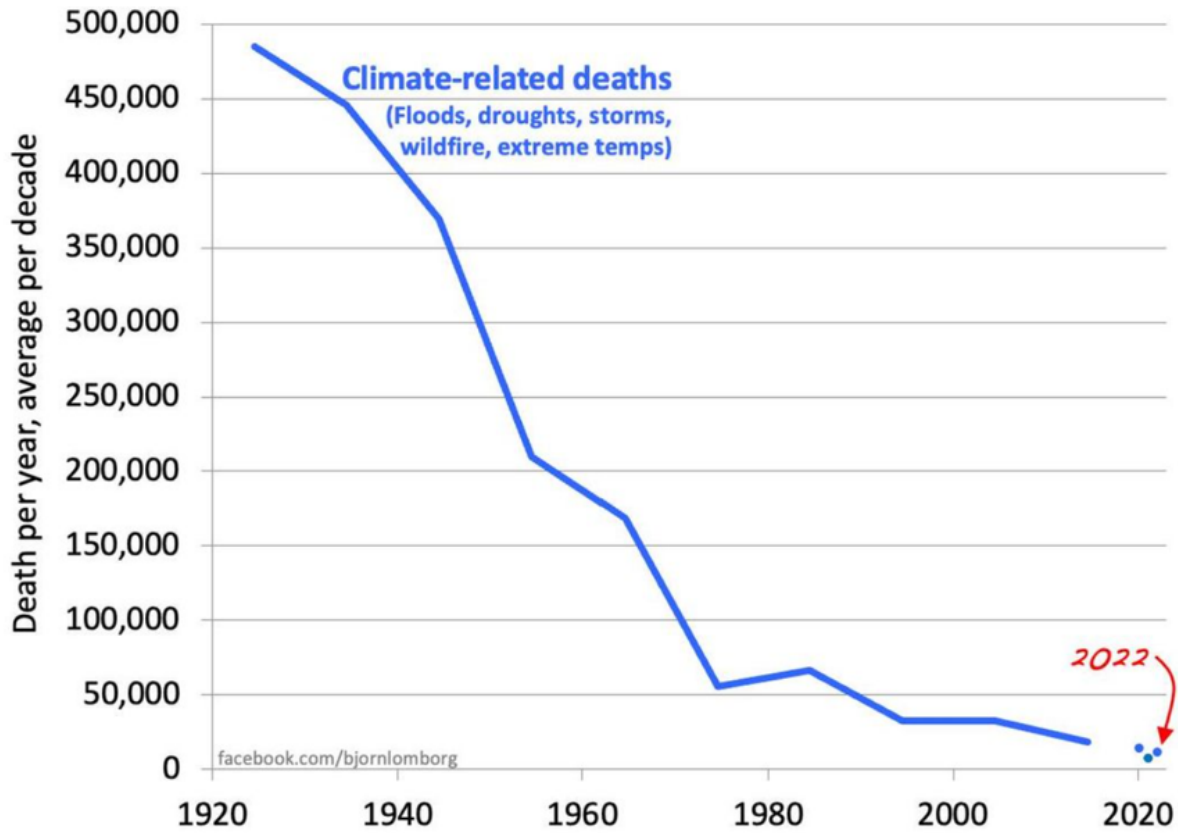


Devrimb/iStock

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1920??29???2010??2019??3???

Climate-related Deaths: 1920-2022

Deaths have declined precipitously because richer and more resilient societies reduce disaster deaths and swamp any potential climate signal



facebook.com/bjornlomborg
 OFDA/CRED International Disaster Database, <https://public.emdat.be>, deaths averaged over decades 1920-29, 1930-1939, ... 2010-2019 placed at decadal midpoints (1924.5, 1934.5 etc), with annual data for 2020, 2021, and 2022, accessed January 1, 2023. Likely database will be updated further, so the current 2022 estimate is probably low. 2022 at 14,920 dead, 2021: 7,705, 2022: 11,873. Update of Fig. 17 from <https://www.sciencedirect.com/science/article/pii/S0040162520304157>.

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2022??2022??
 ??????100????98??????????????

??EM-DAT?????????

?????1920??

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Posted in ???, ????? | No Comments »

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?? ? · Saturday, January 7th, 2023



Natali_Mis/iStock

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2.3.???

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??????2040??
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????Typhoon????????????21t??4t????????????????????49MWh????????????????????
?????????180Wh/kg????????????????13??272

t????????49×10⁶Wh/180×10³Wh/t?272.2t????????????

????????TV??
70??=272/4??
????????????????????????

????????????6.2m×?2.5m??4667kg?300????????????S??????????2100kg?100kWh?????300?
????????????

?????????2.2?????????220kWh???1m²?1
50W?????6.2m×?2.5m????????????????95?????220kWh/(0.15kW/m² × 6.2m × 2.5m)?94.6
h????????95????????????1????????????

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??3.1. ??????

2.4.????????????????????

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?????????2200????????????????????????????????????2600????????????????????????????????
??1?1?2????????????????????????????
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??3????????

2.5.????????????????????

????????????????????????489.7EJ?60??=293.8EJ??CO2????????????????????????9320GW??????
????40????????????23300GW????????????????????28????????????????????????????
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??2021?11????????????COP26????????????????
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????????????????????????2022?3????8.6%????7?720????????????2022????
????????????????????

? ?????2022????????????1.2%????80????????????????????2????3????4????

????????????????2021??3.54EJ?2019??2.27EJ?56????????????8.47%????
????????24????????2.4%????????????

??2050????2070????????
????2050????????????

3??????????

????????????????????99.7%????ICE?internal combustion engine????95????

????????????????BEVs?battery electric vehicles????PHEVs?Plug-in hybrid electric vehicles????HEVs?hybrid electric vehicles????

? ?????PHEV?HEV????????????

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????????????????BEVs??
????FCV??1100????????????????????????????????

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????????????????????EV?PHEV??
??700????????????FCV????????
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??BEVs????????????????????????????????LDVs?light duty
vehicles????????????????45??
????????????????????????????

??????A320????????????????????????????????????19????????????????????????

?????13??LDVs??????2040?????17?19?????????????????????3600??LDVs?????2021????B
EVs?36????1%????????????????LDVs????????????????100????????????LDVs????????
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2021????????1250??(??)BEVs??????70????????????????????????????????????
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Posted in ??, ????? | No Comments »

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?? ?? · Friday, January 6th, 2023



runeer/iStock

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Our climate is heating rapidly. Floods, droughts, heatwaves, extreme storms and wildfires are going from bad to worse, breaking records with ever alarming frequency. Heatwaves in Europe. Colossal floods in Pakistan. Prolonged and severe droughts in China, the Horn of Africa and the United States.

There is nothing natural about the new scale of these disasters. They are the price of humanity's fossil fuel addiction. The number of weather, climate and water-related disasters has increased by a factor of five over the past 50 years.



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Wikipedia??

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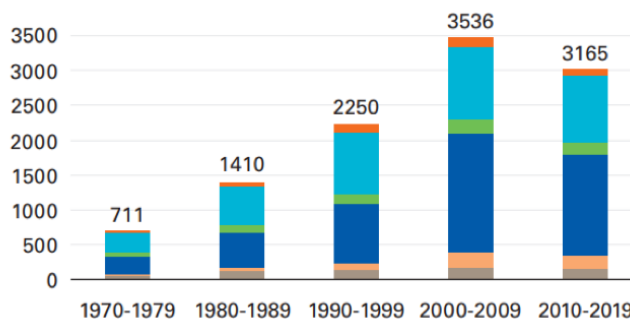
??W
MO????????????????????IPCC??????????



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?????????50??5??
 ??????????????????????????????

(a) Number of reported disasters
 Total = 11 072 disasters



■ Drought ■ Extreme temperature ■ Flood ■ Landslide ■ Storm ■ Wildfire

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Posted in ???, ????? | No Comments »

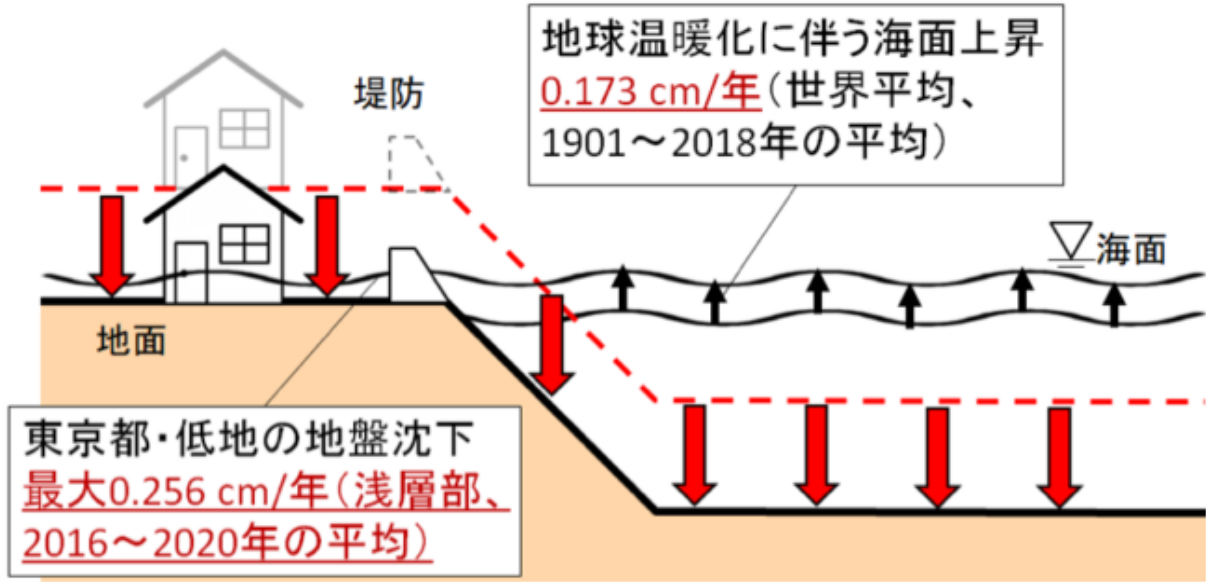
????????????????????????????????????

?? ?? · Tuesday, January 3rd, 2023

1906~2019????????????????????????????????2020????????????????????????????????

