Greening the Supply Chain

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Internal C-SC1

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Green inbound logistics Why?

1.



High dependence on carbon-intensive transportation!

2.



long-distance supply routes was contributing to avoidable CO_2 emissions and energy consumption.

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GREEN INBOUND LOGISTICS TRANSFORMATION

Decarbonizing the journey from supplier to plant

MOVEMENT → DECARBONIZATION → NETWORK





Green Mobility
EV + CNG vehicles

Green Freight
Air to Sea

Green Supply Base
Localization

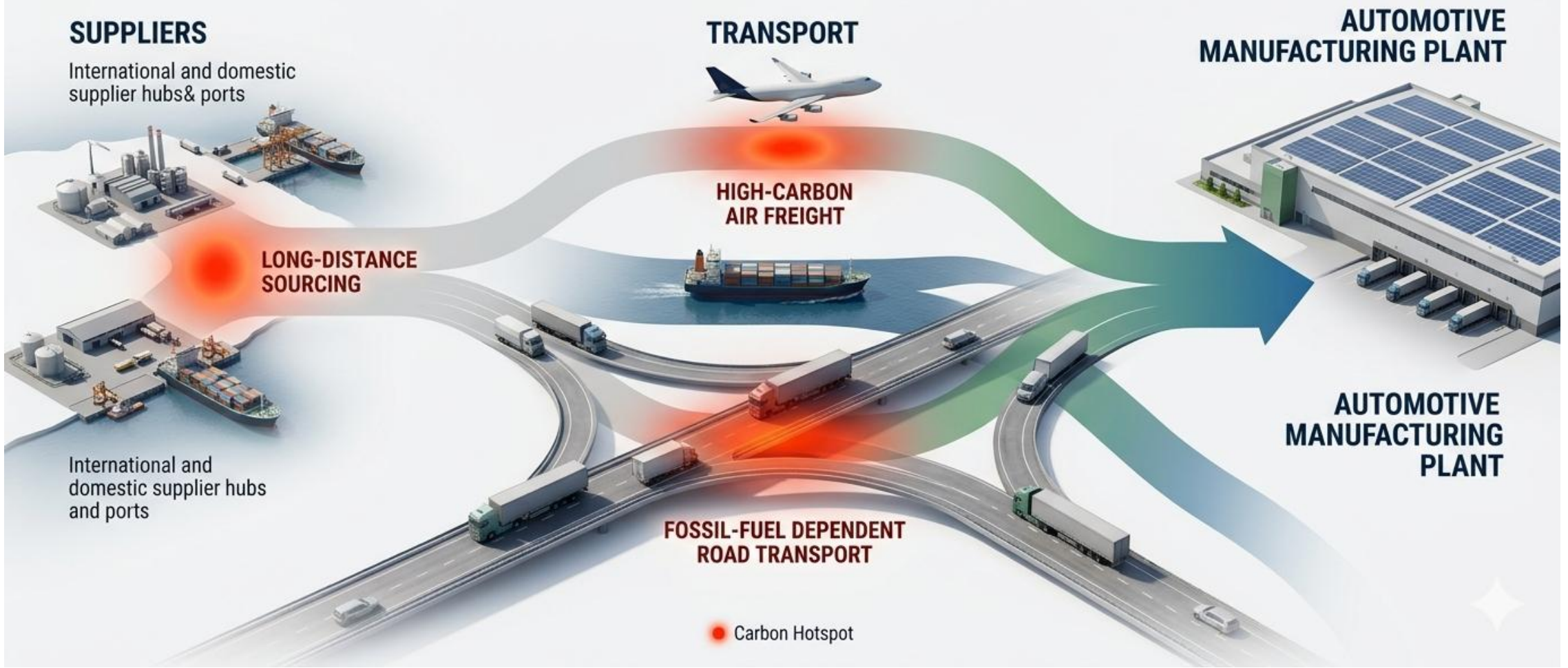
Reduce → Replace → Localize

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INBOUND SUPPLY CHAIN: CARBON HOTSPOTS

Identifying high-emission areas across the supply chain



STRATEGIC TRANSFORMATION

REDUCE → REPLACE → LOCALIZE



REDUCE → REPLACE → LOCALIZE

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EV & CNG VEHICLES FOR RM SUPPLIES

SUSTAINABLE LOGISTICS FOR A BETTER TOMORROW

Deployment of EV and CNG vehicles for logistics operations has reduced transport-related emissions while supporting Bosch's sustainability and green logistics objectives.

