

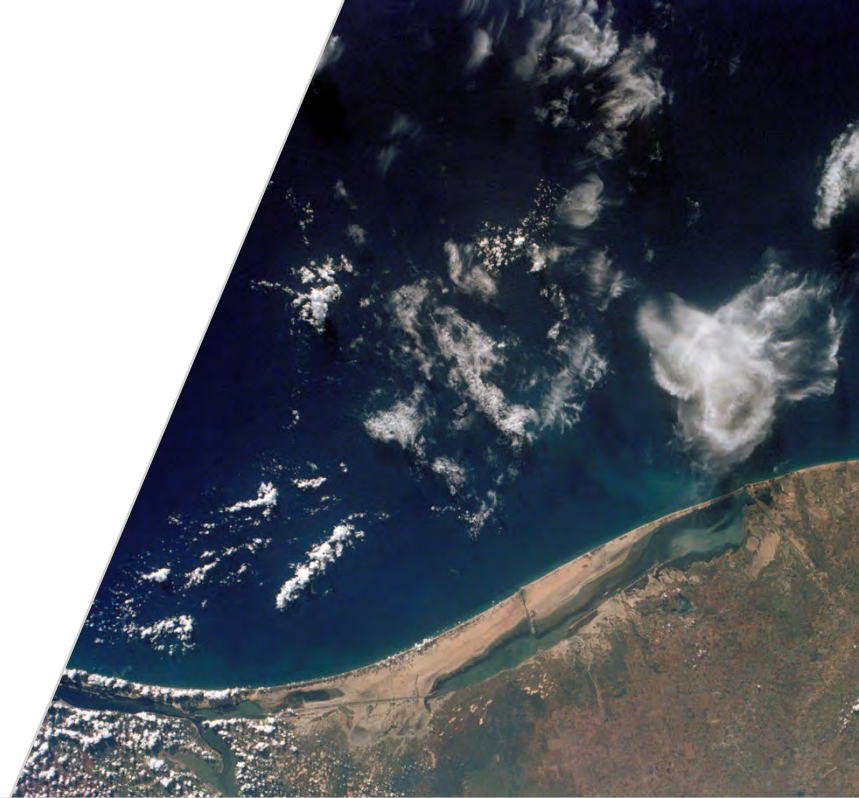
# 脱炭素化に向けた世界 と日本の動向

動き出すパリ協定、選ばれる企業

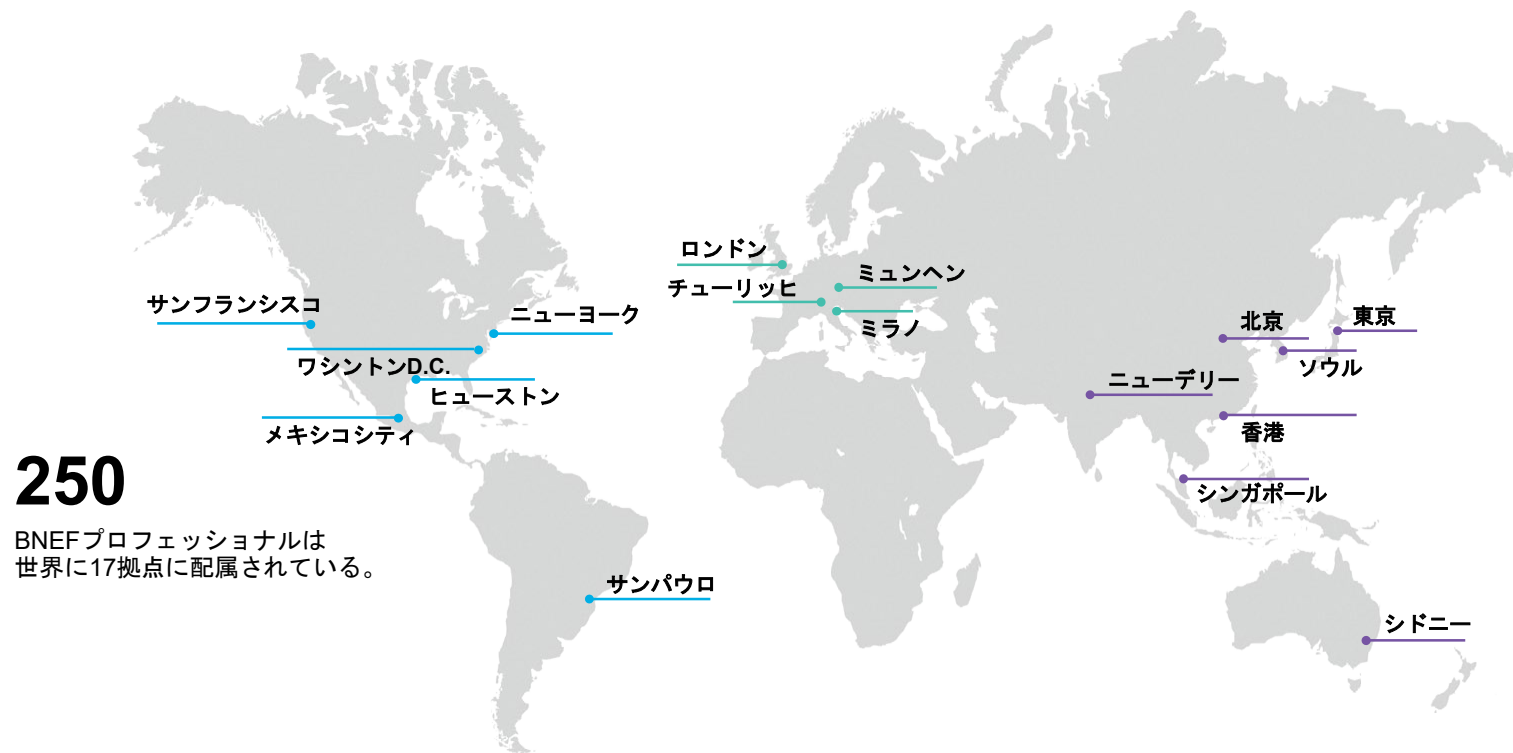
黒崎 美穂

March 26, 2019

BloombergNEF

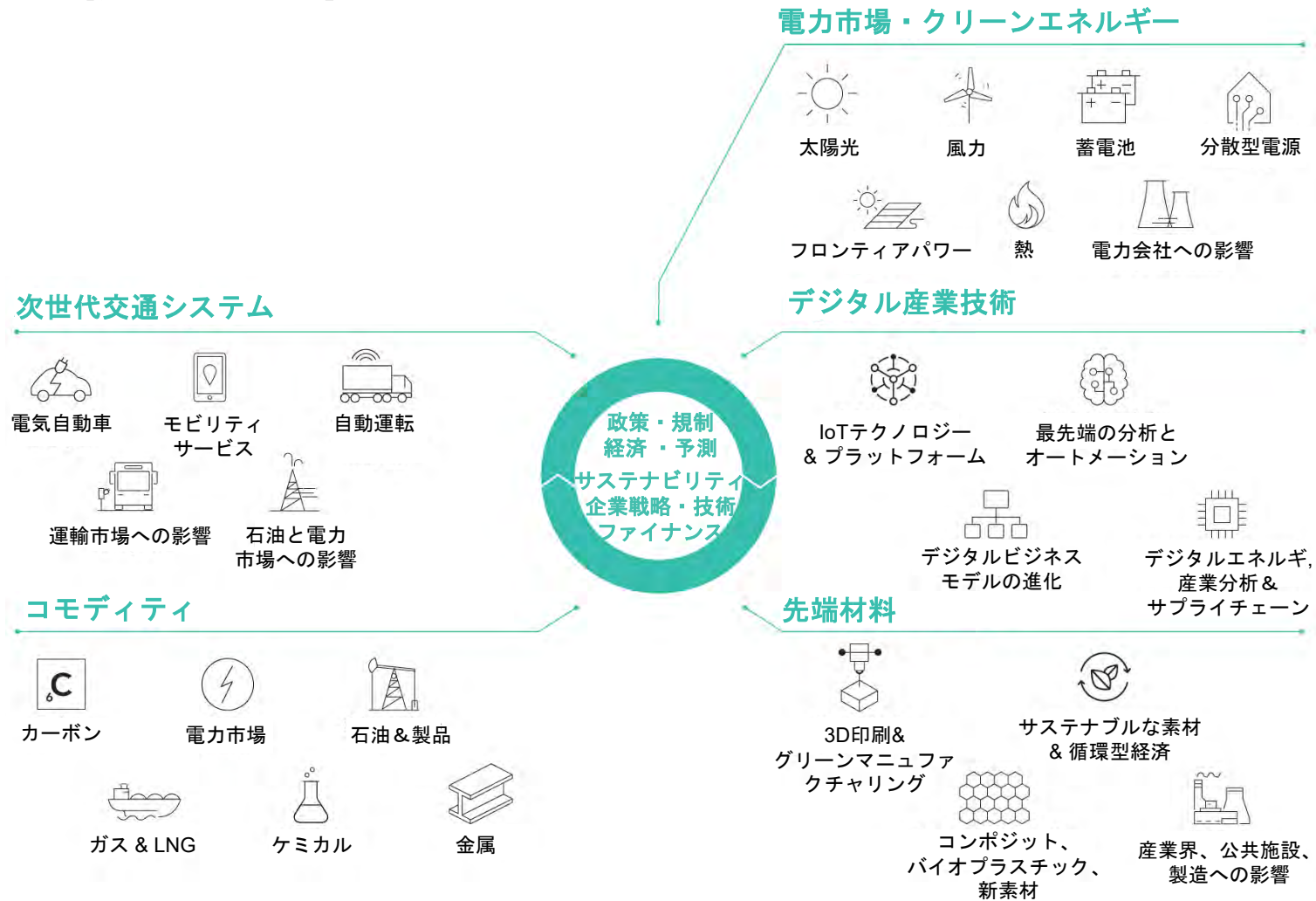


# ローカル・グローバルの 両方の観点から



\* ブルームバーグLPでは世界176拠  
点、従業員は19000人

# よりクリーンな 未来への戦略立案



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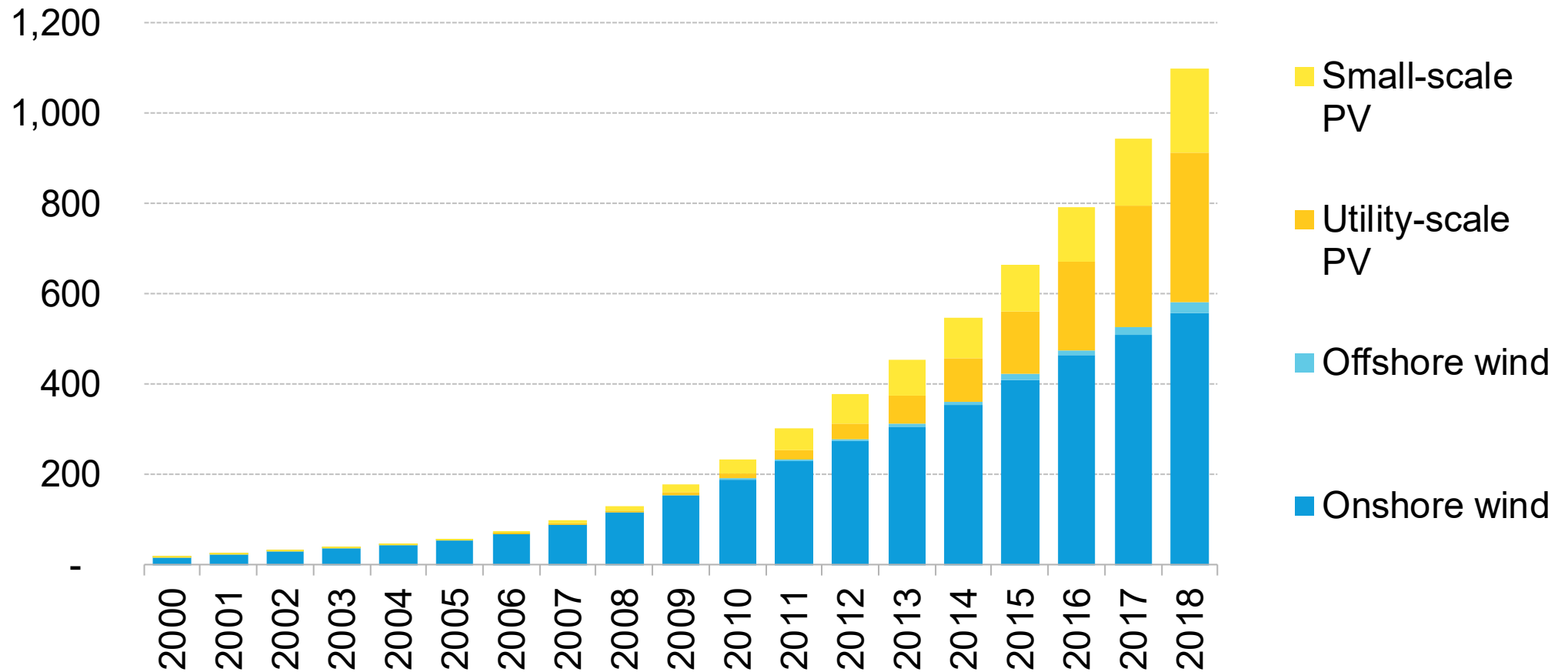
# 供給側の脱炭素化