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??2??



2

????????????????????????????????2022????????????????4????1????????????????????????????IPCC
??6????????1?????????

????????????????????????1901~2018????????????????1????0.173
cm??2016~2020????????1????
0.256 cm????????????????????????

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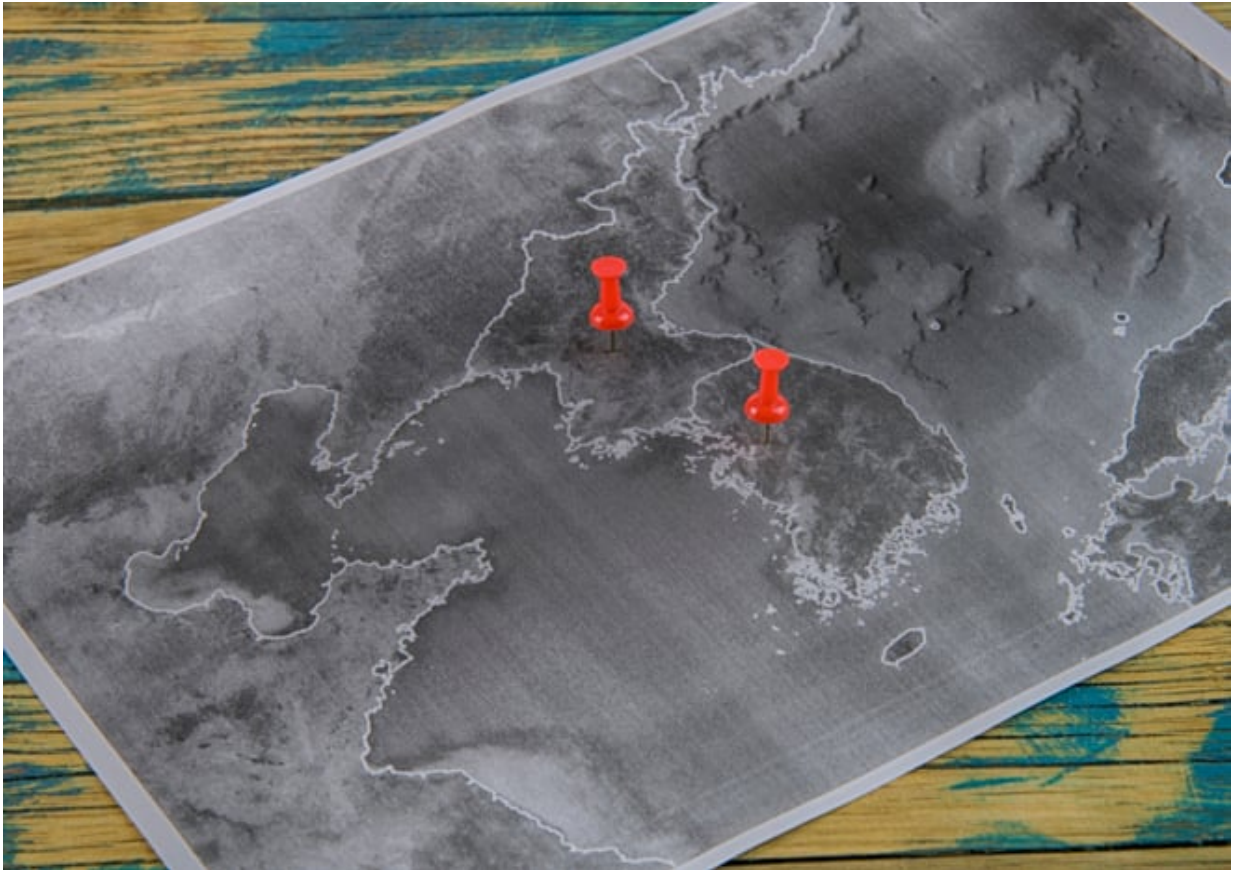
????????????

????????1891~1970?????4.5
m??

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?? ?? · Wednesday, December 28th, 2022



Perytskyy/iStock

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??NPT????????????????????
???VOA Korea 2022?12?23??

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????????????BTS??????????

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dzika_mrowka/iStock

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1??300??

??????2018??K????????????????BTS????????????????????T????????SNS????????TV????????
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??NPT????????????????????NPT??NPT????
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Posted in ??, ????????? | No Comments »

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

?? ?? · Sunday, December 25th, 2022



gremlin/iStock

WEF??2050????????????????????????????

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????????????????????100????250??80????????

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?????6,000??40??80????????????????????????????
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????100????1800??

??200????????????????????
????????????????????????????

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ESG??????????

WEF?????ESG?????????????????????????ESG??
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???ESG????????????????????
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ESG??????????

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

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?? ?? · Saturday, December 24th, 2022

EU????????????12?18?????EU????????????????????????????????????EU????????????????
????????????????????

????EU?CO₂??????4?????EU-
ETS????????????????2030????????????43??62????????????????????????????????????
????????????????????????????2026????????????????????????

????26??2.5????????27?5.0??28?10??29?22.5??30?48.5????????????2034??100????????????????
????????????????????????



Galeanu Mihai/iStock

??EU????????????CO₂????????????
??EU????????????????
????????????

??EU????????????????
????????????????CBAM????????????????

CBAM??EU??CO₂????EU??ETS????????????

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

????????????????CO2??EU????????????????
??WTO????????????????????
????????????????????

????????????2023?10????25????15??202
6????????????????????????EU????26??
????????????????????

????????????????CBAM????????????????????Eurofer????????????????????????????????????450????????????
????????????????????????????????????

????????????????????????CBAM????EU??EU????????????????????
??EU??2026????EU????????????????????????????

????????????????EU??EU????????????
????????????????WTO????????????????????????????????????

????????????????????????2025????????????????????????????????????WTO????????????????????????????????
????????????????????????????WTO??EU????????????
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?????EU??CBAM????????????
??CBAM????????????

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

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?? ? · Friday, December 23rd, 2022



Artur Nichiporenko/iStock

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2.1. ??????????????????

??????1??????489.7 EJ??60??CO2??

Table 1. Primary energy and electricity sources in exajoules, EJ (10¹⁸ joules) and installed wind and solar capacity in GW for 2021 [7]. Electricity generation converted to EJ from TWh. 1 EJ= 277.8 TWh.

Country	World	China	U.S.A	India	UK
Oil, EJ	184.21	30.6	35.33	9.41	2.5
Natural Gas, EJ	145.35	13.63	29.76	2.24	2.77
Coal, EJ	160.1	86.7	10.57	20.09	0.21
Total fossil fuel, EJ	489.66	130.93	75.66	31.74	5.48
Actual delivered Wind, EJ	6.7	2.36	1.38	0.245	0.232
Actual delivered Solar, EJ	3.72	1.177	0.594	0.246	0.045
Nuclear, EJ	25.31	3.68	7.4	0.4	0.41
Hydro, EJ	40.26	12.25	2.43	1.51	0.06
Other, EJ	29.5	7.253	5.306	1.289	0.953
Total Primary Energy, EJ	595.15	157.65	92.97	35.43	7.18
Electricity Generation					
Installed wind capacity, GW	824.9	329	132.7	40.1	27.1
Installed Solar Capacity, GW	843.1	306.4	93.7	49.3	13.7
Total electricity generated, EJ	102.47	30.72	15.86	6.173	1.116

Other includes bioenergy, geothermal etc.

?1

??1 EJ=277.8 TWh ???1 kWh=860.6 kcal=3597kJ??

????????1kWh=2074kcal=8669kJ????????????????MJ????????kJ????????????????????????????????

??????????860.6 kcal?????1kWh????????????1kWh????????????2074kcal??1 kWh=860.6kcal????????????????????2.4??2?????????17%? 34%??

??2?3??

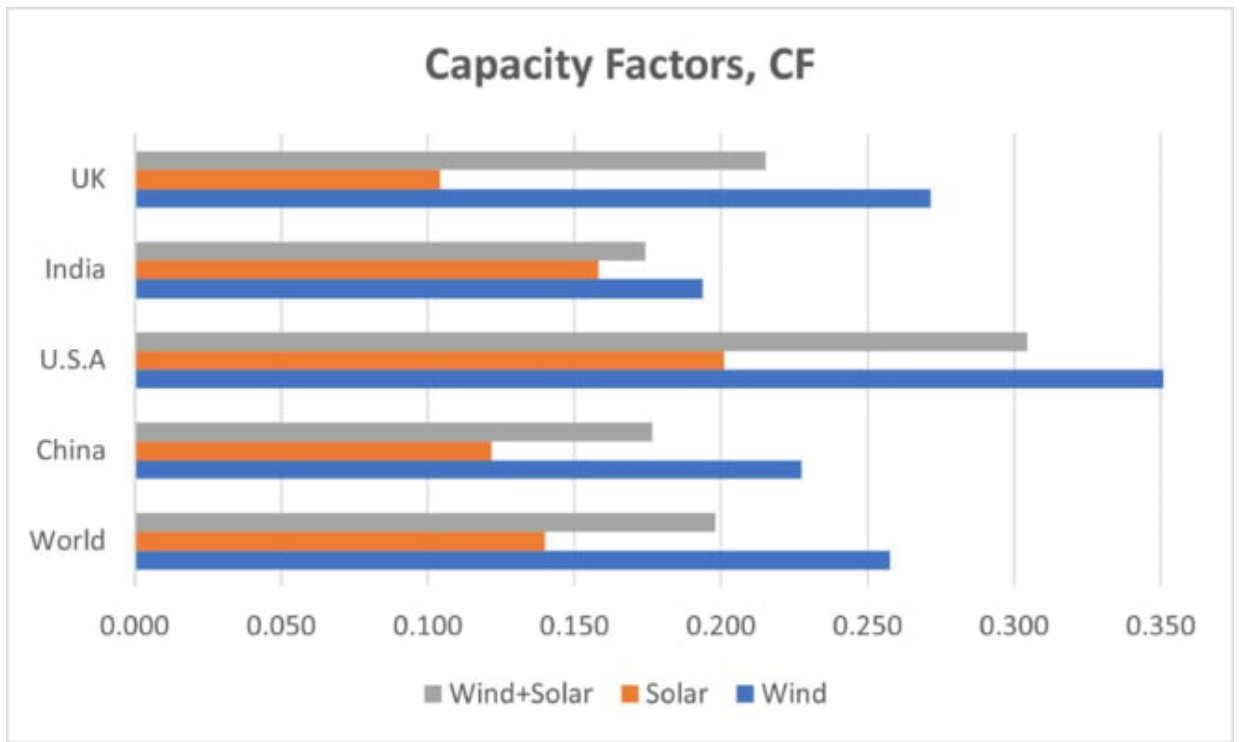
????????489.7EJ??60??=293.8EJ??CO2??60??CO2?????
????????????40??CO2????????????????????????????????
????????????????????????

