A REVOLUTION IN HOW WE CONSUME AND PRODUCE ENERGY IS UNDERWAY

“IF I HAD ASKED PEOPLE WHAT THEY WANTED, THEY WOULD HAVE SAID: FASTER HORSES...”

Henry Ford
CONTENTS

Drivers supporting the revolution
Implications for capital flows
What does this mean for the future?
FIVE FACTORS WILL DRIVE US TO A MORE SUSTAINABLE FUTURE

DRIVERS OF THE ENERGY REVOLUTION

The need to electrify
Rise of renewables
Digitalisation 2.0
Electrification of transport
Emergence of Storage

A ZERO-CARBON, SUSTAINABLE PLANET
ELECTRICITY IS BECOMING THE WORLD’S MOST IMPORTANT ENERGY SOURCE
DRIVER #1: IT ALREADY IS AS OUR **DIGITAL WORLD CAN NOT SURVIVE WITHOUT ELECTRICITY!**
DRIVER #2: TECHNOLOGY CHANGE AND ECONOMICS WILL PUSH US TO ELECTRIFY TRANSPORT, HEAT AND HEAVY INDUSTRY
DRIVER #3: ONE OF THE BEST WAYS TO LOWER CO₂ EMISSIONS IS TO REDUCE ENERGY CONSUMPTION THROUGH ELECTRIFICATION

Our Energy System is highly inefficient, wasting 60% of the energy extracted.
DRIVER #4: OUR FUTURE DIGITAL WORLD NEEDS MORE ELECTRICITY!
RENEWABLES TECHNOLOGY WILL DOMINATE THE GLOBAL CAPACITY MIX OVER THE COMING DECADES
DRIVER #1: LOW COST RENEWABLES...

LCOE by technology in different markets

Source: Alexa Capital

January 2021
DRIVER #2: WE WILL SEE FURTHER COST REDUCTIONS IN RENEWABLES AND IN PARTICULAR SOLAR WE WELL AS PERFORMANCE INCREASES

Solar is now ‘cheapest electricity in history’, confirms IEA

Sources: Bloomberg, International journal of science
Renewables

DRIVER #3: IT IS MUCH EASIER AND CHEAPER TO DECARBONISE ELECTRICITY THAN HYDROCARBON FUELS...

Decarbonising heat is:

💰 Expensive

🚫 Disruptive

Typical Home Improvements:
A. Sealing air leaks and adding insulation
B. Improving heating and cooling systems
C. Sealing ductwork
D. Replacing windows
E. Upgrading lighting, appliances and water heating equipment
F. Installing renewable energy systems

January 2021
DIGITALISATION 2.0 IS THE KEY TECHNOLOGY DISRUPTOR OF THE NEXT DECADE, AND WILL TRANSFORM THE WAY WE THINK ABOUT ENERGY & MOBILITY

Impact of Big Technology Shifts on Economic Development

January 2021
DRIVER #1: ECONOMICS

BIG DATA
DRIVER #2: EASE OF USE
**DRIVER #3: COVID-19 IS ACCELERATING THE DIGITAL TRANSITION**

### iOS Top App Charts

<table>
<thead>
<tr>
<th>#</th>
<th>App</th>
<th>Free Rank</th>
<th>Grossing Rank</th>
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<tr>
<td>1</td>
<td>ZOOM Cloud Meetings</td>
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<td>100+</td>
<td>Business</td>
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<td>2</td>
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<td>4</td>
<td>Webex</td>
<td>4</td>
<td>100+</td>
<td>Social Networking</td>
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<tr>
<td>5</td>
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<td>10</td>
<td>Business</td>
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<td>6</td>
<td> ANTON:  Learn-App  </td>
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<td>86</td>
<td>Education</td>
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<td>7</td>
<td>Microsoft Word</td>
<td>7</td>
<td>17</td>
<td>Productivity</td>
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<tr>
<td>8</td>
<td> Zoom </td>
<td>8</td>
<td>25</td>
<td>Entertainment</td>
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<tr>
<td>9</td>
<td>Google Chrome</td>
<td>9</td>
<td>10</td>
<td>Utilities</td>
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<tr>
<td>10</td>
<td>  Messaging for WhatsApp on iPad</td>
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<td>100+</td>
<td>Social Networking</td>
</tr>
<tr>
<td>11</td>
<td> Microsoft Outlook</td>
<td>11</td>
<td>100+</td>
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<td> Microsoft PowerPoint</td>
<td>13</td>
<td>100</td>
<td>Productivity</td>
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<td>14</td>
<td> YouTube </td>
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<td>20</td>
<td>Photo and Video</td>
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<tr>
<td>17</td>
<td> Microsoft OneNote</td>
<td>17</td>
<td>11</td>
<td>Productivity</td>
</tr>
</tbody>
</table>
DRIVER #4: BIG TECH POWER DEMAND WILL CONSUME 21% OF TOTAL ENERGY BY 2030