Cleaner Logistics Greener Future

EV VEHICLE:

CO_2 ↓ ₹

1.5 MT → **0 MT**

Trip cost reduction **1K / Trip**

Driving Sustainable Change

- Lower Emissions
- Greener Supply Chain
- Responsible Logistics



- REDUCE EMISSIONS
- CONSERVE RESOURCES
- BUILD A SUSTAINABLE TOMORROW

Lower Carbon Footprint | Cleaner Logistics & Supply Chain | Sustainability Leadership | ESG Readiness | Industry 4.0 Smart Logistics

Cleaner Today Greener Tomorrow

Sustainable Today | Responsible Tomorrow | Better Logistics for a Greener Planet

NhP1 - LOG Sustainability Approach

CNG Vehicles for Raw Materials Supply

Cleaner Logistics | Greener Operations | A Sustainable Tomorrow

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Cleaner
Safer
Greener
Together

- CLEANER AIR
- CLEANER FUEL
- LOWER EMISSIONS
- GREENER TOMORROW





Driving Sustainability Forward

Chennai --- Chennai to NhP1 → 300 KM --- 300 KM ← NhP1 to Chennai --- NhP1

CONVENTIONAL DIESEL VEHICLE

CO_2		₹
1.5 MT	07 Hrs	19,560

CNG VEHICLE

CO_2		₹
1 MT	08 Hrs	19,151

KEY BENEFITS

- Reduces carbon footprint in logistics and supply chain.
- Enhances brand image as a sustainability leader.
- Compliance with ESG Standards.
- Supports integration with Industry 4.0.

MOVING TO A SUSTAINABLE FUTURE

PEOPLE FOR A CLEANER TOMORROW | OPERATIONS WITH A GREATER PURPOSE | A SUSTAINABLE SUPPLY CHAIN

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CNG VEHICLE IMPLEMENTATION FOR SCRAP MATERIAL PICK UP

SUSTAINABLE TODAY FOR A BETTER TOMORROW

Cleaner Logistics for a Sustainable Tomorrow



Diesel Vehicle CO_2 Emission

10 Tons CO_2
(per trip)

CNG Vehicle CO_2 Emission

7 Tons CO_2
(per trip)

CO_2 Savings per Trip

Around **3 Tons CO_2 Saved**



- Lower Emissions
- Cost Efficient
- Reliable Operations
- Supports a Sustainable Future

Scrap Material Pickup Route



NhP1

CNG

NhP1 → Tumkur



Tumkur

Together We Move towards a Cleaner & Greener Tomorrow

REDUCE
RECYCLE
RETHINK

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CNG VEHICLE IMPLEMENTATION FOR HAZARDOUS WASTE PICK UP

Towards a Cleaner & Greener Tomorrow

CO_2 EMISSION COMPARISON

Diesel Vehicle	CNG Vehicle	CO_2 Saved
10 Tons CO_2 per trip	7 Tons CO_2 per trip	3 Tons CO_2 every trip

Route

NhP1 Plant → Dabaspete



Reducing Emissions Creating a Sustainable Future

- Cleaner Air
- Lower Carbon Footprint
- Responsible Waste Management
- Greener Supply Chain

EV + CNG: Converting transport emissions into measurable impact

180,096 vehicle-km/year transitioned from diesel

180,096	132.4 t	2,496	93,600	84,000
vehicle-km/year transitioned	diesel-equivalent CO_2/year*	km/year • EV	km/year • CNG RM	km/year • CNG scrap

TANGIBLE IMPACT

- Diesel movement replaced by EV + CNG
- 132.4 tCO_2/year diesel-equivalent baseline avoided*
- 2,496 km/year raw-material movement via EV
- 177,600 km/year CNG raw-material + scrap movement

INTANGIBLE IMPACT

- Strengthened green logistics culture
- Demonstrated technology adoption in logistics
- Reduced dependence on conventional diesel
- Built a sustainability-oriented transporter ecosystem

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Making low-carbon mobility operationally viable

The shift was not just a vehicle change — it was an ecosystem change

01 | INFRASTRUCTURE

Charging & CNG availability
Route feasibility • station accessibility

02 | OPERATIONS

Vehicle range • trip planning
Load / route optimization • backup readiness

03 | COMMERCIAL

Suitable EV/CNG transporter availability
Adoption barriers • business-model alignment

04 | CHANGE MANAGEMENT

Driver/transporter acceptance
New operating practices • safety & emergency preparedness

“The key challenge was not technology availability — it was making sustainable technology operationally reliable.”

