



# Customized Energy Solutions

Analyze · Simplify · Implement



## Battery Value Chain - Midstream

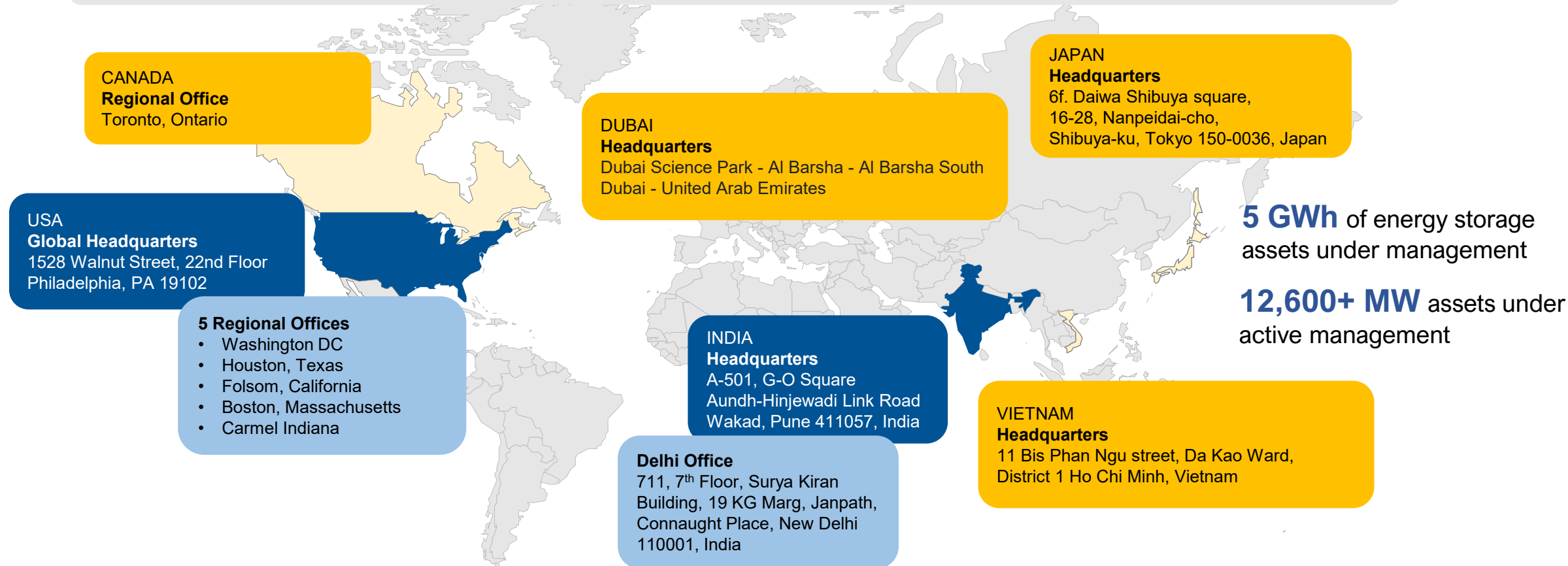
Harsh Thacker

Feb 2024

CES-LTD.COM

# CES' global presence supplements its techno-commercial and international business expertise

Established in 1998, CES is an **energy consulting and services company** with **300+ employees across 10 global hubs** located in United States, Canada, India, Japan and Vietnam serving **500+ clients**.