Global data center market size projections appear conservative, since forecast growth rates for Big Data applications are significantly higher.

Sources: Bloomberg, International journal of science
THE TRANSPORTATION SECTOR IS ELECTRIFYING

EVs
**DRIVER #1: PHYSICS AND ECONOMICS ARE DRIVING AUTOMOBILES TOWARDS AN ELECTRIC FUTURE**

<table>
<thead>
<tr>
<th>ICE</th>
<th>Hybrid</th>
<th>EV</th>
</tr>
</thead>
<tbody>
<tr>
<td>25% efficiency</td>
<td>28% efficiency</td>
<td>77% efficiency</td>
</tr>
<tr>
<td>Oil</td>
<td>Oil</td>
<td>Renewables</td>
</tr>
<tr>
<td>Plant to tank</td>
<td>Plant to tank</td>
<td>Grid losses</td>
</tr>
<tr>
<td>Thermodynamic losses</td>
<td>Thermodynamic losses</td>
<td>Battery charger</td>
</tr>
<tr>
<td>Engine &amp; transmission</td>
<td>Engine &amp; transmission</td>
<td>Li-ion batteries</td>
</tr>
<tr>
<td>6 litres per 100km</td>
<td>4.5 litres per 100km</td>
<td>15.5kWh per 100km</td>
</tr>
<tr>
<td>€6.50</td>
<td>€4.50</td>
<td>€1.08</td>
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</table>

*Source: Alexa Capital*
DRIVER #2: BATTERY CELL COSTS ARE GOING TO FALL FURTHER IN THE NEXT YEARS AND PERFORMANCE AND LIFETIME IS GOING TO IMPROVE

### Benchmark

<table>
<thead>
<tr>
<th>Material pricing decrease</th>
<th>Energy density increase</th>
<th>Production rate increase</th>
<th>Scrappage decrease</th>
</tr>
</thead>
<tbody>
<tr>
<td>91.3</td>
<td>85.4</td>
<td>80.8</td>
<td>79.7</td>
</tr>
<tr>
<td>73.5</td>
<td>74.4</td>
<td>71.7</td>
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<tr>
<td>63.8</td>
<td>62.3</td>
<td>62.3</td>
<td>61.3</td>
</tr>
<tr>
<td>85.4</td>
<td>80.8</td>
<td>80.1</td>
<td>79.7</td>
</tr>
<tr>
<td>80.8</td>
<td>80.1</td>
<td>79.7</td>
<td>79.4</td>
</tr>
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<td>71.7</td>
<td>70.6</td>
<td>70.6</td>
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<td>63.8</td>
<td>62.3</td>
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<td>63.8</td>
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<tr>
<td>85.4</td>
<td>80.8</td>
<td>80.1</td>
<td>79.7</td>
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<td>80.8</td>
<td>80.1</td>
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<td>79.4</td>
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<td>71.7</td>
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<td>71.7</td>
</tr>
<tr>
<td>63.8</td>
<td>62.3</td>
<td>62.3</td>
<td>63.8</td>
</tr>
</tbody>
</table>

### Performance and Lifetime Improvement

- **Material pricing decrease**
- **Energy density increase**
- **Production rate increase**
- **Scrappage decrease**

### Key Points

- **1000+km range EVs are in sight!**

---

**Source:** BNEF & CATL

January 2021
DRIVER #3: AUTOMOBILE MANUFACTURERS ARE UNDER PRESSURE TO IMPROVE FUEL EFFICIENCY AND REDUCE EMISSIONS

<table>
<thead>
<tr>
<th>Category</th>
<th>US</th>
<th>EU</th>
<th>China</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCO advantage to drive widespread adoption</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Depends on the evolution of fuel &amp; battery prices, taxes, incentives</td>
<td>✓</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Increasing offer of desirable EVs in premium segments</td>
<td>✓</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Tightening regulations &amp; CO2 fleet emissions targets</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>City level emissions regulations &amp; restrictions</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>ICE registration bans</td>
<td>x</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>Incentives and tax advantages are present but declining</td>
<td>x</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>xEV adoption will follow announced targets for NEV and FH/MH</td>
<td>x</td>
<td>x</td>
<td>✓</td>
</tr>
</tbody>
</table>

Source: Alexa Capital

January 2021
DRIVER #4: EVS ARE EXCITING TO DRIVE!

