

Life Giga Regio Factory

Methodology that help identify relevant building for collective buy-in scheme



**giga
regio
factory**
by energie
sprong



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> Methodology for collective buy-in-scheme

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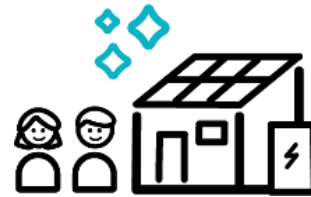
Introduction & context

EnergieSprong in its early days: an ambitious renovation standard to drive off-site renovation

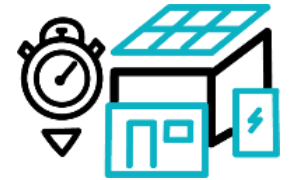


To accelerate and scale up:
Specifications for guaranteed, industrialized, and desirable
zero-energy renovations

Desirable



Fast



SCALABILITY

E=0



Affordable



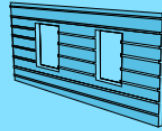
> Projects that have enabled the development of standardized solutions



> Projects that have enabled the development of standardized solutions



Façades

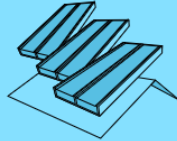


Panneaux de façade 2D simple

Panneaux de façade 2D complexe

Éléments de façade en kit/manuportables

Toiture

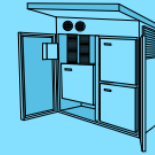


Caissons de toiture isolants

Plancher bas

Solutions traditionnelles uniquement

Solutions pré-fabriquées



Module énergie individuel extérieur

Module énergie individuel intérieur

Module énergie collectif

Systèmes techniques en kit

Solutions traditionnelles (PAC, double flux)

Accessibilité



Ascenseurs et escaliers extérieurs

Amélioration du confort et sécurité



Loggias et balcons

Salles de bain préfabriquées

Mise aux normes (électriques, ...)

Création d'espace



Surélévation/extension

> Since then, off-site renovations have grown in popularity

As part of EnergieSprong: E=0 renovations...



... But also in other ways, with other performance ambitions





On building policies, we therefore need several standards in order to achieve our 2050 objectives

Examples :

1. Leading group: Energiesprong E=0: Building envelope + systems – EPC Class A in one step

1 step

2.a. Envelope

1 step

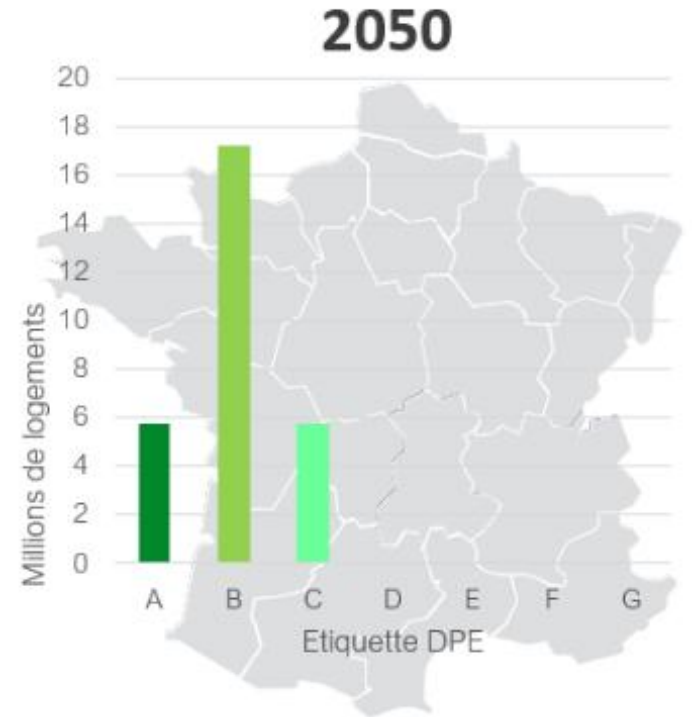
2.b. System

1 step

3.a. Envelope or 3.b Systems

1 step

Depending on short-term/long-term challenges



➔ **Choosing the right standard for the right building**



Meeting the climate challenge at optimized costs means 60% of renovations are carried out using mass production methods with a few key standards that can be replicated for each type of housing

