Integrating logistics into urban projects: *A new approach to dimension needs for logistics infrastructure in the Paris region*

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Introduction: logistics urban planning

Urban Logistics in 2025

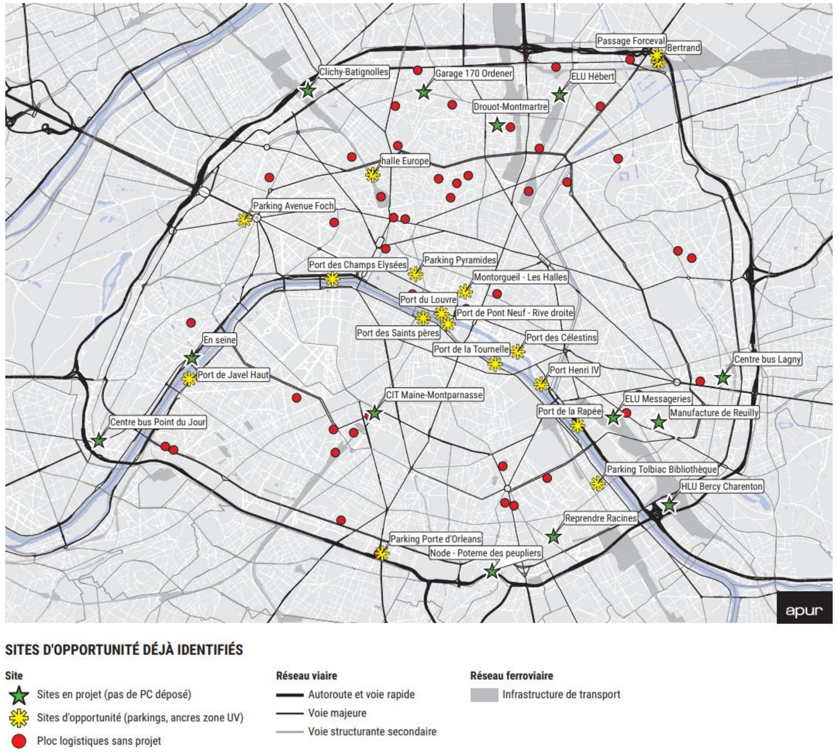
- Logistics causes negative externalities
- Integrating logistics in city centers can reduce environmental impact but creates challenges
- Standardizing logistics facilities (size, location, form) in cities is difficult
- Tools for strategic planning exist but are in early stages

In the Paris Region

Only 9% of large urban projects incorporate logistics and freight planning (Debrie and Heitz, 2017)

Key issues in urban logistics planning:

1. Lack of knowledge among local authorities, developers, and planners
2. Poor coordination between stakeholders and logistics operators



Sites identified to integrate urban logistics infrastructures in Paris
APUR, 2021

