



सत्यमेव जयते

GOVERNMENT OF INDIA  
MINISTRY OF HOUSING AND URBAN AFFAIRS



## Urban Mobility India 2023

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# Sustainable Urban Freight: Perspectives and Research Attempts in the Indian Context

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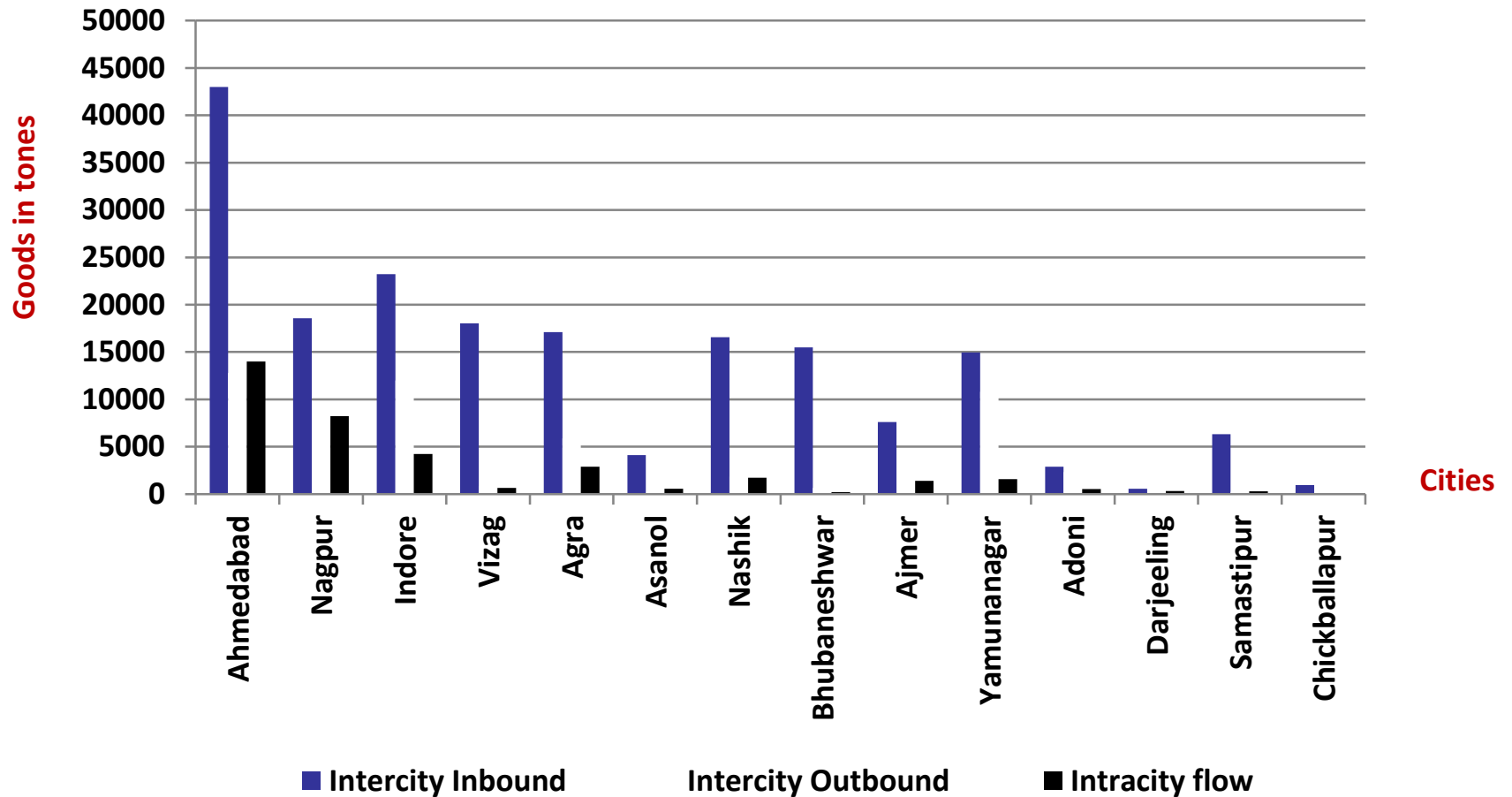
# Importance of Urban Freight

- The ability to transport goods quickly, safely, economically and reliably is seen as vital to a city's prosperity and urban planning in particular.
- Goods transport account for **10 to 15 per cent of vehicle equivalent km** travelled in urban areas, **2 to 5 per cent of employed urban workforce** and **3 to 5 per cent of urban land use** (*UN-Habitat 2013 report*)
- Urban goods transport (including transiting heavy goods vehicles) accounts for **31% of energy use** and **31% of CO<sub>2</sub> emissions** respectively (*Dablanc, 2006*)
- Sustainable urban freight operations is critical element in city efficiency



