

Roadblocks to Sustainable Urban Freight

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Presentation Outline

- I. Motivation and research overview
- II. Methodology
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 - A. Motivations
 - B. Strategies
 - C. Roadblocks (Challenges)
- IV. Summary & Conclusions

Motivation and research overview

Sustainable Urban Freight

Collected and synthesized expert views from both the private and public sectors on what is needed to sustainably deliver goods within cities and identifying the challenges towards this goal.

- **Research Question: What are the roadblocks (challenges) to achieving a sustainable urban freight system?**
 - What motivates cities and companies to reduce emissions?
 - What strategies are stakeholders using to reduce emissions?

Research boundaries:

- ***Sustainable*** urban freight was limited to carbon dioxide emissions.
- Focus on North American cities & companies

A multitude of challenges

- Urban freight is complex and disaggregated
- Sustainability in the sector is relatively new
- Most challenges faced by cities fall into two categories:
 - Lack of tools to effect change
 - A need for strong leadership and more resources
- Challenges faced by companies are more diverse:
 - Most companies cannot be agnostic about cost
 - There are many technological hurdles
 - Challenges are not limited to a single company

Methodology

Methodology

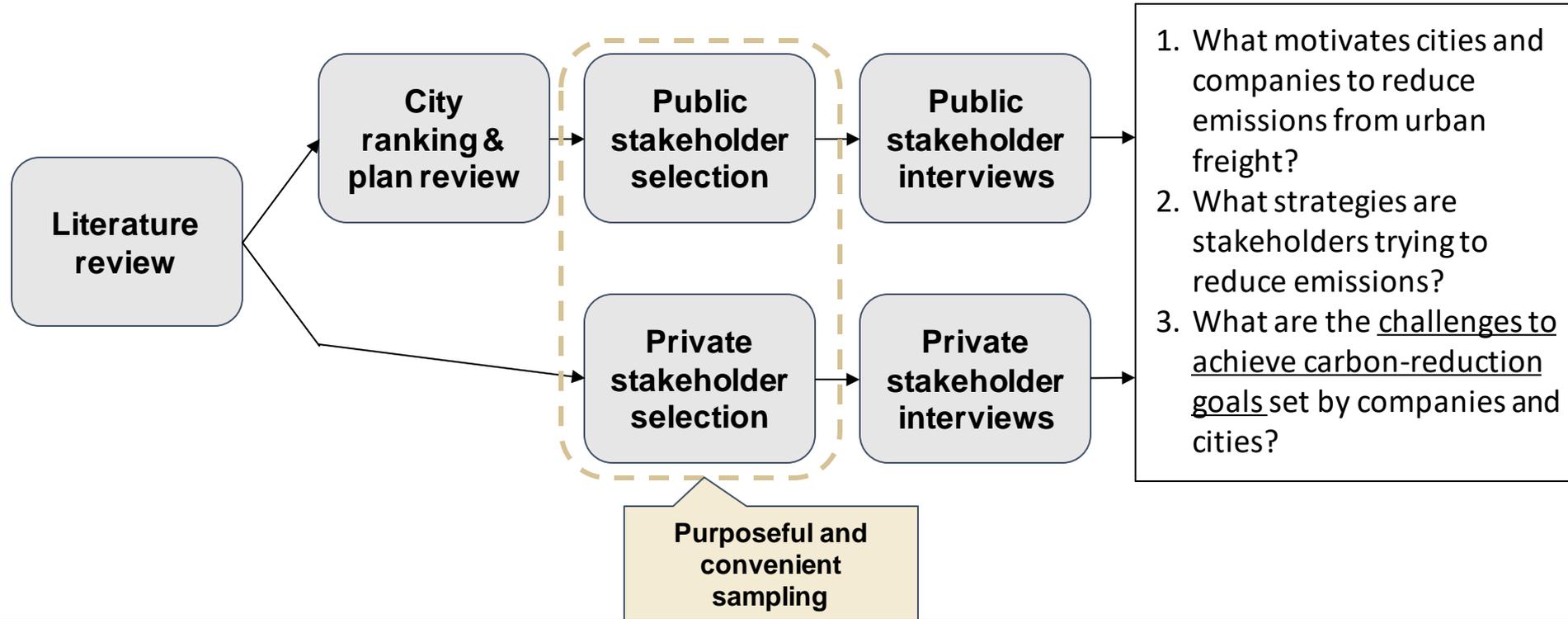
**Literature
review**

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Findings:

- 2 bodies of work: government sponsored “roadmaps” and scientific research;
- Over 20 strategies identified
- Disconnect between research and what companies are currently and actively pursuing
- Scientific research focuses on one or a handful of strategies
- Emphasis on public-private coordination

Methodology



Public stakeholder selection



Limitations:

- Lack of Midwest representation
- Concentration in California, Texas, and Florida.