Tesla Model 3 S
0-100kmh = 3.2sec!

VW ID3
0-100kmh = 7sec!
WE ARE GOING TO SEE ENERGY STORAGE EVERYWHERE

FOSSIL FUELS ARE EASY TO STORE WHILE ELECTRICITY IS NOT...

changes by e.g. power plant failure, weather influence

disturbances

changes by e.g. power on/off household or industry

power generation

target frequency

51 Hz
50 Hz
49 Hz

power consumption

power generation = power consumption
Driver #1: There are lots of electrical storage technologies already, and these need to be used differently.

Two technologies have dominated the last 100 years: Pumped Hydro & Lead Acid.

Source: BNEF

January 2021
DRIVER #2: LITHIUM ION BATTERIES ARE ALREADY EVERYWHERE!

I COUNTED 150 IN MY HOME...
**Driver #3: Lithium-ion Batteries Is Taking Over from Lead Acid Batteries**

**Energy Density of Different Batteries**

<table>
<thead>
<tr>
<th>Battery Type</th>
<th>Wh/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead acid</td>
<td>40</td>
</tr>
<tr>
<td>NiCd</td>
<td>61</td>
</tr>
<tr>
<td>NiMH</td>
<td>85</td>
</tr>
<tr>
<td>LTO</td>
<td>80</td>
</tr>
<tr>
<td>LFP</td>
<td>118</td>
</tr>
<tr>
<td>LMO</td>
<td>140</td>
</tr>
<tr>
<td>NMC</td>
<td>200</td>
</tr>
<tr>
<td>LCO</td>
<td>200</td>
</tr>
<tr>
<td>NCA</td>
<td>250</td>
</tr>
<tr>
<td>Future Li-ion</td>
<td>350</td>
</tr>
</tbody>
</table>

**Li-ion are now at the same price as lead acid**

Source: BNEF

January 2021
DRIVER #4: LITHIUM-ION PRICING IS GOING TO GET LOWER AND VOLUMES ARE INCREASING - MOSTLY GOING INTO TRANSPORT

Lithium-ion battery pack price (real 2019 $/kWh)

Cumulative demand for lithium-ion batteries (GWh)

Source: BNEF

January 2021
DRIVER #5: BATTERY CELL COSTS ARE GOING TO FALL FURTHER IN THE NEXT YEARS AND PERFORMANCE AND LIFETIME IS GOING TO IMPROVE

Source: BNEF & CATL

Benchmark Material pricing decrease: $/kWh

Energy density increase:
- Short term: 79.4
- Mid term: 80.8
- Long term: 80.1

Production rate increase:
- Short term: 73.5
- Mid term: 71.7
- Long term: 70.6

Scrappage decrease:
- Short term: 63.5
- Mid term: 63.8
- Long term: 62.3

Development projects:
- Short term: 50-60Wh/kg
- Mid term: 65-70Wh/kg
- Long term: 75-80Wh/kg

Source: BNEF & CATL
DRIVER #6: LITHIUM-ION BATTERIES WILL BRING TOGETHER THE UTILITY AND AUTOMOBILE VALUE CHAINS

AND CARS ARE ONLY USED 5% OF THE TIME...