????293.8EJ????????????????????????????9320GW??1?????????
????????????824.9

GW????843.1GW????1668GW??102.47EJ????????????????????1668GW/102.47EJ ×
293.8EJ?4782GW??2????????????2????????????1/2????????
????????????

????????9320GW??3GW??3110????????????GW?100?kW????????100?kW????3????????311
0????????????????2021????????????????436????????396GW????????????????

????????????????????????4????Capacity
Factors????????????25????????????40????????????9320/0.4?23300
GW????????????????????824.9 GW??28????



24

????????????????????60??

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

????????????4000?6000??/kW????4000??/kW????279GW????????????1????????
????????????????????????

????????640MWh????2????????????????????8GW?5????????????????????
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2.2. ?????????????????????

????????????????23300GW????????????????????????????????????

- 2500×10⁶ tons?
- 12000×10⁶ tons?
- 70×10⁶ tons?? 2021????????0.21??
- 1.63×10⁶ tons?
- 2.20×10⁶ tons?

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

????????????????23300GW????????????????60% ?????????????????????
????????????CO2??CO2????????
????????????????????

2025??
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2.3. ?????????????????????????????????

????????????????CO2????????????????CO2?????e-
fuel????????????44????????????44????????
????????????

Jet/Kerosene????????10.0379EJ????14EJ????44?e-
fuel????14/0.44?31.8?32EJ????1000GW????0.4????2500
GW????

	Million barrels of oil equivalent, MBOE	Energy, exajoules, EJ	Volumetric lower calorific value, MJ/litre	Fuel Volume, billion litres
Gasoline	26.26	0.1607	32.5	4.94
Diesel/Gasoil	28.12	0.1721	36	4.78
Jet/Kerosene	6.2	0.0379	35	1.08
Residual Fuel Oil	6.2	0.0379	38	1.00
Other	32.75	0.2004		
Total	99.53	0.6091		

????????????????1??????1668GW?102.47EJ????????????32EJ????1668/102.47×32?520.9
GW??

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

????????????e-fuel????????????????????CO2????????????????????????????e-
fuel????????????????????

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

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

????????????????1?3??CO2????192????0.12ha????????
??36?40?????1
ha????CO2??8.8????0.12ha??3??1ha??25????3????
??????2??????1??6.2 MBOE????2263 MBOE????CO2????9.90??990×10⁶
tons????????

0.12 ha × 990×10⁶ t/? ÷ 3 t/? 39.6×10⁶ ha

????????(489.66 EJ)????**2.8%**??????????(35.7×10⁶
ha)????3????

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

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

?? ?? · Wednesday, December 21st, 2022

????????CO2????10????CO2????CO2????10????
????2030??CO2????

????????CO2????7.1????

????????HTT????HTT????

????5kW?PV????4kWh????

	導入コスト	自家消費	年間メリット	試算諸元	回収年
PVシステム	150万円(5kW) 家庭用のPVシステム導入費30万円/kW、出力5kWと仮定。 ^[1]	30% 現在の住宅用太陽光発電の平均的な自家消費率実績 ^[2]	FIT期間中 12万円/年 FIT以降 6万円/年	資源エネルギー庁「地域活用要件について」(R1)に準じて試算 出力5kW × 8,760h/年 × 設備利用率14% ^[3] = 発電6,132kWh/年 ①自家消費分のメリット 6,132kWh × 30% × 系統単価24.76円/kWh ^[4] = 45,548円/年 ②売電分のメリット(FIT期間中: ~10年) 6,132kWh × 70% × FIT単価(R1)21円/kWh = 90,140円/年 ③売電分のメリット(FIT終了後、電力会社と個別に契約) 6,132kWh × 70% × 想定買取価格8円/kWh ^[5] = 34,339円/年 ④運転維持費(定期点検・パワコン交換1回) ▲3,490円/年・kW ^[6] × 5kW = ▲17,450円/年	15年
+蓄電池	75万円(4kWh) システム導入費18.7万円/kWh ^[7]	+20% ^[8]	3万円/年	①追加の自家消費分のメリット(充放電効率90%と仮定 ^[9]) 発電電力量6,132kWh/年 × 充放電効率90% × 自家消費20% × 系統単価24.76円/kWh = 27,329円/年 ②ピークカット+調整力運用のマルチユースを行った場合のメリット想定: 2,400円/年(600円/年・kWと仮定 ^[10]) ※夜間へのピークシフト運用は併用が難しいとして考慮せず	25年

??????????

??????????CO2?????1kWh????177kg-CO2????????Kawamoto????3??

??5kW????????CO2?????

177×5=885kg

????????????CO2????????????????????2.19kgCO2/Wp????5kW????????

2.19×5=10.95tCO2

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

0.885/10.95=8.08%

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CO2????????8.08%????????

????????CO2????????7.1????????

7.1×(1+8.08%)=7.7

????????????????????CO2????????7.7??????

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??CO2????????
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?????Orthosie/iStock

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

CO2削減目標10%

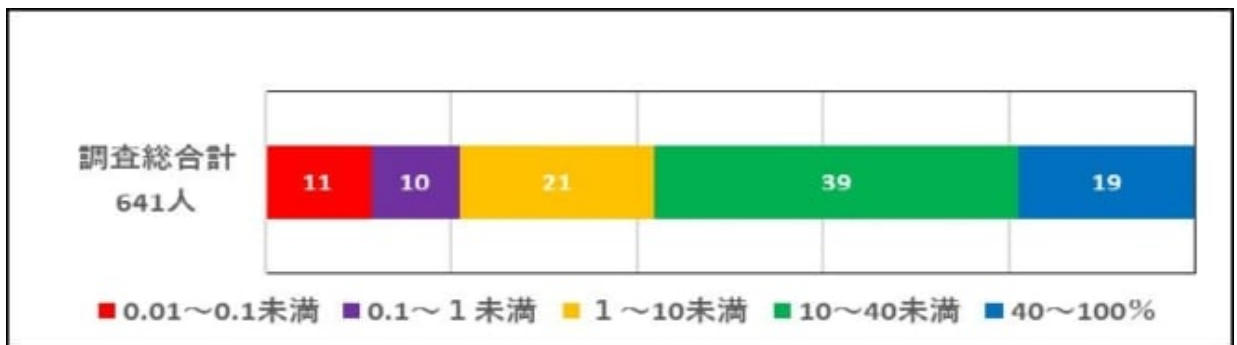
2022年12月20日 星期二



artisteer/iStock

CO2削減目標10%の達成状況

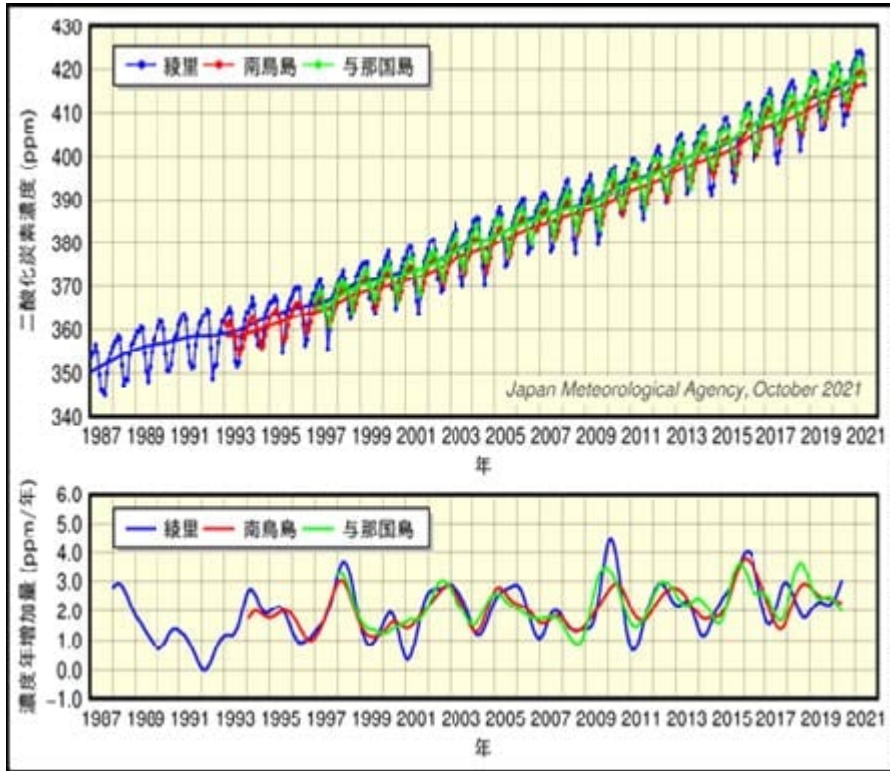
2021年22%削減目標を達成した企業は641社、削減率10%未満の企業は11社、削減率0.1%未満の企業は10社、削減率1%未満の企業は21社、削減率10%～40%未満の企業は39社、削減率40%～100%の企業は19社であった。



