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World Materials Forum

Peter Carlsson, CEO Northvolt

Enabling the Future of Energy

Northvolt was founded with the mission to build **the world's greenest battery** and enable the transition to a decarbonized society and industry

Unique **vertical integration** done at scale

European leadership with **European roots**

Industry leading technology and industrialization platform

World's greenest battery

These levers set Northvolt apart from the rest of the battery manufacturing industry and form the pillars of Northvolt's sustainable competitive advantage

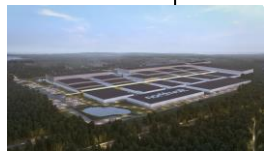
Key milestones on Northvolt's journey

Northvolt is consistently delivering on its business plan towards becoming a European leader in the battery space

October 2016
Northvolt was founded to enable the European transition to a decarbonized future

Spring 2018
Key partnership investments secured & EIB support to begin Northvolt Labs construction

June 2019
USD 1 bn+ Equity funding closed for Northvolt Ett



Summer 2019
Battery cell A-samples delivered to key customers

January 2020
First cell from Northvolt Labs

July 2020
USD 1.6 bn Debt Financing signed

June 2020
HydroVolt battery recycling JV announced in Norway

December 2020
Approved for ~EUR 200 m in grants to expand Northvolt Labs & a new German factory

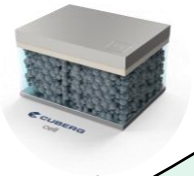
September 2020
USD 600 m Private Placement closed

December 2020
Environmental permit secured for Northvolt Ett expansion to 60 GWh

February 2021
Northvolt Poland ESS Expansion announced

February 2021
A-sample acceptance & nomination from all existing customers

March 2021
Acquired Cuberg's advanced battery technology



February 2021
GWh-scale energy storage supply agreement signed

March 2021
Secured USD 14 bn order from VW Group for Skellefteå expansion

Significant achievements in the last 9 months

Solidifying Northvolt's business plan, de-risking the execution path and laying a strong foundation for future growth

Northvolt project overview

Northvolt Ett

- **USD 1.6bn** debt financing fully unlocked
- **>1,400** contractors on site daily
- **50%** of project completed in March 2021
- **Anode and cathode coating, slurry mixing** being installed
- **US 1 and DS1** structurally complete
- First **cathode active material calcination** equipment installed
- **4,200** equipment containers delivered to site
- Environmental permit secured to **60GWh**
- **Northvolt Ett Expansion** design and groundworks started
- → **First cells in Q4 2021**

Northvolt Labs

- **Northvolt Labs and R&D** facilities fully operational
- **Cathode Materials Lab** installed and operational
- **200+** operators in 3 shifts
- **4 ongoing** industrialization development programs
- **145 km** electrode coated every month
- → **$100 million Northvolt Labs 2.0** expansion started

Revolt

- **Revolt Pilot** operational since September 2020
- **>1,000 kg** batteries crushed **500 kg** black mass recycled
- **94%** recovery yield achieved
- **Hydrovolt JV** construction started
- → **Revolt Ett** construction start in Q2 2021

Systems

- **3,000** modules produced
- **6 GWh+** ESS contract signed, among world's largest contracts
- **45 packs** delivered to Epiroc, used in the field
- → **Northvolt Poland** 5GWh/year expansion for ESS launched

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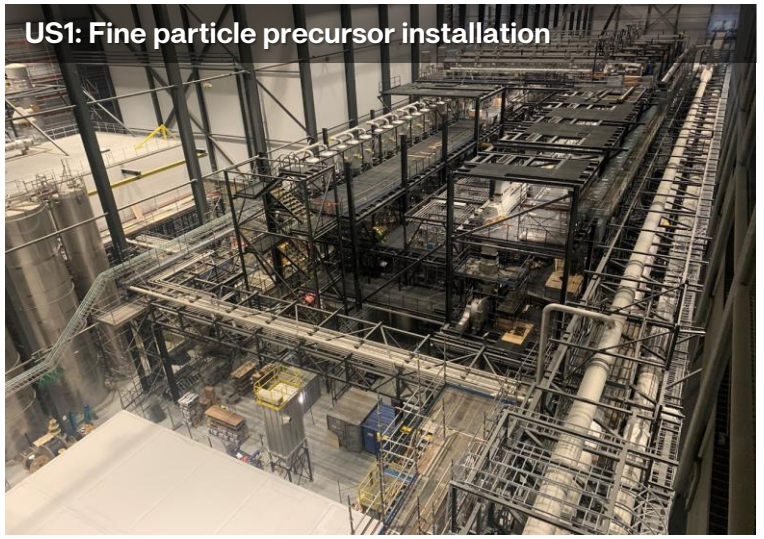
Northvolt Ett progress in pictures