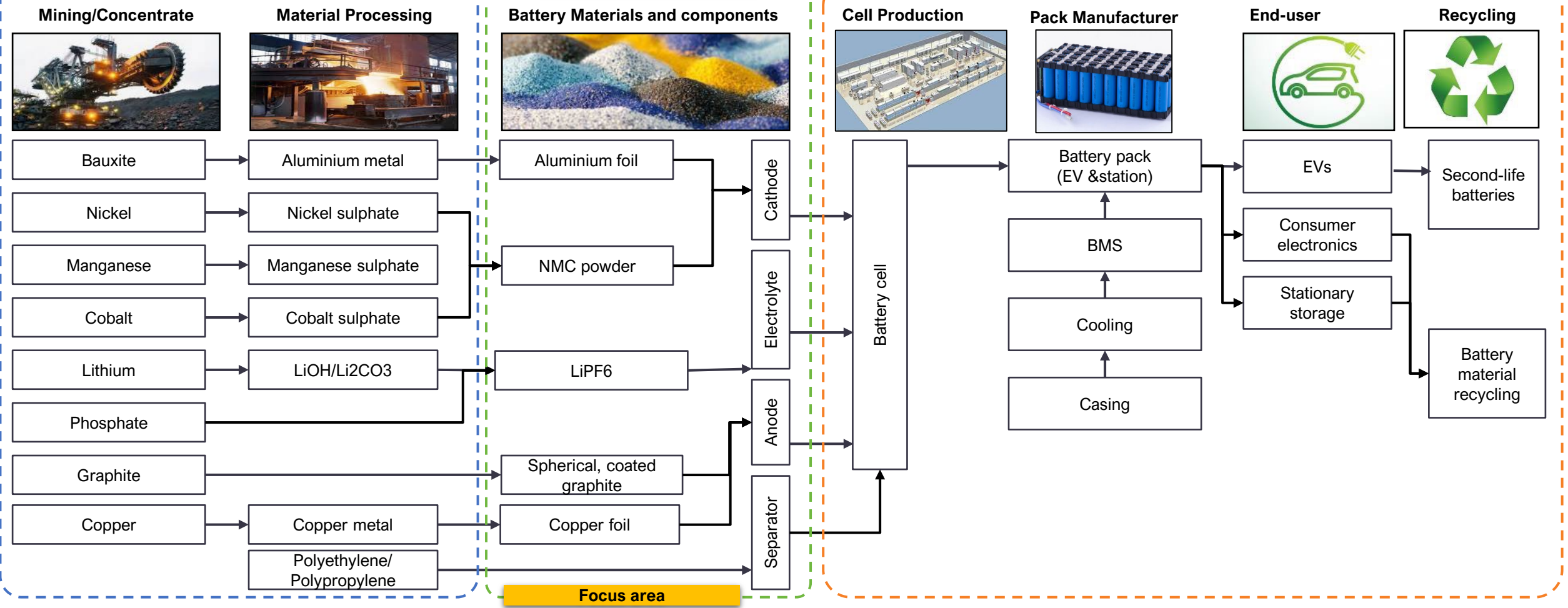


# Battery Value Chain

## Upstream

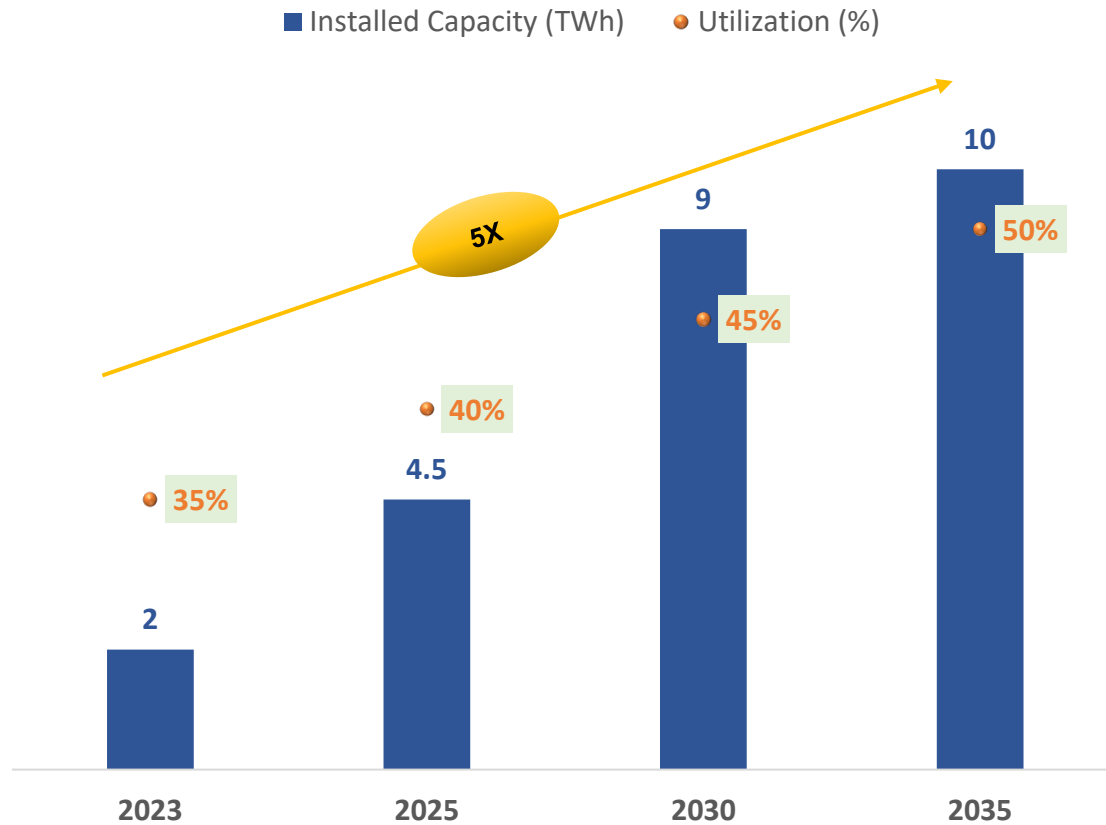
## Midstream

## Downstream







# Going forward, US and EU are