Typologies of buildings

Standards

A/B

Envelope + System

XL

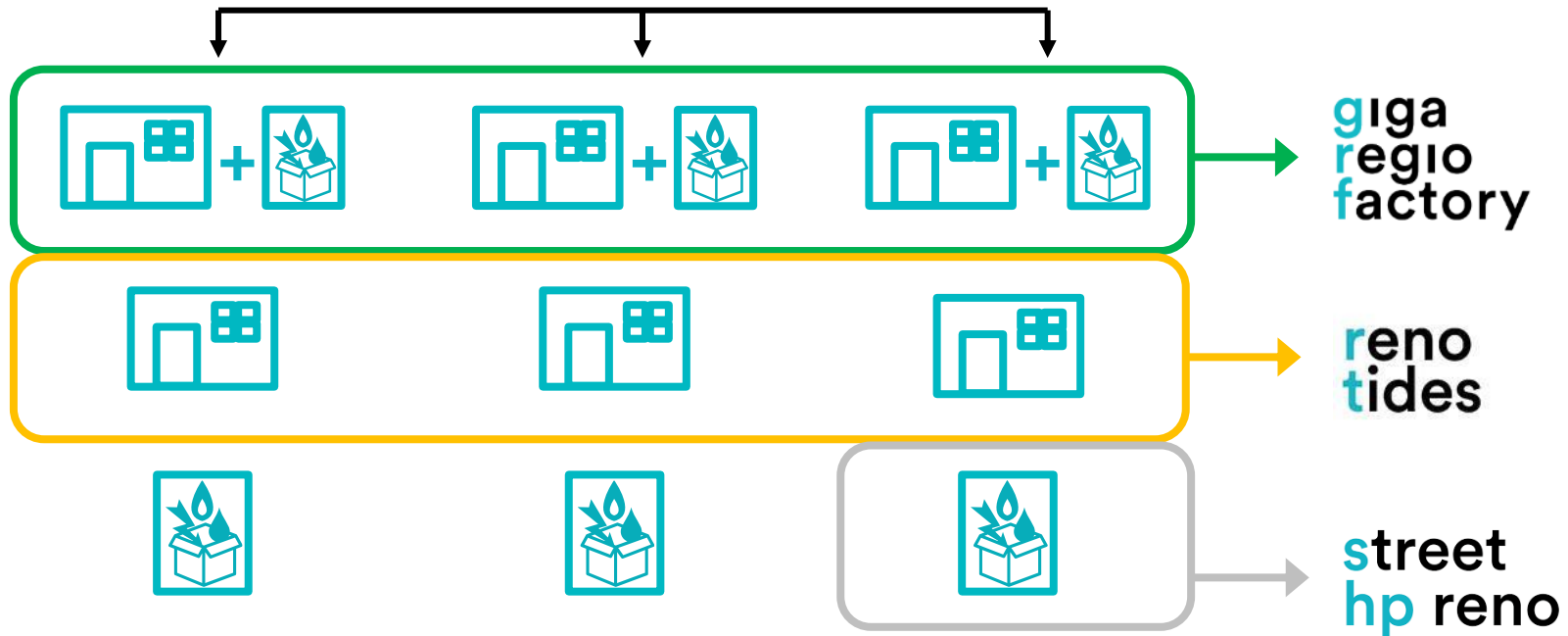
B/C

Envelope

L

C

M





To test a first wave on a large scale, there was the first regional mass market: MASH Pays de la Loire in France (approx. 1,500 homes)

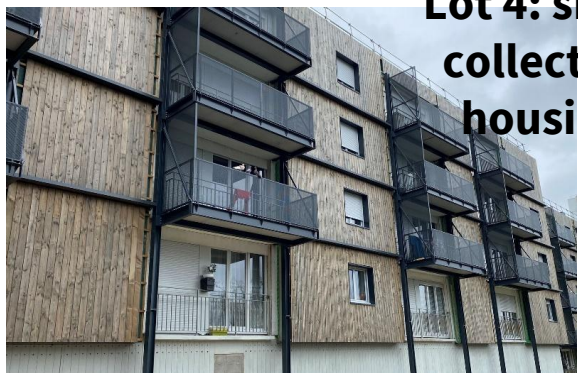
**Lot 1:
individual
housing**



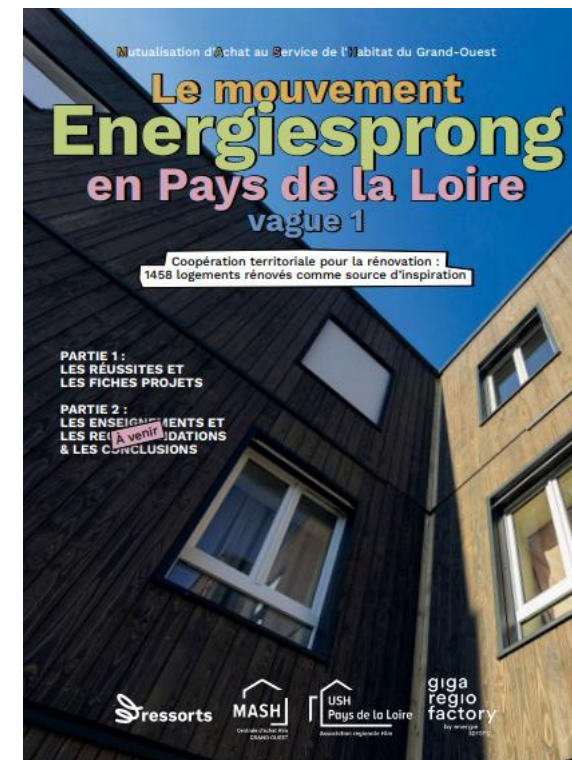
**Lot 1:
individual
housing**



**Lot 4: small
collective
housing**



**Lot 5 : big
collective
housing**



https://ressorts.life/wp-content/uploads/2025/12/Rex_mash_partie_1_FR.pdf



Feedback: it worked, but there were many difficulties related to the innovative format of the order... and the selection of housing

- Very long design phase: competitive dialogue + very long development periods.
- Projects that are not entirely off-site in their DNA: a “traditional” order requiring prefabricated solutions.
- Reflexes (attitudes and methods) that resurface: heterogeneity of requirements during the development phase, attitude
- Governance to be improved for decision-making

However, prices are in line with expectations:

€80k excluding tax for detached houses

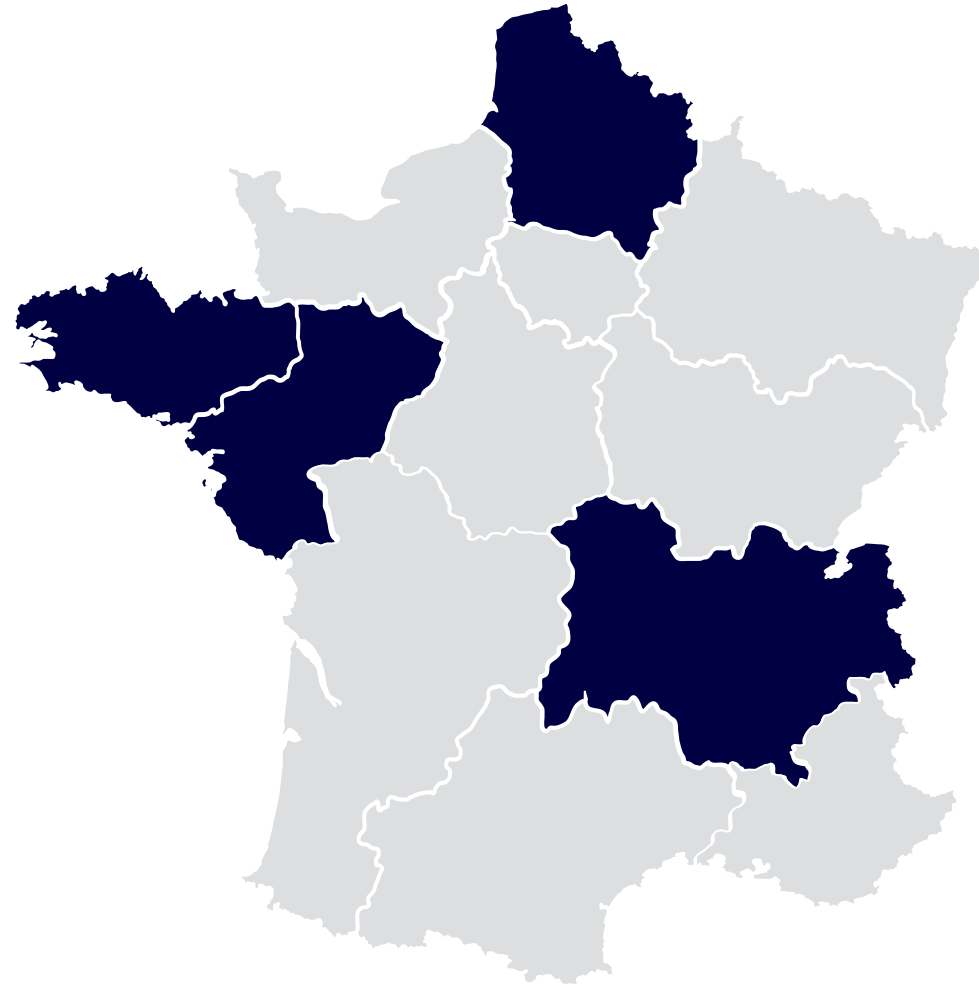
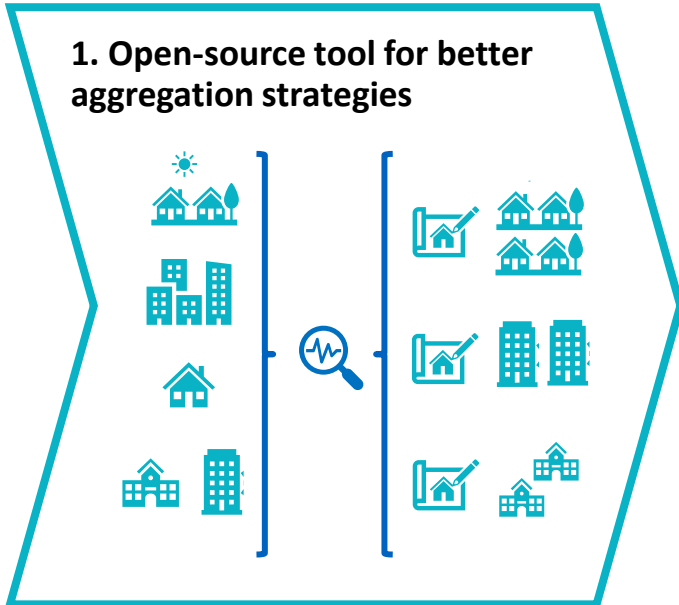
€65k excluding tax for small apartment buildings

€50k excluding tax for large **apartment buildings**

For EnergieSprong E=0

One of the key areas for improvement: better selection and allocation of housing units to be renovated during the planning phase.

> The idea is to do better for those who come after us:



Enable more efficient collective buy-in-scheme for renovation projects in several regions of Europe

→ Consolidate demand aggregation to increase volume and visibility

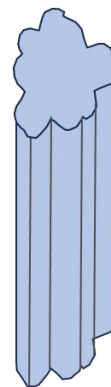
Technical presentation

- Presentation of the Life Giga Regio Factory methodology

> The three dimensions of rapid, coordinated rehabilitation



Nuage Towers, Nanterre
RVA, in progress
Perspective of RVA



A complex layout and bay morphology, heterogeneous heights but 4 ha of facades, similar layouts and only 3 types of windows.