# Urban Freight Trends in India

Estimated Daily Goods Flow in Selected Cities of India (in tonnes)



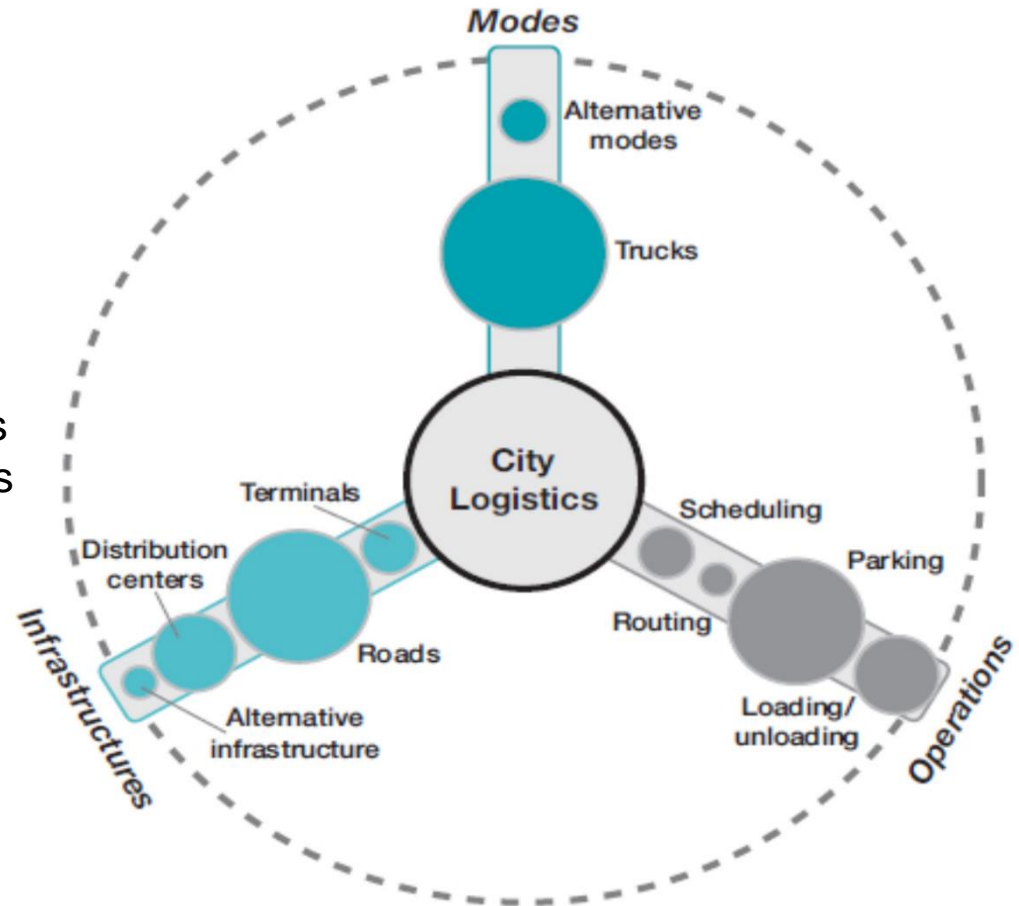
# Emerging Issues and Challenges for Urban Freight

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- Logistics Sprawl phenomena and its impact on freight deliveries
  - Increasing E-commerce Deliveries and their environmental impact
  - NMT treated as a “ Neglected option of urban freight mobility”
  - Barriers towards EV adoption in urban freight
  - Poor freight operations infrastructure in major freight generating areas
  - Freight is a neglected component in City Mobility Plans and Master Plans
  - Weak institutional setups, Inadequate technical capacity, absence of standards and performance benchmarks
  - Absence of data and research on urban freight leading to an absence of informed policy planning
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# Concept of Sustainable Urban Freight and City Logistics

- **Economic, Social and Environmental** impacts of urban freight
- **Sustainable Urban Freight Policy** measures are:
  - Land use and planning measures
  - Transport infrastructure measures
  - Managing infrastructure measures
  - Pricing measures
  - Attitudinal and behavioural measures
  - Information provision measures
  - Modal shift measures
  - Other measures to reduce the environmental impact of vehicle use