emerging as the major regions supporting setting up Gigafactories

Global Gigafactory Capacity (TWh)

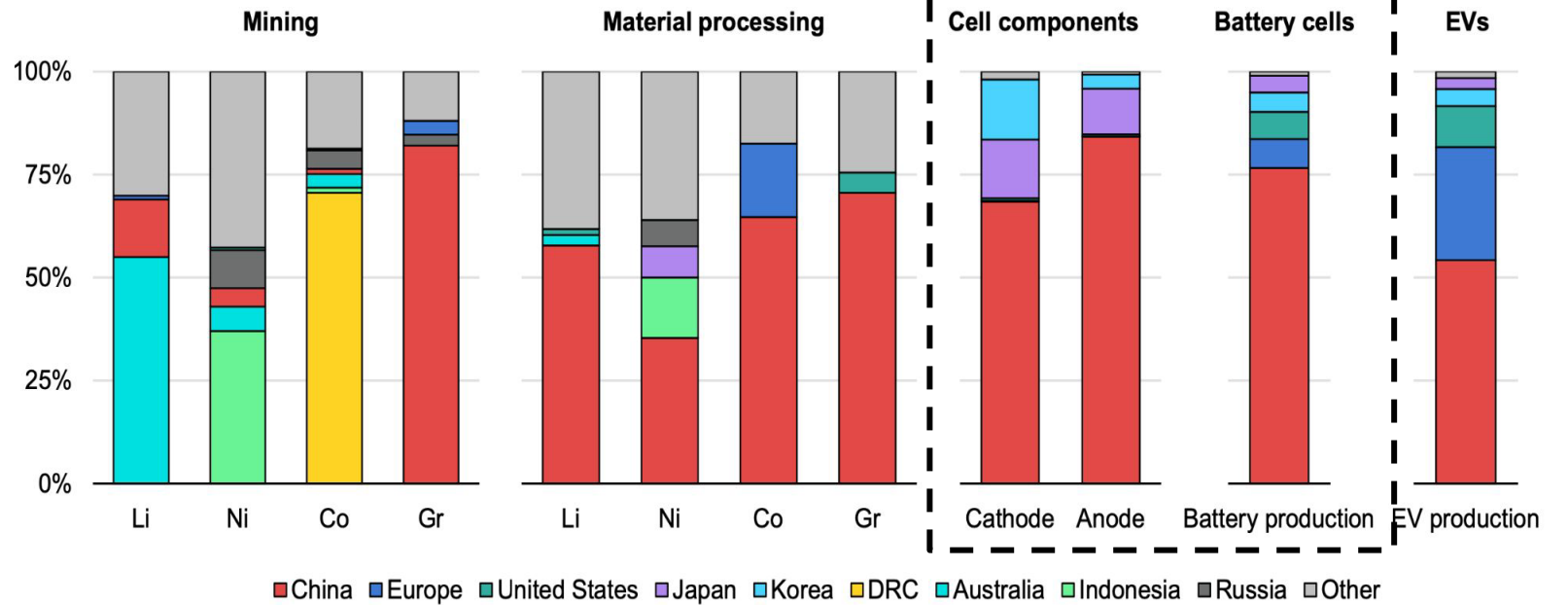
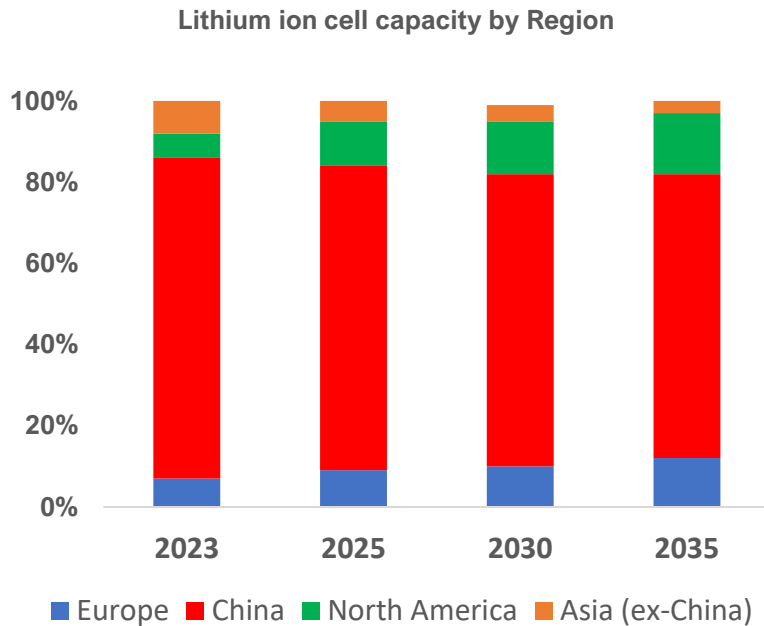