Interviews Performed

Table 1. Stakeholders interviewed for this study.

Sector	Stakeholders Group	Number of Interviews (Number requested)
Private	Carriers	4 (5)
	Vehicle Manufacturers	3 (2)
	Wholesalers/Distributors	2 (4)
	Property Owners or Developers	1 (2)
	Labor Unions	1 (1)
Public	Departments of Transportation	6 (11)
	Planning Department	3 (7)
	Offices of Sustainability	3 (6)
	Departments of Economic Development	1 (1)
	Municipal Utilities	1 (2)

Stakeholder Interview Results

What motivates cities and companies to reduce emissions?

Public sector (Cities)

1. Follow leadership goals (e.g. Mayor's office, city council)
2. Responsiveness to constituents
3. Reaction to private interests

Private sector (Companies)

1. Gain efficiency & reduce cost
2. Branding & customer loyalty
3. Corporate vision & company values

What strategies are stakeholders using to reduce emissions?

Table 2. Urban freight decarbonization strategies identified during interviews.

Category	Strategy	Public Stakeholders (Cities) ¹	Private Stakeholders (Companies) ¹
Vehicle Technology	Vehicle electrification	√	√
	Public charging	√	√
	“Bridging” or alternative fuel vehicles		√
Land use	Curb space management	√	
	Microhubs/urban distribution centers	√	√
Alternative delivery methods	Cargo bikes	√	√
	Parcel lockers	√	√
	Final 50 feet alternatives (drones, remote-operated delivery robots, etc.)		√
Operations	Efficient routing		√
	Packaging and vehicle loading		√
Enforcement	Off-peak deliveries	√	
	Vehicle size restrictions	√	
	Low- or zero-emission zones	√	

¹ A check mark (√) in these columns indicates the stakeholder group that was pursuing the strategy.

What are the roadblocks (challenges) to achieving a sustainable urban freight system?

Challenges for public and private stakeholders sometimes overlap but can be categorized in broad terms:

- **Technological:** specific to each strategy; can impact time of adoption
- **Financial:** faced by both large and small companies
- **Policy:** Cities may lack the knowledge and tools to impact urban freight
- **Workforce:** how can companies (and cities) reach workers or introduce new technology to their current workforce?



Figure 1. Challenges to achieving sustainable urban freight by category.

Technological Challenges

1. Fitting new strategies into existing expectations

2. Piloting and testing/design of new technology

- Primarily challenging to companies
- Customer expectations
- Cost, efficiency, and timeliness
- E.g., cargo bikes replacing vans or trucks

Financial Challenges

1. Cost burden of new technology

2. Market immaturity and concern for technology obsolescence

3. Managing corporate risk

- Primarily challenging for companies
- Market immaturity manifests itself in cost and availability
- E.g., upgrading large fleets to battery-electric trucks or vans

Policy Challenges

1. Need for strong leadership

2. Lack of resources and industry knowledge

3. Federal and state preemption

- Primarily challenging to cities
- Market signals
- Cities unable to take action / regulate
- E.g., Clean Air Act and CAFE Standards (federal), public property laws (state)

Workforce-related challenges

1. Company-contractor relations

2. Labor agreements

3. Workforce outreach

- Challenging to cities, companies, labor unions, and the general workforce
- Cities do not know how to reach small companies
- Companies must recruit from unfamiliar labor pools

Conclusions

Conclusions

- Disconnect between researchers and urban freight industry
- There is a lack of coordination between the public and private sectors (they work at different speeds with different tools).
- Industry fragmentation
- Some challenges delay emission reduction strategies while others restrict stakeholders from even getting started.

Challenges to Sustainable Urban Freight

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Thank you