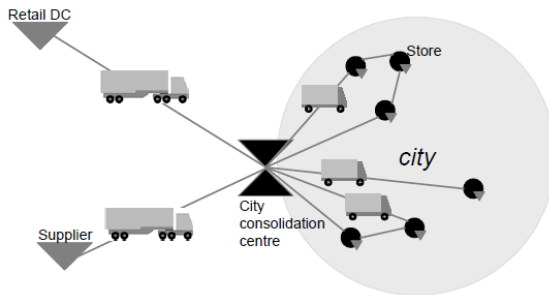




# Global Best Practices in Sustainable Urban Freight Distribution

## International Practices

### Urban Consolidation Centre



### Cargo Cycles for Last-mile Delivery



### Kiala Points - Lockers



### Nearby delivery areas



## Indian Practices

### Mumbai Dabbawallas



### Urban Delivery Networks - UDAAN



# Freight Traffic Growth Trends in Delhi

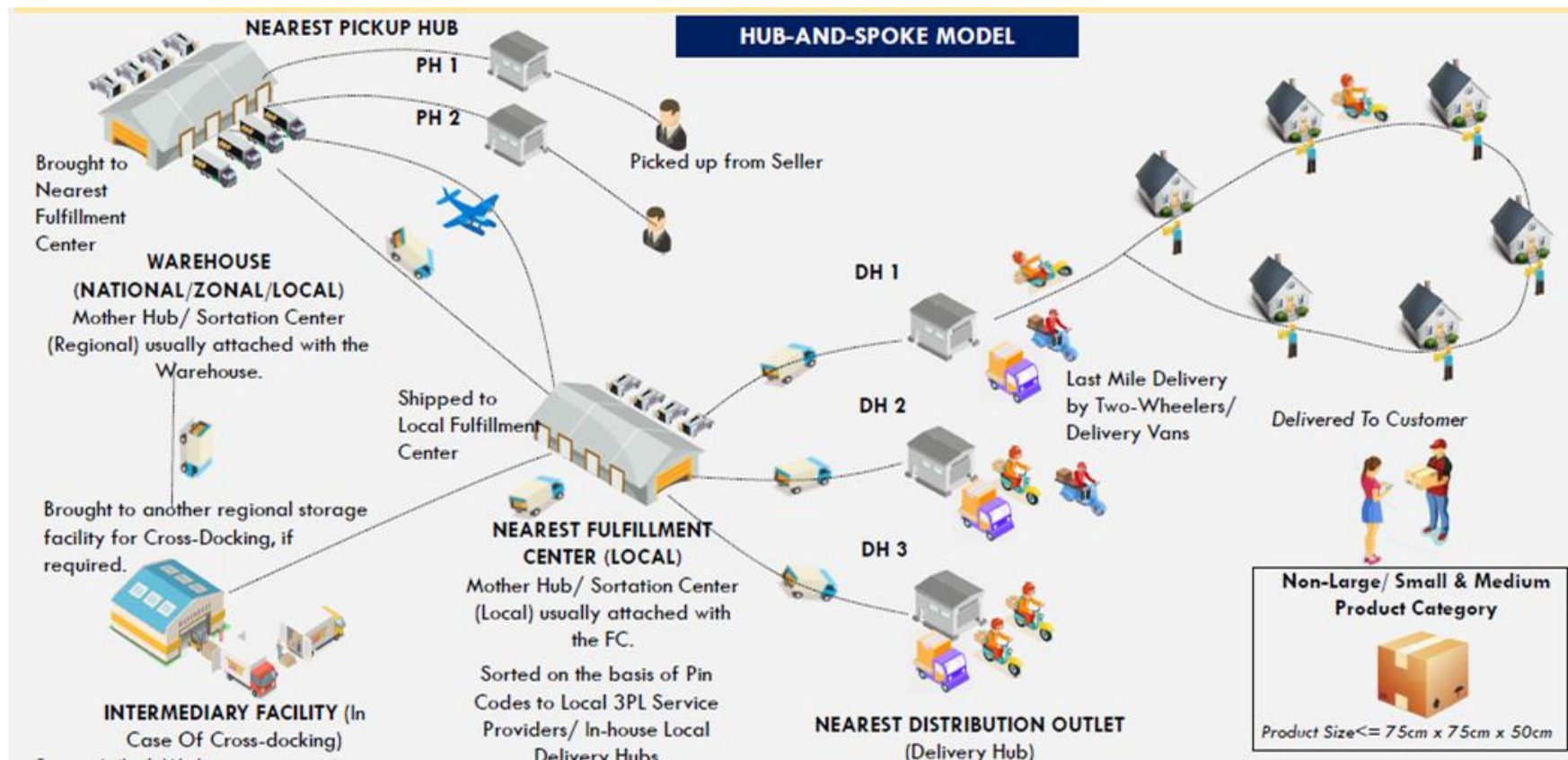
## Total originating and destined tonnage from Delhi

Traffic Type/day	1993	1996	AAGR (%)	2008	AAGR (%)	2014 (estimated)
Originating Tonnage/day (Tonne)	58,114	90,488	15.9	1,13,555	2%	1,27,207
Destined Tonnage (Tonne)/day	76,108	1,01,750	11.2	2,63,475	8%	4,23,977
Total Tonnage Handled/day (Tonne)	1,34,222	1,92,238		3,77,030		5,51,184

*Source: SPA (1993,1996), RITES (2008), SPA (2014)*

- Estimated 1.93 lakhs freight vehicles move in and out of Delhi everyday (2023)
- Building materials, Textiles, and Fruits and vegetables account for 40% of total daily vehicle arrival and 45% of tonnage entering Delhi.

