Accelerating Innovation

Dr. Andrew Steer
President & CEO
Bezos Earth Fund
Total global GHG emissions by sector
What’s Needed to Transform the Transport System

Reduce

Shift

Decarbonize

Provide Access
The Path to Decarbonization

Future policies could achieve 85% of reduction required to reach 1.5°C goal

2050 emissions with future policies

Baseline 2020 emissions

Median target to reach 1.5°C goal

Source: ICCT
Number of kilometers of rapid transit per 1,000,000 inhabitants (in the top 50 emitting cities)

- **Historical Data**: Shows the trend from 1990 to 2020.
- **Current Trend**: Projected increase from 2020 to 2030.
- **Needed Pace**: The required increase to reach the 2030 target.

**2020 Data**: 19 km/1,000,000 inhabitants

**2030 Target**: 38 km/1,000,000 inhabitants

**EXPONENTIAL CHANGE UNLIKELY**

**ACCELERATION FACTOR NEEDED TO REACH 2030 TARGET**: 6X

**SOURCE**: ITDP
Number of kilometers of high-quality bike lanes per 1,000 inhabitants (in the top 50 emitting cities)

- **Historical Data**
- **Current Trend**
- **Needed Pace**

**WORLD**

km/1,000 inhabitants

**HISTORICAL DATA**

- 2010: 0
- 2020: 0

**2030 Target**

- 2030: 2

**EXPOENTIAL CHANGE UNLIKELY**

**ACCELERATION FACTOR NEEDED TO REACH 2030 TARGET**

10X+

**SOURCE:** United Nations
Share of electric vehicles in light-duty vehicle sales

Historical Data ➤ Current Trend ➤ Needed Pace

WORLD

2035 Target: 100%
2030 Target: 75-95%
HISTORICAL DATA: 1.7%
2021 Data

EXPONENTIAL CHANGE LIKELY
ACCELERATION FACTOR NEEDED TO REACH 2030 TARGET 5X

SOURCE: BNEF
Innovation noun

1: A new idea, method, or device

2: The introduction of something new
Four Types of Innovation

1. Incremental
2. Basic research
3. Breakthrough
4. Disruptive
1896 Scissors
1912 Western Roll
1936 Straddle
1968 Fosbury Flop
THE BREAKTHROUGH EFFECT:
HOW TO TRIGGER A CASCADE OF TIPPING POINTS TO ACCELERATE THE NET ZERO TRANSITION
Historical and projected capital cost vs. installed capacity for P2X electrolyzers

Learning Rate: 18%

-60% x2,000
-85% x15,000

Instal Capacity  Capital Cost  Tipping Point Range
Catalyzing Innovation

1. A narrative that inspires
2. A systems-change mindset
3. Leadership that takes risks
4. Smart politics, opportunities seized
5. Big thinking
Catalyzing Innovation

1. A narrative that inspires
Electric School Buses

Health
Economy
Generational transition
Utility storage
Climate change
Paris mayor Anne Hidalgo: ‘A city’s creativity doesn’t depend on cars. That’s the 20th century’

Accused of desecrating the French capital, the politician wants more bikes, green spaces and social housing.
Catalyzing Innovation

1. A narrative that inspires

2. A systems-change mindset
Green Shipping Routes

Source: Global Maritime Forum, 2021
Catalyzing Innovation

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2. A systems-change mindset
3. Leadership that takes risks
New York State commits to 100% electric school buses by 2035 [Update]

Michelle Lewis | Apr 8 2022 - 7:27 am PT | 0 Comments

ELECTRIC SCHOOL BUSES

Colorado commits $65 million to electric school buses

The race to electrify America’s school bus fleet

Photo: Laura Gilchrist, Flickr
Shipping giant Maersk to become major green hydrogen consumer as it embraces methanol fuel

Danish company has ordered 12 methanol-powered container vessels from shipbuilder Hyundai Heavy Industries
Bogota, Colombia
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Electric Vehicle Timeline

- **Tesla**: To begin Model 3 volume production.
- **PSA**: To launch first electrified models on Efficient Modular Platform (EMP).
- **JAGUAR**: JLR will electrify all models.
- **RENAULT NISSAN**: Renault-Nissan plans joint platform for EVs.
- **SUBARU**: Subaru to launch first full EV.
- **Volvo**: Targets 1mn total sales of electrified cars.
- **DAIMLER**: Daimler plans 15-25% of production to be electric.
- **Aston Martin**: Plans 25% of sales to be electric.

**Timeline**:
- 2017: Tesla targets annual sales of 500,000.
- 2018: GM plans to produce 500,000 electrified vehicles by year-end.
- 2019: Volvo will no longer sell cars solely powered by ICEs.
- 2020: Ford to have 40% of global models electrified (hybrid, PHEV, BEV).
- 2021: PSA to have all 7 PHEV and 4 BEV models built on EMP.
- 2022: Ford to have 13 new electrified models.
- 2023: BMW plans 15-25% of sales to be electrified.
- 2024: Porsche plans 50% of cars to be electric.
- 2025: VW plans to have 30 new EVs accounting for up to 25% of sales (2-3mn units).
- 2026: Aston Martin plans all models to be hybrid by 'mid-2020s'.

Source: BMI Research
Catalyzing Innovation

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Governments with set targets for phasing out sales of all new internal combustion engine passenger cars

Note: BEV = battery electric vehicle; FCEV = fuel cell electric vehicle; PHEV = plug-in hybrid electric vehicle
Source: Wappelhorst, 2021
Why is PM Modi setting such disruptive goals?

500 gigawatts of renewable energy and half of energy mix from sources other than fossil fuels by 2030
Catalyzing Innovation

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5TH AVE, NEW YORK, 1900
5TH AVE,
NEW YORK, 1913
Global EV Sales (‘000s)

Source: EV Volumes
Total Committed Electric School Buses

Cumulative # of ESBs committed*
The Systems Change Lab
A VIRTUAL SITUATION ROOM
Thank you!