Technology, economics and policy

# 風力、太陽光がテラワットを超える

## Global wind and solar installations

Cumulative GW

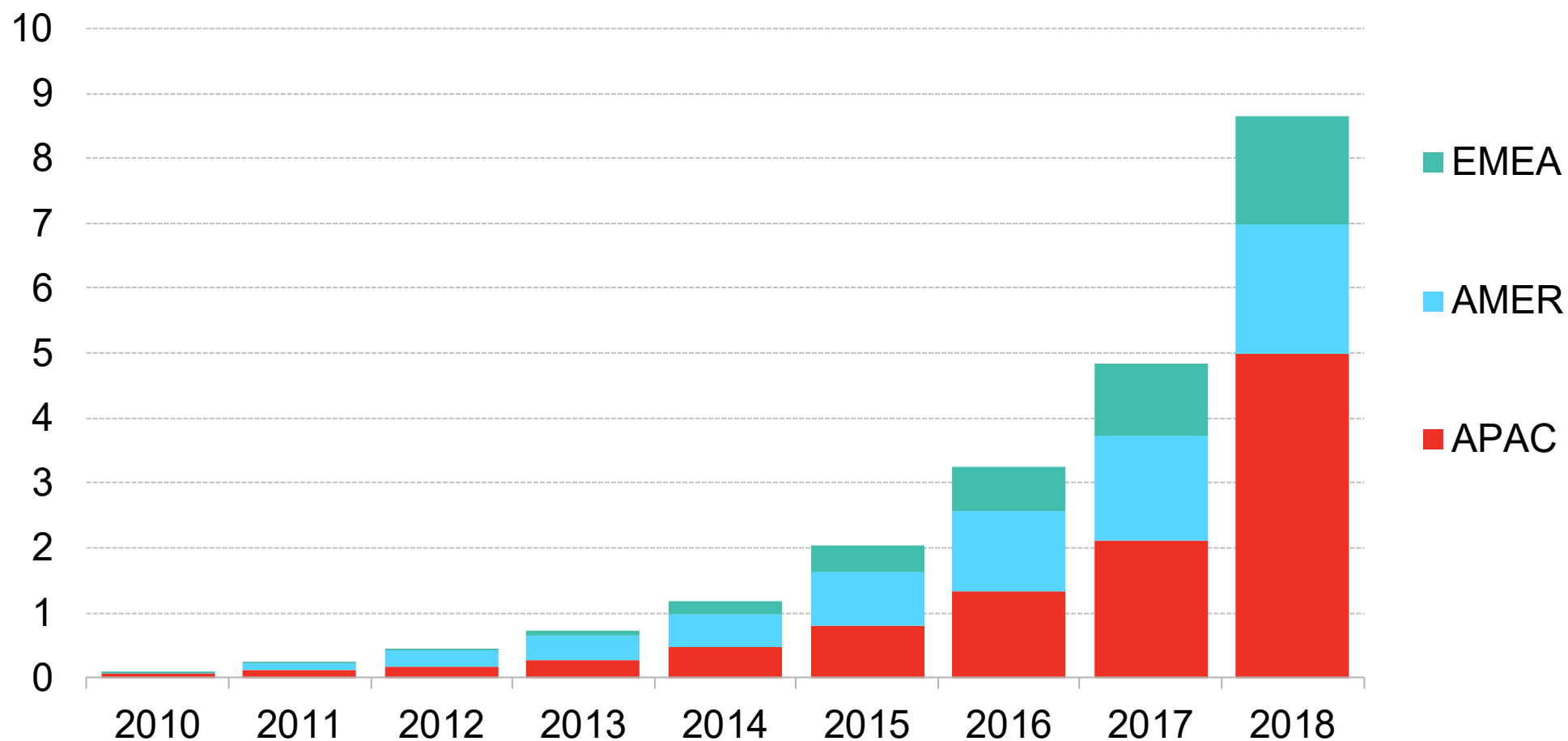


Source: BloombergNEF

# 蓄電池も普及し続ける

## Global energy storage installations

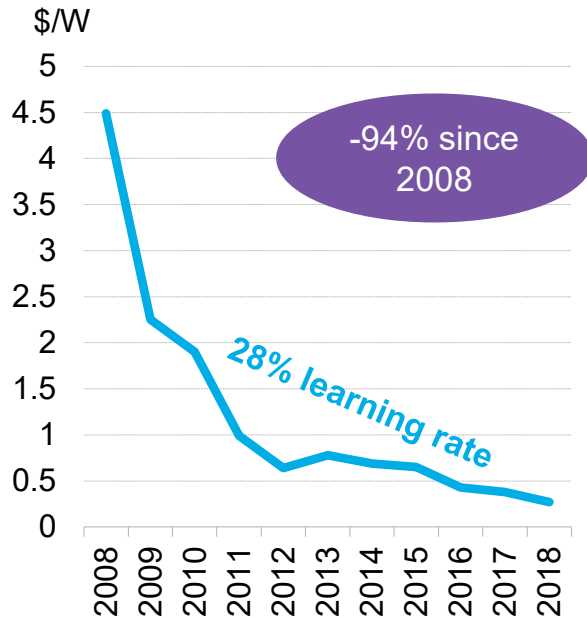
Cumulative GW



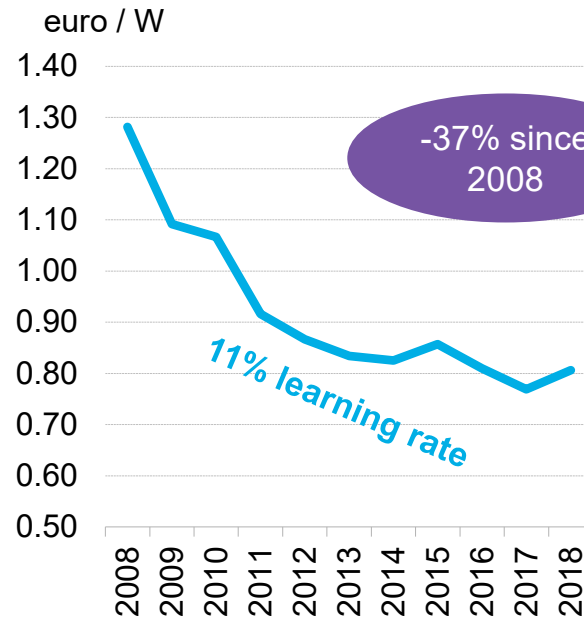
Source: BloombergNEF

# 技術の革新に伴って転換が起こる

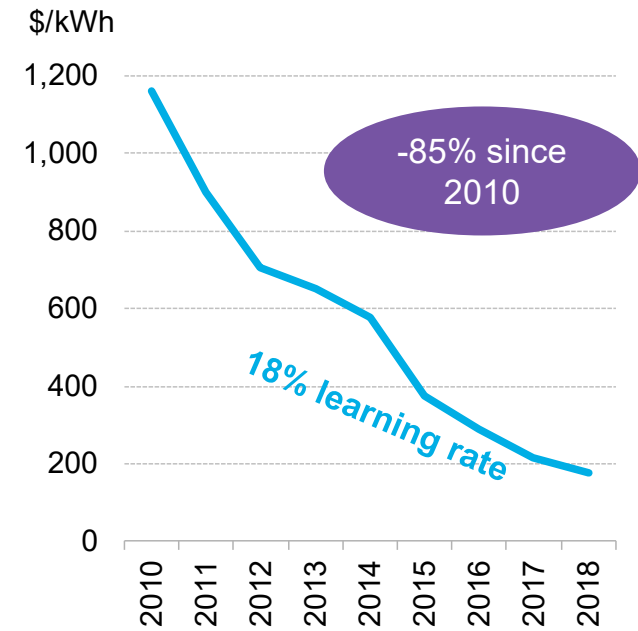
## Solar PV module prices



## Onshore wind turbine prices



## Lithium-ion battery prices



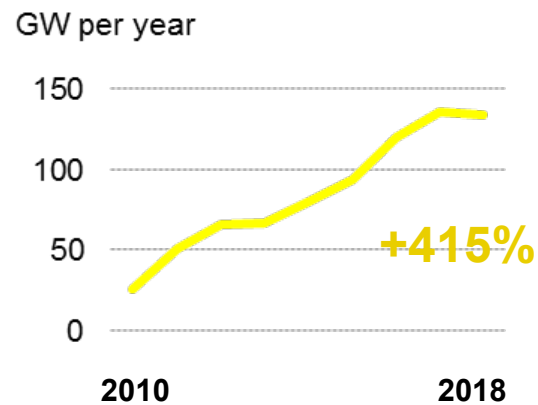
Source: BloombergNEF.



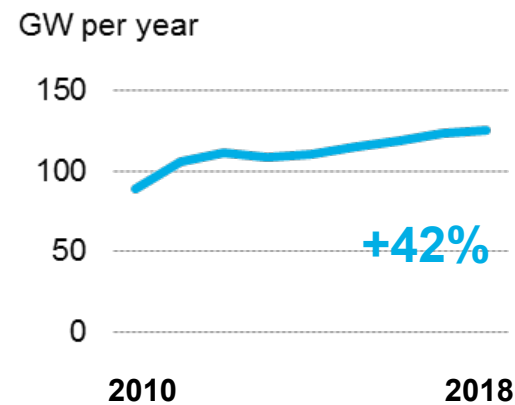
# それに伴って生産も増加

## Annual manufacturing capacity

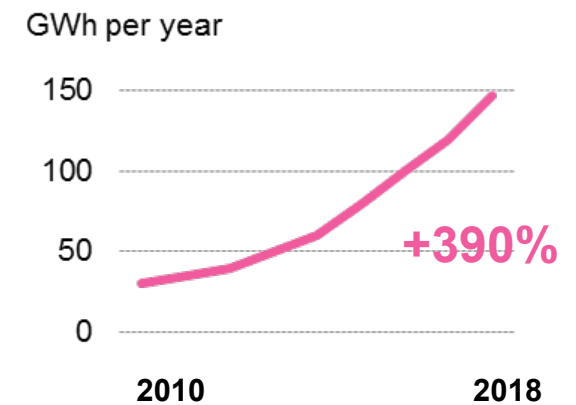
### Solar PV Cells



### Wind Turbines



### Li Battery Cells

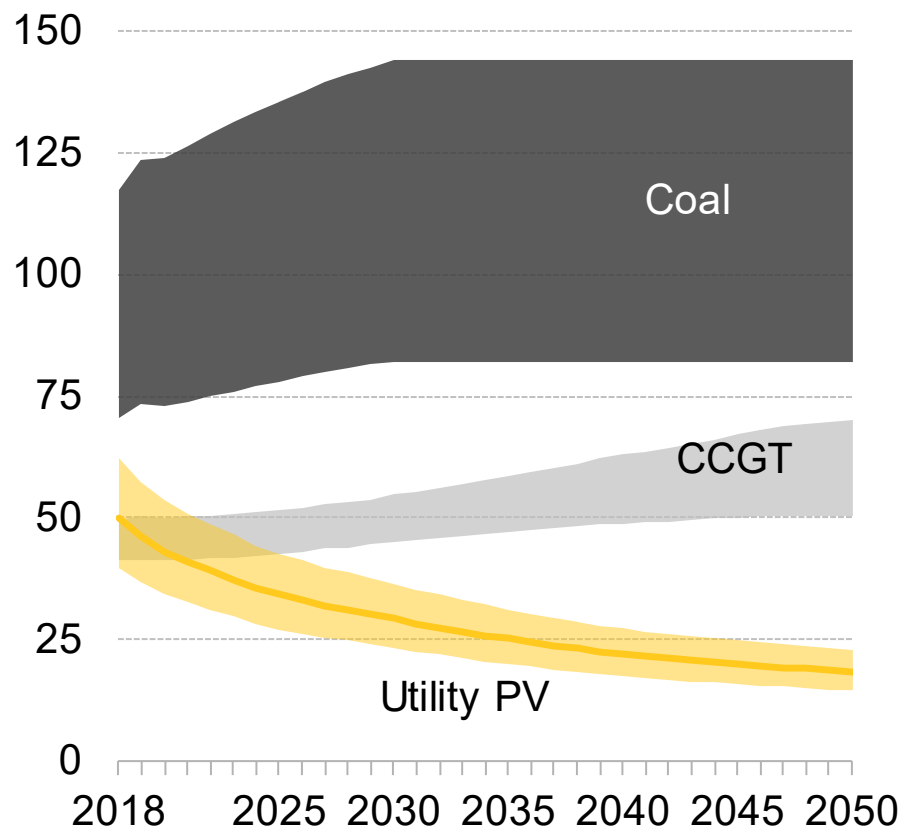


Source: BloombergNEF.