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Localization

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LOCALIZATION PROJECT

Reducing Carbon Footprint & Strengthening Supply Chain Resilience

Transition from Germany-Sourced Component to Local Supplier (Pune,India)

CURRENT SUPPLY CHAIN

Germany → Chennai (Sea) → Bangalore (Road)



Sea Freight Shipments	Road Trips (Chennai to Bangalore)	Annual Volume	Annual Weight	Annual Pallets
571 /year	285 /year	273.6 Million pcs	8,906 MT	13,702 Pallets

LOCALIZATION INITIATIVE

FUTURE SUPPLY CHAIN

Pune → Bangalore (Road)



Road Trips (Pune to Bangalore)	Annual Volume	Annual Weight	Annual Pallets
1,370 /year	273.6 Million pcs	8,906 MT	13,702 Pallets

ESG IMPACT AT A GLANCE

- **571** International Shipments Eliminated Annually
- **60–70%** Reduction in Logistics Related Carbon Footprint
- **Lower** Packaging, Handling & Associated Waste
- **Lower** Fuel Consumption Across the Supply Chain

ENVIRONMENTAL BENEFITS

- Significant reduction in Scope 3 emissions
- Lower fuel consumption
- Reduced packaging & waste
- Smaller environmental footprint

SOCIAL BENEFITS

- Supports 'Make in India' initiative
- Strengthens local supplier ecosystem
- Creates domestic employment opportunities

GOVERNANCE BENEFITS

- Reduced exposure to global disruptions
- Improved supplier visibility & auditability
- Enhanced supply chain resilience & risk management

BUSINESS BENEFITS

- Lower inventory holding costs
- Shorter lead times
- Faster response to demand
- Simplified logistics & operations



Air to sea conversion

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AIR-TO-SEA CONVERSION PROGRAM

Sustainable Logistics. Lower Emission. Stronger Future

Transition from Air Freight to Sea Freight for a Greener, Cost Efficient & Resilient Supply Chain

CURRENT STATE – AIR FREIGHT

Air Freight

High Carbon | High Cost | Urgent Shipments



TRANSFORMING OUR SUPPLY CHAIN FOR A SUSTAINABLE TOMORROW

Future State – Sea Freight

Sea Freight

Lower Carbon | Lower Cost | Sustainable Logistics



Project Name	Country	Status
Air to Sea conversion for PCB (Dynamic Supplier – ABS)	China	Implemented
Air to Sea conversion for Seksum te supplier (Airbag)	China	Implemented
Air to Sea Supplier's Automotive Electronics	China	Implemented
Air to Sea conversion for EPT	Germany	Implemented
Air to Sea Ccon connectors (H&B Electronic GmbH & Co. KG)	Germany	Implemented
Air to Sea (Zhenjiang Xianfeng Automobile)	China	Implemented
Air to Sea – DA3 – Silitec Supplier	Malaysia	Ongoing
Air to Sea – KMET Capacitors	Hongkong	Ongoing

KEY ACHIEVEMENTS

Lower Carbon Footprint
~80–90%
reduction in CO_2 emissions per ton-km

Cost Savings Potential
15–30%
reduction in freight cost on converted lanes

Projects in Transformation
8
strategic projects across 4 key countries

Countries Covered
4
China, Germany, Malaysia, Hong Kong

Sustainability Milestone
Strengthening our journey towards Net Zero and responsible logistics

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Localization + Air-to-Sea: Carbon reduction beyond the vehicle

Shifting from faster transport → smarter transport

LOCALIZATION

571

shipments / year

GERMANY → CHENNAI → BANGALORE

↓ LOCALIZED ↓

PUNE → BANGALORE

~47.5%

estimated logistics CO_2e reduction / tonne

AIR → SEA

AIR FREIGHT → SEA FREIGHT

420 tCO_2

CO_2 saving

SUPPLY-CHAIN IMPACT

- Reduced transport carbon intensity
- Lower dependence on air freight
- Better planned inbound logistics
- Cost + carbon optimization
- Sustainability integrated into sourcing decisions

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Overcoming barriers without compromising business continuity

Carbon reduction was designed into the decision — not added after it.