Northvolt Ett Phase 1

US1: Fine particle precursor installation

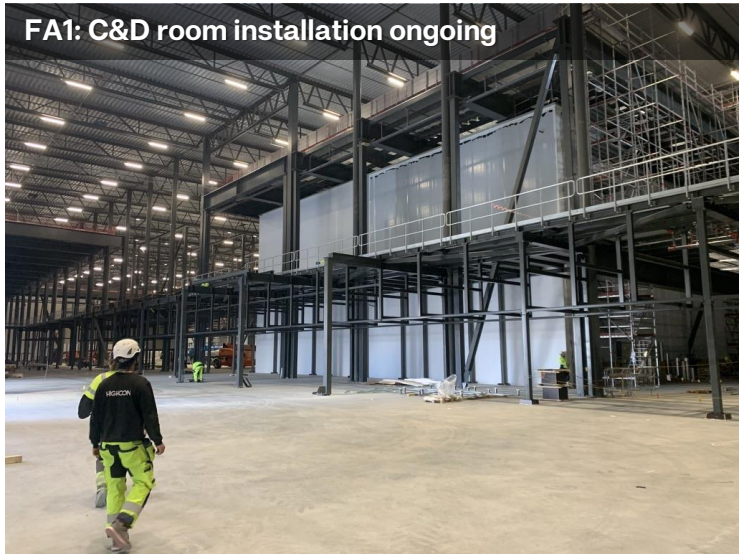


DS1: Cell Assembly Line 1 installation

DS1: Slurry mixing electrical inspection

DS2: Shell near completion

FA1: C&D room installation ongoing



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The Northvolt loop

Northvolt's commitment to sustainability extends throughout the battery supply chain

Focus is placed on raw material sourcing, production processes, logistics, battery recovery and recycling

By building a sustainable raw materials supply chain, significant CO_2 reductions can be realized

Northvolt manufacturing with renewable sourcing of electricity, target to decrease CO2 with

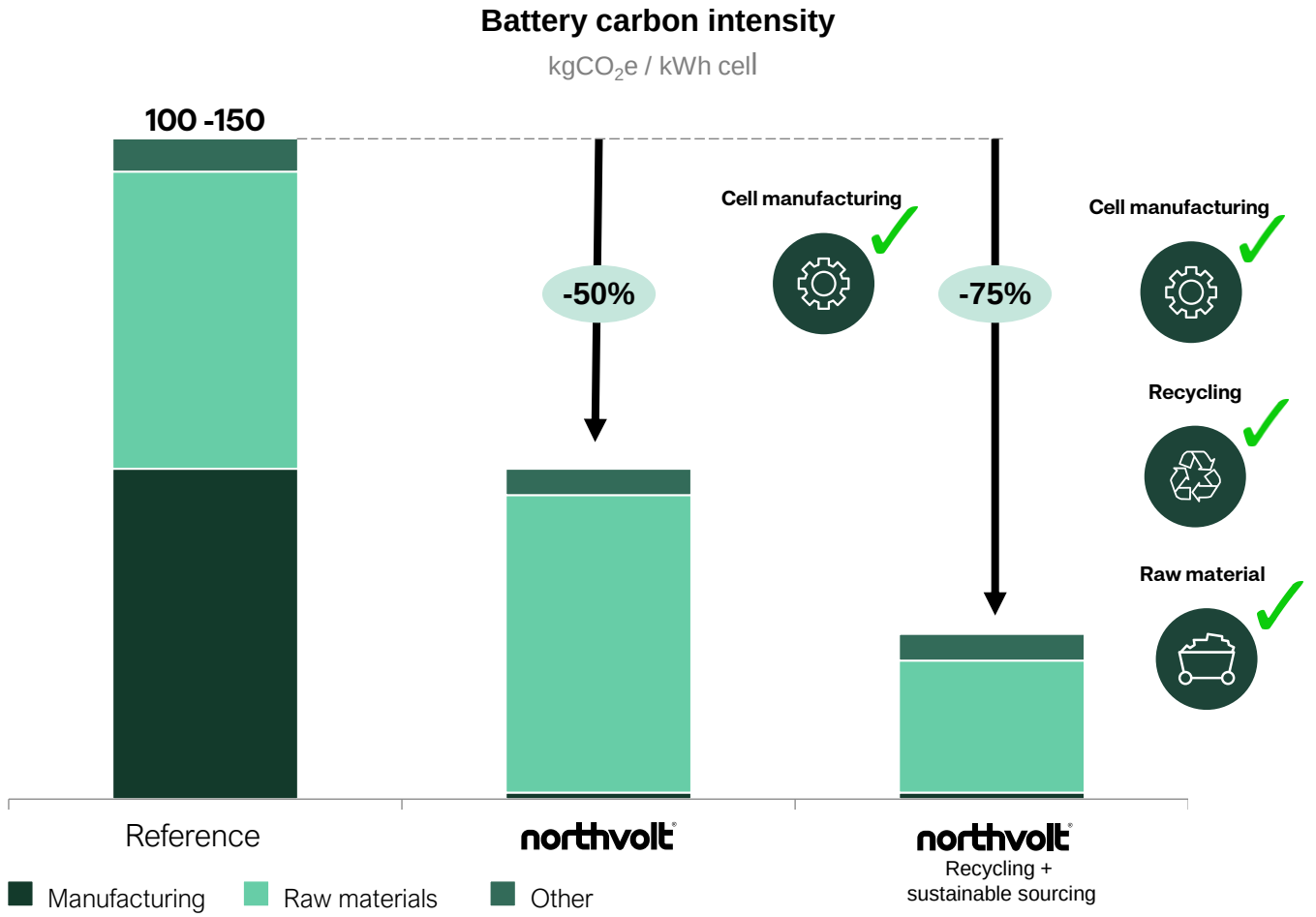
50%

Northvolt raw material strategy with sourcing and recycling, target to decrease CO2 with

