

THE IMPACTS OF ELECTRIFICATION TO THE AUTO-MOBILITY SUPPLY CHAIN



ADOPTING AN INTEGRATED APPROACH FOR SUSTAINABLE OPERATIONS

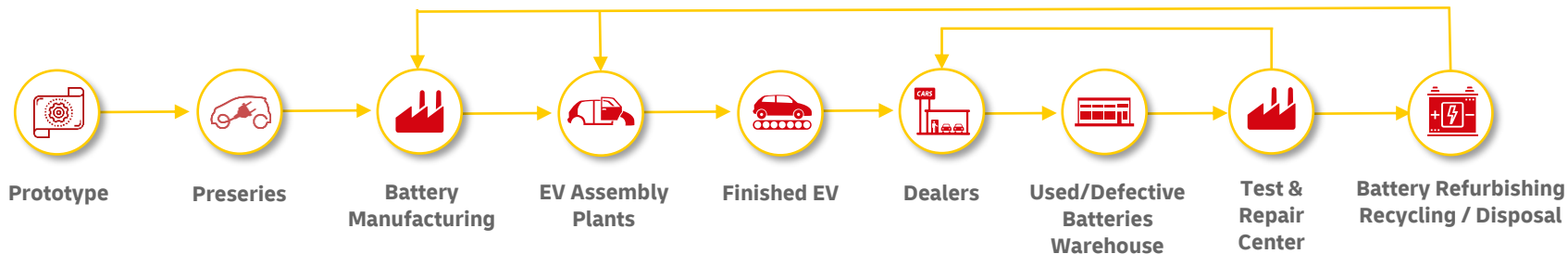
The rise of electrification has deeply influenced supply chains, reshaping how materials are sourced, goods are produced, and products are distributed. This shift towards electric vehicles and machinery necessitates a comprehensive, integrated approach to supply chain management. Companies are reevaluating traditional models, focusing on sustainable material sourcing for electric components and restructuring distribution networks to accommodate electric vehicles.

An integrated approach to electrification involves collaboration across the supply chain, from suppliers to distributors. This not only optimizes manufacturing and transportation processes but also aligns with circular economy principles, promoting responsible disposal and recycling of electric components. Embracing this integrated perspective enables businesses to capitalize on the advantages of electrification, including reduced carbon emissions and operational costs, while preparing for evolving market dynamics and emerging opportunities.



The impacts of electrification to the Auto-Mobility supply chain

An integrated logistics approach is required for the EV supply chain, starting with the design & production of a new vehicle, and ending with reclamation and recycling programs



New Vehicle Launch	
Characteristics	Impact
Shorter time to market due to simpler powertrain configurations & the elimination of extended emission testing	Limited data for logistics planning, requiring accuracy and compliance within a limited time
Build-to-order model	Volatility and challenging planning, which demand flexible logistics

Inbound to Manufacturing	
Characteristics	Impact
Components & lithium-ion batteries required by other industries	Challenge to secure supply, with the risk of shortages & delayed lead times
~50% reduction of inbound parts	Reduction in suppliers, inventory & lead times
Increased Dangerous Goods (DG) cargo such as sensitive & heavy batteries	Requirement for trained staff, permits & packaging for compliant DG transport
Less complex manufacturing processes for EV	Increases requirement for KD (Knock Down) processes

Finished Vehicles & Aftermarket	
Characteristics	Impact
Heavier finished vehicles	Higher unit cost of transportation
Required charging & connectivity	Investment for charging stations and Wi-Fi in ports and compounds
Coexistence of all powertrains for aftersales service in the near future	Increased SKUs (stock keeping unit) to manage all platforms
Transportation & Storage of damaged / defective batteries	Potential investment for DG compliance across all locations

Battery Second / End-of-Life	
Characteristics	Impact
Tailored strategy due to the location of providers facilities	DG domestic or international transport of battery packs to dismantling & pre-treatment facilities, plus movement to recovery or repurposing facilities