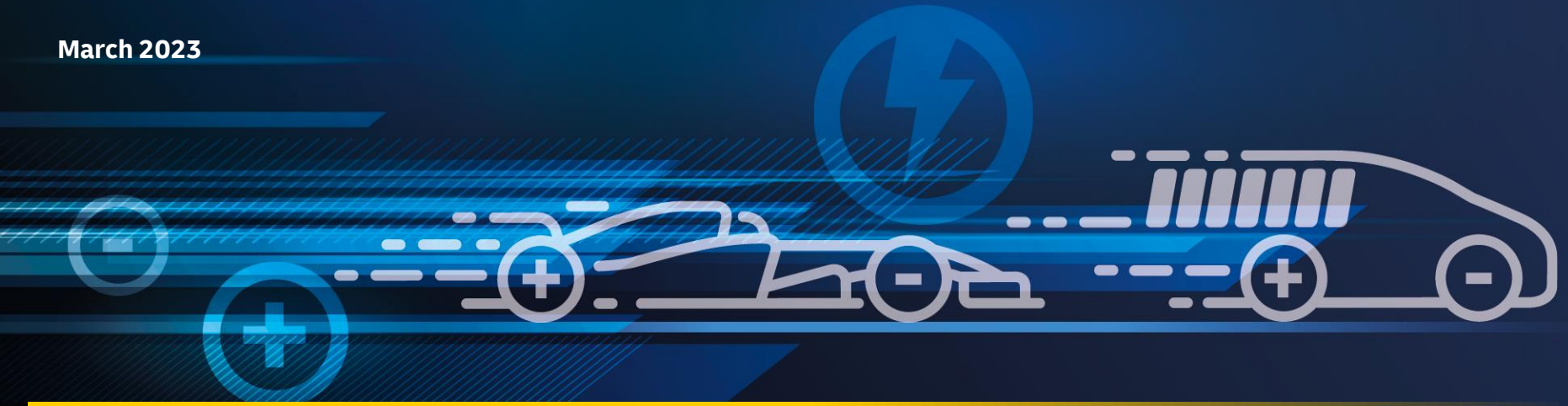
DHL EV LOGISTICS INTRODUCTION

March 2023



Executive Summary

ACCELERATED EV MARKET

EV Market unprecedented growth leads to new needs & requirements in the Auto-Mobility supply chain

14%
Expected EV market Growth Rate 2022-2030

>56%
EV Share of new car sales 2030F

290 million charging points are needed globally by 2040 to support the growing EV fleet.

Source: Frost & Sullivan

THE BATTERY CHALLENGE

Lithium-Ion Batteries are classified as DG goods and require special handling for transportation & storage to ensure safety and compliance

Packaging requirements

Transport mode feasibility

Local/ International DG **Transport & Storage Regulation**

DHL PROPOSAL

DHL offers one stop network design, batteries global transport, storage and local delivery services

25+ Countries
EV Batteries Logistics Footprint

6+ EV Center of Excellences
Around the Globe, DHL established

Comprehensive value-add services
Humidity & Temperature Control, Quality Check & Decanting, Reverse logistics

DHL Global Forwarding Indonesia - Capabilities

Products and solutions

- Air Freight
- Ocean Freight
- Customs Clearance
- Value Added Services
  - Industrial Project
  - Domestic Freight
  - Integrated Warehouse Service
  - Bonded Logistics Center
  - Temperature Controlled
  - DHL AsiaConnect+

Sector Expertise

- Automotive
- Chemicals
- Consumer
- Energy
- E&M
- LSH
- Retail
- Technology

Digitalization

MyDHLi

Website Tracking

AIDA

DHL Cargo Insurance

Certifications

3 ISO certifications

DHL Air and Ocean Thermonet Network Station Certifications

top EMPLOYER INDONESIA 2022
CERTIFIED EXCELLENCE IN EMPLOYEE CONDITIONS

Top Employer Certification for three consecutive years

Great Place To Work. Certified SEP 2021-SEP 2022 IDN

#6 Great Place to Work in Indonesia

Agenda

1. The Electrification Acceleration
2. The Battery Challenge
3. Designing the Right Supply Chain Network
4. Our Value Proposition
5. Our Approach & Experience

THE ELECTRIFICATION ACCELERATION

Decarbonization is at the top of the agenda with sustainability driving new strategies and respective vehicle portfolios

Electrification Boosters

Government Policies, Incentives & Subsidies

Consumers Behaviors & Preferences

Decrease in Battery Prices

Expansion of EV Models & Charging Infrastructure Available

An Electrifying future

Growing sales

14% EV Sales CAGR for 2022-2030

Leading segment

>56% EV Market Share of new car sales by 2040

Supply of 2nd life batteries

>200 GWh of EV used batteries to be repurposed by 2030

Demand for charging Infrastructure

290 million charging points are needed globally by 2040 to support the growing EV fleet.

