

エネルギー、モビリティ産業の大転換

REVision2019

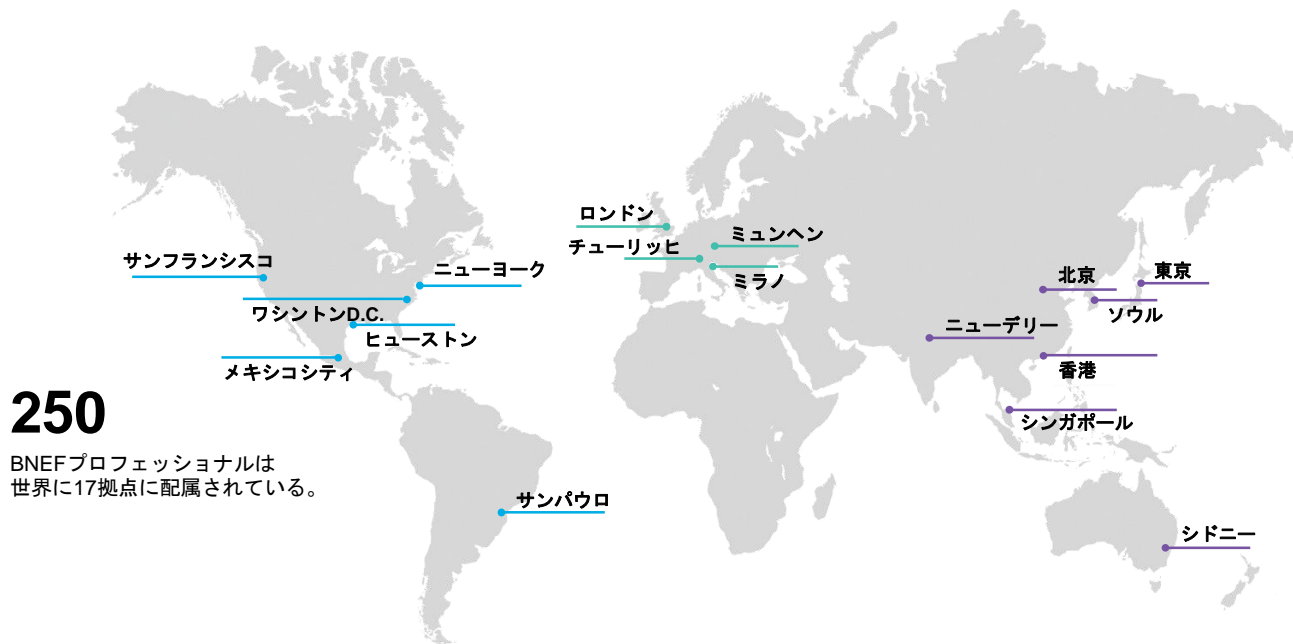
Miho Kurosaki

March 6, 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

次世代交通システム



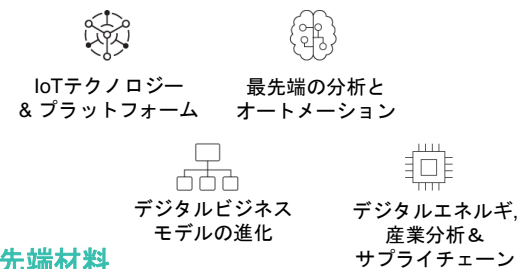
コモディティ



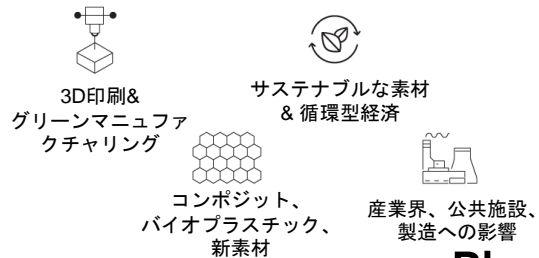
電力市場・クリーンエネルギー



デジタル産業技術



先端材料

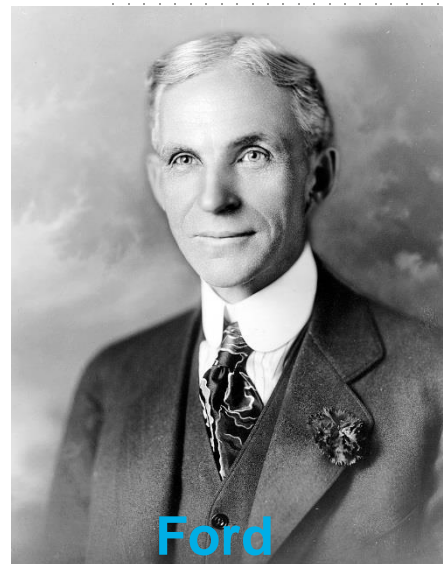
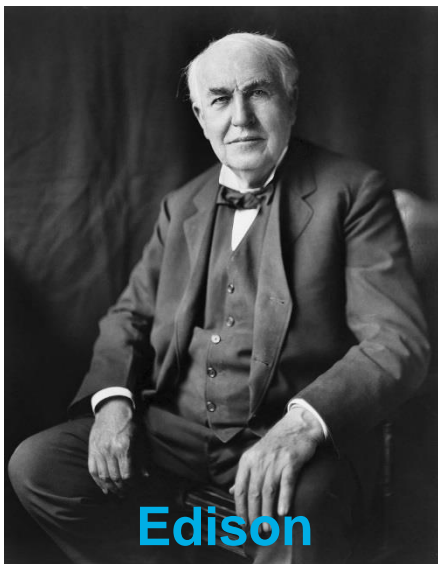