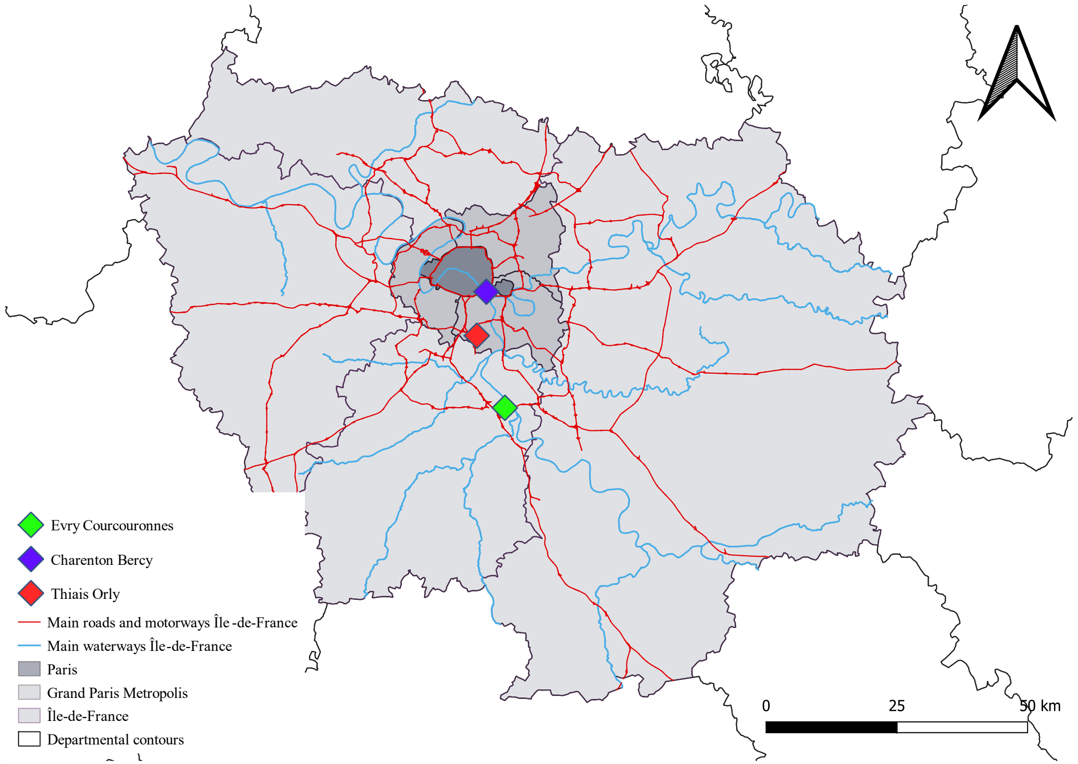
Research objectives and approach

Objective: Improve logistics integration into urban planning

- Anticipate logistics needs in urban projects
- Assess current planning tools' adequacy
- Develop methods for better logistics coordination

Approach: Case study of three projects: Charenton Bercy, Thiais Orly, Evry Courcouronnes

- **Phase 1**: Assess logistics needs of urban developments *(today's presentation)*
- **Phase 2**: Define leverage points for logistics infrastructure planning (future study)



Map of three urban projects. *Fisher. 2025*

Methodology

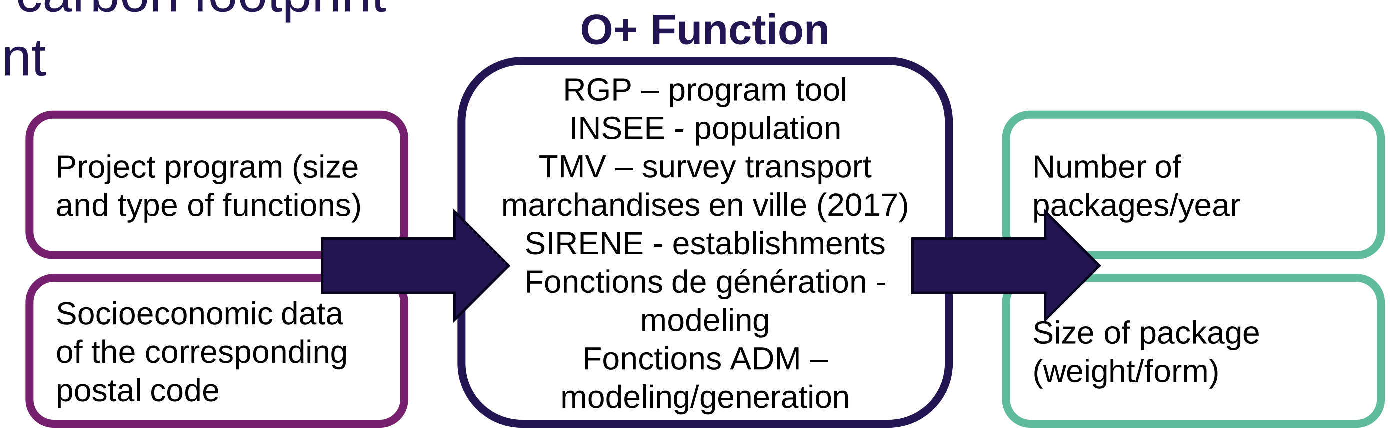
Objectives:

- Quantification of spatial need for logistics in large-scale urban development projects
- Integration of real estate developers and urban planners’ perspectives
- Estimation of logistics infrastructure requirements (square meters for possible warehouses or last mile infrastructures) without relying on freight models

Target audience: Developers, planners, and public authorities

Data and tools mobilized:

- O+ programmatic tool (Heitz and Beziat. 2017)
- Logistics real estate developer(Sogaris) carbon footprint
- Sogaris logistics platform flow experiment