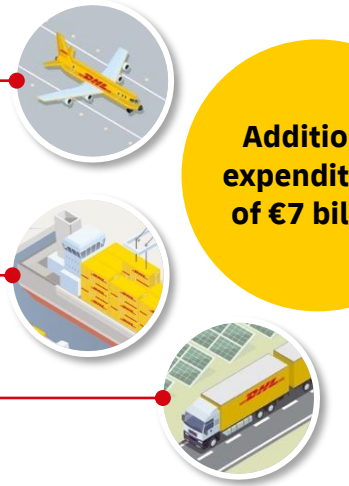
Sources: BloombergNEF, Deloitte, International Energy Agency, McKinsey

DHL is committed to sustainability with our GoGreen Zero Emissions 2050 and strategic targets for 2025 to track progress

By 2050, reduce logistics-related GHG emissions[1)] to net zero[2)] (Scopes 1 to 3, excluding offsetting).

By 2030, additional expenditures of up to EUR 7bn earmarked for sustainable technologies and fuels.

>30% share of sustainable fuels in Air/Ocean Freight and Road Transport



60% e-vehicles in pick-up and delivery

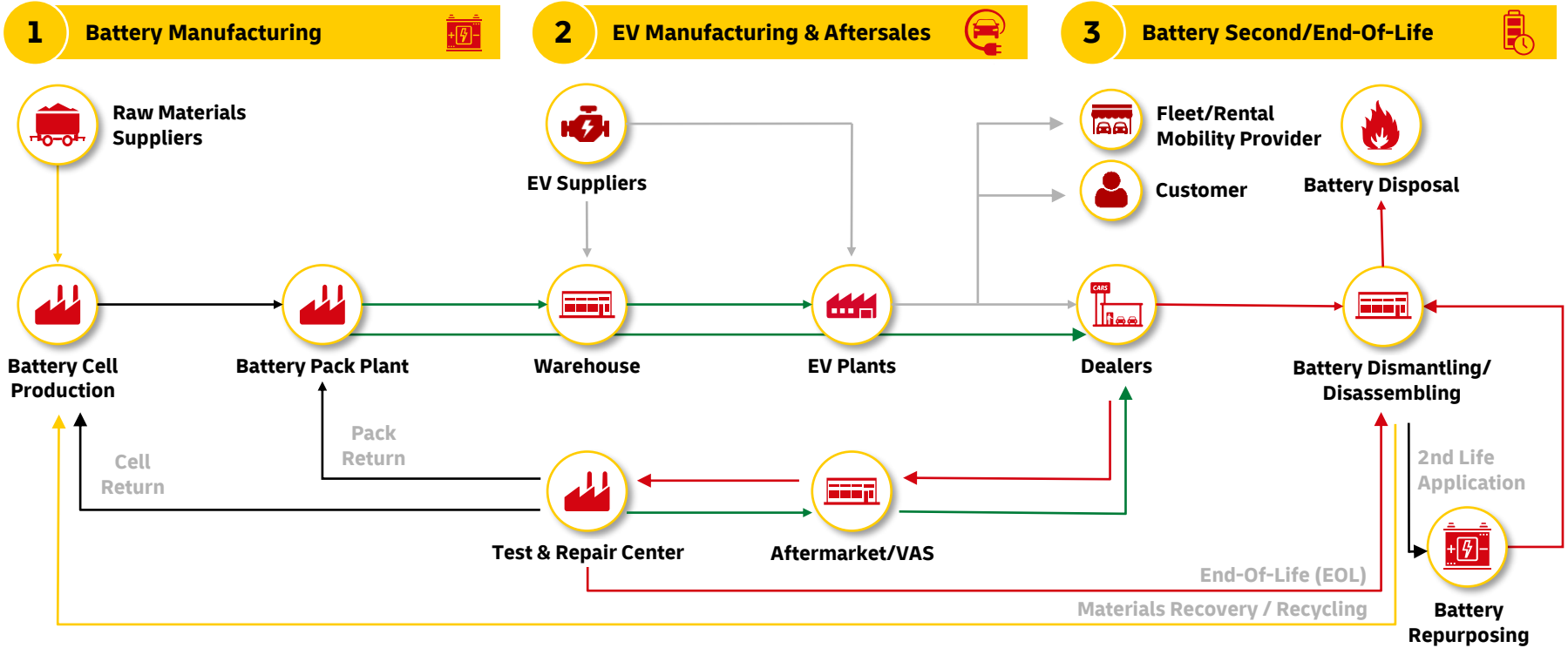
All new **buildings** are **climate neutral**[3)]