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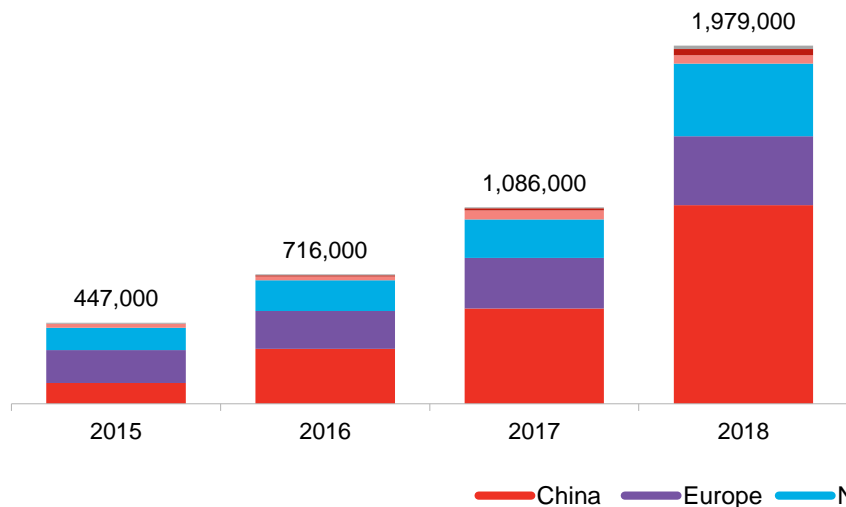
Twin transitions

同時並行で起こる変化

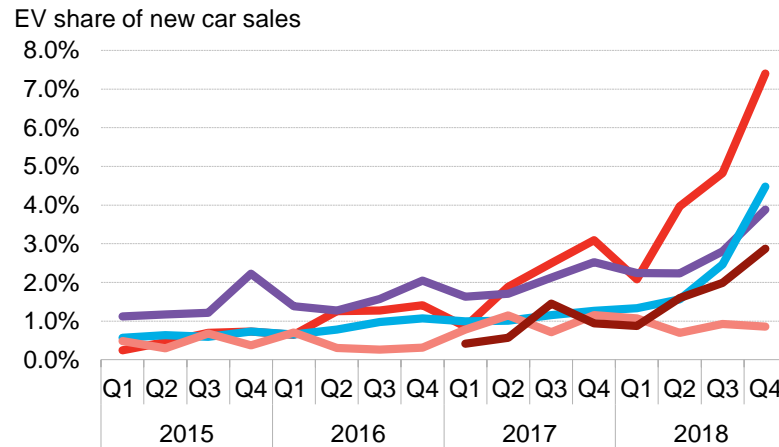


電気自動車の急速な普及

Global EV sales



EV sales penetration by country

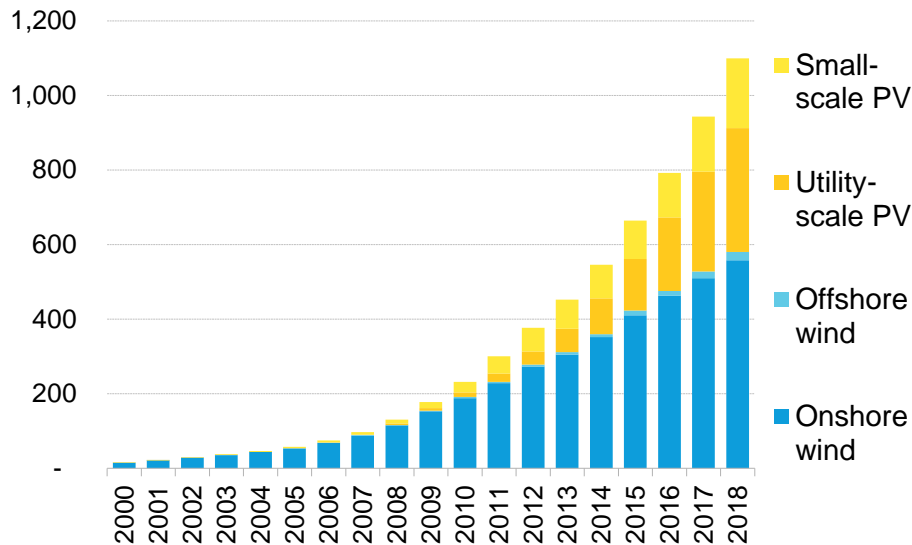


Source: BloombergNEF, EV includes BEVs and PHEVs. Some December 2018 data is estimated. Europe figure covers 16 main European vehicle markets