削減率80%以上の企業は20社、削減率60%以上の企業は6社、削減率78%以上の企業は21社、削減率1%未満の企業は10社であった。

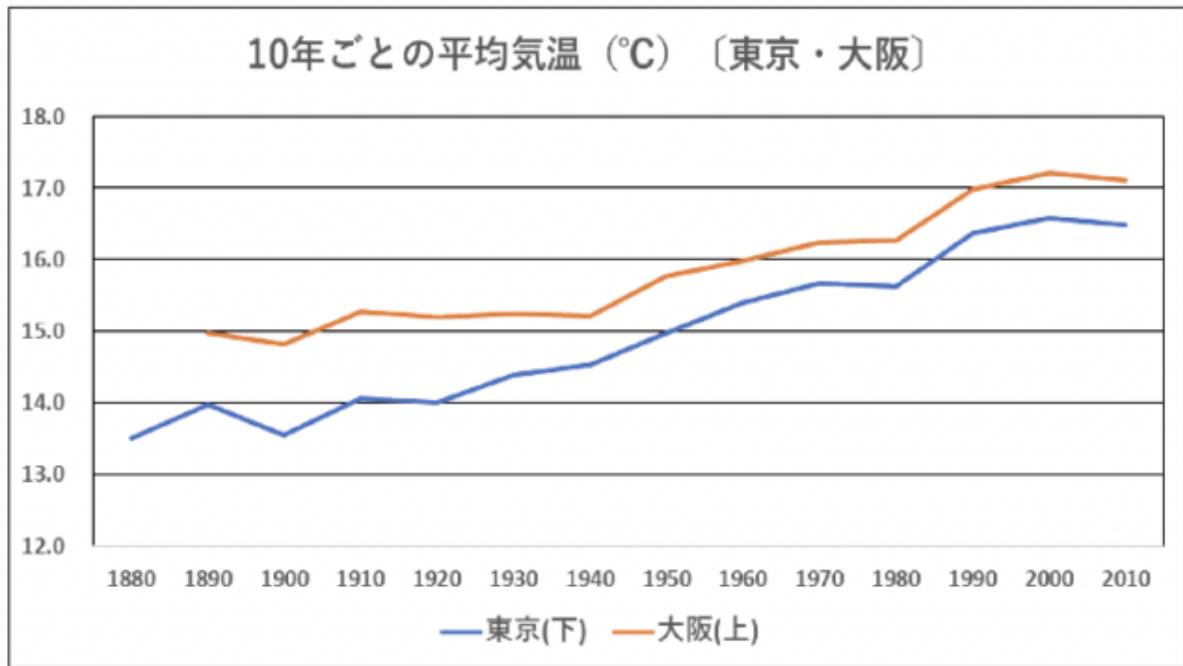
削減率10%未満の企業は11社、削減率0.1%未満の企業は10社、削減率1%未満の企業は21社、削減率10%～40%未満の企業は39社、削減率40%～100%の企業は19社であった。

2000????CO₂????????????????????????????????



????JMA?HP??????3????????????????????????????????CO₂??1987??
 ?????1958??????????????????63??1958?2021??99ppm?316?415ppm????????????????????????1.57ppm/?
 ?????????????????30??CO₂????????????????????????????????

????????????????????????????????HP????????????>????????????>????????????????????????????????????10????
 00?09????????????????????????????????????



????1940??2000????????????1980??1990????????????????????????????2000????????????????????????????????
 ?????5????????????????????????????????

????????CO₂??
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?????????Spiral **of**
Silence???
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2000?????IPCC????????????????????????????COP????????????????????
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?? ? · Monday, December 19th, 2022

????????COP????????NGO????????????????????COP????????????????????

????????????6??
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COP25??
????????????????????1????????????????????NGO????????????????????
GO????????????????????????????

????????????????????????????????????2????????????????????????
????????????????????NGO????????????????????????

COP27?????11?9??
????????????????????????????????NHK????????????????????



NHK??

<https://www3.nhk.or.jp/news/html/20221110/k10013886821000.html>

COP27??

- 11?9??
- 11?10??
- 11?11??UAE/????????????????GECF????????????Energy Transition Accelerator????????????????????????????????????
- 11?12????????????????
- 11?14????????????????2024????????????????
- 11?15????2030?BAU????????????????30??????
- 11?16?????1????????????????
- 11?17????????????????????????????????
- 11?18????????EU????????????????????????Colossal Fossil??????

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??NGO?????????????????COP26????????????????????

??G7????????????????NDC????????????????
????????????????????COP27??

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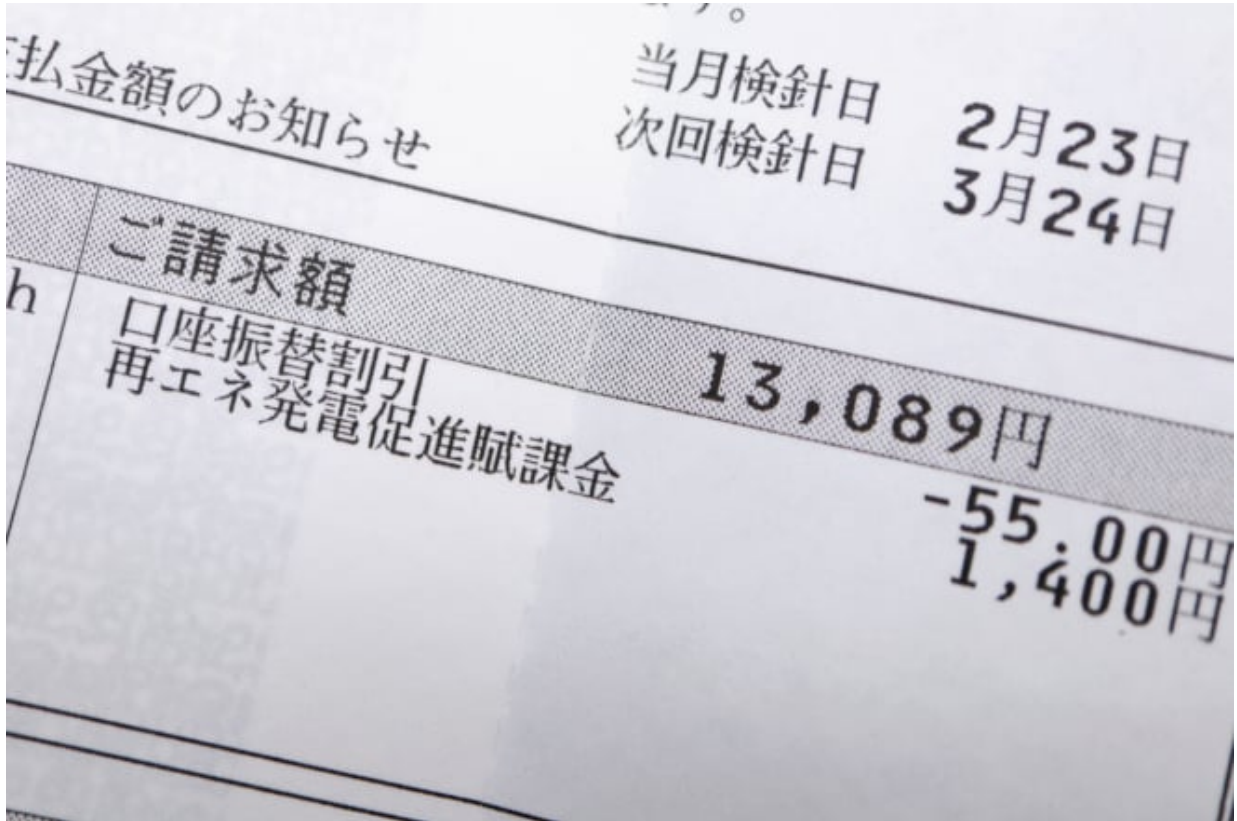
?NGO????NGO??NGO??
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Posted in ???, ????? | No Comments »

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?? ??? · Thursday, December 15th, 2022



Yusuke Ide/iStock

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???CO2??FIT??2012?????
 ???2021????????????????????16.3????????????????????0????????????????1
 3????????????????????

?FIT??
 ?????????????????????

電気ご使用量のお知らせ		いつもご利用いただきありがとうございます		電気料金領収証	
エネ庁 タロウ 様		ご契約番号 000-000000-0		エネ庁 タロウ 様	
●●年×月分		ご契約種別 AAA		ご契約番号 000-000000-0	
ご使用量 000 kWh		ご請求予定額 0,000円		ご契約種別 AAA	
前月指針数 000	基本料金 000円	検針月 0,000円		ご請求月×月分	
前月指針数 000	第1料金 000円	基本料金 0,000円		5/15迄経過分 000円	
差引 000	第2料金 000円	第1料金 000円		5/15迄未経過分 (5/15)	
	第3料金 000円	第2料金 000円		5/15迄未経過分 (5/15)	
	燃料費調整額 0円	第3料金 000円		5/15迄未経過分 (5/15)	
	再エネ賦課金 0円	燃料費調整額 0円		5/15迄未経過分 (5/15)	
		再エネ賦課金 0円		5/15迄未経過分 (5/15)	

再エネ賦課金

電気料金 + 再エネ賦課金 = 月々の電力会社へのお支払い

〈再エネ賦課金の算定方法〉
 (2022年5月検針分の電気料金から適用される単価)