Joint effort and engagement: Working together with customers, transportation partners and industry partners on initiatives to reduce fuel consumption and GHG emissions; procuring data needed for targeted subcontractor management.

1) Basis for GHG emissions calculation (well-to-wheel): Greenhouse Gas Protocol, DIN EN 16258 and Global Logistics Emissions Council Framework. 2) Reduction to unavoidable minimum, which is to be fully compensated by recognized countermeasures (without offsetting). 3) New owned buildings.

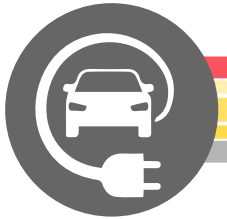
UNDERSTANDING THE EV SUPPLY CHAIN NETWORK

Compliant logistics requirements are necessary for the end-to-end electric vehicle battery supply chain, and especially in Aftersales/2nd & End of life



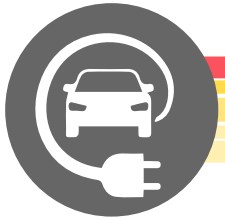
THE BATTERY CHALLENGE

Electric Vehicles present a new set of logistics considerations that impact different areas of the value chain



LITHIUM-ION BATTERIES	• **Dangerous Goods** transportation and **warehousing** (market acceptance constraints) • **Inconsistent** (or non-existing) battery **regulations** at a region, country and district level
CHARGING INFRASTRUCTURE	• **New charging infrastructure** required (home, work, public, service station)
REDUCTION IN VEHICLE PARTS	• **SKU proliferation** in the short term as EV and ICE co-exist • **SKU reduction** in the long term
INCREASED SHARE OF ELECTRONICS	• **Constraints in supply** due to competition with other industries (i.e. **semi-conductors**) • **Increased use of Air Freight & Courier** services due to shorter product lifecycles
SUSTAINABILITY	• **Sustainable supply chains** required for EV Supply/Value Chains, with respective attributes

EV Battery presents a new set of challenges for Auto-manufacturers



BATTERY SPECS	• The logistics considerations depend on general battery assumptions, **pending MSDS & Packaging information,** which is also necessary to define l**ocation of storage** solutions due to battery specs & handling requirements.
RESTRICTIONS	• Currently there are serious **restrictions from OFR carriers** to move damaged/defective batteries even in correct packaging, which could have an impact on current proposal.
BATTERY AVAILABILITY	• Deliveries are **based on battery availability** at each regional hub location (replenishment process to be verified). Replenishment **lead times** based on FCL
INFRASTRUCTURE	• All **dealerships should be prepared to handle & load batteries** in the respective packaging.
RETURNS	• Return packaging for all batteries' status must be confirmed (including relevant regional needs). All return batteries must be fully, and accurately, classified by the dealer/agent prior to shipping.

International regulatory requirements for the cross-border movement of Lithium Batteries by IMO and IATA

TRANSPORTATION	NEW	DAMAGED/ DEFECT	KEY REGULATORY ELEMENTS
	✓	✓ SPECIAL PACKAGING	UN 3480 Lithium-Ion Batteries  **General Shipping Requirements:** • **Packaged UN Group II** • **Classification and labeling** • **Safety tested** (Manual of Tests and Criteria, III.38.3) • **Safety venting device** • **Short circuit prevention** • **Quality management program** • **Trained personnel**
	✓	✗	

IMO INTERNATIONAL MARITIME ORGANIZATION

- **SP 188 : New/used** → Exemption
- **SP 230 : New/used** → Additional specs for li-Ion batteries (P903 or LP 903)
- **SP 376 : Defective/ Damaged** → Special packaging required (P908/ LP904 or P911/ LP906)
- **SP 377: Disposal / Recycling** → Special packaging required (P909)
- **SP 310**: Prototypes (P910 or LP905)