Spatial diagnostic method overview

Step 1: Generating Delivery Estimates

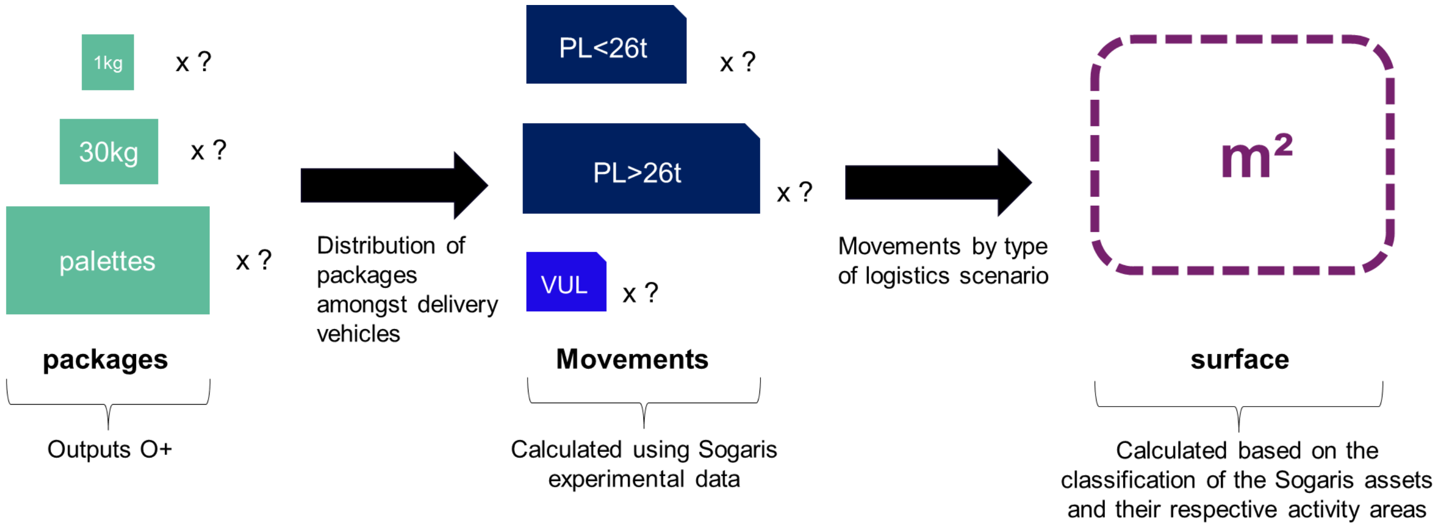
- Use of O+ tool for Paris to simulate B2B and B2C deliveries.
- Input: Project location, housing surface area, and number of housing units.
- Output: Number and size of packages to be delivered per year.

Step 2: Distributing Packages Among Vehicles

- Experimental data from Sogaris and Altaroad for vehicle distribution and average weight.
- Breakdown of vehicle types and their respective flows.

Step 3: Calculating Space/Movement Ratios

- Space-to-movement ratios derived from Sogaris data for various logistics clients and activities



Method limitations and assumptions

Assumptions

- Weight standardization among package types

Limitations

- The method doesn't account for all factors influencing logistics space (e.g. infrastructure capacity, project objectives).
- Reliance on self-reported data from private actors
- Assumption of uniformity in delivery sizes and weights

Applicability

- A complementary tool to urban programming, not a substitute
- It helps developers justify logistics facilities but requires more accessible data for improved accuracy