1m Tesla = 100GWh of power = Peak power needs of Germany and Netherlands

Source: Alexa Capital

January 2021
DRIVER #7: THERE WILL LOTS OF LOW COST BATTERIES OUT THERE...SECOND LIFE BATTERIES ARE COMING

Source: Alexa Capital
 DRIVER #8: DIGITALISATION ENABLES STORAGE BY ALLOWING DEVICES TO BE CONNECTED TOGETHER
CONTENTS

Drivers supporting the revolution

Implications for capital flows

What does this mean for the future?
1. The evidence on climate risk is compelling investors to reassess core assumptions about modern finance

2. Investors are increasingly reckoning with these questions and recognizing that climate risk is investment risk.

3. Because capital markets pull future risk forward, we will see changes in capital allocation more quickly than we see changes to the climate itself’

*Larry Fink, CEO Blackrock*
CAPITAL IS FLOWING OUT OF OIL AND INTO ELECTRICITY AND IN PARTICULAR CLEAN ENERGY PRODUCERS

Source: Bloomberg

January 2021
THE LARGEST RENEWABLE SUPPLIER VESTAS IN THE WORLD IS WORTH MORE THAN THE TWO BIGGEST OIL AND GAS SERVICES BUSINESSES TOGETHER

Source: Bloomberg
ENERGY AND MOBILITY STOCKS PERFORMED EXCEPTIONALLY WELL IN 2020

- **EVs**: TESLA (+700%)
- **Solar**: Sunrun (+300%), JinKo (+140%), SunPower (+330%)
- **Wind**: Vestas (+90%), PNE (+90%), Siemens Gamesa (+80%)

*Source: Bloomberg*
WE ARE SEEING A **BIG COMMITMENT** TO CLEAN ENERGY FROM FINANCIAL INSTITUTIONS

World's biggest sovereign wealth fund to ditch fossil fuels

*Norway's Government Pension Fund Global gets go ahead to divest $13bn of investments*

Source: The Guardian

▲ North Sea oil companies such as Premier and Tullow will lose investment. Photograph: Alamy
MASSIVE AMOUNTS OF **INFRASTRUCTURE CAPITAL IS FLOWING** TO THE ENERGY SECTOR

<table>
<thead>
<tr>
<th>Environment</th>
<th>2020</th>
<th>Source: Inframation</th>
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<tbody>
<tr>
<td>Greenfield</td>
<td>USD 5.90bn</td>
<td></td>
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<tr>
<td>Brownfield</td>
<td>USD 5.98bn</td>
<td></td>
</tr>
<tr>
<td>Refinancing</td>
<td>USD 5.09bn</td>
<td></td>
</tr>
<tr>
<td>Greenfield PPP activity</td>
<td>8 deals</td>
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<thead>
<tr>
<th>Social</th>
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<td>Greenfield</td>
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</tr>
<tr>
<td>Brownfield</td>
<td>USD 11.38bn</td>
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<td>Refinancing</td>
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<td>Greenfield PPP activity</td>
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<td>Greenfield</td>
<td>USD 34.63bn</td>
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<td>Brownfield</td>
<td>USD 39.60bn</td>
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<td>USD 42.67bn</td>
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<td>Greenfield PPP activity</td>
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<td>Brownfield</td>
<td>USD 86.60bn</td>
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<th>Power</th>
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<td>Brownfield</td>
<td>USD 42.90bn</td>
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<td>Refinancing</td>
<td>USD 18.31bn</td>
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<td>Greenfield PPP activity</td>
<td>7 deals</td>
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<table>
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<tr>
<th>Renewables</th>
<th>2020</th>
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<tr>
<td>Greenfield</td>
<td>USD 75.60bn</td>
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<tr>
<td>Brownfield</td>
<td>USD 66.90bn</td>
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<tr>
<td>Refinancing</td>
<td>USD 44.17bn</td>
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<td>Greenfield PPP activity</td>
<td>4 deals</td>
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<th>Telecommunications</th>
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<td>Greenfield</td>
<td>USD 10.99bn</td>
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<td>Brownfield</td>
<td>USD 70.81bn</td>
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<td>Refinancing</td>
<td>USD 13.05bn</td>
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<td>Greenfield PPP activity</td>
<td>5 deals</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Other</th>
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<td>Greenfield</td>
<td>USD 0.09bn</td>
</tr>
<tr>
<td>Brownfield</td>
<td>USD 6.65bn</td>
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<td>Refinancing</td>
<td>USD 0.96bn</td>
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<td>Greenfield PPP activity</td>
<td>1 deal</td>
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</table>

*January 2021*
HUGE AMOUNTS OF PUBLIC MARKET CAPITAL ARE FLOWING INTO MOBILITY TECH – $100BN IN VALUATIONS

Mobility tech SPAC IPO landscape

Completed or in-progress merger with SPACs

Electric vehicles

- Nikola Motor Company
- Fisker
- Peloton
- InMotion
- VIA
- Microvast
- Solid Power