# E-commerce Freight Demand in Delhi: Case of Flipkart



Source : SPA Delhi study (2020)

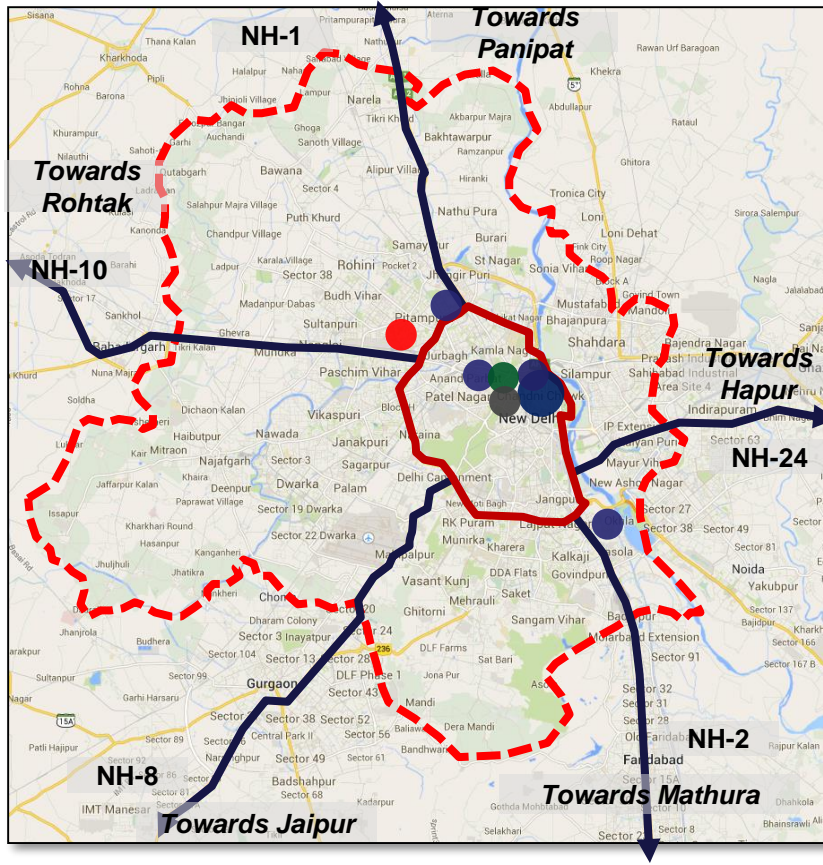
- Delivery Hubs: **357**
- Orders delivered per day: **6.60 lakh units** (32% share)

- Average Line haul distance from the Fulfillment centre to the Delivery Hub: **27 Km**
- Average last-mile delivery distance from Delivery Hubs to customers: **6.3 km**