CHALLENGE	RESPONSE
Supplier localization	Identify & qualify domestic sourcing alternatives
Supply continuity	Validate capacity, quality and delivery reliability
Longer transit by sea	Advance planning & shipment visibility
Air → Sea transition	Demand forecasting + planned dispatches
Transporter capability	Build EV/CNG transporter ecosystem
Stakeholder alignment	Integrate Procurement + Logistics + Business + Sustainability

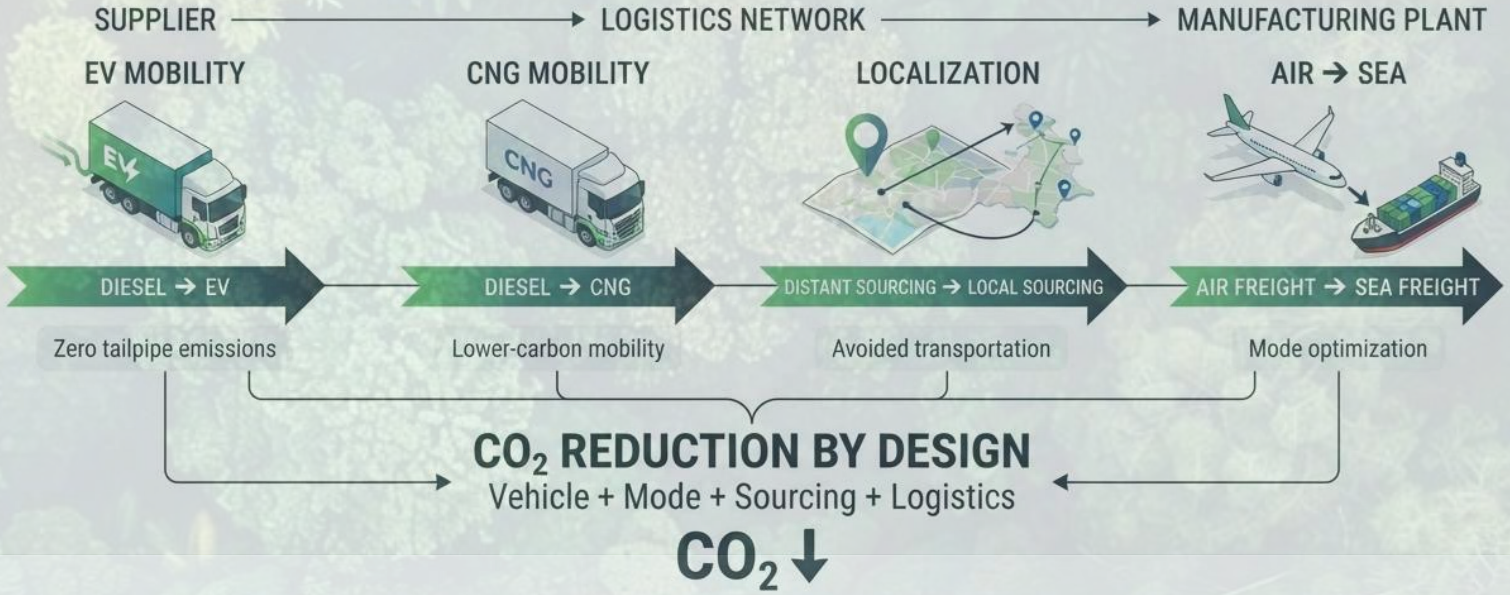
DECARBONIZE • DE-RISK • DELIVER

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ONE SUPPLY CHAIN. FOUR DECARBONIZATION LEVERS.

Cleaner mobility • Smarter sourcing • Lower-carbon logistics



CO_2 REDUCTION BY DESIGN

Vehicle + Mode + Sourcing + Logistics

CO_2 ↓

UNIQUE BECAUSE WE DIDN'T OPTIMIZE ONE ACTIVITY – WE REDESIGNED THE SUPPLY CHAIN FOR **LOWER-CARBON MOVEMENT.**

Thank You

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