IATA International Air Transport Association

- **< 30% State of Charge**
- **CAO only**
- **A88: Prototypes (P910 or LP905)**
- **A99: >35kg required approval**
- **A154: Damaged forbidden**
- **A183: Waste required approval**

For detailed information on the regulation, please talk to the Team EV Specialists

Battery state management and related packaging challenges

The general focus on transportation and warehousing solution design is concentrated on green and amber areas, due to the specialised nature of red (critical) damaged batteries

NEW / USED

Safe/ No probable danger for transport

- No apparent damage / malfunctioning
- Evaluated as not “legally defective”

Packaging requirement

P903
P909

- ✓ **Packing group II**
- ✓ **Short circuit** protection
- ✓ **Collision** protection
- ✓ **Strong** outer packaging
- ✓ **Protective** enclosures
- ✓ **Handling** enablement

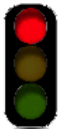
DAMAGED/ DEFECT

Non-critical/ No immediate danger during transport

- Defective for safety reasons
- Physical damage / leaked / vented

P908

- ✓ **Leak-proof** inner/outer packaging
- ✓ **Secured** against movement/vibrations
- ✓ **Venting** device for sealed packages
- ✓ **Non-conductive/combustible** material
- ✓ **Fire retardant/resistant**
- ✓ **Reusable**
- ✓ **Easy handling** (forklift or crane)



Critical/ Immediate danger during transport

- Liable to dangerously react
- Not clear how to assess

P911

Approval of competent authority

Generally transported by specialist waste companies

OUR VALUE PROPOSITION

Enabling end-to-end efficient and complient EV supply chain solutions

Battery Sourcing

- **Compliant** & **Safe** International Transport solutions
- **Condition monitoring** / **temperature control** for durability

EV Production

- **Compliant** pre-assembly battery warehousing & handling
- **Process adaption to "simpler" EV Manufacturing**

Aftermarket & Battery Recycling

- **Shared warehousing** & **Distribution network**
- Compliant **return networks**, **testing**, **repair** & **recycling**

Charging Infrastructure Deployment

- Installation & maintenance of **private & public charging stations**
- **E-commerce** distribution for **home chargers**

Market leading EV expertise underpinning the end-to-end process

Global Expertise, demonstrating thought leadership in EV Logistics

Knowledge sharing & **events** on all things EV

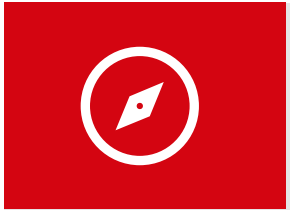
EV Workshops to enhance your supply chain

OUR APPROACH & EXPERIENCE

EV logistics is a disruptive event and we are at an inflection point in the Auto-mobility sector regarding EV logistics growth trajectory

EV Supply Chain Knowledge

- Experienced EV Logistics provider, in-depth understanding of industry electrfication trends & government regulations
- Continuous improvement, learning & modular solution development for EV Logistics



Logistics Expertise & Values

- Professionalism & Compliance adherence
- Agility in an expanding and evolving environment
- Value partnership with customers in developing tactical specialist requirements

Team EV Fully Charged.

There is no one-size-fits-all solution. **Collaborative solution design** with our customers, based on **combined experience and EV know how,** enables us to design **compliant, cost-efficient supply chains** tailored to your needs.

DHL Supporting EV Logistics Globally with EV capabilities across all Regions

Solutions include:

- Cells, modules, battery packs & EV parts transportation (AFR, OFR, Road Freight & Rail)
- Cells, modules & battery packs storage
- Battery end-of-life & reverse logistics
- VAS (e.g. Quality Check, Decanting)
- Charging Stations Logistics

International Freight **Express Shipments** **Contract Logistics**

Our Regional & multi-user EV Centre of Excellence supporting fully integrated end-to-end aftermarket logistics solutions

Facility features	
Size	Plot Area 60,000 m² Built up 23,478 m²
Certificates	ISO 9001:2015, ISO 14001:2015
Security	CCTV, perimeter fencing, access control, back to base fire alarms, gates. TAPA Compliant

Value Proposition

Global Inbound Replenishment to Dubai from suppliers

Warehousing & **Value-added services** in EV Logistics hub Dubai

Handling of **outbound deliveries** to regional dealers

Reverse Solution & **Recycling**

THANK YOU

FOR FURTHER INFORMATION
PLEASE CONTACT
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