# 変化は転換点を迎える

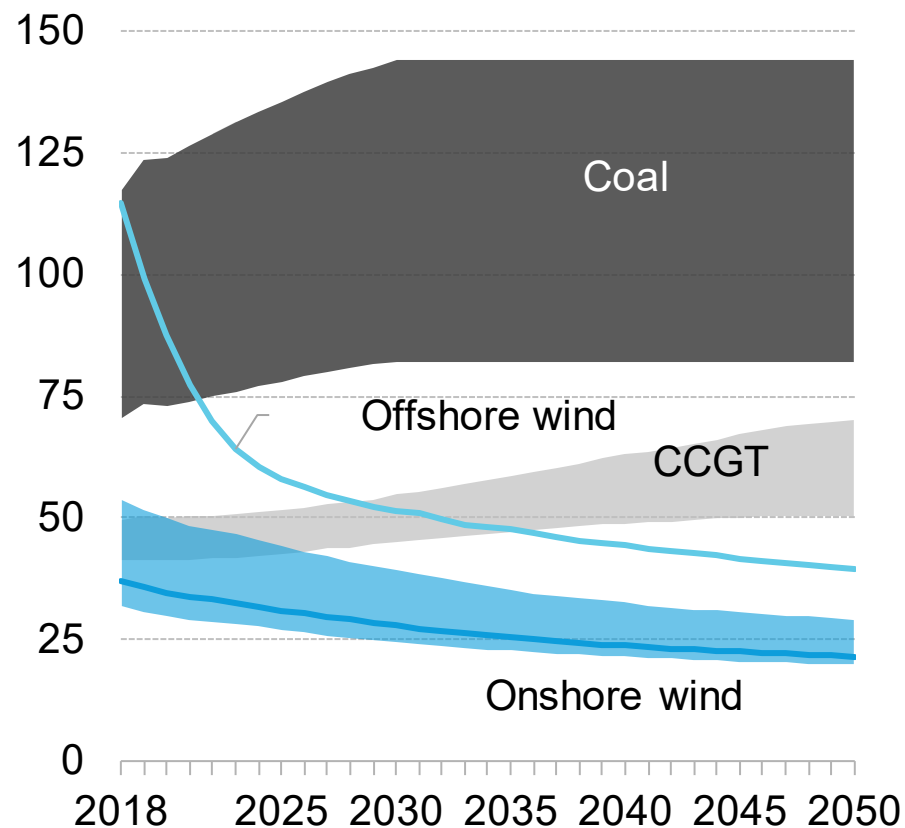
## Solar costs vs. coal & gas

\$/MWh (2017 real)



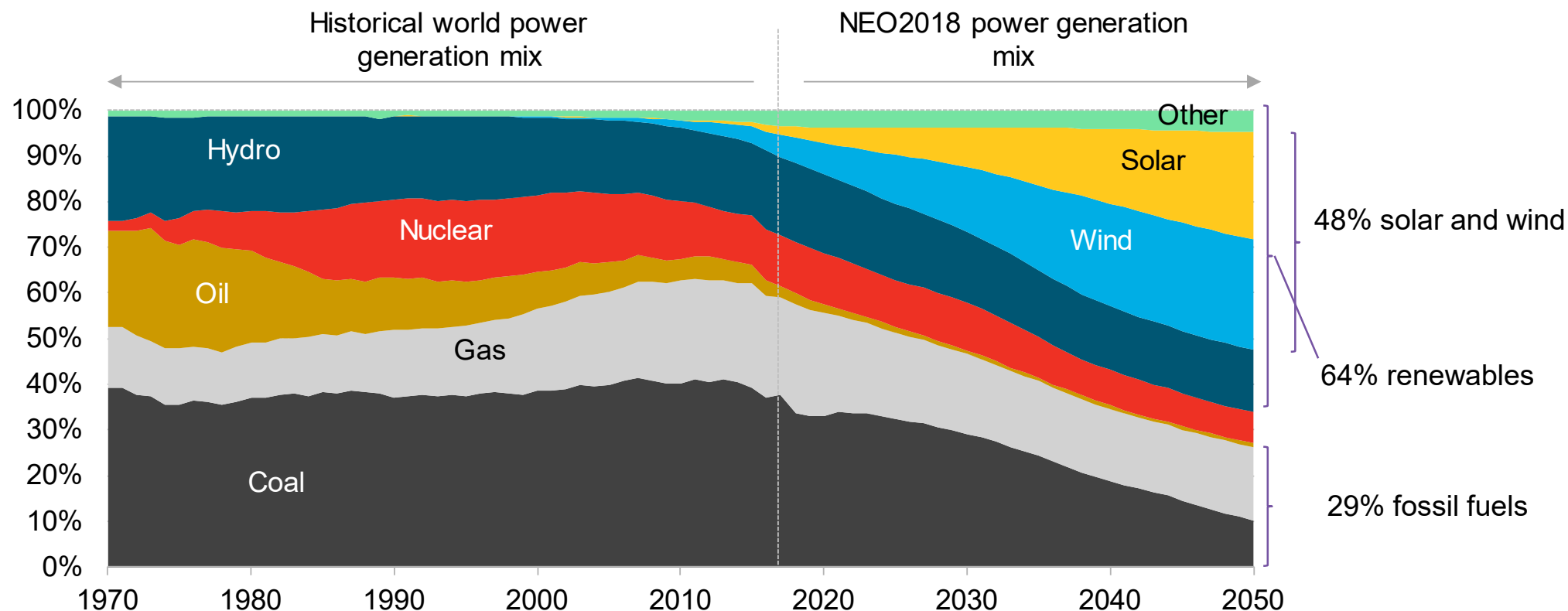
## Wind costs vs. coal & gas

\$/MWh (2017 real)



Source: BloombergNEF Note: Levelized cost of electricity (solar, wind, gas, coal) calculations are for utility-scale assets in the U.S. and exclude incentives such as the ITC and the PTC. Utility PV assumes tracking. EV price is for a medium segment vehicle in the U.S