風力、太陽光がテラワットを超え、蓄電池も普及し続ける

Global wind and solar installations

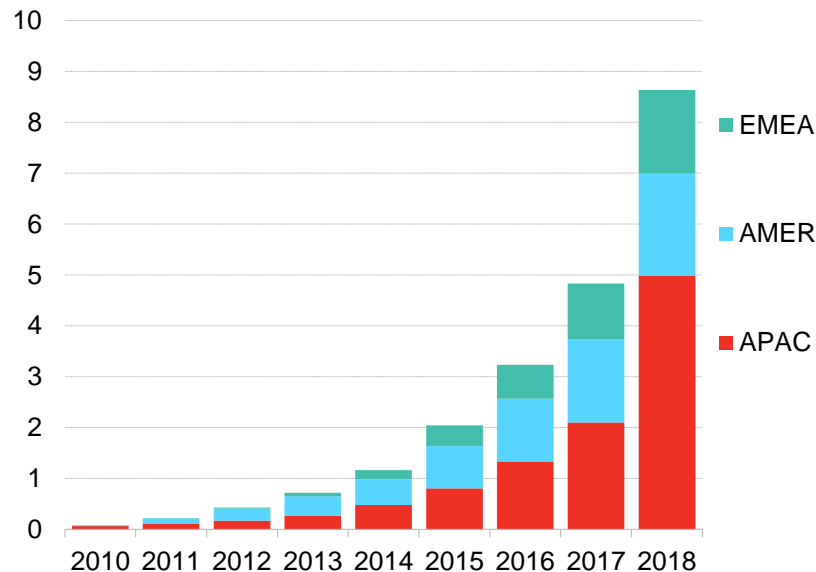
Cumulative GW



Source: Bloomberg NEF.

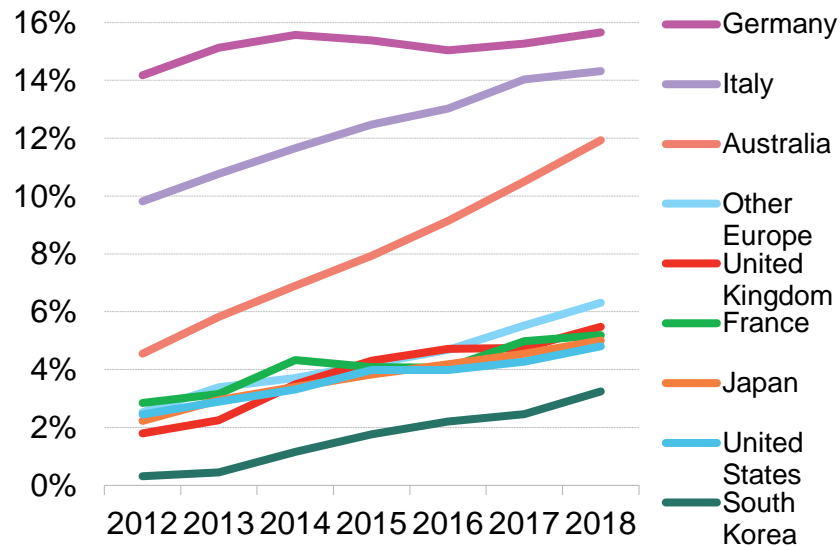
Global energy storage installations

Cumulative GW

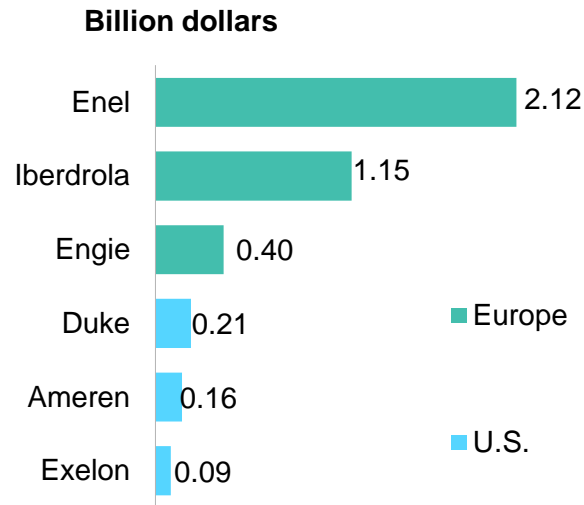


分散化とデジタル化

Decentralization ratio



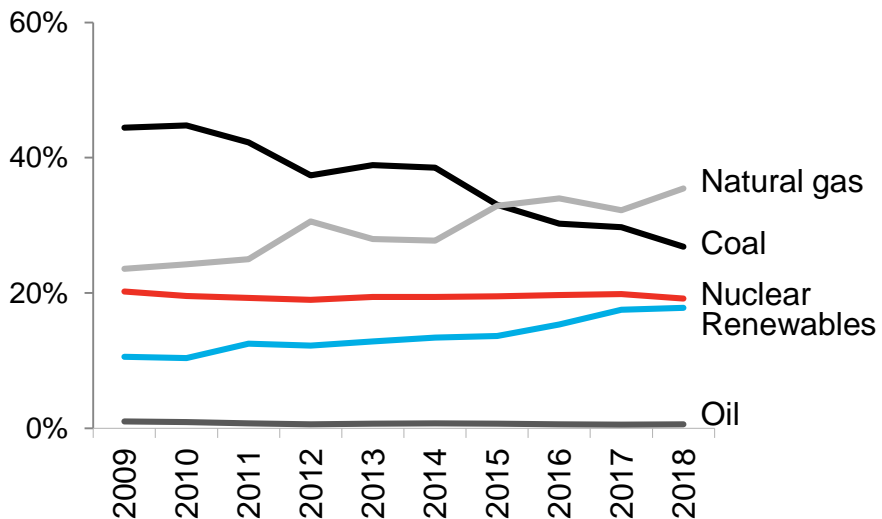
Annualized planned utility digitalization capex