A high rise, a single building but an uncluttered bar producing a large screened facade surface.



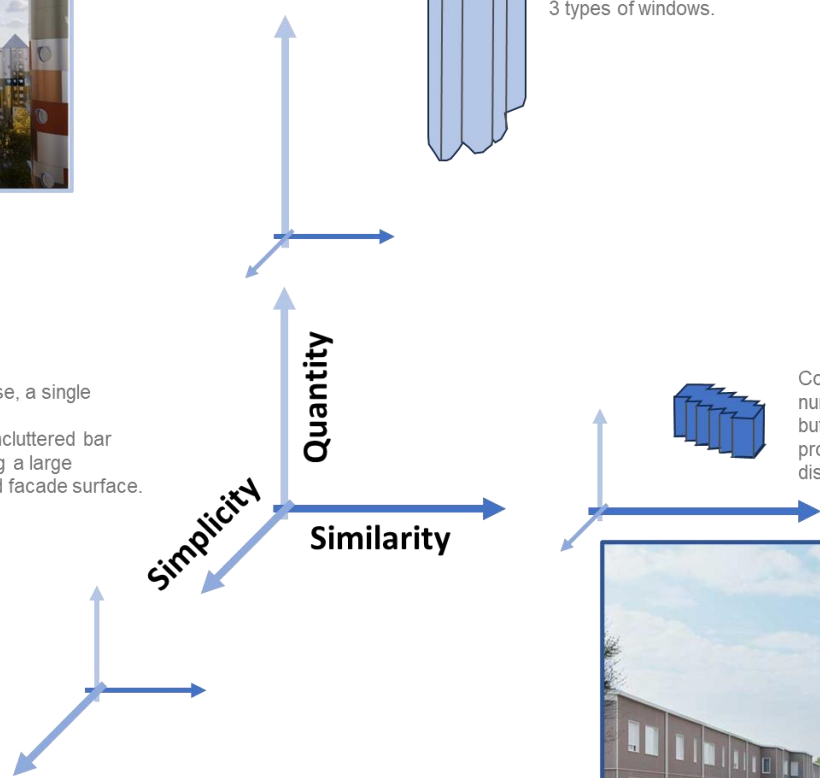
Grand Parc district, Bordeaux
Lacaton&Vassal, Druot, Hutin, 2017
Photo by Lacaton & Vassal



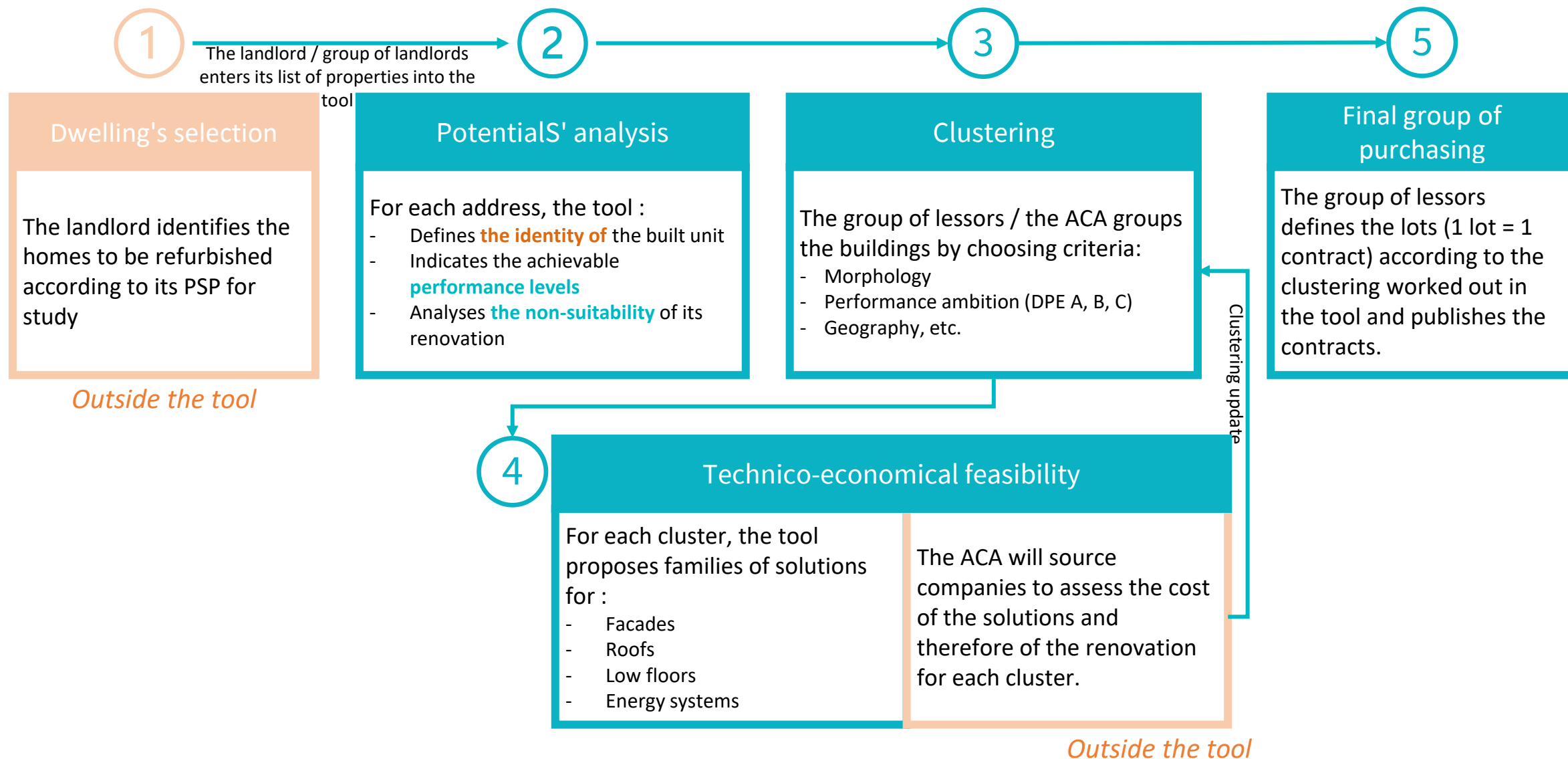
Complex layout morphology, average number of units but the same housing module proliferating throughout an entire district.