75%

The Goal:

10 $kgCO_2e/kWh$



Northvolt's approach to sustainable raw material supply

Raw materials sourcing and recycling

- Raw materials sourced responsibly and locally
- Patented large-scale, vertically integrated recycling process
- Batteries closed loop enabling circular economy

10 kg CO_2e/kWh
Northvolt's long-term emission goal for batteries

50%
Target recycled materials in new batteries by 2030

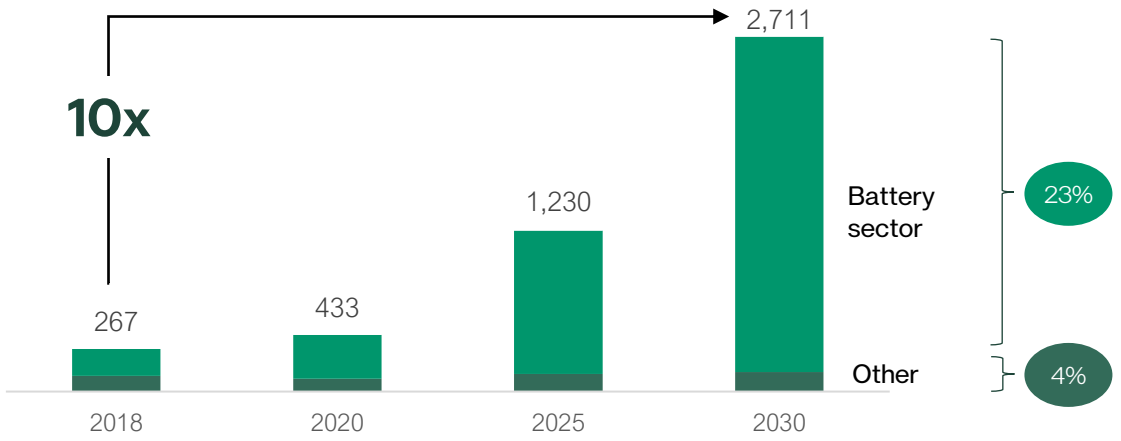
100%
Traceability of all raw materials

- Target most sustainable feed
- Full traceability to mine level
- Working closely with counterparts to ensure environmental and social sustainability
- Audit all mines, smelters and refineries before contracting
- Promoting the European supply chain
- Supporting new projects with best-in-class sustainability profile
- Circular business model with 50% recycled material in 2030

There is a need to strengthen regional supply chains to meet sharp uptick in lithium demand driven by battery market growth

Battery demand will be the primary driver of the lithium market...

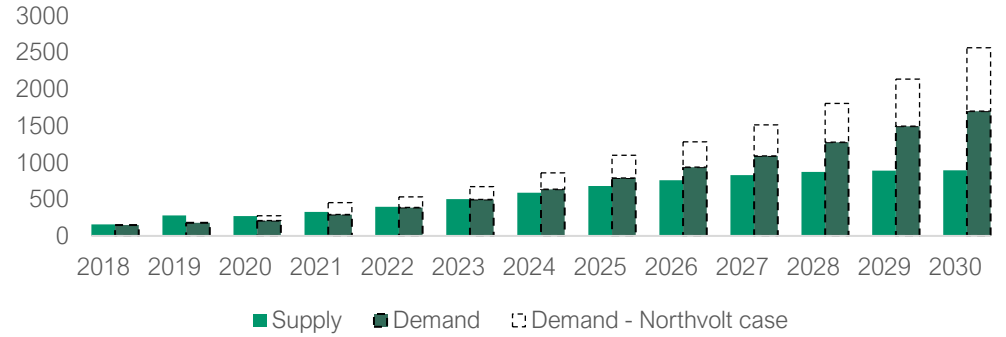
Global lithium demand by use case, ktonnes LCE, base case[1]



- Li-ion battery demand is accelerating globally with a major push from Automotive OEMs to transition to electric vehicles, driven by looming CO2 fines
- Global lithium demand is as a result expected to grow by c. 10x between 2018 and 2030 to 2,7 million tonnes/year
- A prolonged supply deficit to occur in coming years unless significant additional capacity comes online
- Europe is a key growth market for battery demand, but at present lacks lithium refining capacity
- 10+ additional large scale conversion plants needed to meet European demand in 2030