Source: BloombergNEF. Note: decentralization ratio is small-scale PV, storage, and demand response capacity divided by total system capacity

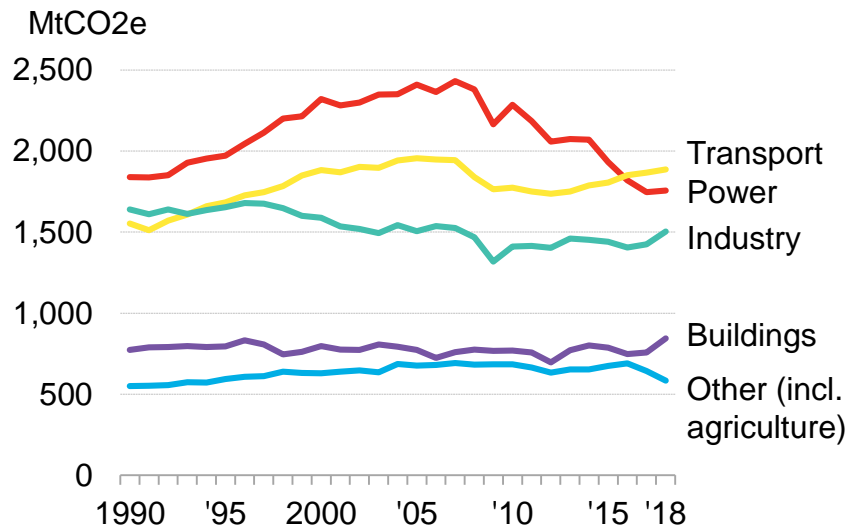
脱炭素化が進む

U.S. power generation mix



Source: BloombergNEF, EIA, EPA

U.S. greenhouse gas emissions by sector



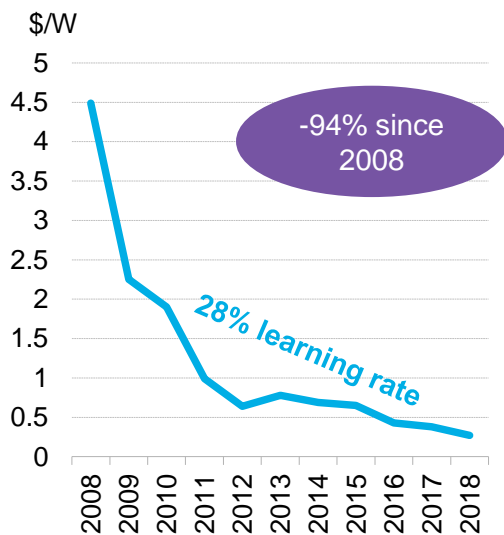
政策と政策のサポート

Selected government targets:	Electric vehicles	Renewable power
California	5m (~33%) on the road by 2030	60% by 2030 100% clean power by 2045
Europe	<i>30-50% of sales by 2030</i>	55% by 2030*
Sweden	Ban ICE sales by 2030	<i>100% by 2040</i>
UK	Ban ICE sales by 2040	<i>~50% by 2030</i>
Spain (proposed)	Ban ICE sales by 2040	70% by 2030, 100% by 2050
China	7m (~20%) sales by 2025	35% by 2030

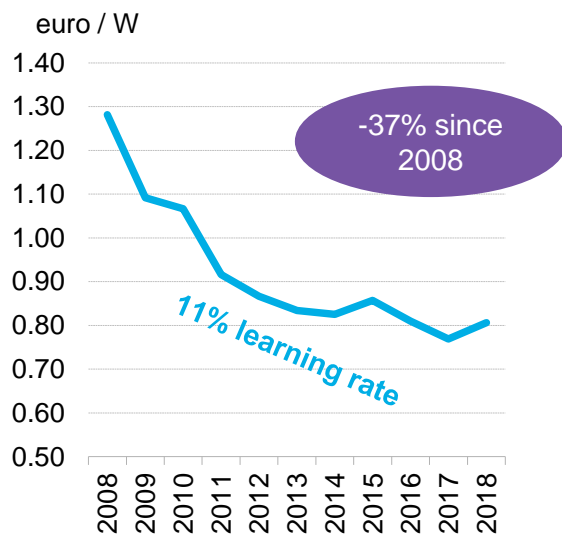
*Note: Italicized figures are our estimates and interpretations of EU regulations and UK carbon budget. *EU legislation calls for 32% renewable energy by 2030, of which power sector is expected to make a bigger contribution of around 55%.*