Beaulieu district, Wattrelos
Redcat Architecture, 2020
Photo by Redcat Architecture

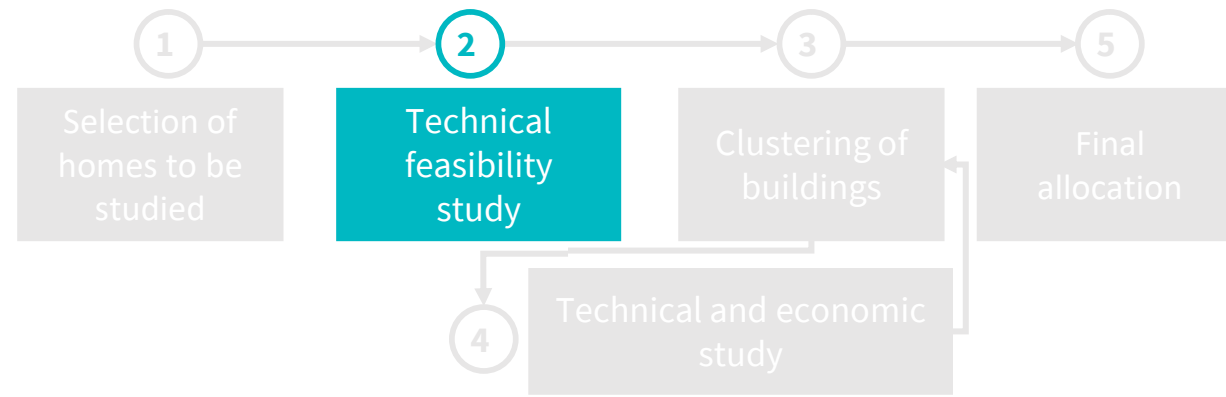


> A method that fits into a collective renovation strategy



Presentation of step 2 : PotentialS' analysis

> Step 2: Technical feasibility study



The collective of social organization enters the list of buildings to be studied into the tool, which, for each address:

2.1

Built unit identity: a spatio-temporal and parametric study

2.2

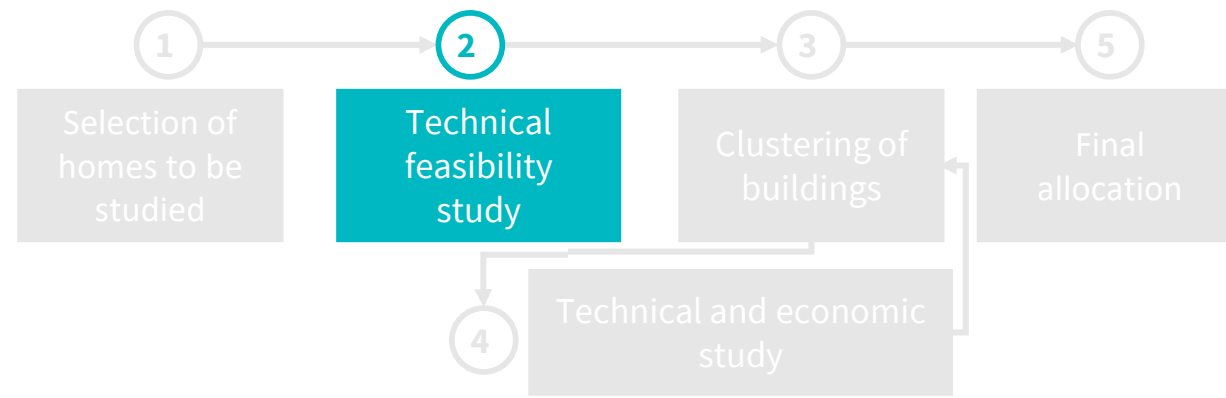
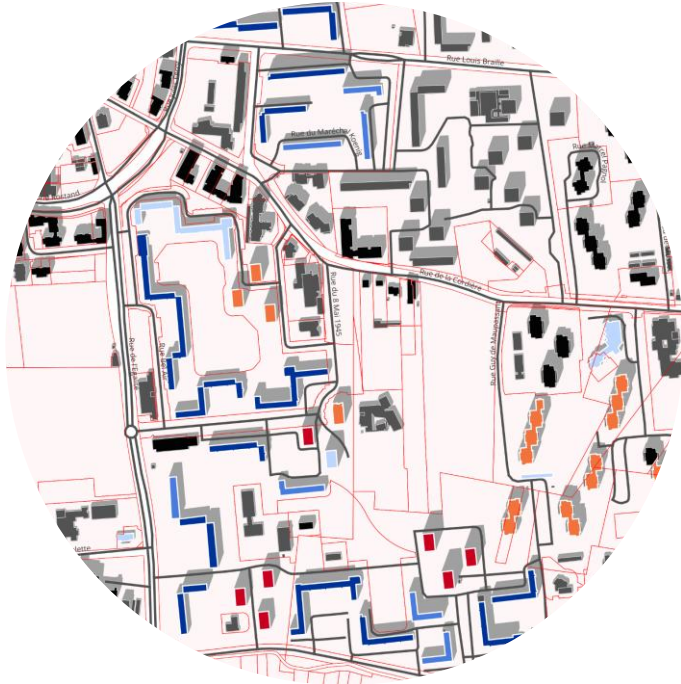
Define potential for decarbonising systems