# 太陽光と風力は2050年には世界の発電量の半分に

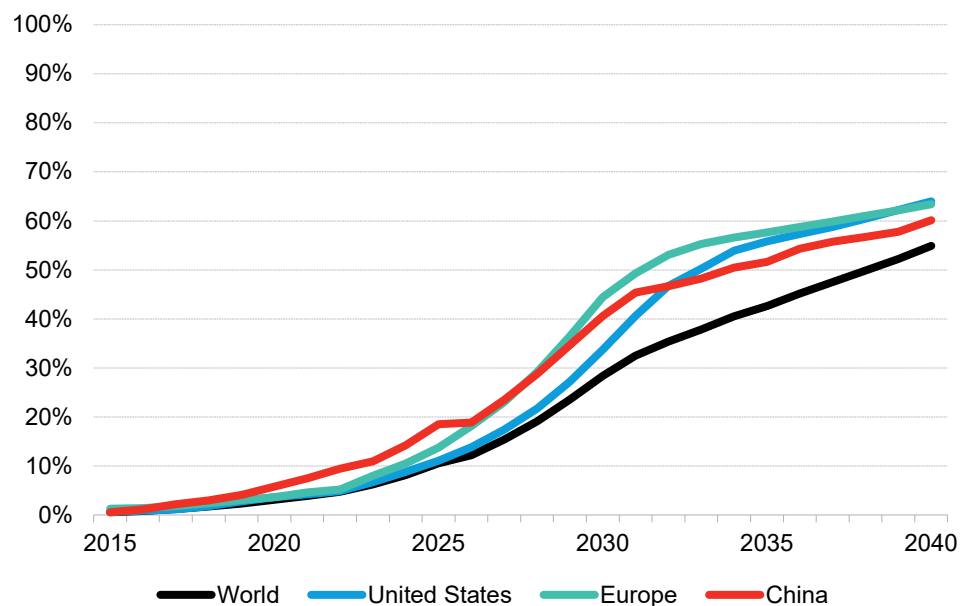


Source: BloombergNEF, IEA

# BNEF長期予測: 2040年までに電気自動車も再エネも半分に

## Electric vehicle outlook

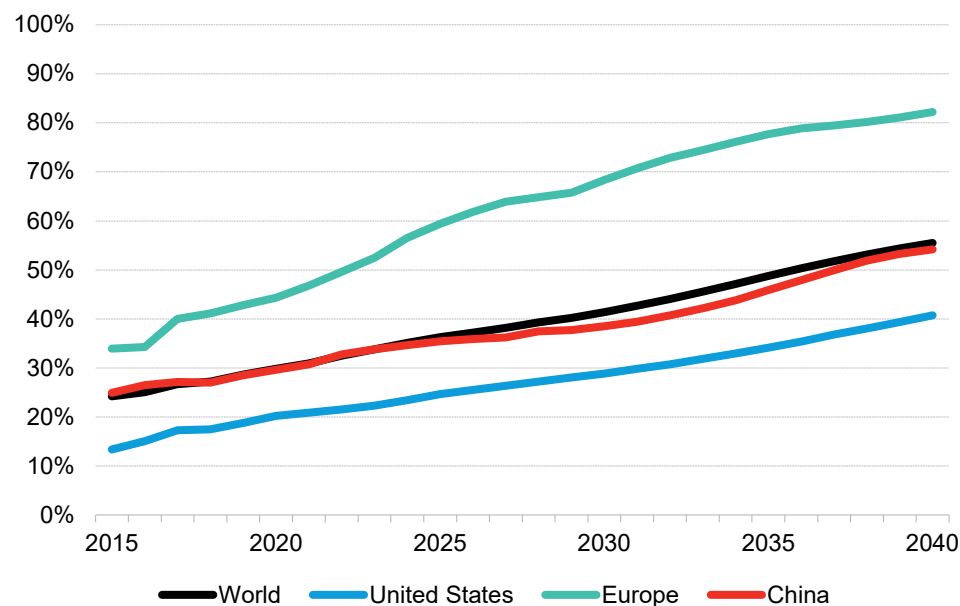
EV share of passenger vehicle sales



Source: BloombergNEF 2018 EV Outlook

## New energy outlook

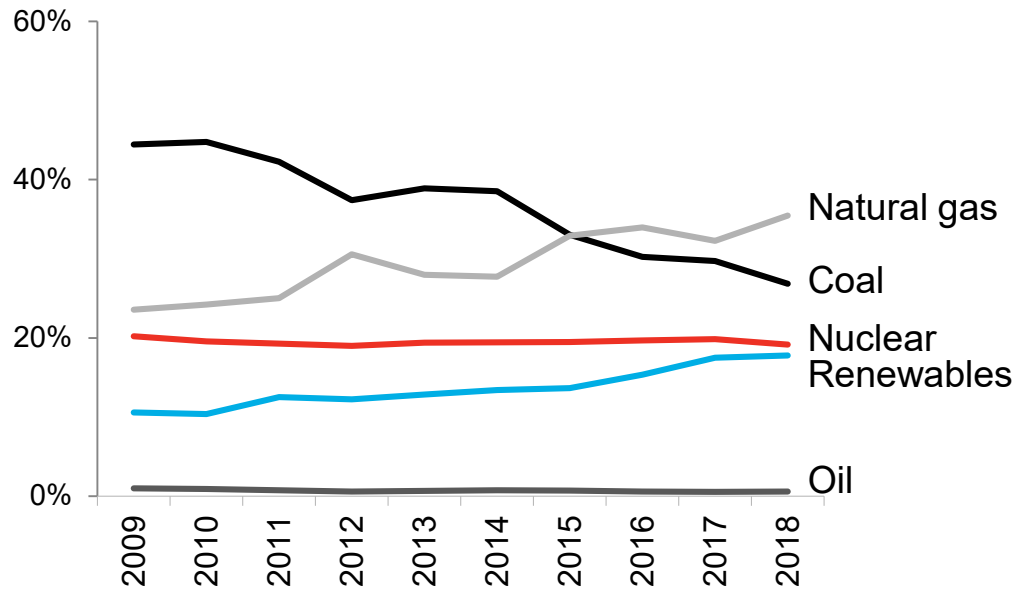
Renewable share of total generation



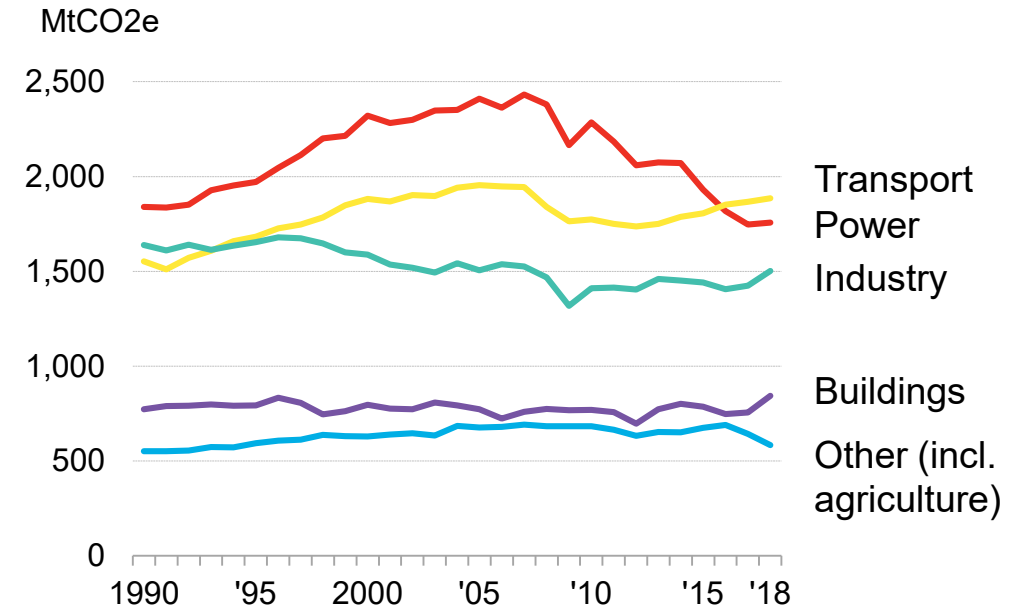
Source: BloombergNEF 2018 New Energy Outlook