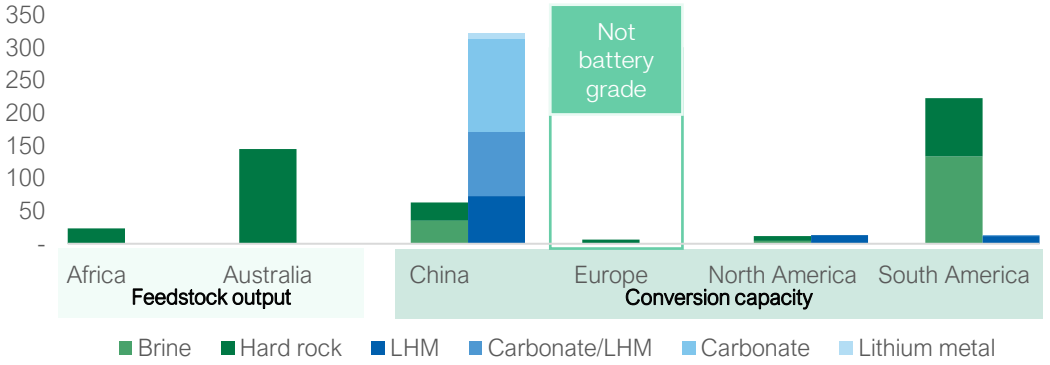
...and significant additional capacity must come online to fill supply gap

Battery grade lithium compound supply and demand, 2020-2030, ktonnes LCE[2]



In Europe, lithium demand is set to soar but capacity is lacking

2019 lithium feedstock production and processing capacity, ktonne LCE[3]



Source: (1) Roskill, Northvolt adjustments for 2020-2030 figures based on projected Li-ion battery demand by World Economic Forum, Global Battery Alliance, McKinsey analysis; (2) Roskill, Northvolt adjustments for based on projected Li-ion battery demand; (3) Wood Mackenzie, Northvolt analysis.

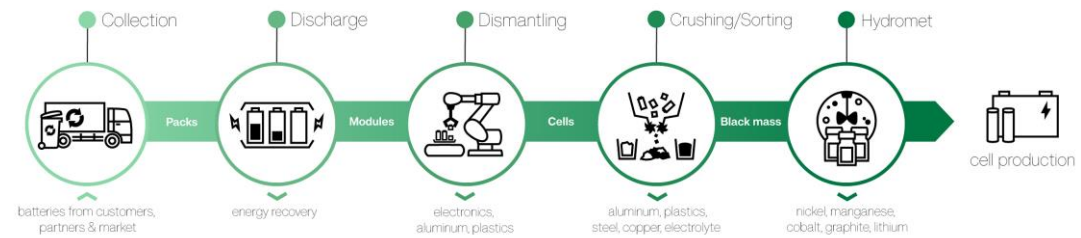
Revolt enables a fully circular business model

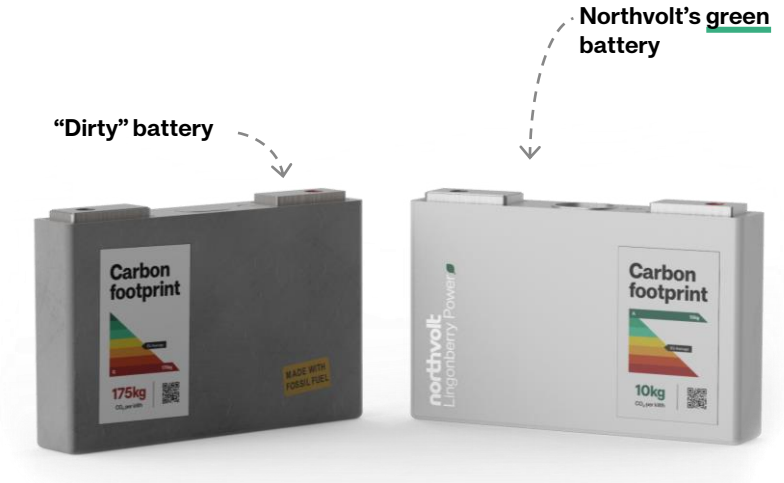
Northvolt's own recycling program reduces dependence on raw materials and unlocks further CO_2 footprint reduction

Revolt is Europe's first large scale EV battery recycling plant, with a developed recycling process targeting ~95% recovery of Nickel, Cobalt, Lithium and Manganese

- **Unique process for high-lithium extraction** from black mass versus peers in the market
- Reducing extraction of new primary resources – large reduction in CO_2 emissions
- **De-risking battery materials supply chain** for Northvolt
- Symbiotic relationship with OEMs, providing long-term customer loyalty and mitigating end-of-life risk
- Significant **economic benefit**, capturing large volumes of scrap and waste from active materials production and cell manufacturing, and batteries reaching end-of life (EOL)

Revolt is well positioned across the entire recycling value chain, with further expansion opportunities across Europe for collection, dismantling and crushing of EOL batteries:



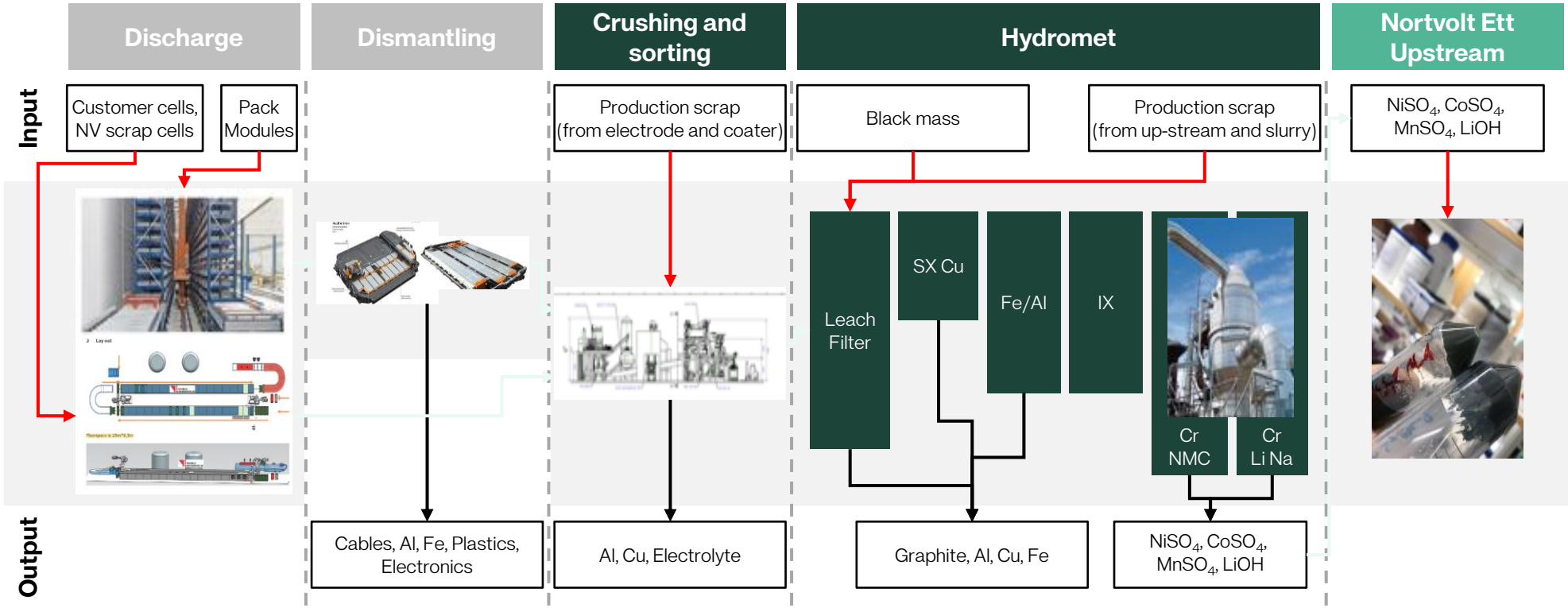


Revolt's sustainability and circularity focus stands to benefit significantly from the new EU Battery Regulation presented in December 2021:

- Mandatory battery **carbon footprint declarations** for all batteries sold in Europe will shift the industry towards sustainability
- Mandatory **recycling efficiencies** with minimum lithium recovery efficiency
- Mandatory **declaration of recycled content** in new batteries, with minimum levels of recycled materials required
- **Retention of spent batteries in Europe**, export of batteries needs proof of recycling facilities with quality and high environmental standards

Source: Northvolt analysis, Independent third-party consultancy firm

Revolt has developed a unique recycling process



Pilot	Revolt Pilot operational in Västerås	
Phase 1	Primarily delivered through partnerships	Revolt Ett in Skellefteå, Sweden – 4 GWh capacity
Phase 2	Regional discharge and dismantling hubs across Europe	Capacity expansion of Revolt Ett