# Phenomena of Logistics Sprawl in Delhi

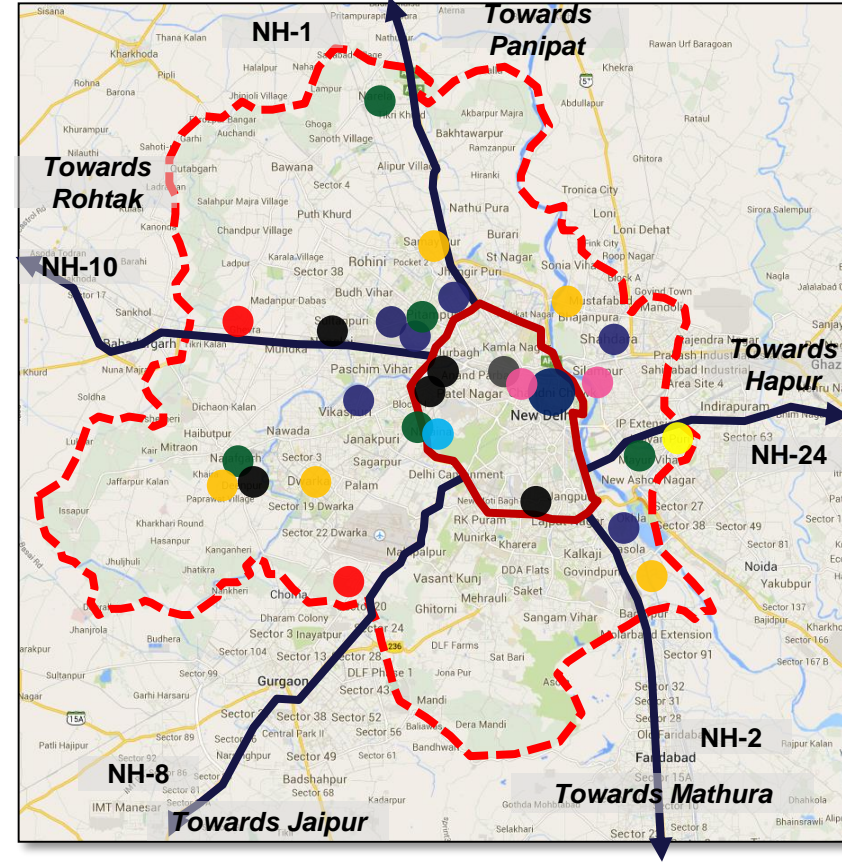
## Wholesale Markets: 1962-1981



- Foodgrains
- Textile
- Hardware & BM
- F & V
- Autoparts
- Fuel Oil
- Timber
- Iron & Steel
- Poultry
- Fodder

Source: SPA Delhi study (2014)

## Wholesale Markets: 1981-2011



Wholesale markets have sprawled up to 28 km from the centre of Delhi towards the peri-areas during the period 1962 to 2014

# Planned Decentralisation of Wholesale Markets through IFCs in Delhi

## - Sustainable Planning Strategy

- **Integrated Freight Complexes (IFCs)** planned to provide facilities for
  - Regional & intra-urban freight movement
  - Warehousing & storage facilities
  - Specialised markets
  - Services and other facilities.
- **Four IFCs** proposed in different parts of Delhi.

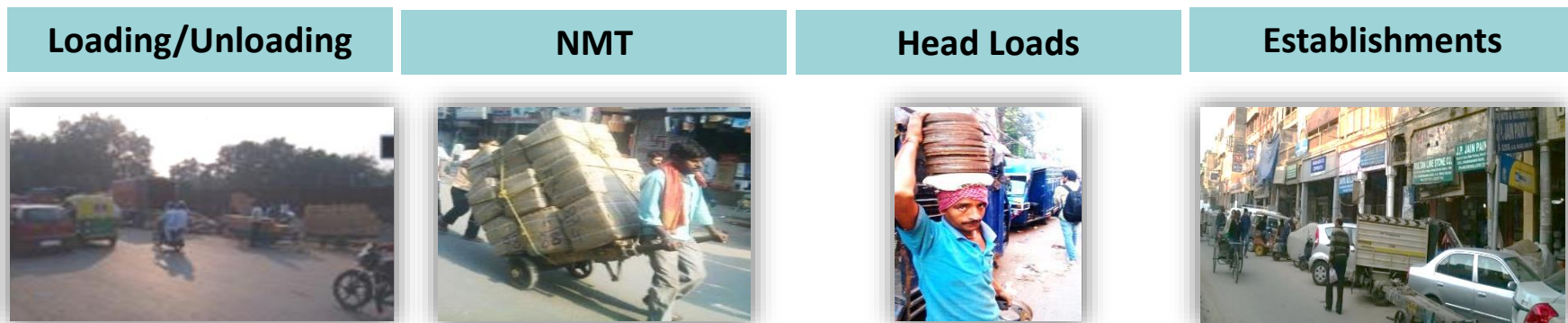


*Source: Delhi Master Plan 2001*

# Potential Role of NMT Modes in Freight Operations in Walled City

- An estimated 37,425 tonnes of goods are handled daily by 7 major wholesale markets resulting in 0.16 million tonnes km of movement through various modes (2013)
- Overall estimated 55% of the daily estimated tonnage is handled by the NMT
- Estimated daily tone km the share of NMT is 67% while it is 74% in terms of vehicle km.