技術の急速な変化

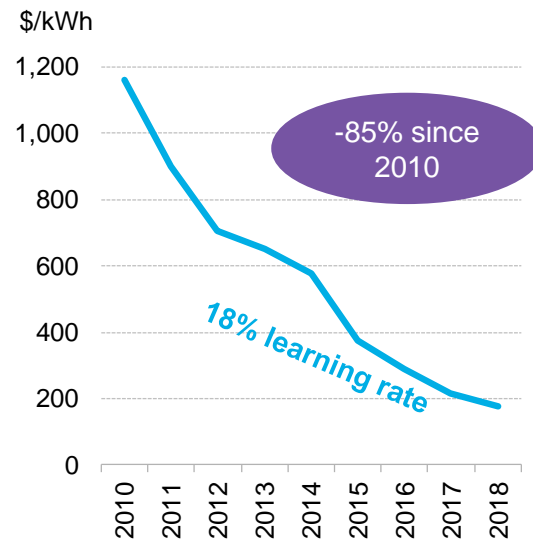
Solar PV module prices



Onshore wind turbine prices



Lithium-ion battery prices

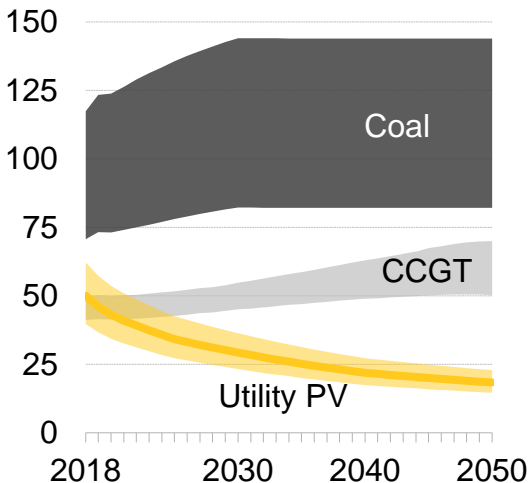


Source: BloombergNEF.

変化は転換点を迎える

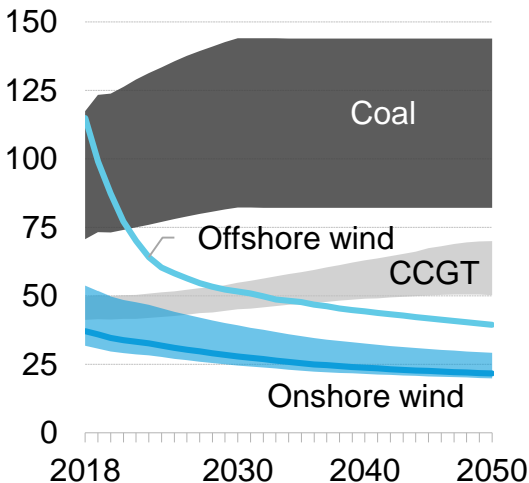
Solar costs vs. coal & gas

\$/MWh (2017 real)



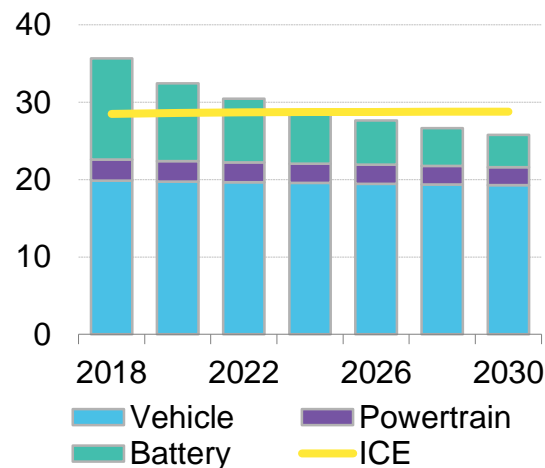
Wind costs vs. coal & gas

\$/MWh (2017 real)



EV purchase price vs. ICE

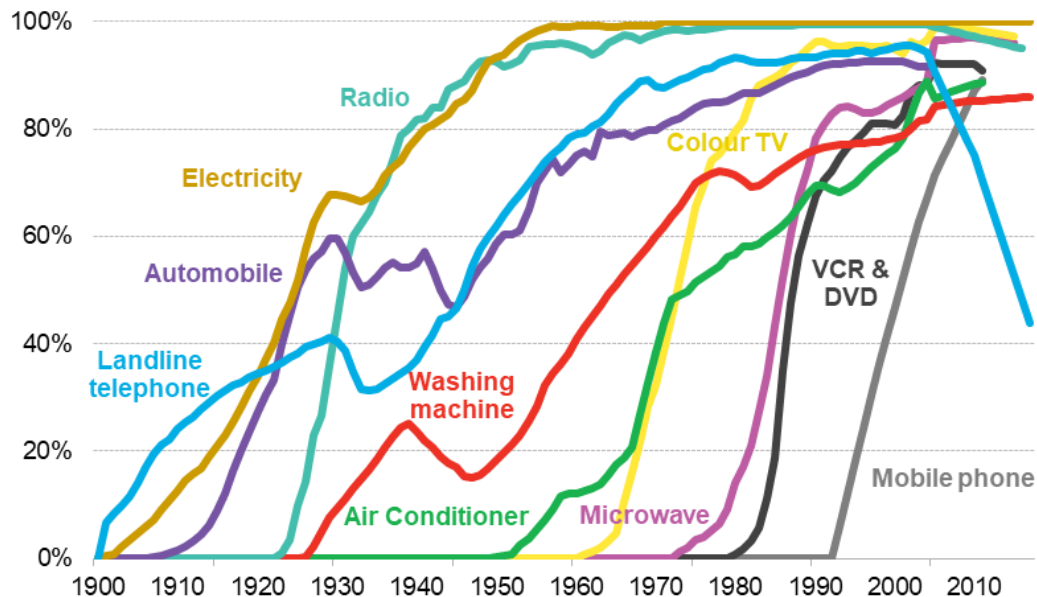
EV and ICE price in \$ thousand



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.