再エネ賦課金 = ご自身が使用した電気の量 (kWh) × **3.45円/kWh**

※ただし、大量の電力を消費する事業所で、国が定める要件に該当する方は、再生可能エネルギー賦課金の額が減免されます。

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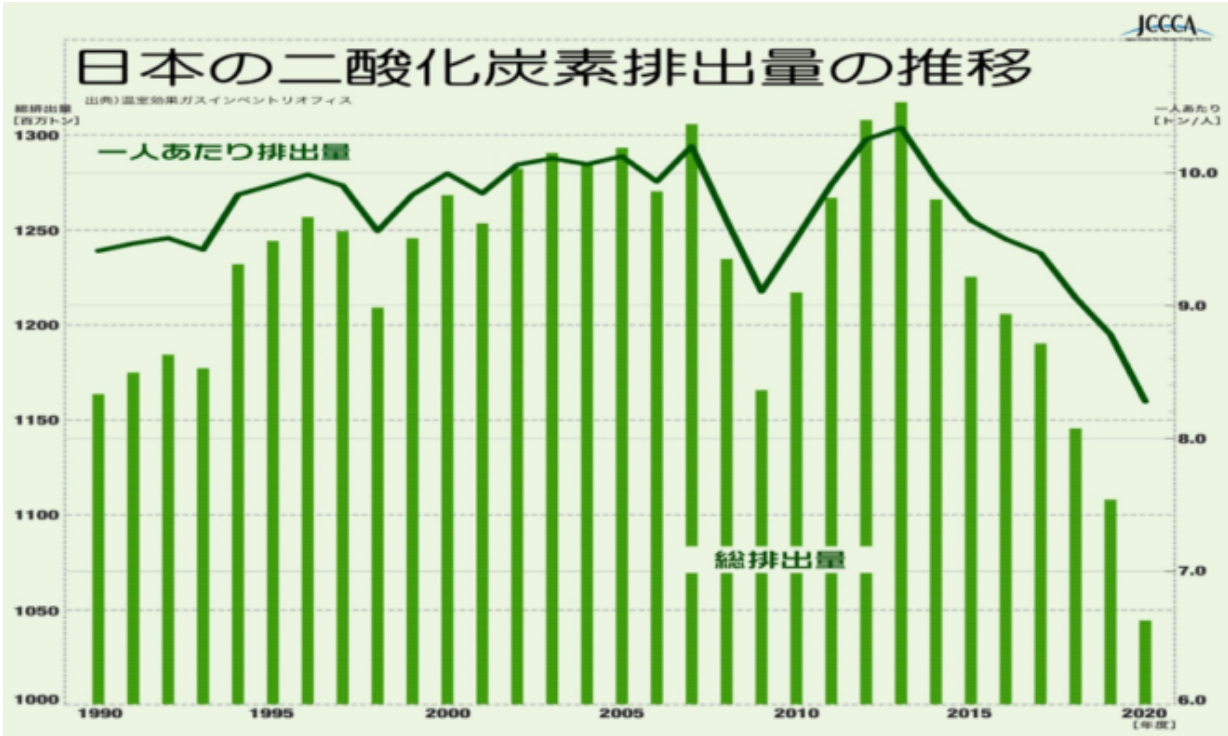
??2021????????????????6000?kW????500?kW????????????????????????????2?6000?kW??25??2021??10.2???????

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

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?? ? · Wednesday, December 14th, 2022



suken/iStock

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2022 COP27 1865=1970:31

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2022 12 2023 3 31 GDP 3 150 10

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1950=1995:130 2022 110

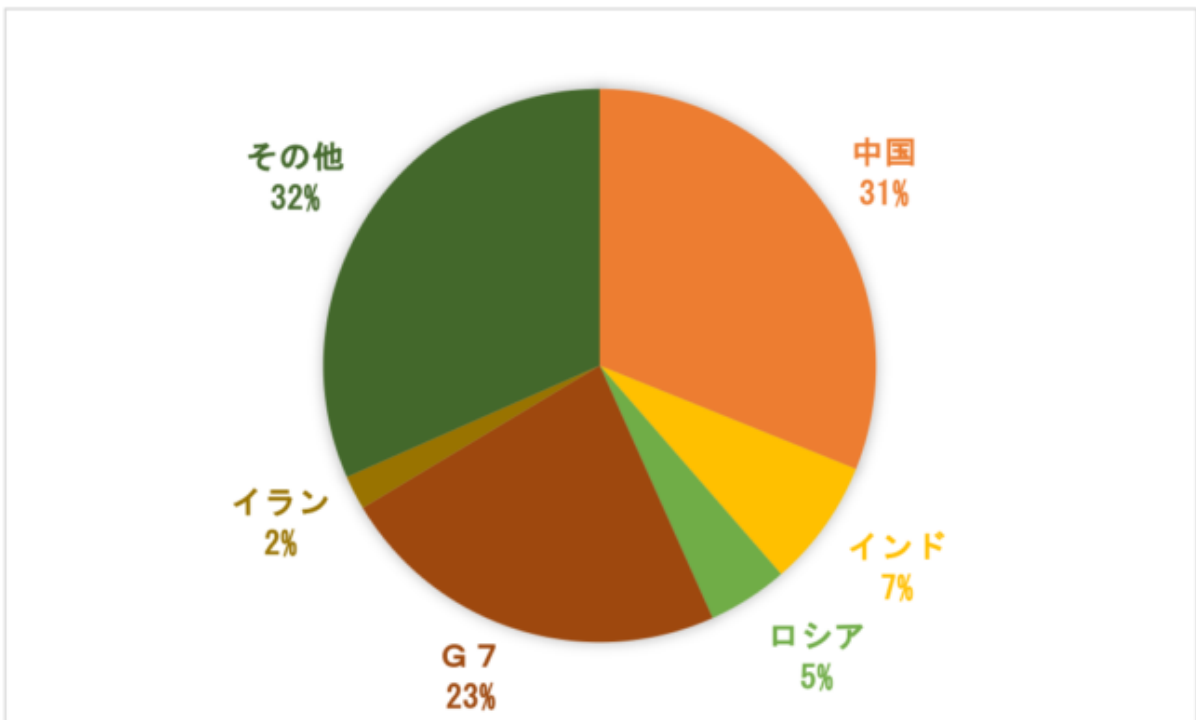
18 19

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2022 12 8 1751 10 0

16²⁾

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2021 BP

Global Note

G7

13.9 23.1 1.9 1.6 1.0 0.9 0.8
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G7 3.1 3.0 2.8
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1 (particular)

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• Bernard,C.,1865,Introduction à l'étude de la médecine expérimentale .(?1970,????????????).



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?? ?? · Tuesday, December 6th, 2022



muhammet sager/iStock

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?? ?? · Monday, December 5th, 2022



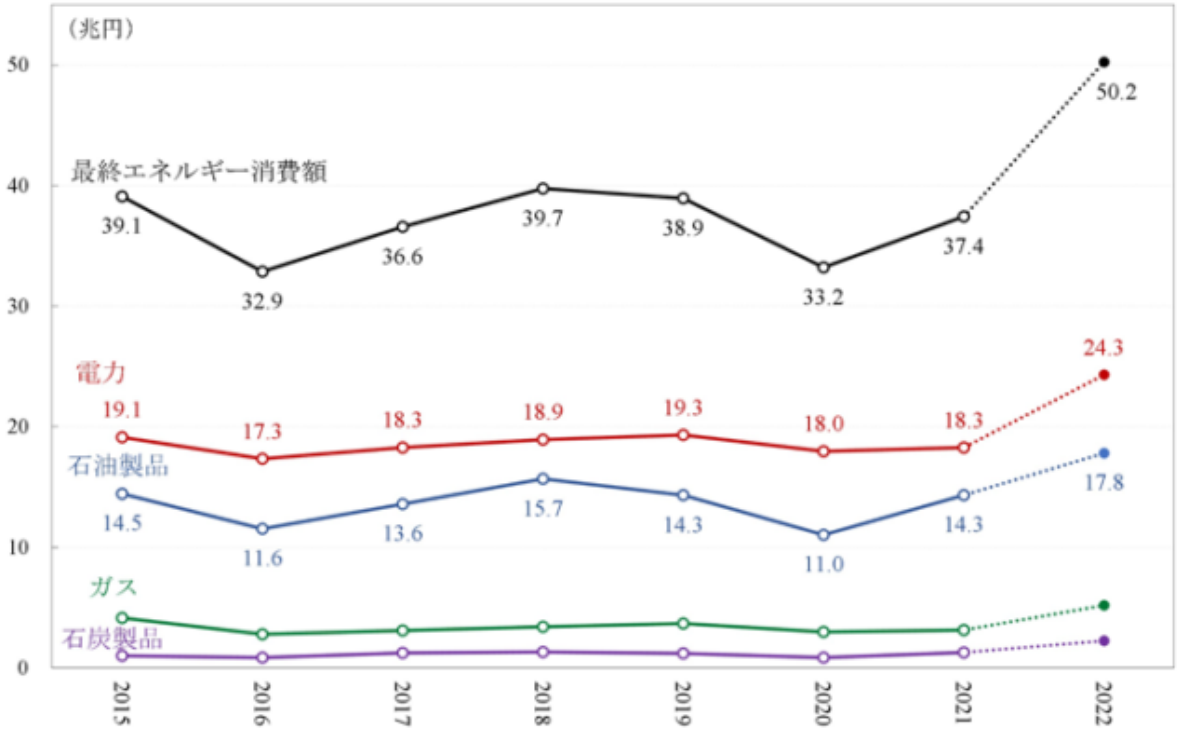
Daniele Mezzadri/iStock

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エネルギーコストの年次動向

- 2022暦年の最終エネルギー消費額（予測値）は50.2兆円、前年差で12.8兆円（前年比34.2%）の増加見込み。
- 2022暦年の電力消費額（予測値）は24.3兆円、前年差で6.0兆円（前年比33.1%）の増加見込み。



エネルギーコスト・モニタリング (ECM) ECM_JPN_202211 © 2022 慶應義塾大学産業研究所 野村研究室

単位：兆円。注：観測期間は2015年—2021年。2022年値は2022年10月値までを反映した予測値。

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

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

?? ?? · Thursday, December 1st, 2022



y-studio/iStock

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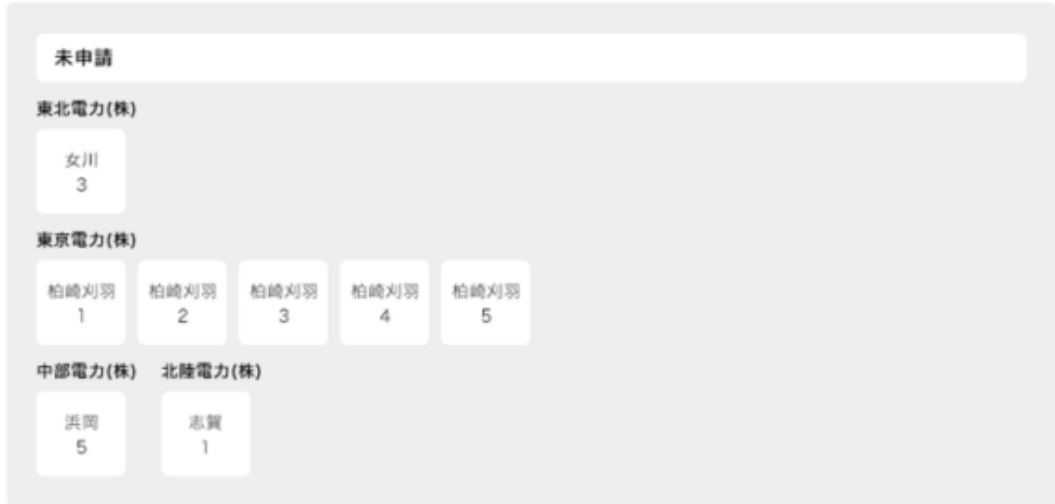
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Posted in ??????????, ??? | No Comments »

????COP??????