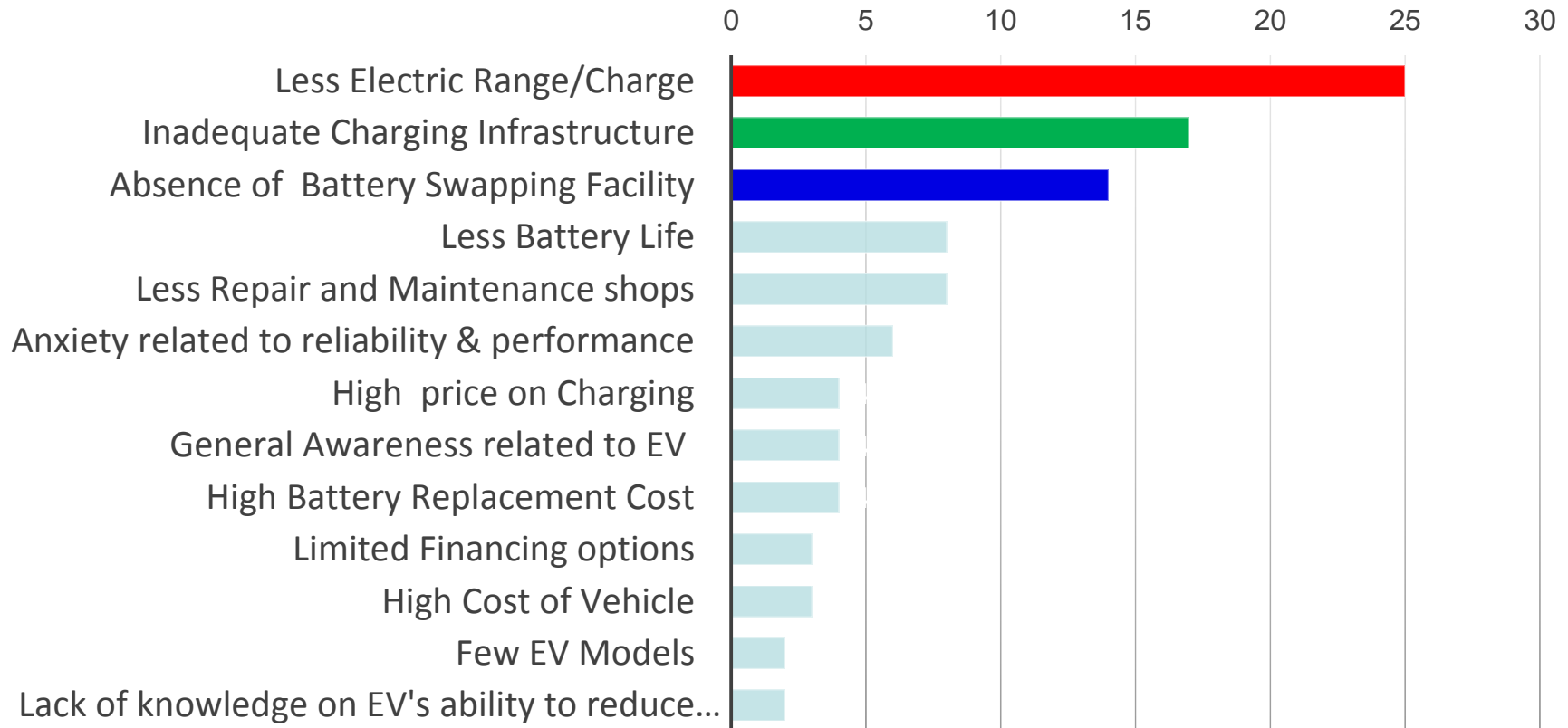
## Typical Freight operation in Walled city wholesale markets



Source : SPA Delhi study (2013)

# Significant Barriers for EV Adoption amongst Small Freight Vehicles in Delhi

## Global Weights (%)



**Source: SPA Delhi study (2022)**

# Priorities of Solutions for EV Adoption in Small Freight Vehicles in Delhi

Solutions & Strategies	Stakeholder Local weights			Global Weights
	Self/Rented vehicles (CNG /Petrol) (%)	Owned by Company (CNG/ Petrol) (%)	Electric Vehicles (%)	
Extensive EV Charging Infrastructure	56.6	66.8	62.1	62
Awareness Campaigns for logistics providers	31.8	13.7	22.2	21
Financing from public banks	9.2	11	9.4	10
More Subsidies	5.5	6.8	6.2	7