2.3

Analyse the off-site potential for renovation

Step 2.1 :

> Built unit identity: a spatio-temporal and parametric study



Identification of building morphologies



The built units are **represented in such a way that they can be analysed** according to their shape, the way in which they are located in relation to their plot and in relation to neighbouring buildings, and the way in which the built unit addresses the road. These three patterns of buildings, plots and roads help us to understand the environment of each dwelling. We are no longer looking at a list of addresses but at medallions, like the view through the lens of a microscope of a dwelling in a Petri dish.



Step 2.2 - Performance: a two-pillar study



The tool assigns a score to the building, which is used to assess how **easy it is to carry out a high-performance renovation**, based on two pillars: the potential for renovating the envelope and the potential for decarbonising the systems.



Envelope renovation potential

Objective: to study the ease of insulating the envelope, preferably using ITE.

	Houses houses		Buildings apartment blocks	
	Weight of each rating	Maximum score	Weight of each rating	Maximum score
A. Climate	1	10	1	10
B. Compactness	1	10	2	10
C. Facades	2	10	3	10
D. Roofs	1	10	1	10
E. Low floor	0,5	10	0	10
Overall score (weighted average)	/ 10		/ 10	



Potential for decarbonising systems

Objective: study the possibility of installing a heat pump or solar heating or connecting to a network

	Houses individual	Apartment buildings apartment buildings
	Maximum score	Maximum score
A. Heating energy	To be completed with tests in individual dwellings	2
B. Floor area		1
C. Classified area		4,5
D. Insulation level		2,5
PAC = A+B+C+D	/ 10	/ 10
E. Solar thermal potential	To be reviewed	3,5
ST = A+C+E	/ 10	/ 10
F. Heating network		/ 10
Overall score	= max of intermediate scores / 10	

→ The best-rated energy solutions will be recommended in the tool.



Performance: test results on Est Metropole Habitat (French social landlord)



Envelope renovation potential

Example 1: [2 rue du midi, Saint-Symphorien-d'Ozon](#)



Envelope rating: 2/10

Explanatory factors: listed area, property boundary, complicated facade, converted attic space.

Example 2: [94-104 rue du 8 mai 1945, Villeurbanne](#)



Envelope rating: 6/10

Explanatory factors: Simple façade, no property boundary but average compactness (moderately favourable climate zone).

Example 3: [8 Rue Serge Ravanel, Villeurbanne](#)



Envelope rating: 4/10

Explanatory factors: renovation already carried out, some setbacks, no property boundary.



Performance: test results on Est Metropole Habitat (French social landlord)



1
Selection of homes to be studied

2
Technical feasibility study

3
Clustering of buildings

5
Final allocation



Decarbonisation potential of systems

Example 1: [3 place Millet, Saint-Priest](#)



System rating: Solar th: 9/10
HEAT PUMP: 7.5/10
DH grid: 0/10

Explanations: No district heating grid nearby (according to open source data), high solar potential, collective gas heating, available floor space.

Example 2: [2 rue Saint-Jean, Villeurbanne](#)



System score: DH grid: 10/10
HEAT PUMP: 8.5/10
Solar th: 7.5/10

Explanations: District heating grid nearby, good insulation

Example 3: [9-10-11-12 rue Emile Bouvier, Villeurbanne](#)



System rating: Solar th: 8/10
DH grid: 8/10
PAC: 6.3/10

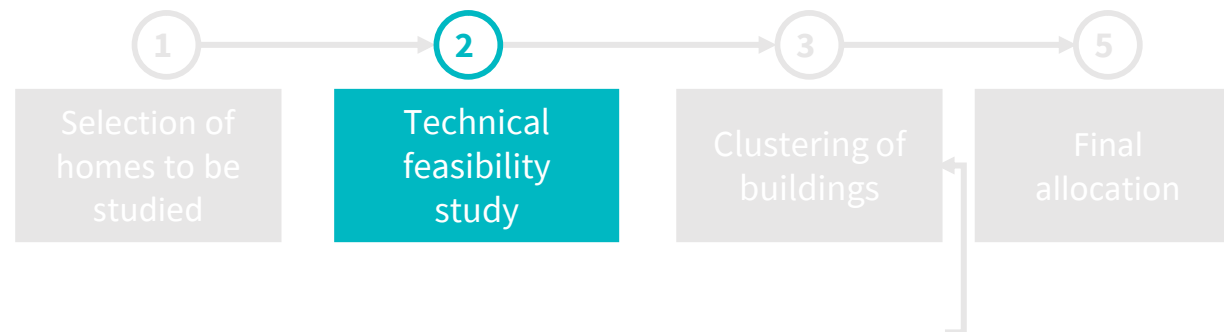
Explanations: high solar potential, district heating grid nearby, individual gas heating