Comments

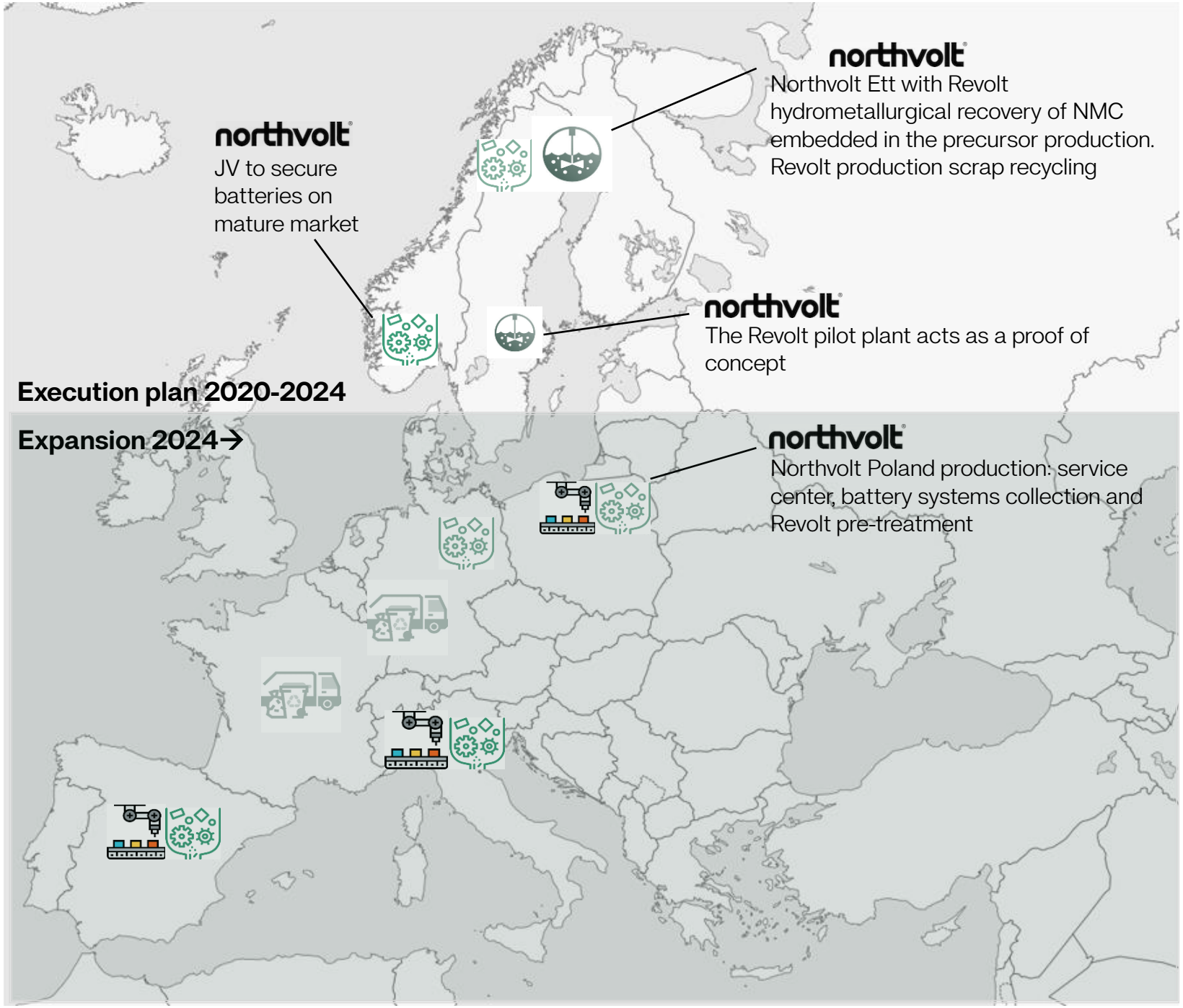
- Conventional li-ion battery recycling processes struggle to achieve battery grade purity in a cost-effective way
- Revolt has developed a **unique recycling process** over the past two years, with a patented hydromet processing stage
- Process developed for **optimal recovery of valuable materials**, resulting in a unique recovery rate exceeding 95% of all materials
- Revolt process will be the **first of industrial scale to also recycle lithium** in Europe
- To improve efficiency, the process has been further adapted to deliver directly to an adjacent precursor production (e.g. Northvolt)
- Battery grade NMC-sulphates are delivered in a solution, avoiding the crystallization and dissolution process steps

northvolt European recycling strategy

- Collection Northvolt OEM's
- Dismantling packs
- Northvolt cells crushing and sorting
- Third party cells crushing and sorting
- Hydrometallurgy

Competitive advantage

- Strong collaboration with car importers to phase out gate fee
- Tight collaboration with OEM's to secure volumes long term
- Logic recycling route
- Selective agreements
- Multi channel partnerships on public tenders
- Battery grade recycling integrated in material production