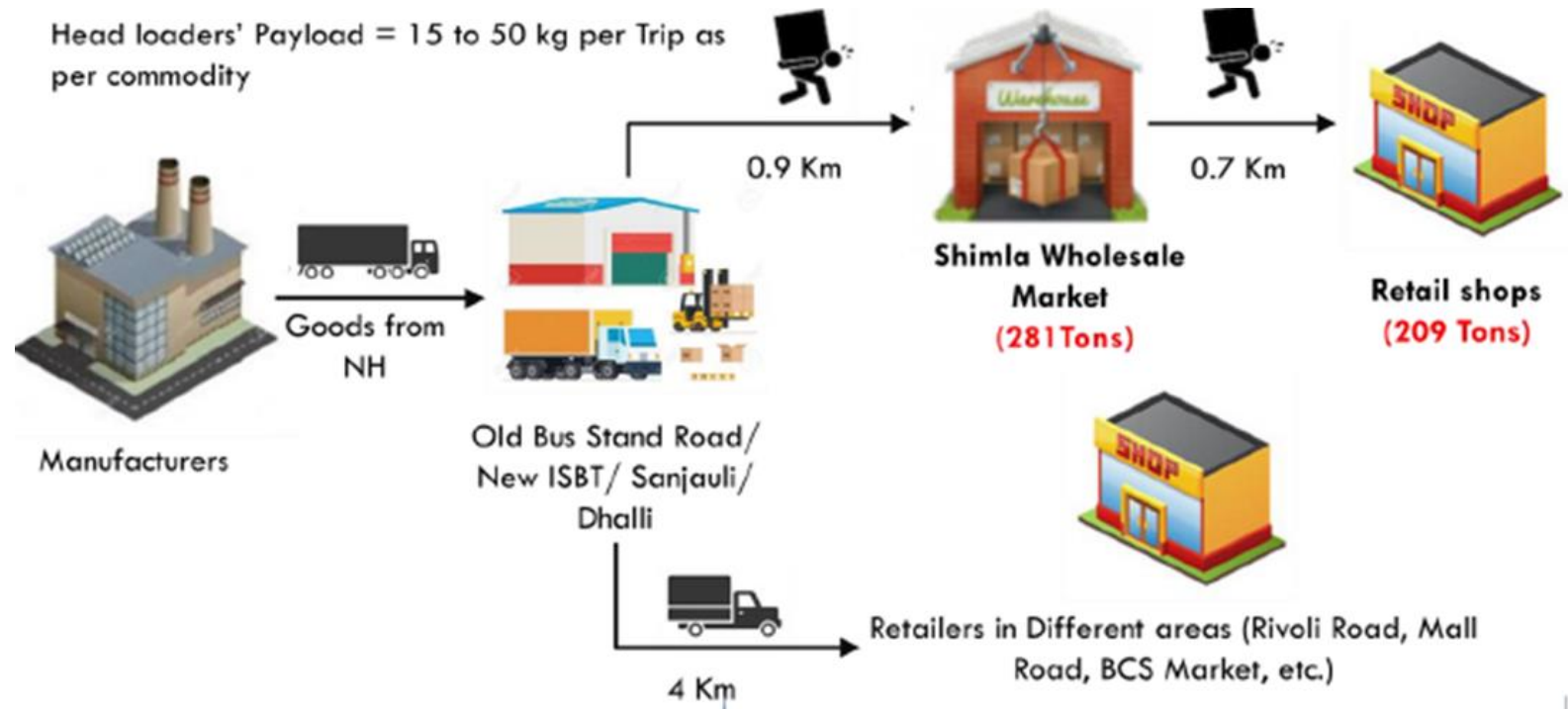
- In addition to above Reduced battery charging time, purchase cost, provision for **dedicated freight Battery Swapping Stations** at Proposed Public Charging Stations and **close to the SFV's base of operations** can accelerate the EV switching process of SFV.

*Source: SPA Delhi study (2022)*



# Existing Freight Distribution in Hilly Town of Shimla

## Supply Chain of Wholesale Establishments



## Type of Establishment in Wholesale Market

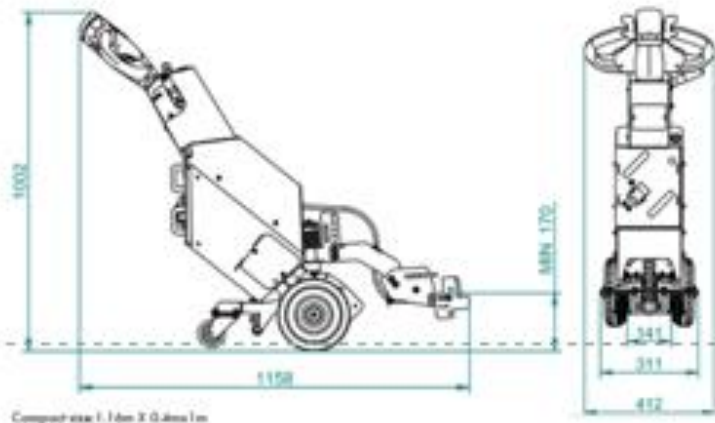
Vegetables	Fruits	Spices	Grain	Fish & Meat	Others
58%	16%	7%	8%	6%	5%