EV charging and battery technology

- QuantumScape
- ChargePoint
- Sopolyne
- Exide
- Jamba

Autonomous vehicles/lidar

- Veoneer
- Luminar
- Velodyne
- InSitu

Online auto commerce

- CarLotz

Micromobility

- Last Mile

Urban air mobility

- Lilium

<table>
<thead>
<tr>
<th>Company</th>
<th>Ticket</th>
<th>SPAC</th>
<th>SPAC ticker</th>
<th>Announcement date</th>
<th>Segment</th>
<th>Market cap/last valuation ($M)*</th>
<th>Return since announcement data</th>
</tr>
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<tbody>
<tr>
<td>Nikola Motor Company</td>
<td>NKLA</td>
<td>Vecto Riverview Acquisition</td>
<td>VRTQ</td>
<td>March 3, 2020</td>
<td>Electric vehicles (hydrogen/EDR)</td>
<td>$5.580 2</td>
<td>54.3%</td>
</tr>
<tr>
<td>Fisker</td>
<td>FSRI</td>
<td>Spartan Energy Acquisition</td>
<td>SPWQ</td>
<td>July 10, 2020</td>
<td>Electric vehicles (HPC)</td>
<td>$4.116 0</td>
<td>81.8%</td>
</tr>
<tr>
<td>InMotion Motors</td>
<td>INM</td>
<td>Diamond Peak Holdings</td>
<td>DPHC</td>
<td>August 3, 2020</td>
<td>Electric vehicles (HPC/EDR)</td>
<td>$4.410 1</td>
<td>27.4%</td>
</tr>
<tr>
<td>Canoo</td>
<td>GOEV</td>
<td>Honker Energy Capital Acquisition</td>
<td>HCAC</td>
<td>August 20, 2020</td>
<td>Electric vehicles (HPC/EDR)</td>
<td>$4.842 3</td>
<td>146.3%</td>
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<tr>
<td>LAMO</td>
<td>LAMO</td>
<td>Veoneer Motors</td>
<td>GMBH</td>
<td>August 24, 2020</td>
<td>Autonomous vehicles (lidar)</td>
<td>$30.010</td>
<td>84.6%</td>
</tr>
<tr>
<td>QuantumScape</td>
<td>QS</td>
<td>Quantum Capital Acquisition</td>
<td>QCAC</td>
<td>September 3, 2020</td>
<td>Electric vehicles (batteries)</td>
<td>$15.346 9</td>
<td>80.80%</td>
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<tr>
<td>XL Fleet XLI</td>
<td>XLI</td>
<td>Fleet Acquisition II</td>
<td>PMC</td>
<td>September 8, 2020</td>
<td>Electric vehicles (HPC)</td>
<td>$7.695 1</td>
<td>25.3%</td>
</tr>
<tr>
<td>ChargePoint CHPT</td>
<td>CHPT</td>
<td>Switchback Energy Acquisition</td>
<td>SEIC</td>
<td>September 24, 2020</td>
<td>Electric vehicles (charging)</td>
<td>$7.490 0</td>
<td>246.0%</td>
</tr>
<tr>
<td>Bowmore Power</td>
<td>BOMO</td>
<td>Hevelsedge Management Group</td>
<td>RMG</td>
<td>October 5, 2020</td>
<td>Electric vehicles (batteries)</td>
<td>$7.451 3</td>
<td>32.5%</td>
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<tr>
<td>Faraday Future</td>
<td>FFAC</td>
<td>Property Solutions Acquisition</td>
<td>BTA</td>
<td>October 2, 2020</td>
<td>Electric vehicles (HPC)</td>
<td>$3.690 0</td>
<td>N/A</td>
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<td>Microvast</td>
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<td>Torom Holdings</td>
<td>THCH</td>
<td>October 5, 2020</td>
<td>Electric vehicles (batteries)</td>
<td>$7.000 0</td>
<td>57.7%</td>
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</tbody>
</table>

Source: Pitchbook
CAPITAL NEEDS TO FLOW TO THE MINING SECTOR DUE TO THE INCREASING NEED FOR NATURAL MATERIALS TO SUPPORT NEXT GENERATION BATTERIES

The Telegraph

Electric car boom fuels global scramble for nickel and cobalt

A surge in demand for crucial metals could lead to sourcing problems for the growing electric car industry