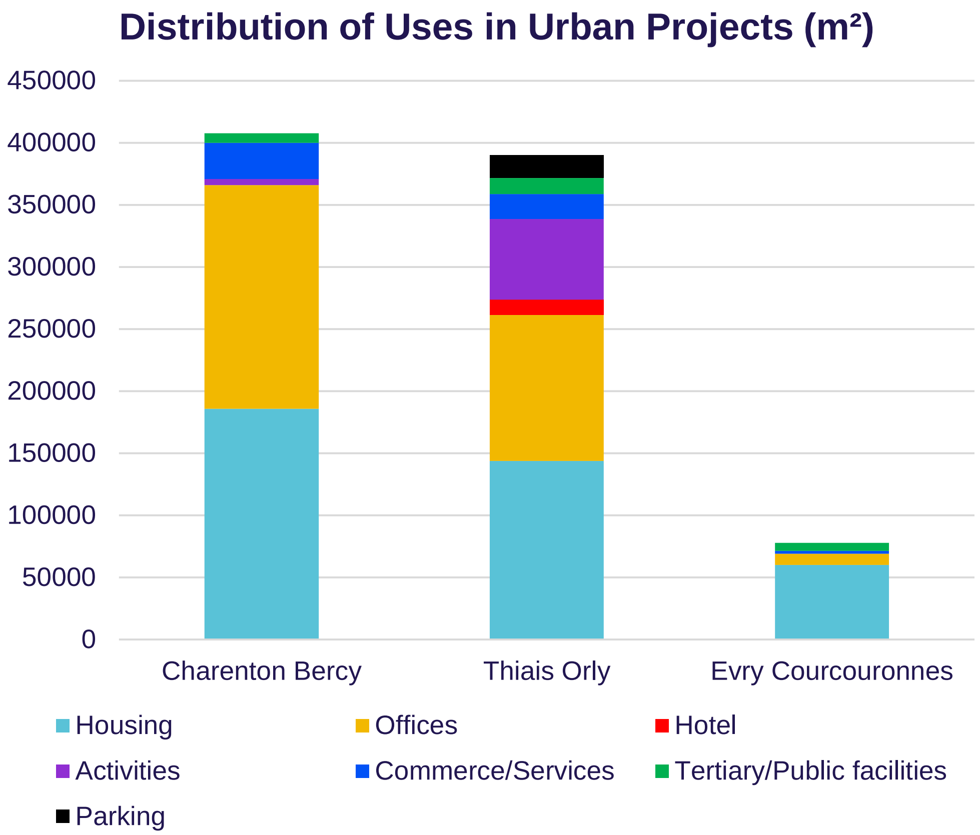
ACTIVITES	NOMBRE	EMPLOIS	LIV_AN	LIV_MOINS_1KG	LIV_COLIS_MOINS_3KG	LIV_COLIS_MOINS_30KG	LIV_COLIS_MOINS_100KG	LIV_COLIS_PLUS_100KG	LIV_PALETTES	LIV_AUTRE	LIV_LOTS_COMPLETS
Petit commerce de détail	6	17	1412,7	7,7	26,3	222,2	160	260,4	195,4	521,2	19,5
Grande distribution	2	16	442,9	0,2	0,4	14,1	1	46,8	319,1	35	26,3
HoReCa	4	13	685	12,3	66,5	164,2	113,8	129,2	38,1	157,2	3,7
Commerce de gros	12	24	1644,5	1,4	17,5	337,4	86,4	544,7	301,1	227,2	128,8
Services artisans	6	8	308,1	1,3	0	203,1	6,9	1,9	21,2	57,1	16,7
Services à la personne	28	75	1599,6	320,9	88,1	313,7	338,8	186,2	65,6	278,2	8
Services de maintien de l'ordre	2	2927	17941,2	184,1	66,9	1019,5	467,5	100,5	13530,2	2149,7	422,8
Enseignement	2	137	413	1,8	41,3	247	25,8	18,3	28,9	41,5	8,4
Activités sportives	2	16	151,3	0,2	1,5	23	18,6	24,7	32	26,2	25,1
Etablissements hospitaliers	1	32	125,1	0,6	12,5	74,8	7,8	5,6	8,7	12,6	2,5
Equipements culturels	2	3	92,5	0	4,6	33,3	6	1,4	1,1	46,1	0,1
Bureaux tertiaires	24	151	1635,5	7,3	163,7	978	102	72,6	114,3	164,4	33,1
Bureaux non tertiaires	4	7	493,7	4,6	2,9	26,4	12,4	10	373	53,9	10,6
Services tertiaires à la personne	8	17	429,4	0,5	4,2	65,3	52,8	70	90,7	74,5	71,4
TOTAL	103	3443	27374,6	542,9	496,4	3722,1	1399,7	1472,3	15119,3	3844,9	777,1

Sample output O+: EC B2B

Type of vehicle	Average weight of goods transported (kg)	Dist. of total weight of goods transported (%)	Dist. Of total flows per vehicle type (%)
Light commercial vehicle	1503	9.54	44
Heavy goods vehicle <26t	9810	73.76	46
Heavy goods vehicle >26t	11802	16.7	10

Altaroad flow experiment results

Application of method to three case studies



Site	B2B Logistics Spatial Requirement	B2C Logistics Spatial Requirement (with average vehicle distribution)	B2C Logistics Spatial Requirement (assuming all deliveries made by light utility vehicle. crossdocking)	Movements Associated (per year. B2B and B2C)
CB	6508.3-11439m²	78.2-137.5m²	340.5m²	31325
TO	6579.1-11563.8m²	51.9-91.2m²	225.9m²	31536
EC	1435.3-2522.8m²	22.3-39.2m²	97.1m²	6933