?? ?? · Tuesday, November 29th, 2022

COP27??COP????????????????????????C
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dinn/iStock

COP27???

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Tyranny????????????????????COP27????????COP????????????????????????????

Posted in ???, ????? | No Comments »

COP27????????????????????

?? ?? · Friday, November 25th, 2022

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metamorworks/iStock

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	2020年	2030年(1)	設備稼働年数	設備利用率	2030年(2)
原子力	11.5円	11.7円	40年	70%	14.4円
太陽光（事業用）	12.9円	8.2～11.8円	25年	17.2%	18.9円
太陽光（住宅用）	17.7円	8.7～14.9円	25年	13.8%	
陸上風力	19.8円	9.9～17.2円	25年	25.4%	18.5円
洋上風力	30.3円	26.1円	25年	30%(33.2%)	
石炭火力	12.5円	13.6～22.4円	40年	70%	13.9円
LNG火力	10.7円	10.7～14.3円	40年	70%	11.2円

2020年2030年
 2021年2022年
 2023年2024年
 2025年2026年
 2027年2028年
 2029年2030年

2030年

2030年2030年
 2030年2030年

2030年2030年
 2030年2030年

	原子力発電	石炭火力発電	LNG火力発電
CO ₂ 対策費	0	3.9	1.8
社会的費用	1.9		
（事故リスク対応費用）	0.6		
（政策経費）	1.3		
発電原価	9.6		
（燃料費）	1.7	4.2	6.4
（追加的安全対策費）	1.3		
（運転維持費）	3.3	2.3	1.2
（資本費）	3.3	2.0	1.3
合計	11.5円kWh	12.5円kWh	10.7円kWh

2030年

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COP27????????14????????

?? ?? · Wednesday, November 23rd, 2022



imagedepotpro/iStock

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COP27?? “????” ??????????NHK?

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COP27????????

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The cover decision, known as the **Sharm el-Sheikh Implementation Plan**, highlights that a global transformation to a low-carbon economy is expected to require investments of at least USD 4–6 trillion a year. Delivering such funding will require a swift and comprehensive transformation of

??4?6?????????GDP??

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22. *Notes with grave concern*, according to information in the contributions of Working Groups II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, the growing gravity, scope and frequency in all regions of loss and damage associated with the adverse effects of climate change, resulting in devastating economic and non-economic losses, including forced displacement and impacts on cultural heritage, human mobility and the lives and livelihoods of local communities, and *underlines* the importance of an adequate and effective response to loss and damage;

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and also welcomes the adoption of decisions -/CP.27¹² and -/CMA.4,¹³ on matters relating to funding arrangements responding to loss and damage associated with the adverse effects of climate change;

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30. *Highlights* that about USD 4 trillion per year needs to be invested in renewable energy up until 2030 to be able to reach net zero emissions by 2050,¹⁸ and that, furthermore, a global transformation to a low-carbon economy is expected to require investment of at least USD 4–6 trillion per year;¹⁹

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32. *Notes with concern* the growing gap between the needs of developing country Parties, in particular those due to the increasing impacts of climate change and their increased indebtedness, and the support provided and mobilized for their efforts to implement their nationally determined contributions, highlighting that such needs are currently estimated at USD 5.8–5.9 trillion²⁰ for the pre-2030 period;

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2030????????6????????????????2024????2029??6????????????????1????????????

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7. *Decide to establish new funding arrangements* for assisting developing countries that are particularly vulnerable to the adverse effects of climate change, *in responding to loss and damage, including* with a focus on addressing loss and damage by providing and assisting in *mobilizing new and additional resources*, and that these new arrangements complement and include sources, funds, processes and initiatives under and outside the Convention and the Paris Agreement;

8. *Also decide*, in the context of establishing the new funding arrangements referred to in paragraph 2 above, to *establish a fund for responding to loss and damage whose mandate includes a focus on addressing loss and damage*;

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Committee?????????COP28??10?????????14?????????

III. Composition

4. The Transitional Committee shall have 24 members, to be nominated no later than 15 December 2022, comprising 10 members from developed country Parties and 14 members from developing country Parties, with geographical representation as follows:

- a) Three members from Africa, including a representative of the President of COP 27;
- b) Three members from Asia and the Pacific, including a representative of the incoming President of COP 28;
- c) Three members from Latin America and the Caribbean;
- d) Two members from small island developing States;
- e) Two members from the least developed countries;
- f) One member from a developing country Party not included in the categories listed above.

??COP28?????UAE????????????????????????????????????1????????
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COP21 in 2015 in Paris. The \$1 trillion per year is a very different concept – it is a requirement based on an analysis of the investment and actions necessary and the domestic finance potentially available, for an internationally agreed and vital purpose. The \$1 trillion is not the new \$100 billion. The latter was negotiated, not deduced from analyses of what is necessary for a purpose.

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Posted in ???, ????? | No Comments »

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?? ?? · Tuesday, November 22nd, 2022



Olga Burkova/iStock

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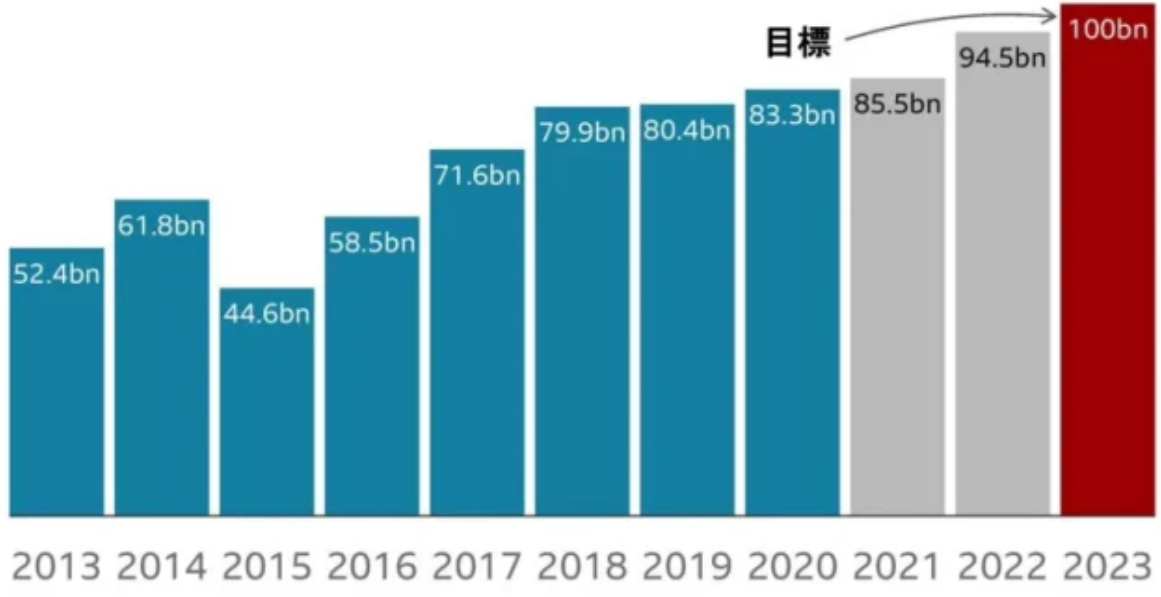
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気候変動対策の支援額 先進国が資金集めと供給を行った額(単位:10億米ドル)



2021年と2022年のデータはOECDによるシナリオの平均値

出典:経済協力開発機構(OECD)



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Posted in ???, ????? | No Comments »

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?? ?? · Saturday, November 19th, 2022