Source: Telegraph; FT

FINANCIAL TIMES

The electric vehicle revolution: Cornwall tries to revive its lithium mines

The English region wants to produce the metal used in car batteries but has to prove it can do so at scale
FROM 2.5M TO 25M EVS IN A DECADE

1. LITHIUM IS THE LONG TERM WINNER AS IS VERY LIGHT, HAS EXCEPTIONAL NEGATIVE ELECTRODE POTENTIAL AND IS ABUNDANT

Demand up 9x to over 1.2m tonnes p.a by 2030 (25m new EVs) – noting that 50% of lithium demand is already from batteries

Source: BNEF

January 2021
FROM 2.5M TO 25M EVS IN A DECADE

2. COPPER WILL BE A BIG WINNER AS EVERY EV NEEDS AN EXTRA 60KG OF COPPER

- 85kg (car)-200kg (bus)
- 1-10kg

10x increase - 1.5m tonnes p.a. (from 24m tonnes p.a.) – could have big impact on market

Source: Alexa Capital
January 2021
FROM 2.5M TO 25M EVS IN A DECADE
3. NICKEL WILL SEE AT LEAST A 10X INCREASE IN DEMAND FROM BATTERIES BY 2030 TO 1.3M TONNES P.A.

### BNEF refined class 1 nickel supply curve

<table>
<thead>
<tr>
<th>Segment</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
<th>2024</th>
<th>2025</th>
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<tbody>
<tr>
<td>Passenger EV demand</td>
<td>54</td>
<td>51</td>
<td>88</td>
<td>153</td>
<td>201</td>
<td>252</td>
<td>298</td>
<td>395</td>
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<td>Commercial EV demand</td>
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<td>4</td>
<td>9</td>
<td>15</td>
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<td>E-bus demand</td>
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<td>2</td>
<td>2</td>
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<tr>
<td>Two-wheeler demand</td>
<td>19</td>
<td>16</td>
<td>17</td>
<td>24</td>
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<tr>
<td>Storage demand</td>
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<td>10</td>
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<tr>
<td>CE demand</td>
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<td>18</td>
<td>20</td>
<td>23</td>
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<td>TOTAL battery demand</td>
<td>96</td>
<td>93</td>
<td>143</td>
<td>231</td>
<td>301</td>
<td>372</td>
<td>438</td>
<td>546</td>
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<tr>
<td>Non-battery demand</td>
<td>760</td>
<td>768</td>
<td>749</td>
<td>759</td>
<td>764</td>
<td>768</td>
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<tr>
<td>Flexible non-battery demand</td>
<td>313</td>
<td>337</td>
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<td>324</td>
<td>331</td>
<td>337</td>
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<tr>
<td>Total demand</td>
<td>1,169</td>
<td>1,199</td>
<td>1,203</td>
<td>1,314</td>
<td>1,395</td>
<td>1,478</td>
<td>1,544</td>
<td>1,652</td>
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<tr>
<td>De-risked supply (2019)</td>
<td>1,078</td>
<td>1,175</td>
<td>1,248</td>
<td>1,330</td>
<td>1,365</td>
<td>1,386</td>
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<tr>
<td>Nameplate capacity (2019)</td>
<td>1,078</td>
<td>1,216</td>
<td>1,273</td>
<td>1,380</td>
<td>1,422</td>
<td>1,422</td>
<td>1,422</td>
<td>1,476</td>
</tr>
</tbody>
</table>

By 2030 over 50% of global demand will go to batteries

Source: BNEF
January 2021
CONTENTS

Drivers supporting the revolution
Implications for capital flows

What does this mean for the future?
1. THERE IS AN **OPPORTUNITY** TO CREATE GLOBAL CHAMPIONS AS AT THE START OF THE 20\textsuperscript{TH} CENTURY
2. THIS REVOLUTION WILL CAUSE A MAJOR SHIFT IN THE WEALTH OF REGIONS AND NATIONS
3. MANY INCUMBENTS WILL NOT SURVIVE AS THEY WILL BE TOO SLOW TO CHANGE

Source: Bloomberg
THE ONLY OIL & GAS COMPANIES THAT SURVIVE WILL HAVE VERY LOW COSTS OF PRODUCTION, OR WILL CHANGE THEIR BUSINESS MODELS
SOME INCUMBENTS WILL MAKE RADICAL CHANGE – VW, FOR INSTANCE, IS BECOMING A UTILITY