## Chinese Dominance

China currently and in future is estimated to produce the majority of cells globally

Region	2023	2030	
	80%	70%	↓
	8%	12%	↑
	6%	15%	↑
	6%	3%	↓

# Global Segmentation of cell, cell components and raw materials

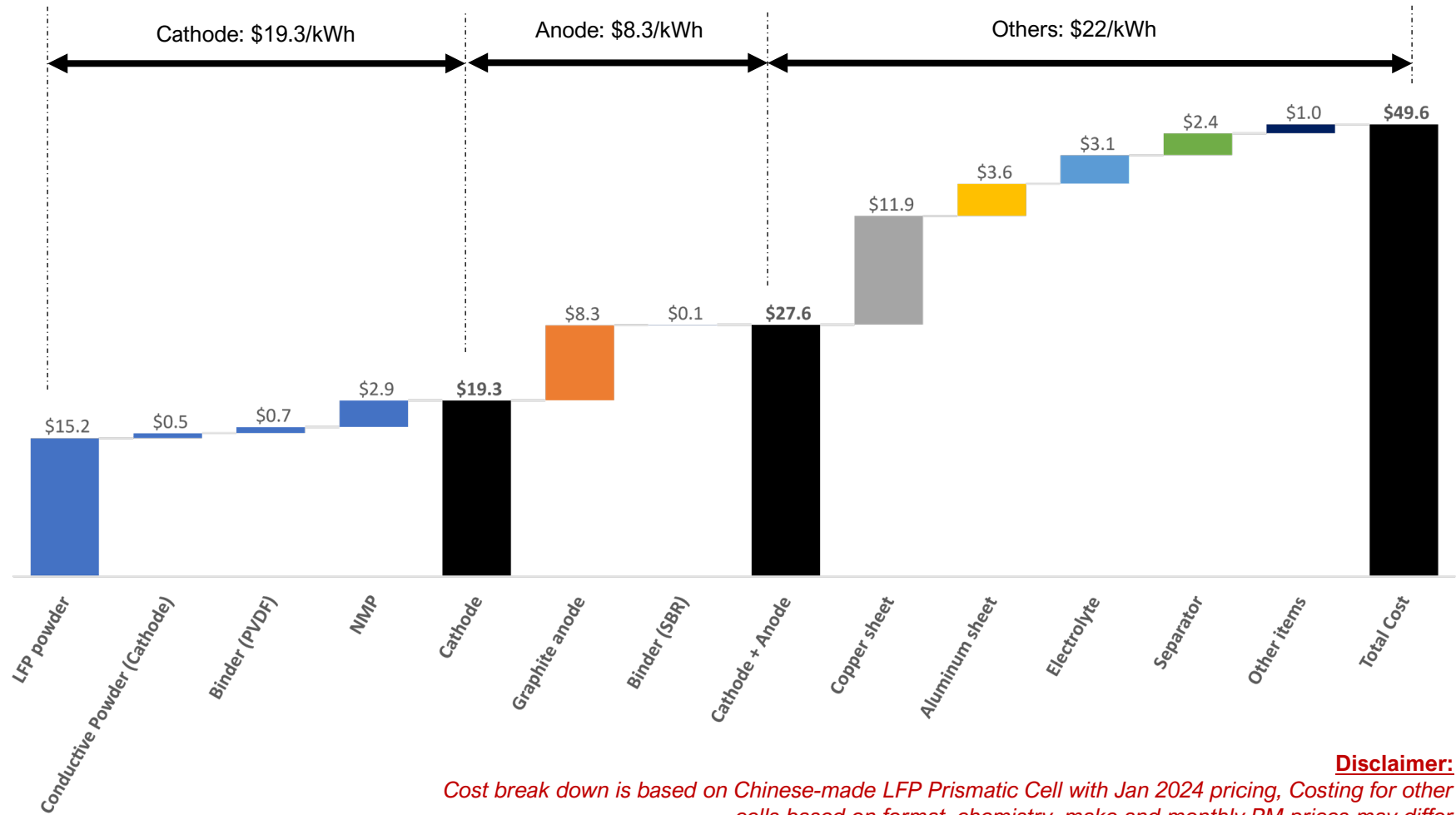
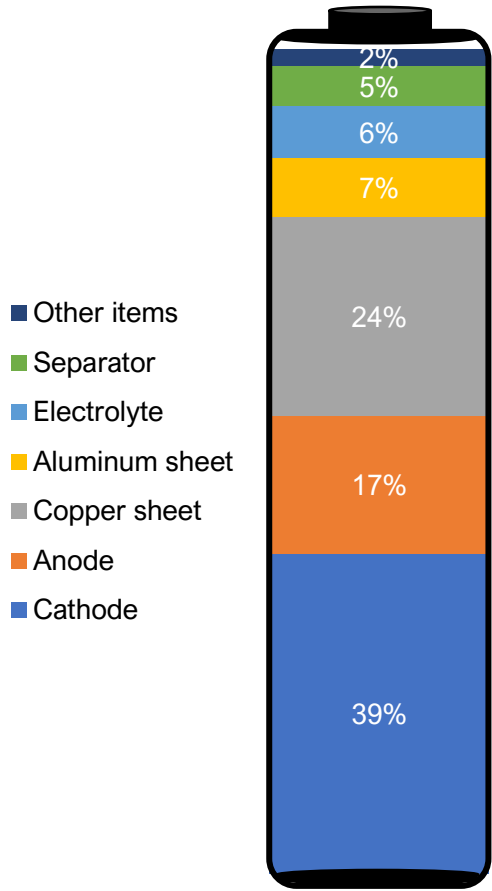


In mid-2022, the U.S. brought the Inflation Reduction Act (IRA) aimed at incentivizing local battery production

Private & Confidential

Source: CES Analysis, Benchmark, IEA, Public Information

# Raw Material Cost Breakdown for a lithium-ion cell



**Disclaimer:**  
 Cost break down is based on Chinese-made LFP Prismatic Cell with Jan 2024 pricing, Costing for other cells based on format, chemistry, make and monthly RM prices may differ

Private & Confidential

Source: CES Analysis

# CES has supported 14 entities in Business Planning with 60GWh\* cumulative capacity of Cell Manufacturing and its allied Supply Chain

Battery Industry Client	# Clients Served	Non-exhaustive						
		Market Sizing & Forecasting	Existing and Future Technology Mapping	Technology Partner Search	Go-to-Market Strategy	Capacity Planning & Expansion Planning	Mfg Advisory Support	Financial Modelling
Country Policy Analysis	2	✓	✓					
Cell Manufacturing (Gigafactory)	6	✓	✓	✓	✓	✓	✓	✓
Separator	2	✓	✓	✓	✓	✓	✓	✓
Electrolyte	1	✓	✓	✓	✓	✓		✓
Graphite	1	✓		✓	✓	✓		
NMP Solvent	1	✓				✓		
Cathode Active Material (CAM)	1	✓	✓	✓		✓		

# THANK YOU

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