Step 2.3 - Off-site: rating the off-site potential of the renovation

Based on various criteria, for example:

- Height of the built unit
- Frontage area
- The compactness of the living space
- The simplicity of the facades (projections, recesses, redents)
- The presence of balconies
- The property boundary
- Whether it is part of our heritage (MH inventory or SPR district)
- The slope of the roofs
- Accessibility for WIP lifting equipment



The tool assigns a score to the building, which is used to assess how easy it is to renovate the building using industrialised solutions:





Off-site feasibility: test results on Est Metropole Habitat



1 Selection of homes to be studied

2 Technical feasibility study

3 Clustering of buildings

4 Clustering of buildings

5 Final allocation

Example 1: 17 rue Pierre-Joseph Proudhon C, Villeurbanne



Off-site feasibility score: 8.59 (/ 10*)

Strengths: screened facade, significant facade development, no great heights, accessible

Weaknesses :

Example 2: 24 Bd du 11 novembre, Villeurbanne



Off-site feasibility score: 7.95 (/ 10*)

Strengths: screened facade, significant facade development

Weaknesses: little or no access

Example 3: 118 Av. Paul Kruger, Villeurbanne



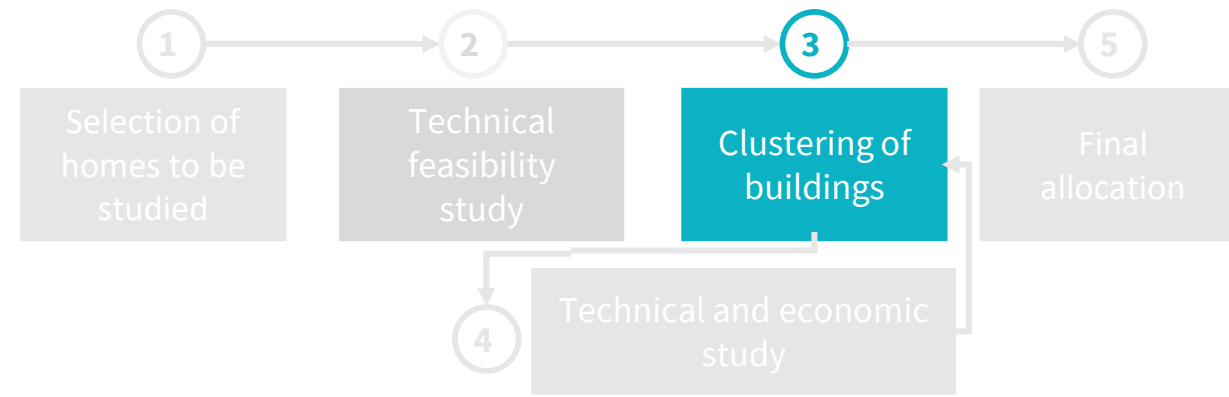
Off-site feasibility score: 3.1 (/ 10*)

Strengths: Simple façade

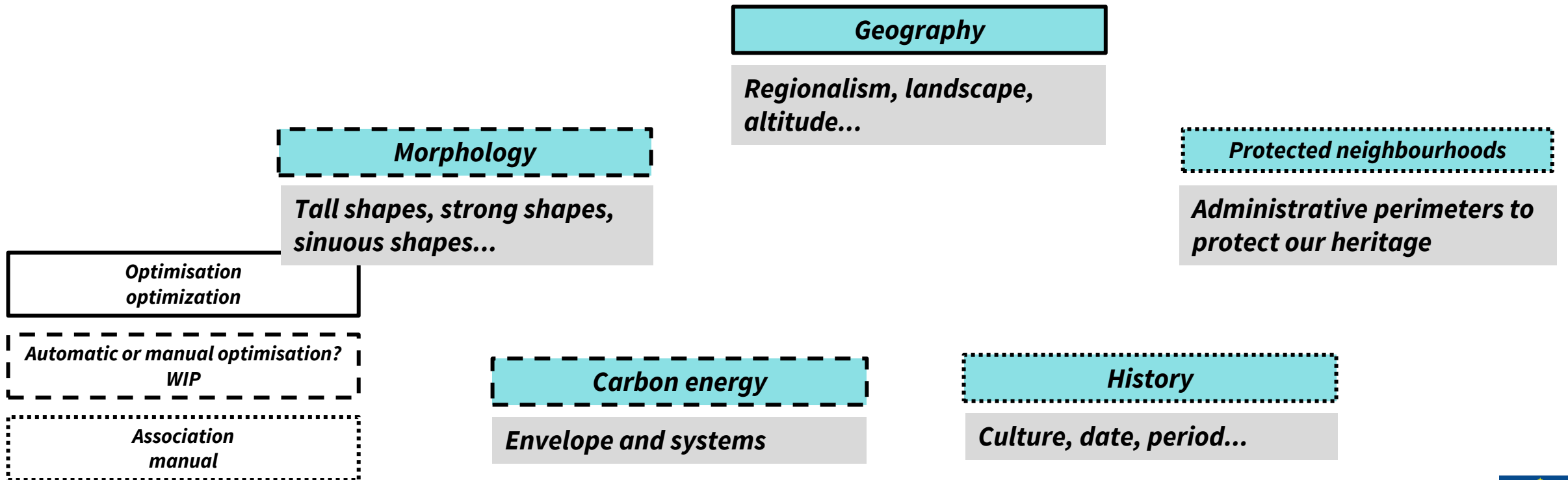
Weaknesses: Little volume, not very accessible, added element