# 脱炭素化が進むが

## U.S. power generation mix



## U.S. greenhouse gas emissions by sector

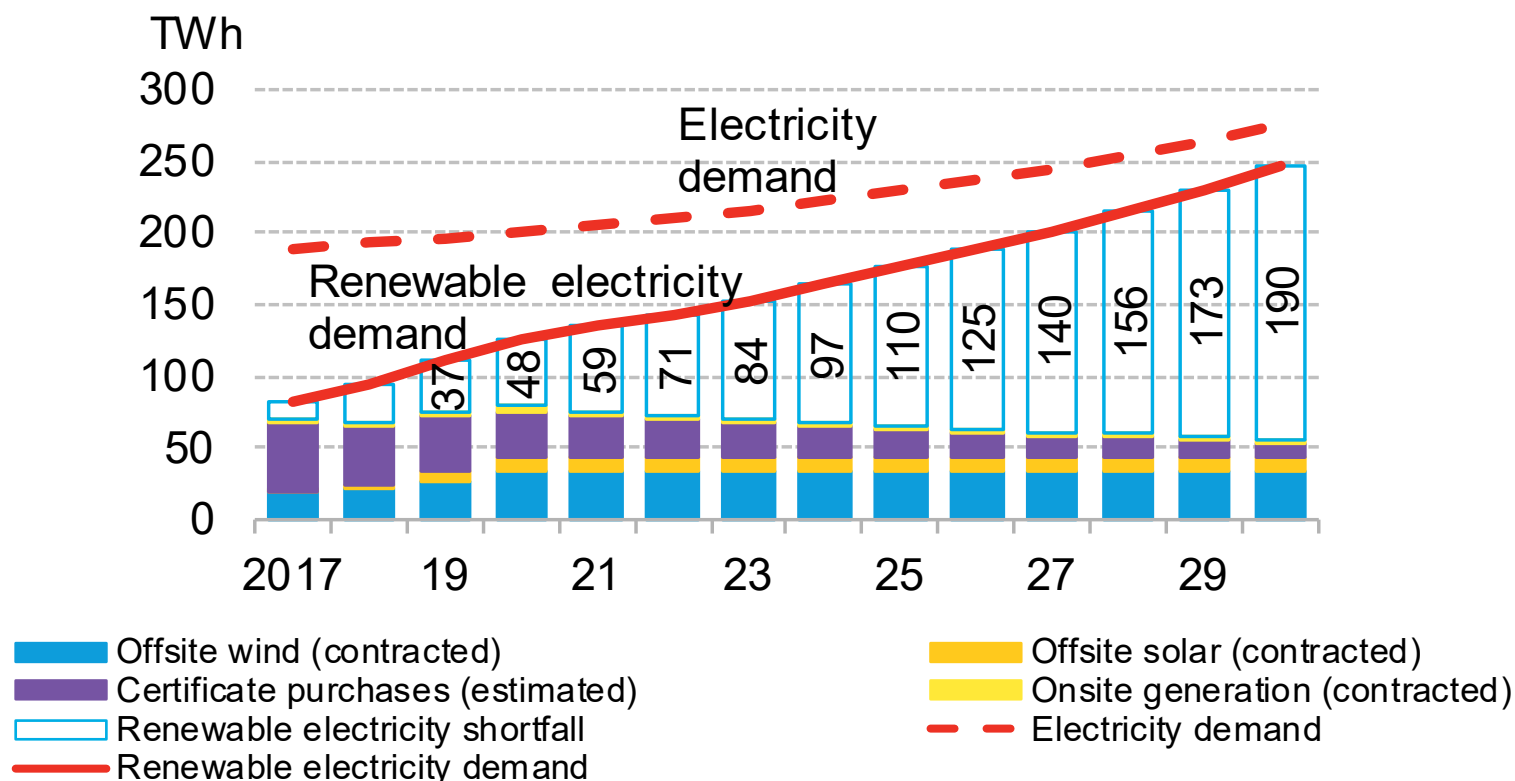


Source: BloombergNEF, EIA, EPA

# 需要家の脱炭素化

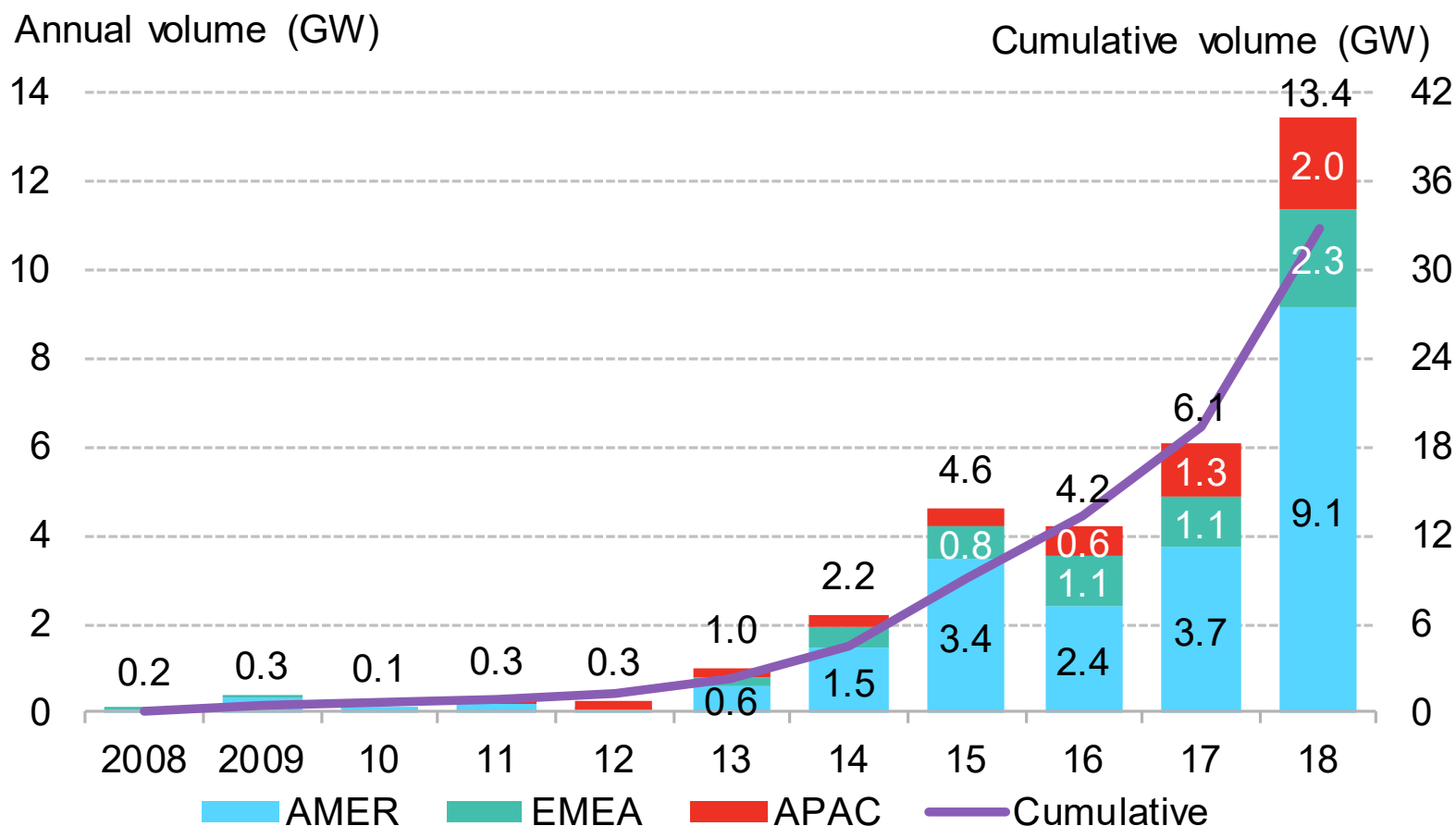
Corporations and customers

# RE100企業に必要な再エネ調達量



Source: BloombergNEF, Bloomberg Terminal, The Climate Group, company sustainability reports Note: Charts are for RE100 members that have disclosed electricity demand. Certificate purchases includes non-U.S. green tariff programs, and are assumed to step down 10% each year. Onsite generation and contracted wind and solar purchases are assumed to remain flat through 2030. Regional breakdown of shortfall estimated based on each company's share of revenue by region. See this report's [accompanying excel](#) for company-level data on the RE100.

# 日本には数少ない選択肢： Corporate PPA



Source: BloombergNEF Note: Onsite PPAs not included. APAC number is an estimate. Pre-market reform Mexico PPAs, Australia sleeved PPAs and India onsite deals are not included. Chart only includes deals with project name and capacity sold through PPAs disclosed. These figures are subject to change and may be updated as more information is made available.