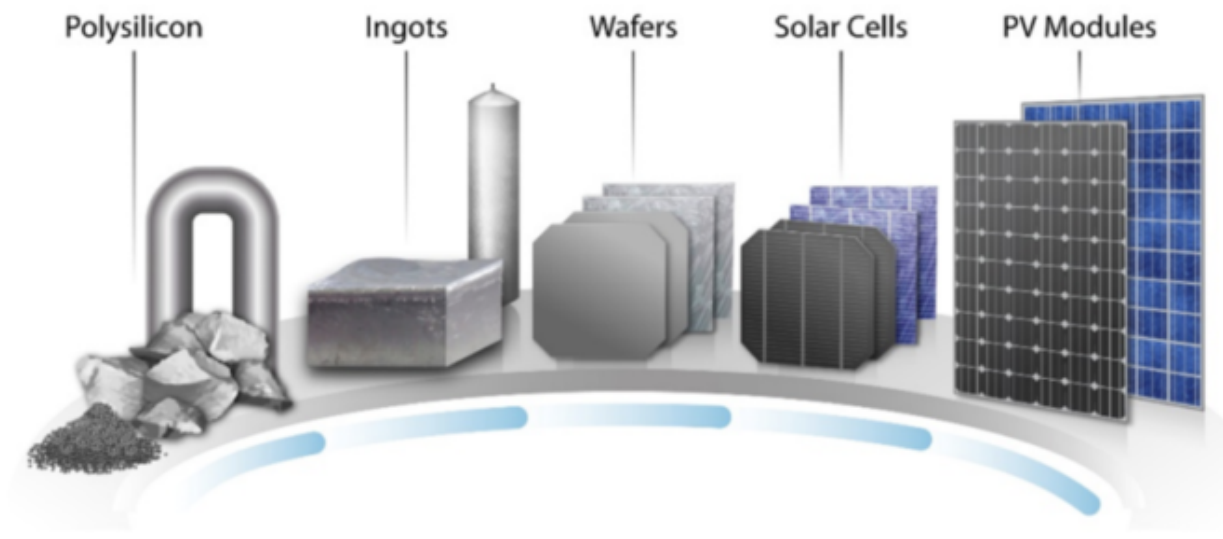


chuyu/iStock

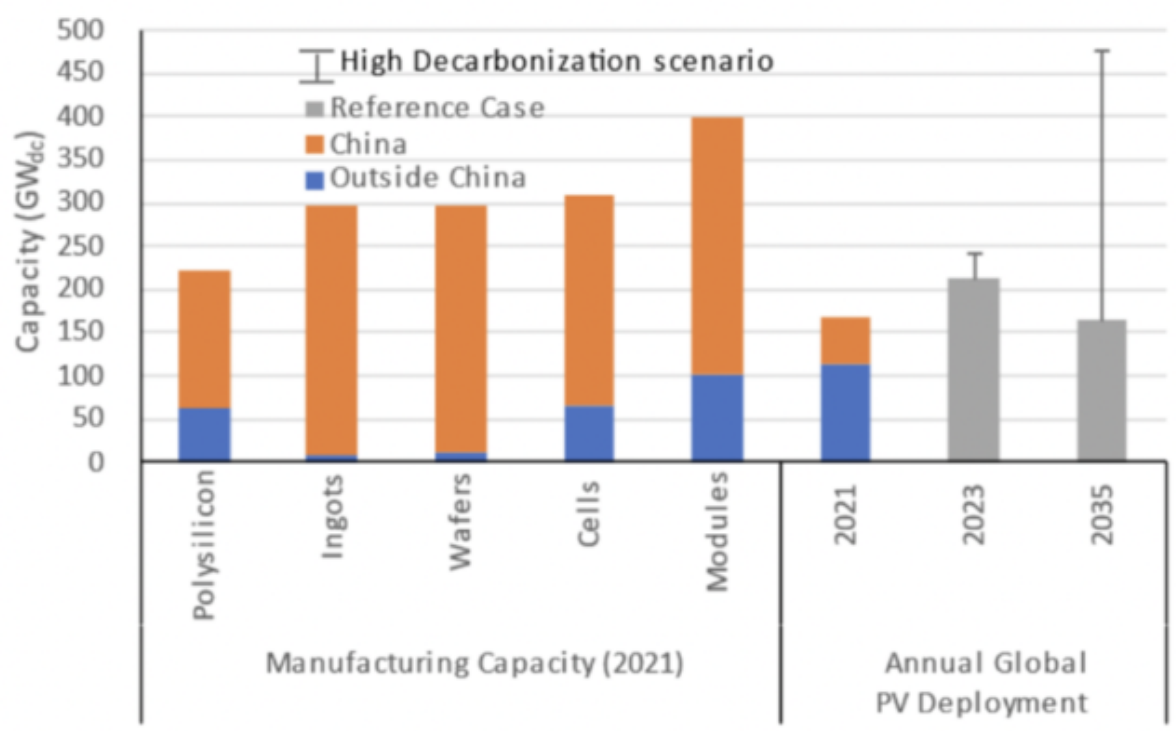
????????????????????(Sins of a solar
 empire)??10??????CO2??????????????
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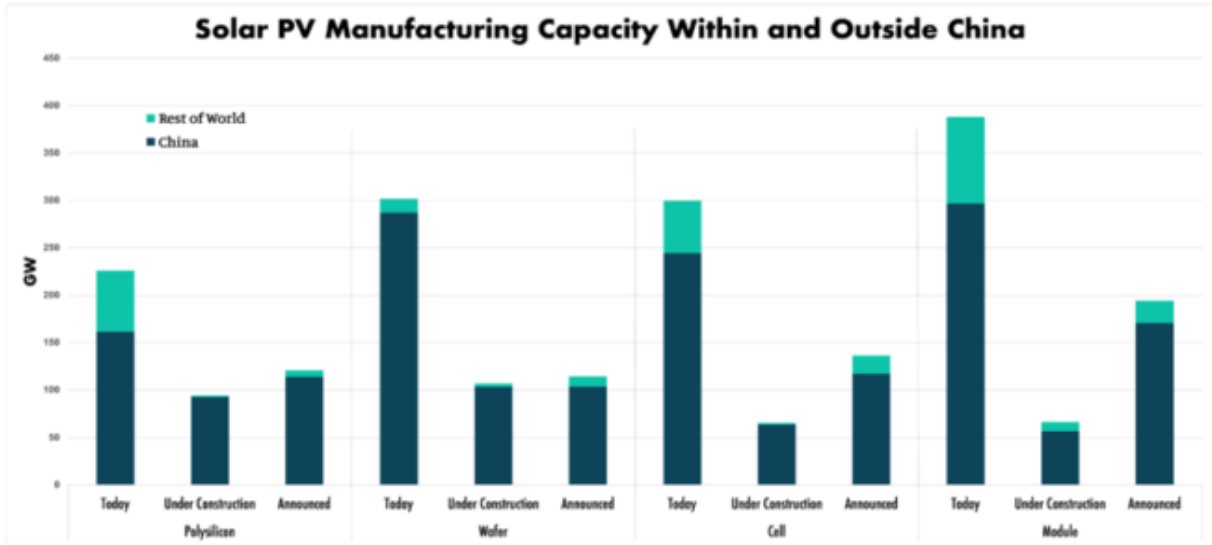
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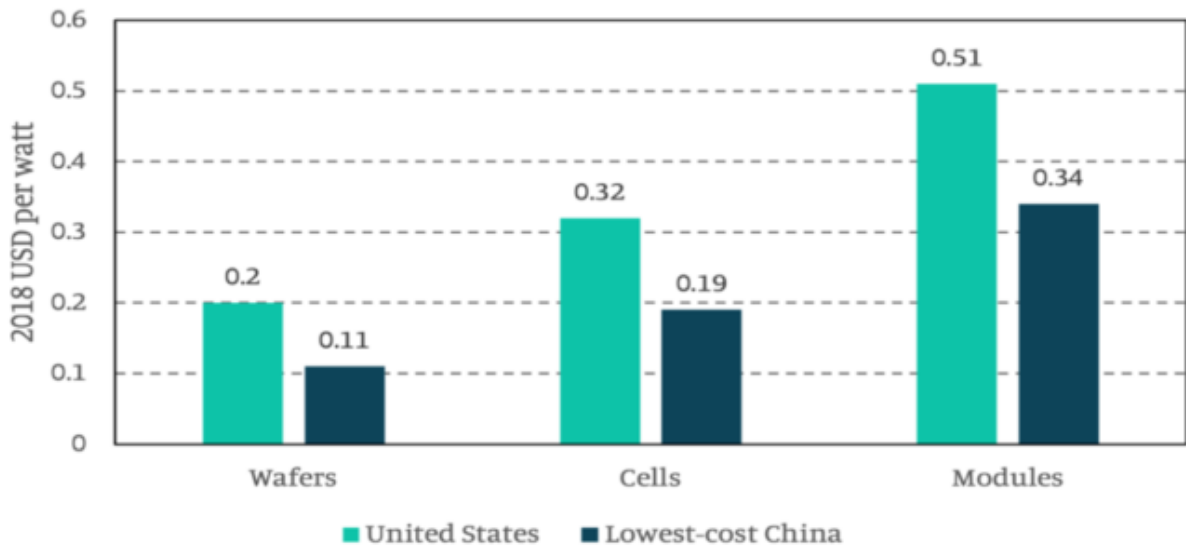


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Minimum Sustainable Price (MSP)



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?? ? · Saturday, November 19th, 2022



Nastco/iStock

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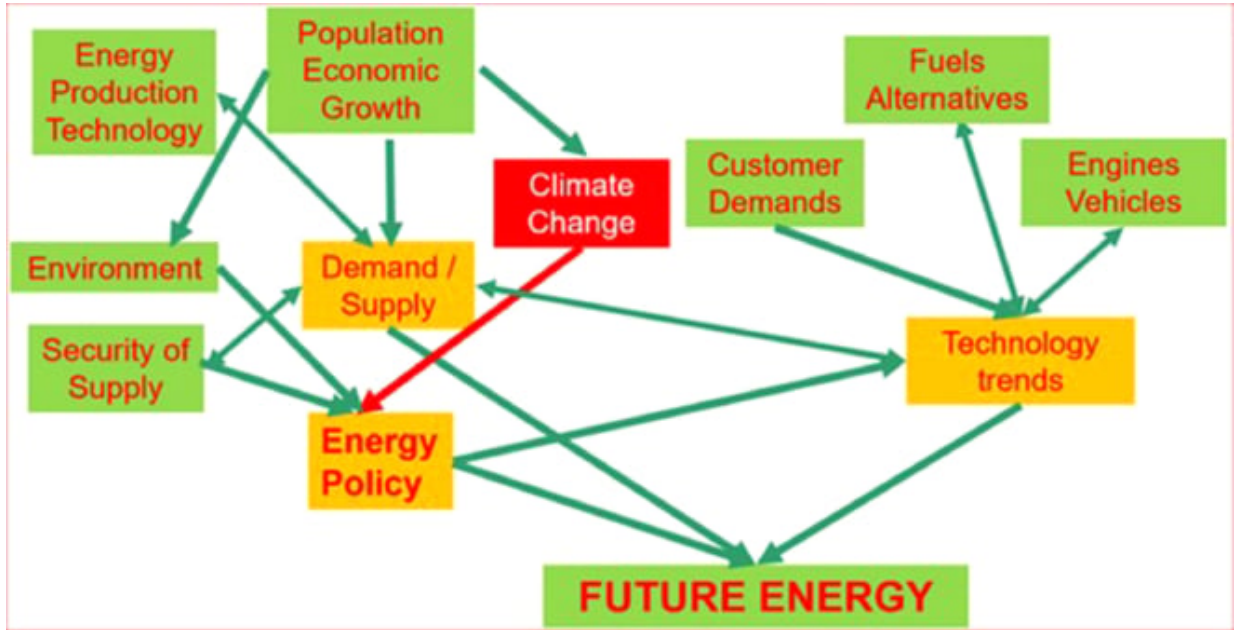
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2021 BP 82.3% 489.66 EJ / 595.15 EJ 1.75%

Table 1. Primary energy and electricity sources in exajoules, EJ (10¹⁸ joules) and installed wind and solar capacity in GW for 2021 [7]. Electricity generation converted to EJ from TWh. 1 EJ= 277.8 TWh.