過去の転換点

Selected technologies' penetration of U.S. households

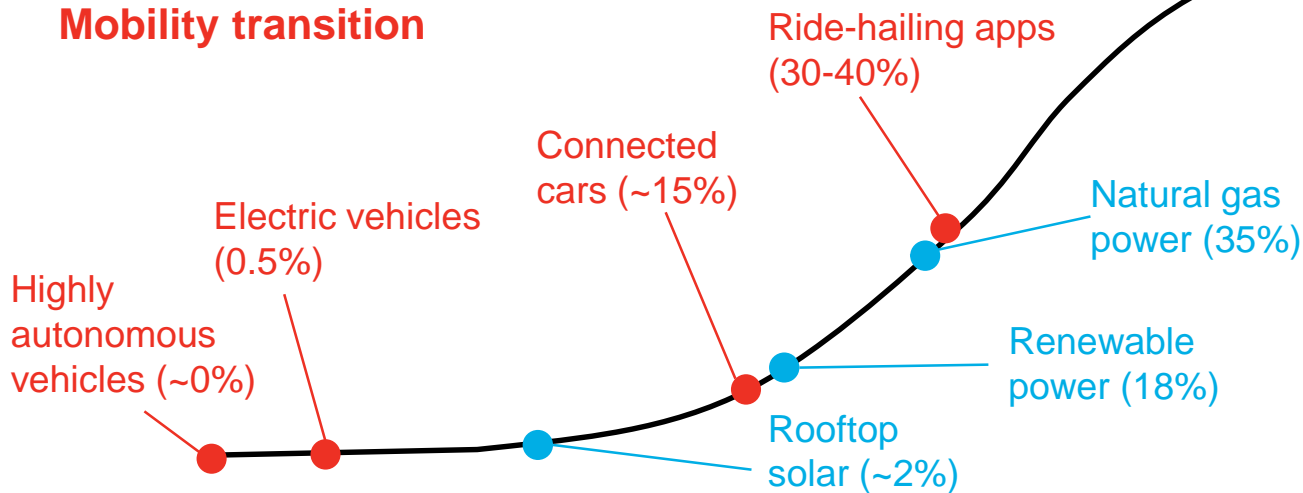


Source: Michael Felton, NY Times, <https://www.census.gov/history/pdf/sipp-data-appliances.pdf>

スピードは違えど、変化は進んでいく...

Current penetration of selected technologies, U.S.

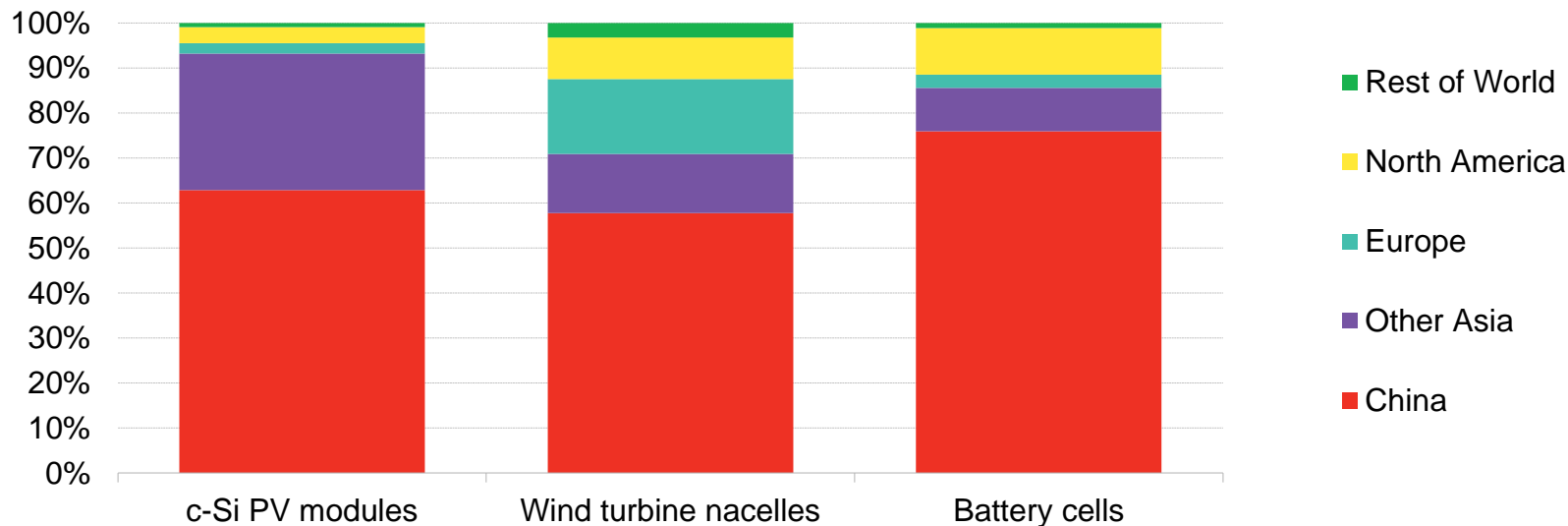
Mobility transition



Note: BloombergNEF

...そして産業政策

Geographical distribution of manufacturing capacity



Source: BNEF. Note: figures are for capacity, not production. Latest data 2019 for batteries, 2017 for wind.