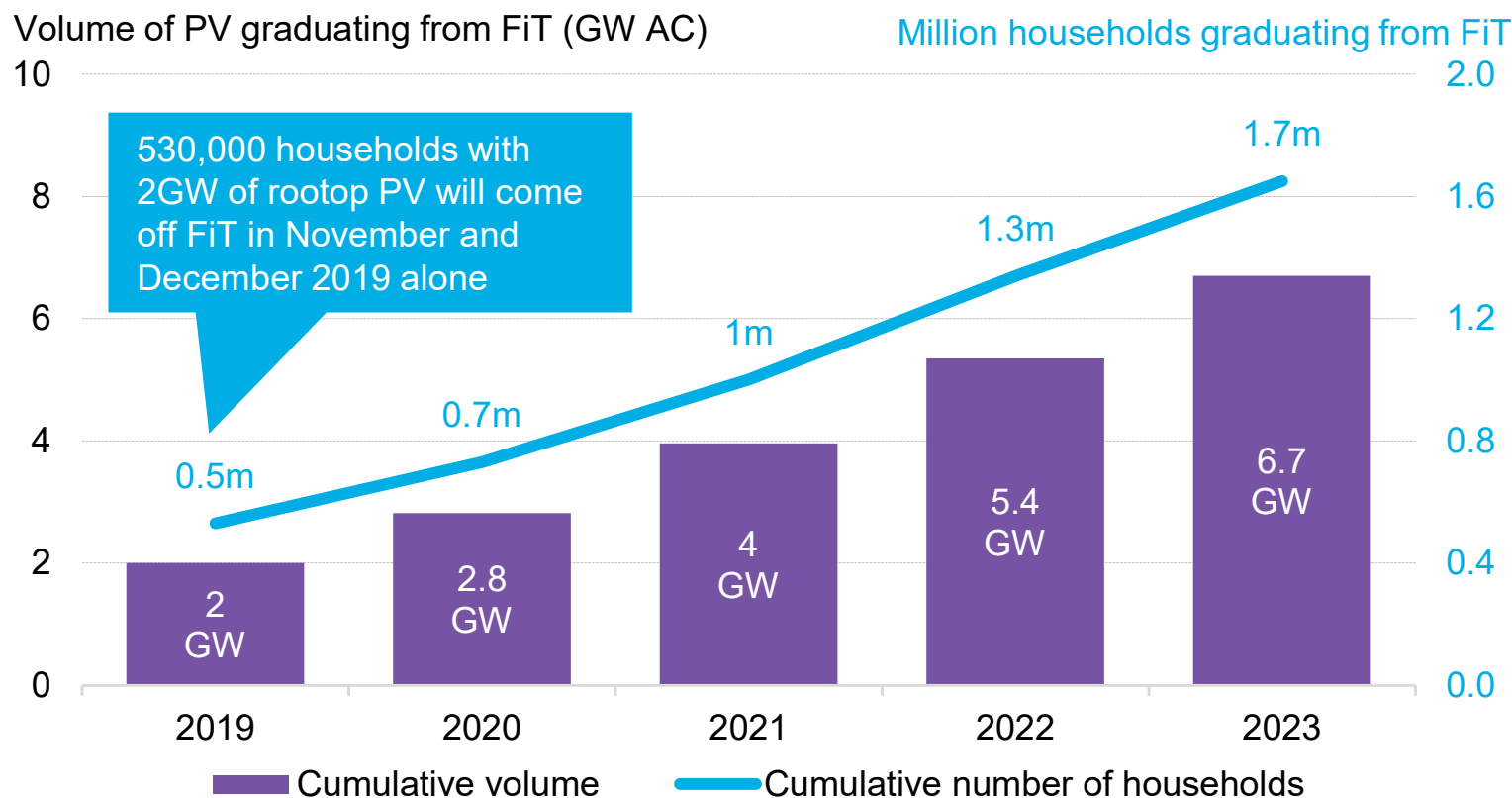
# PPA の場所



Source: BloombergNEF Note: Bubble size based on PPA capacity (MW)

# 日本の再エネ調達 オプション 1: 自家発電、自家消費

## Cumulative households coming off FiT



Source: BloombergNEF, METI. Note: in previous publications we estimated that 547,000 households with 2.15GW of PV will come off the buyback program in 2019. This was an estimate based on a chart published by METI.