Country	World	China	U.S.A	India	UK
Oil, EJ	184.21	30.6	35.33	9.41	2.5
Natural Gas, EJ	145.35	13.63	29.76	2.24	2.77
Coal, EJ	160.1	86.7	10.57	20.09	0.21
Total fossil fuel, EJ	489.66	130.93	75.66	31.74	5.48
Actual delivered Wind, EJ	6.7	2.36	1.38	0.245	0.232
Actual delivered Solar, EJ	3.72	1.177	0.594	0.246	0.045
Nuclear, EJ	25.31	3.68	7.4	0.4	0.41
Hydro, EJ	40.26	12.25	2.43	1.51	0.06
Other, EJ	29.5	7.253	5.306	1.289	0.953
Total Primary Energy, EJ	595.15	157.65	92.97	35.43	7.18
Electricity Generation					
Installed wind capacity, GW	824.9	329	132.7	40.1	27.1
Installed Solar Capacity, GW	843.1	306.4	93.7	49.3	13.7
Total electricity generated, EJ	102.47	30.72	15.86	6.173	1.116

Other includes bioenergy, geothermal etc.

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BP IEA

1 EJ = 10¹⁸ joules = 10¹² Wh = 1 EJ = 277.8 TWh = 1 J

2.778x10⁻⁷kWh??10¹⁸????????????????????????????????

??????1kWh????????????????????1kWh = 860.6kcal = 3.6kJ????100????????????????????100????????????????????40????????

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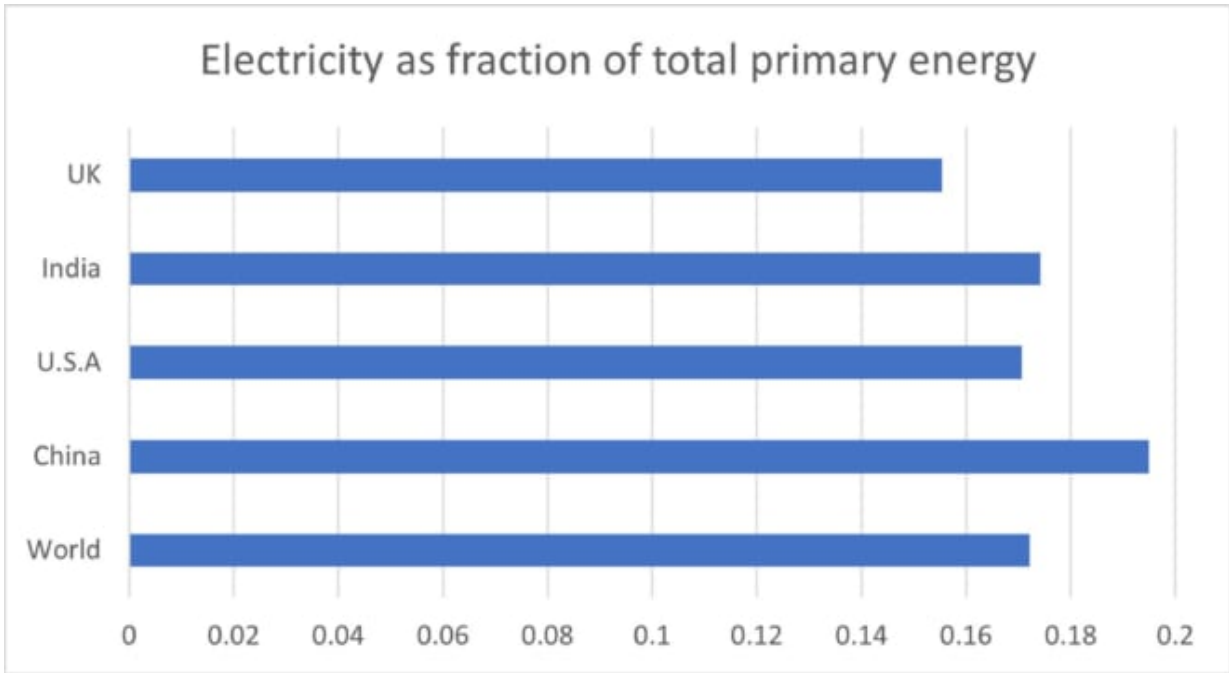
????????????BP????1kWh = 860.6kcal = 3.6kJ?IEA????41.5%????0.415??1kWh = 2074kcal = 8.67kJ????0.415????

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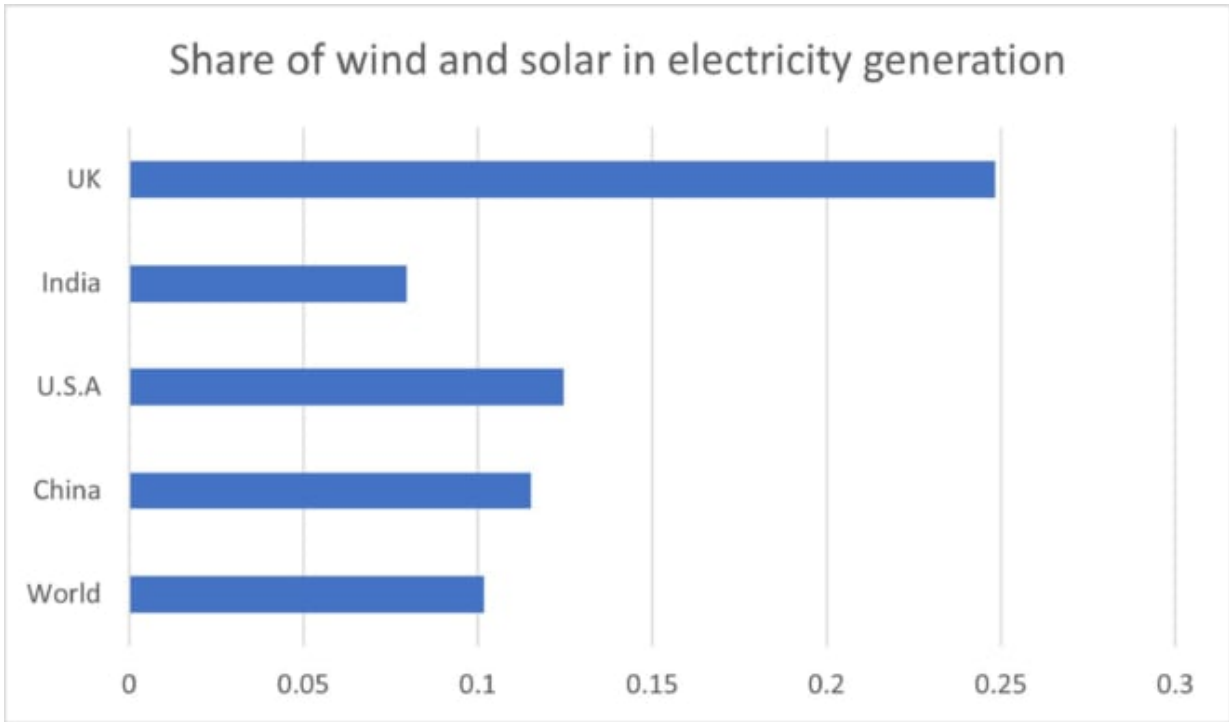
????????1????489.66EJ????105.49EJ??254.19EJ????0.415????2.4????5 95.15EJ??743.85EJ????17.7%?=106.49/595.15????34.2%?=254.19 /743.85????

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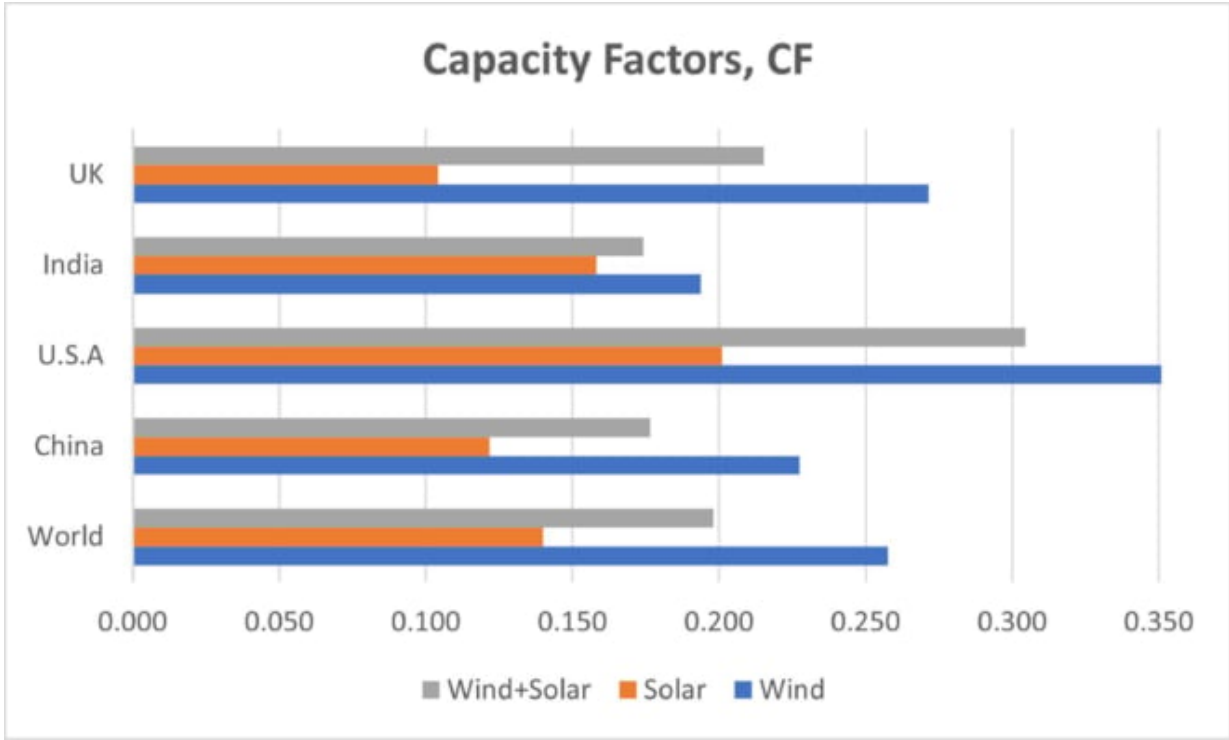
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??140????????COP27????????????

?? ?? · Wednesday, November 16th, 2022



fergregory/iStock

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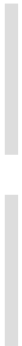
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CO2

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SDGs?ESG

CO2 ESG

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11?15

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?? ? · Sunday, November 13th, 2022

TBS YouTube

16% 10% 8.8% 2.3% 0.5% 25%



alle12/iStock

30?2018 2530 1765 766 600
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