Results: At first glance

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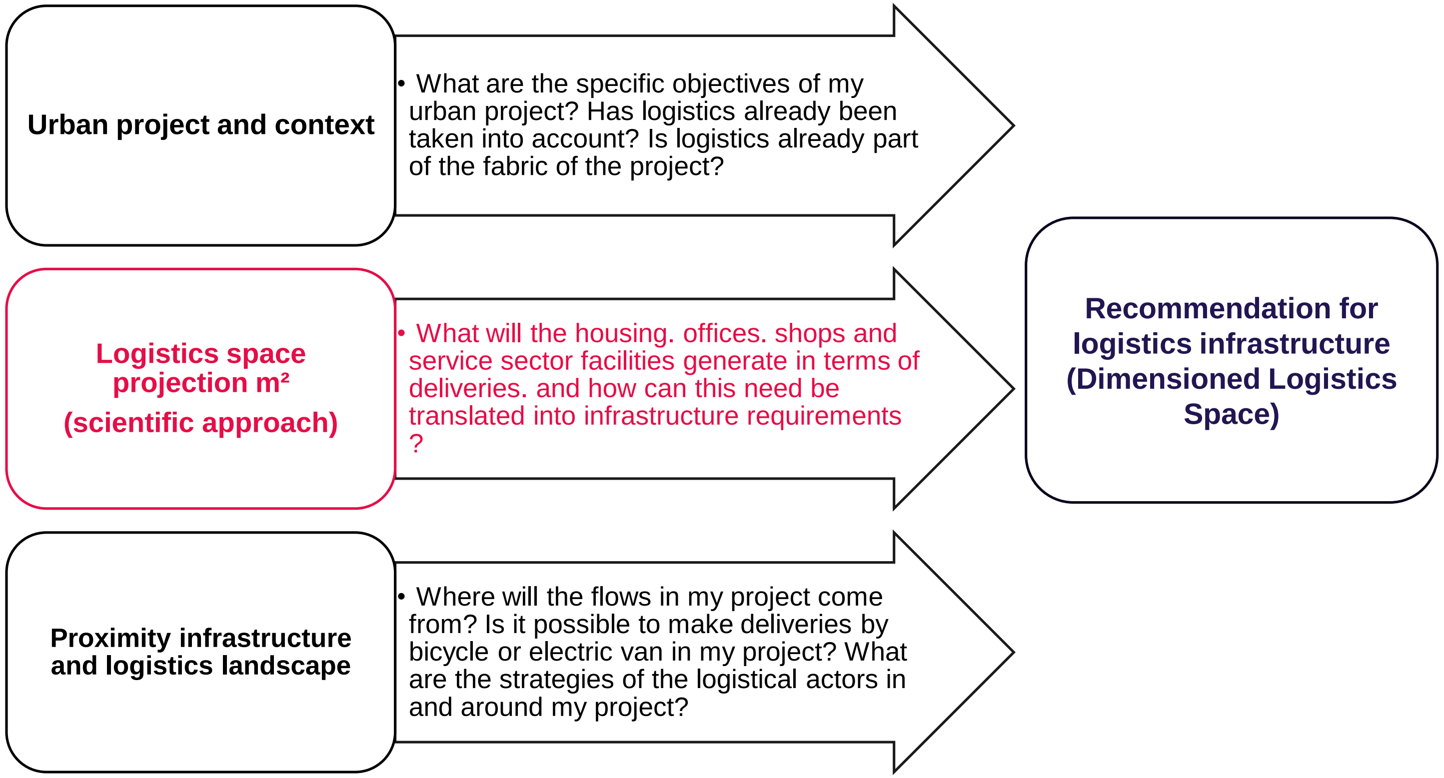
- B2B requires more space than B2C
- Paradox: despite e-commerce bringing greater visibility to urban logistics, larger B2B shipments drive a greater need for logistics space
- This method does not account for other factors that determine the need for space
- Results should not be used as strict requirements for logistics space construction, but estimation can help justify logistics developments and simulate last-mile delivery scenarios

Urban Programming Considerations

Urban project specificities:
- Consider projects of the project owner for the urban project (both mobility-related and other)

Spatial needs projection:
- Not immediately prescriptive; other factors must be considered.
- Consider surrounding logistics infrastructure and its ability to absorb increased demand

Integration with existing infrastructure:
- Anticipating freight flows, considering existing warehouses, and optimizing space



Programmatic process to dimension logistics space in an urban project. *Fisher. 2025*

Conclusions

It is possible to integrate logistics into the planning of mixed-use projects
- By sizing the theoretical equipment needs
- By gathering the needs of all the actors involved in the process
- By identifying the existing logistics operation in the wider territorial sector
- By optimizing economic opportunities of constrained land through mixing activities and functions

For public land developers or urban project owners, this method complements the programmatic approach to urban planning, particularly for large-scale or mixed-use projects.
O+ programmatic tool adds to urban programming but does not replace it.

Why integrate logistics into the planning of mixed-use projects?
- Better integration of logistics facilities and activities
- Increased alignment of public and private stakeholders in urban logistics planning

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Thank you!
Questions?