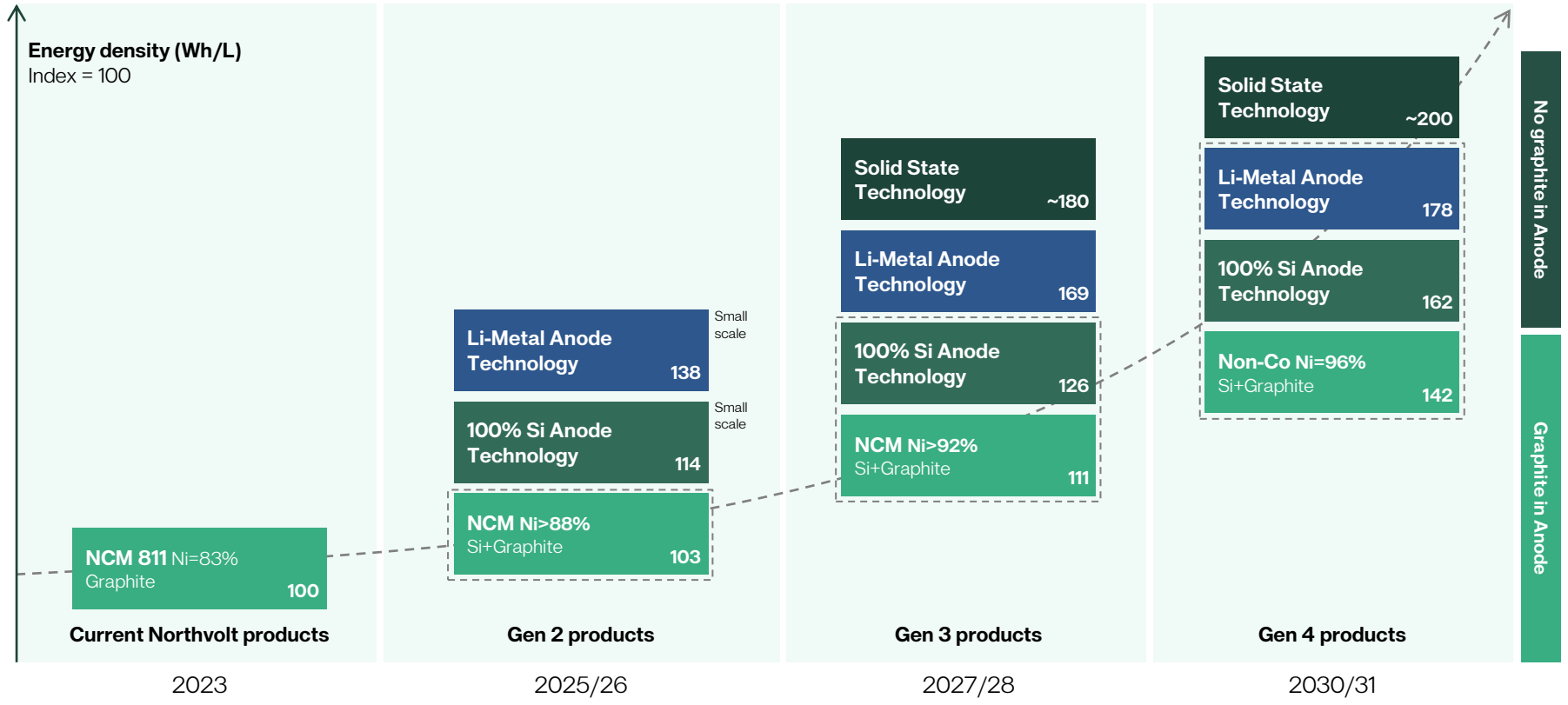
Revolt Ett 4 GWH progress

Building viewed from the south side. SOP 2023

Development roadmap to next generations of battery technology

Northvolt is building on technology improvements in staged phases

Northvolt's view on cell development roadmap

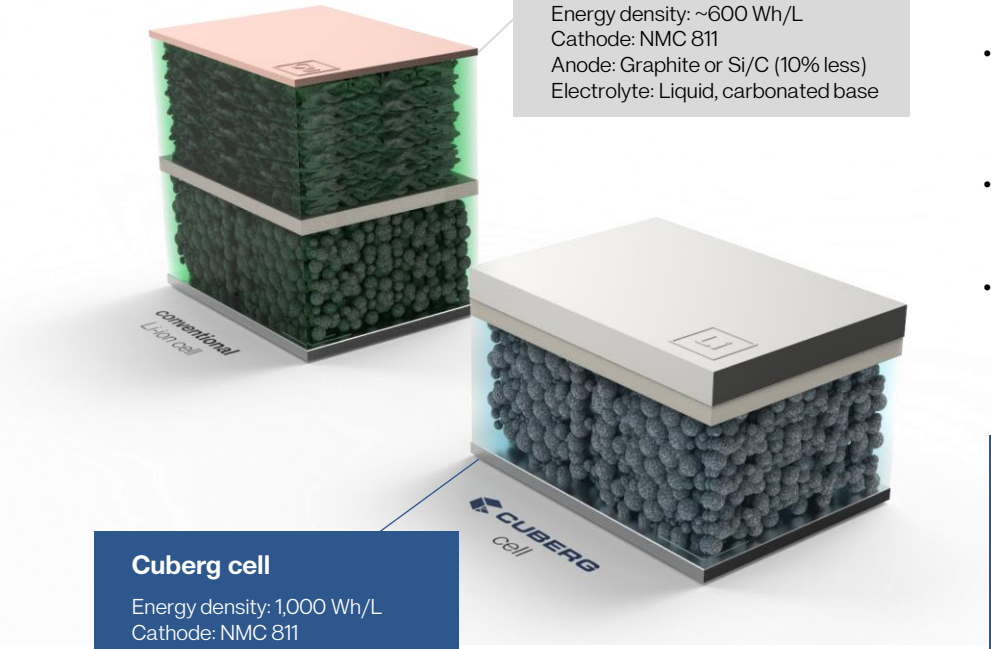


Note: (1) Northvolt estimation of technology roadmap for industrialization of battery cells.

Acquisition of Cuberg accelerates Northvolt's development roadmap

In March 2021, Northvolt acquired Cuberg to enable the next generation of battery technology

Comparison of Cuberg and conventional battery cell technology



Conventional Li-ion cell

Energy density: ~600 Wh/L
Cathode: NMC 811
Anode: Graphite or Si/C (10% less)
Electrolyte: Liquid, carbonated base

Cuberg cell

Energy density: 1,000 Wh/L
Cathode: NMC 811
Anode: Li metal (no copper foil)
Electrolyte: Liquid, LiFSI-based

Cuberg will become Northvolt's advanced R&D center based in Silicon Valley, focusing on future generations of battery technology by leveraging Northvolt's industrialization expertise

- Cuberg was **founded in 2015** and has in a short timeframe developed a high-performance cell design together with an innovative development process based on machine learning
- Cuberg has developed a high-energy density battery thanks to the combination of lithium metal anode and a unique high-performance electrolyte, **delivering up to 70% increase in energy density** over conventional Li-ion technology
- Cuberg's products are designed for high energy and high safety, and have a scalable technology **compatible with mass production process** of traditional Li-ion batteries
- Current sales to **high-end aviation customers** and VTOL players, with potential to expand into new segment