# オプション 2: 再エネ電力

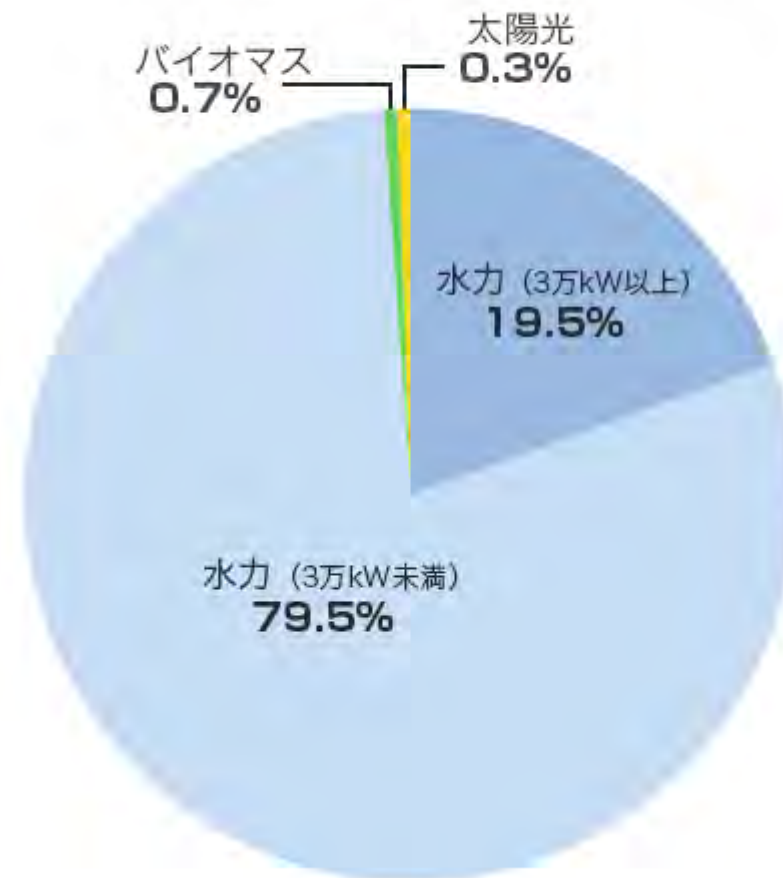
## 法人（大口契約）向けプラン



アクアプレミアム

アクアプレミアムは、水力100%（CO2フリー）のエコな電気料金プランです。

再エネプレミアムプランの電源構成  
（平成30年度 計画値）



# オプション 3: 証書

1. グリーン電力証書
2. J-クレジット
3. 非化石価値証書

# 非化石価値証書

- a) 入札参加者
- b) 電源のトラッキング
- c) 最低入札価格  
: 1.3円/kWh

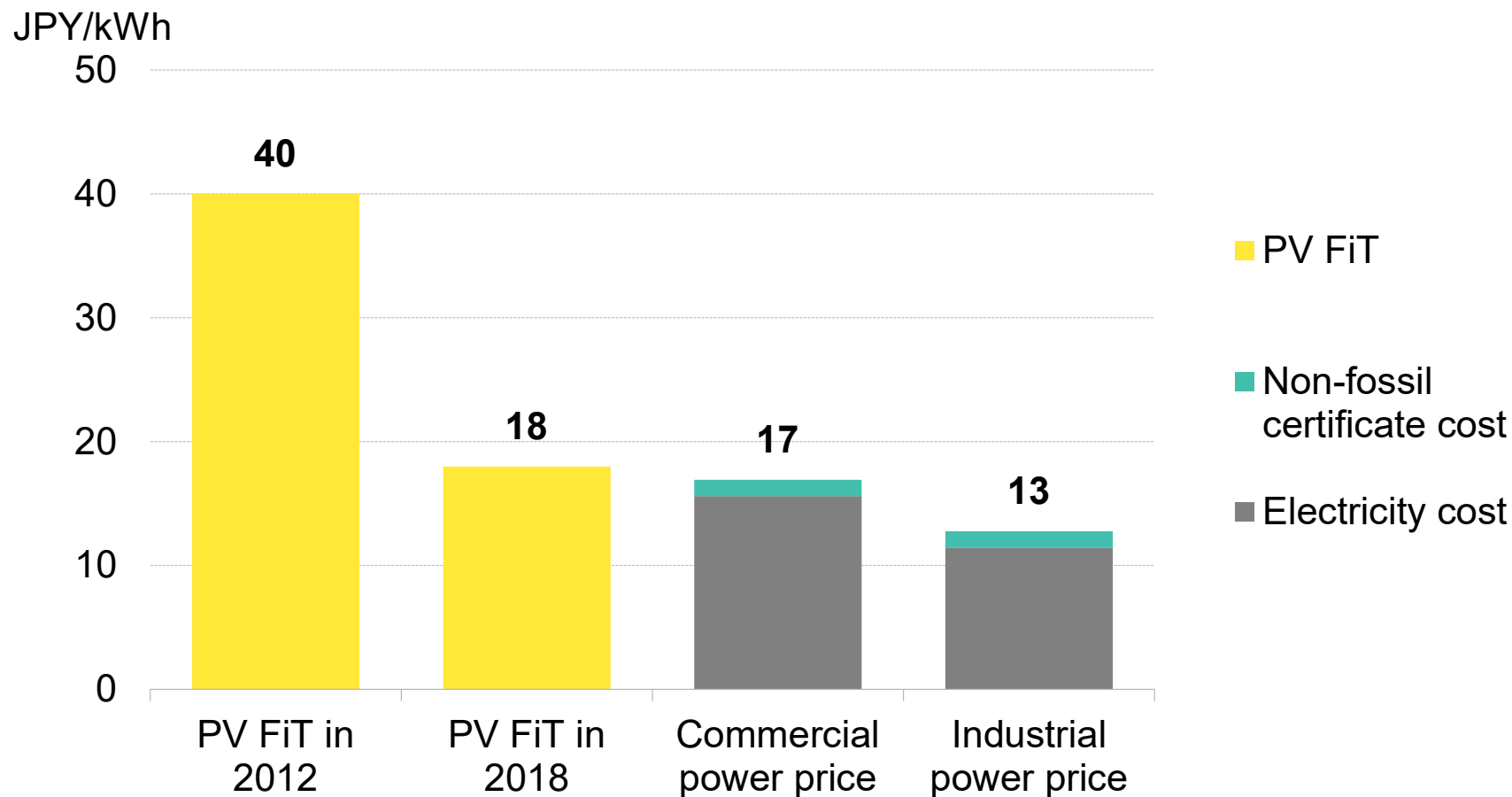
## 非化石価値証書入札結果



Source: BNEF

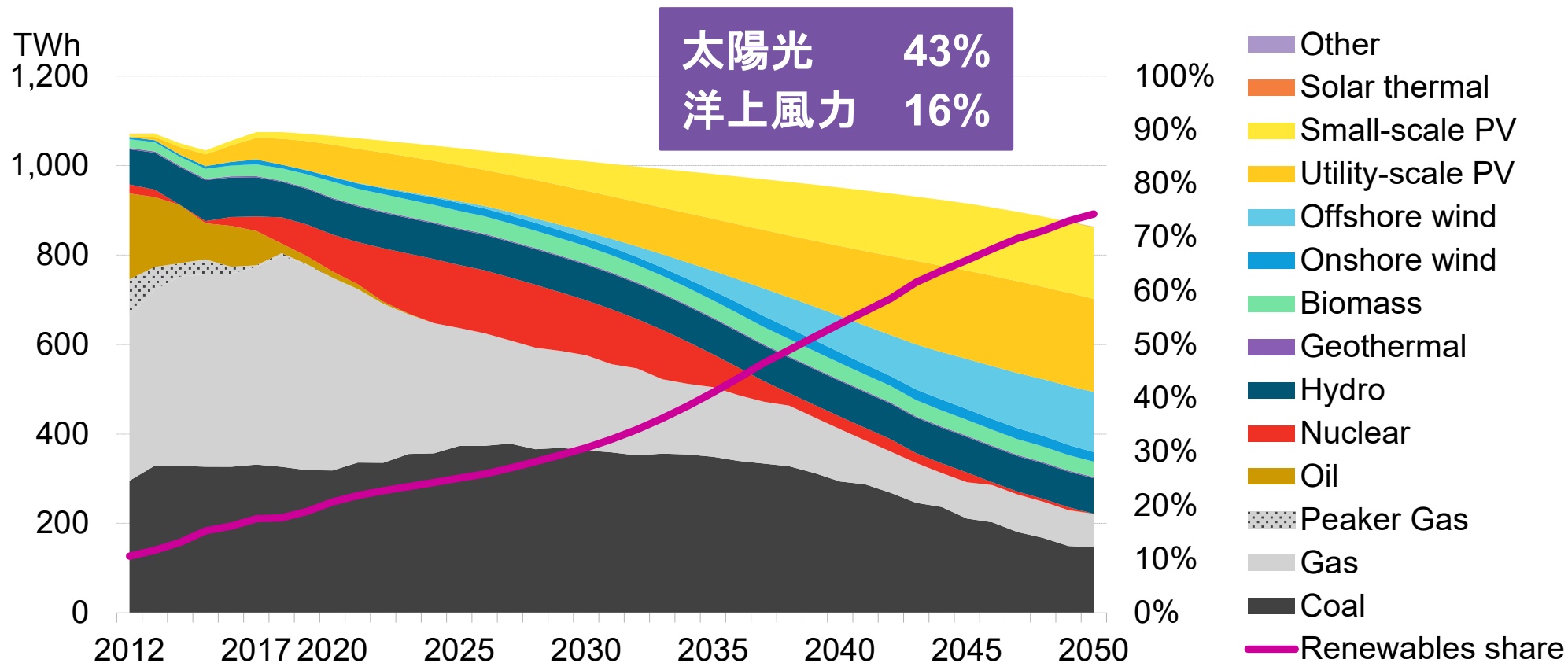
# 経済性の変化

## 太陽光の固定価格価格と非化石価値購入の比較



Source: BloombergNEF

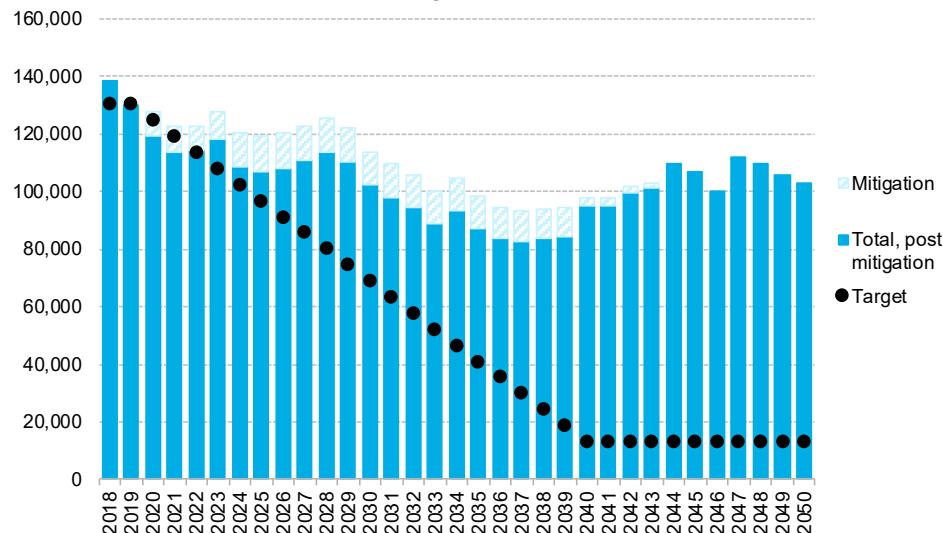
# 電源別電力発電総量



Source: BloombergNEF