# Potential of Pedestrian Tug in Freight Delivery

## Current

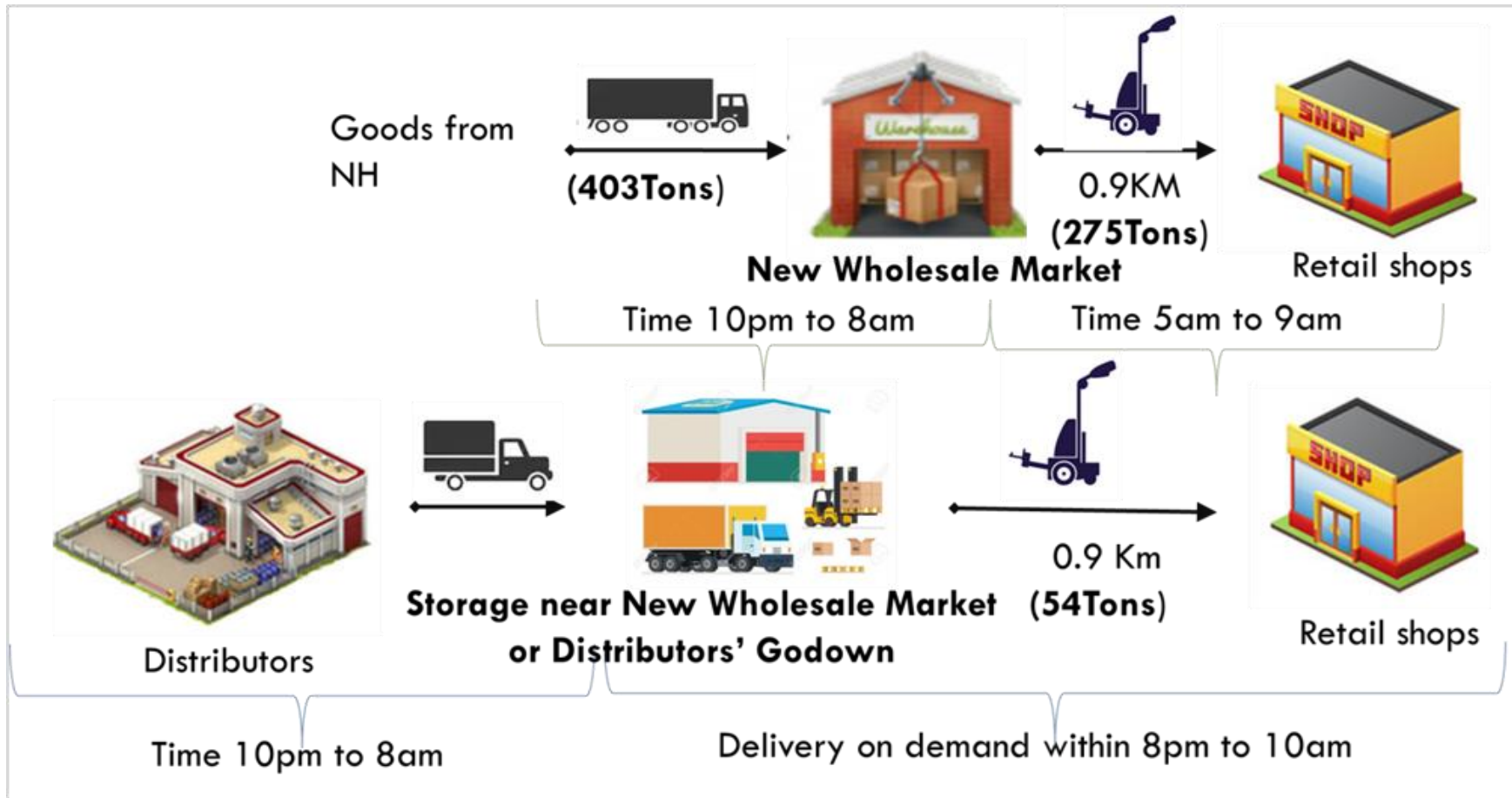


## Proposed Pedestrian Tug



- Pedestrian tug **eliminates manual handling**, improves **Health** and **Safety** and increases **Productivity**.
- **Low maintenance**; can operate in all terrain
- Max. Speed (Km/ Hr.): **5 km/Hr.**
- Machine weight including battery: **70 kg.**
- Load Carrying Capacity: **1000 kg.**
- Battery pack sealed **22Ah 24V**

# Proposed Sustainable Freight Distribution Strategy in Hilly Town Shimla



# Policy Imperatives and Way Ahead

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- Create a **hierarchy of freight handling facilities** for sustainable operations
- Encourage **city logistics practices** for urban freight including **Freight Quality Partnerships (FQPs)**
- Create **freight operation-supportive infrastructure** to improve freight productivity
- Promote incentive schemes for **EV transition** in the urban freight sector and encourage green freight deliveries
- Conduct **capacity-building programmes** for officials, policymakers and stakeholders of urban freight
- Carry out **empirical studies and research** on sustainable urban freight measures
- **Dissemination** of research practices for informed policy planning



Thank You