CUBERG

High-performance cell design

- Proprietary, liquid non-flammable electrolyte
- Lithium metal anode
- Scalable li-ion production process

Innovative development process

- Data science driven R&D
- Machine learning-enabled iteration and testing
- High throughput validation

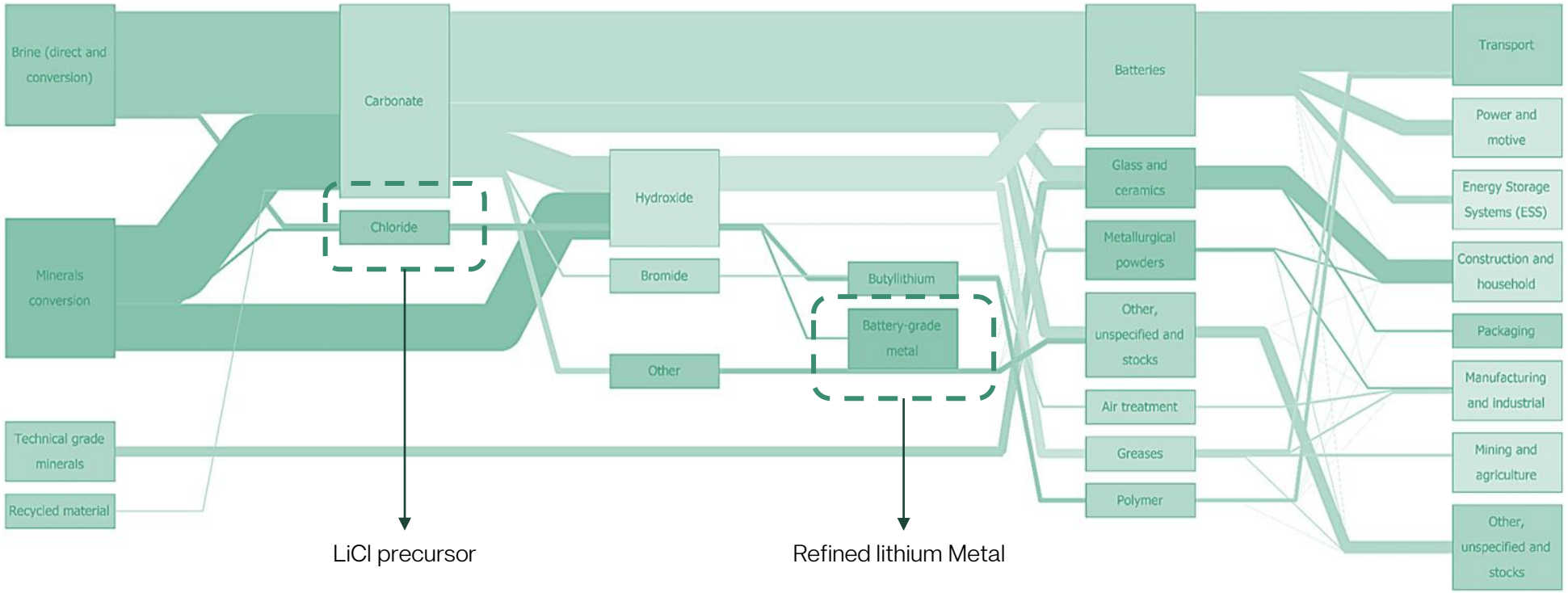
northvolt + CUBERG

- Strengthen Northvolt's positioning as the most sustainable battery player and technology leader
- Digitalizing R&D methodology based on AI, machine learning and connectivity
- Fast track Northvolt towards the next generation battery technology by 3-5 years
- Access to best-in- class technology and team with extensive know-how

Source: Northvolt analysis, Cuberg

Lithium-metal market remains at a nascent stage

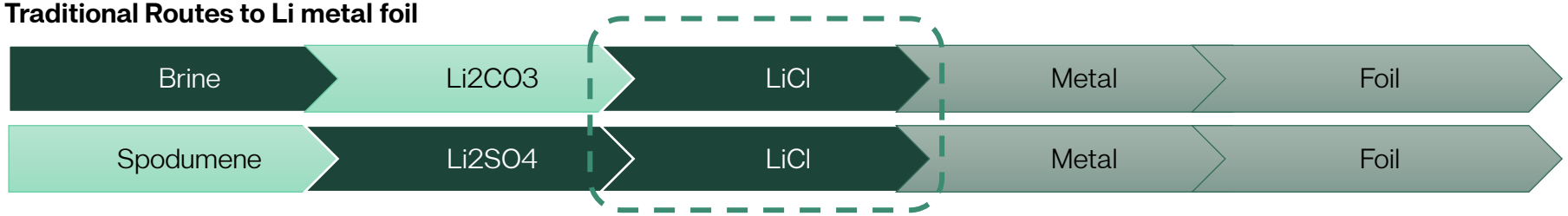
Chloride the only (current) commercially viable precursor to metal, and lithium metal is not yet a liquid market



Metal approx. 1,5% of lithium market in 2019 in terms of LCE

Market must expand exponentially to meet future demand

Traditional Routes to Li metal foil



Thank you

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