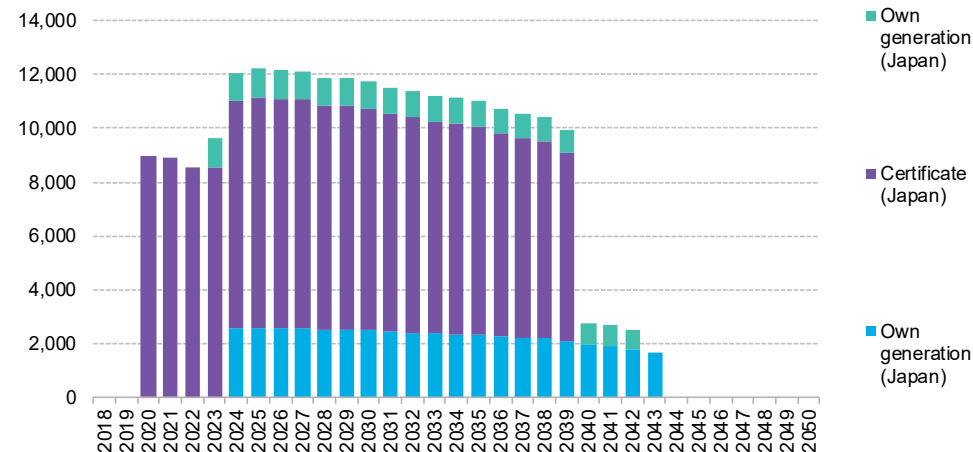
# 具体的な削減方法と戦略立案ツール

Forecast annual emissions after mitigation (tCO<sub>2</sub>)



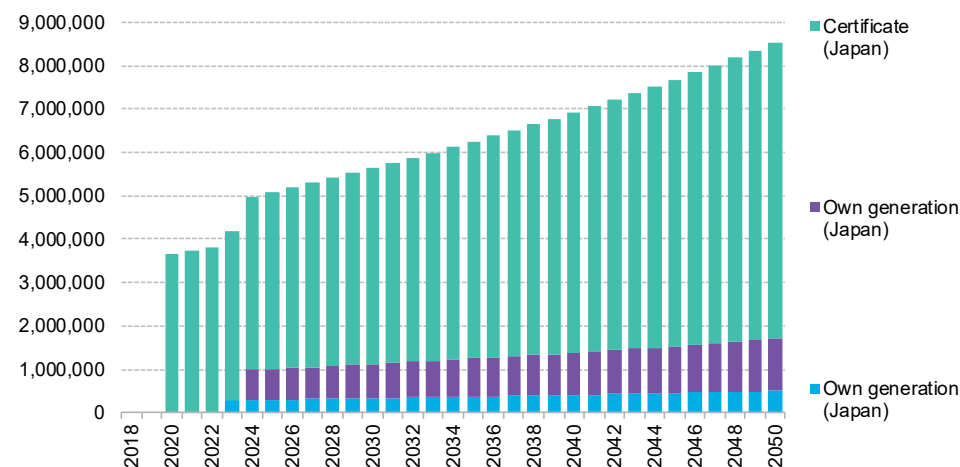
Source: BloombergNEF

Grid mitigation measures annual emissions reductions (tCO<sub>2</sub>)



Source: BloombergNEF

Annual net cost grid mitigation measures (USD nominal)



Source: BloombergNEF

Source: BloombergNEF



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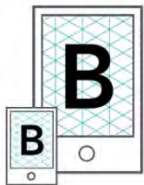
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