Sector coupling

共に進化する

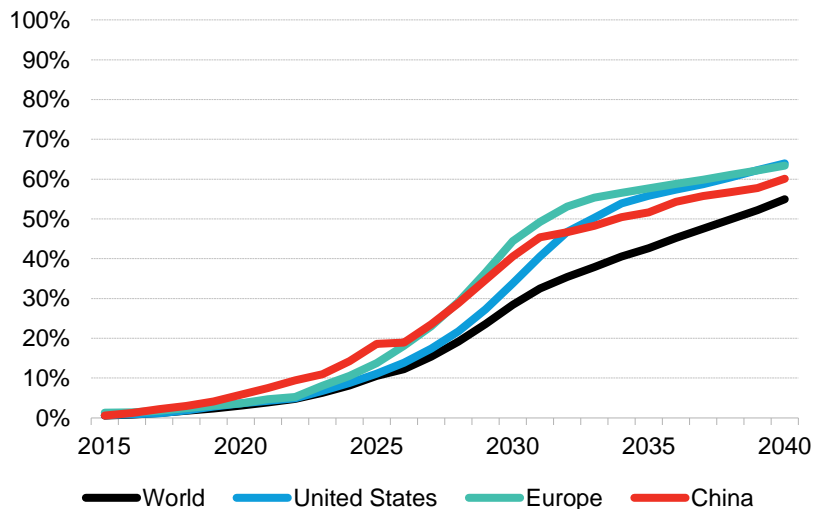


Image from theloop.ca

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

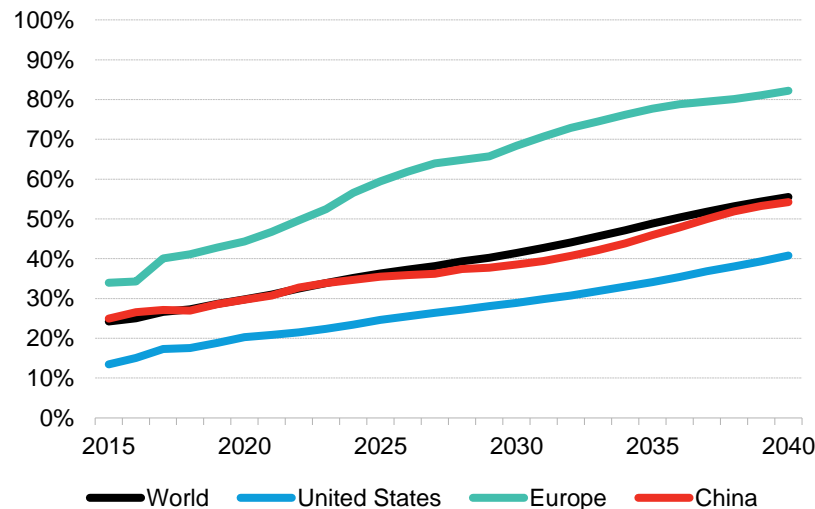
EV share of passenger vehicle sales



Source: BloombergNEF 2018 EV Outlook

New energy outlook

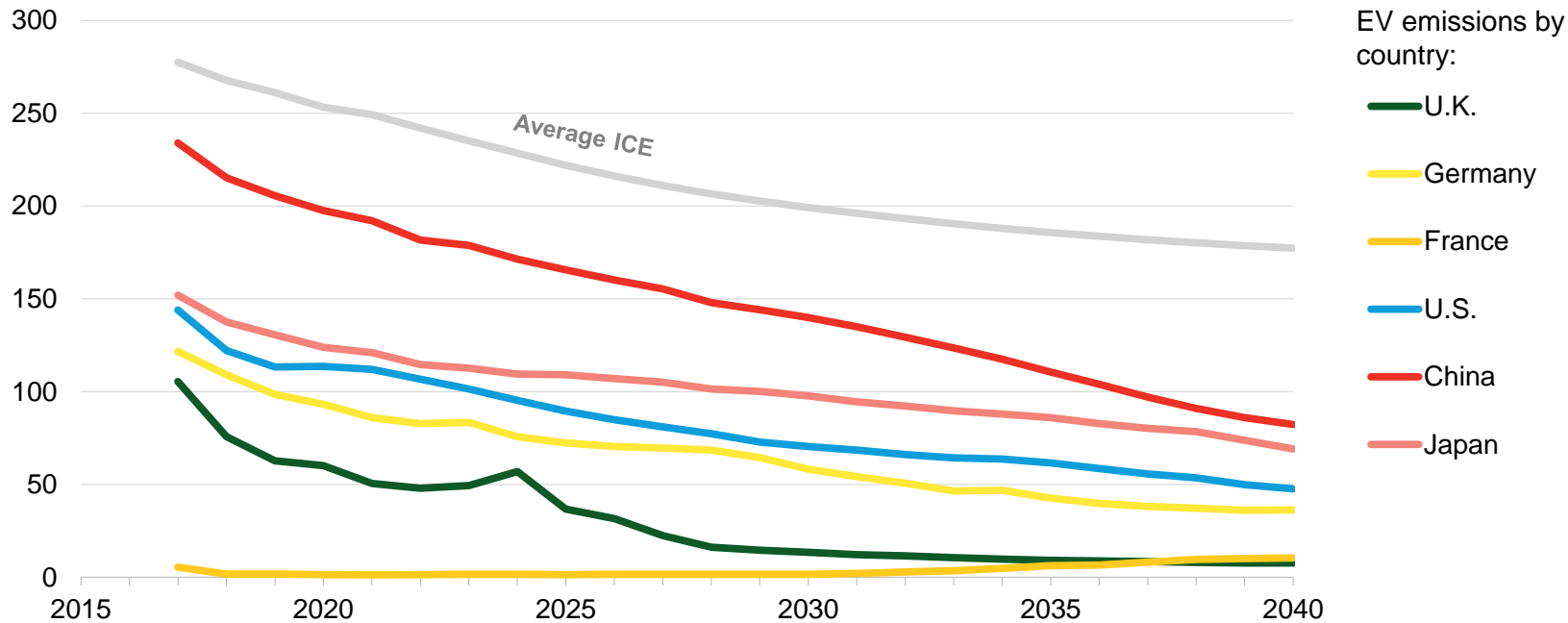
Renewable share of total generation



Source: BloombergNEF 2018 New Energy Outlook

電気自動車からの排出量

gCO2/mile

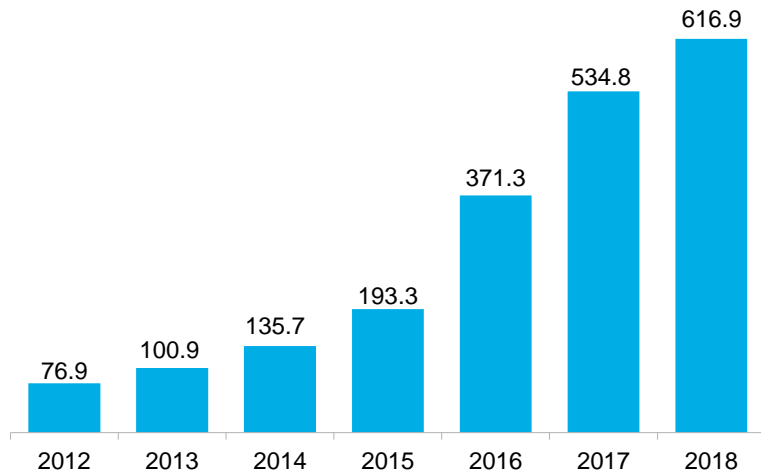


Source: BloombergNEF

充電インフラ

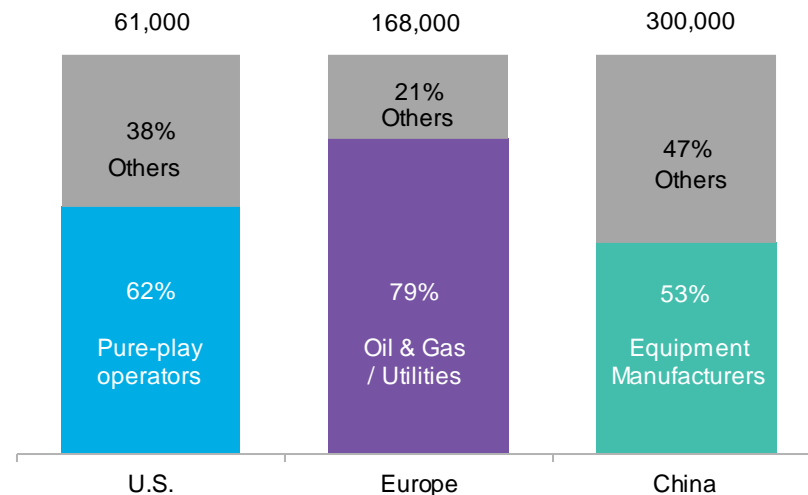
Chargepoints deployed, 2012-18

Thousands



Source: BloombergNEF

Largest type of chargepoint operators by region, 2018










Source: BloombergNEF

Distracted boyfriend

新たな挑戦者の登場



石油会社の電力業への参入

		Europe					U.S.	
								
Generation and trading	Gas power plants							
	Power trading				(Danske Commodities)			
	Renewable energy	(Multiple)	(Lightsource, others)	(Silicon Ranch Corp)		(Apodi project)		Reducing emphasis
	Grid-connected storage	(Saft)	Tesla partnership			(Planned)		
Residential and industrial retail	Electricity sales	(Lampiris, Direct Energie)	(Planned)	(First Utility)				
	On-site generation (e.g., rooftop PV)		(Lightsource)					
	Other services (eg, demand response)	(GreenFlex, Direct Energie)	(Ubiworx)	VC, partnerships				
Electric vehicles	Public charging infrastructure	(G2mobility, PitPoint)	(Charge-master)	(NewMotion)	VC (Chargepoint)	Partnership (Ionity)		VC (Chargepoint)
	AVs or car sharing		VC (Drover)	VC (FarePilot)				

Source: BloombergNEF, company reports and presentations.

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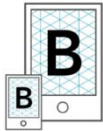
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