Presentation of step 3, 4 and 5 aggregate demand for next collective buy-in-scheme

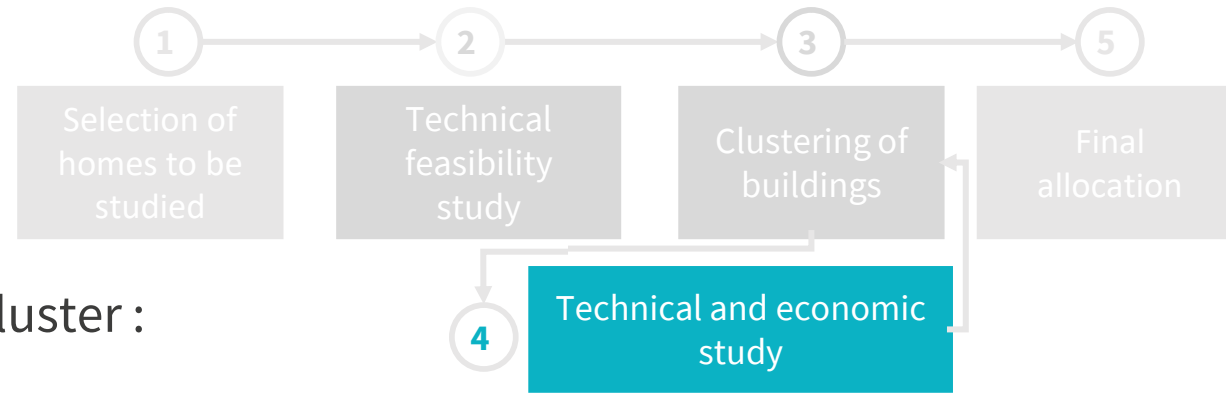
> Step 3 : Clusters dependent on landlord's decisions



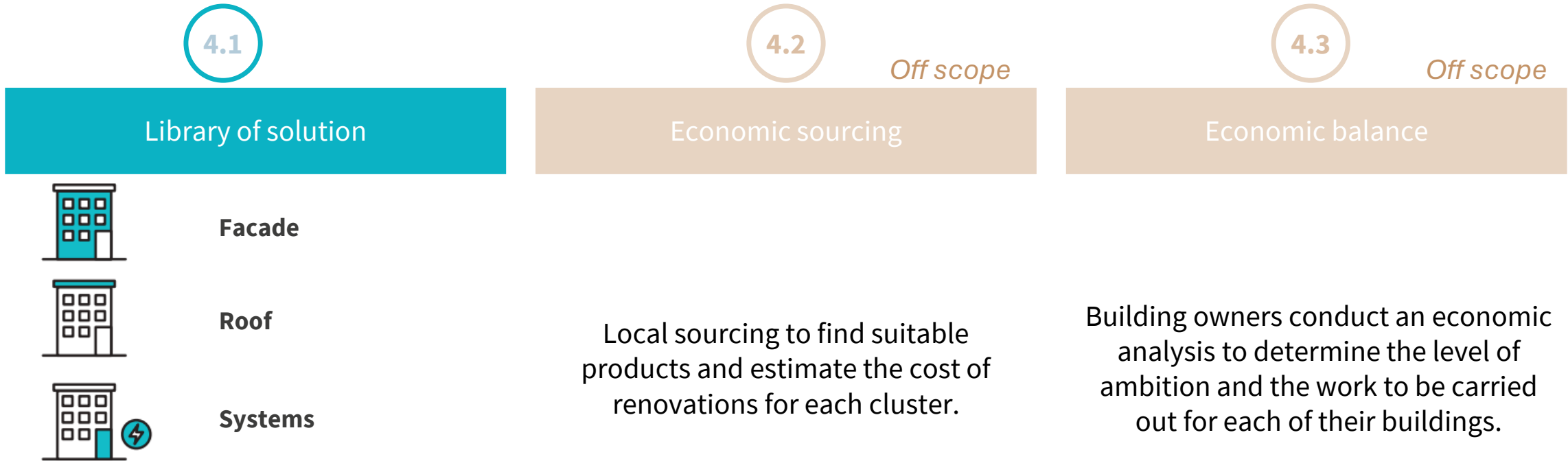
The way in which built units are associated with each other depends on the developer's strategy. So there is **no single combination, but a myriad of possible combinations**. They can be optimised automatically or manually, with or without iteration, according to 5 issues:



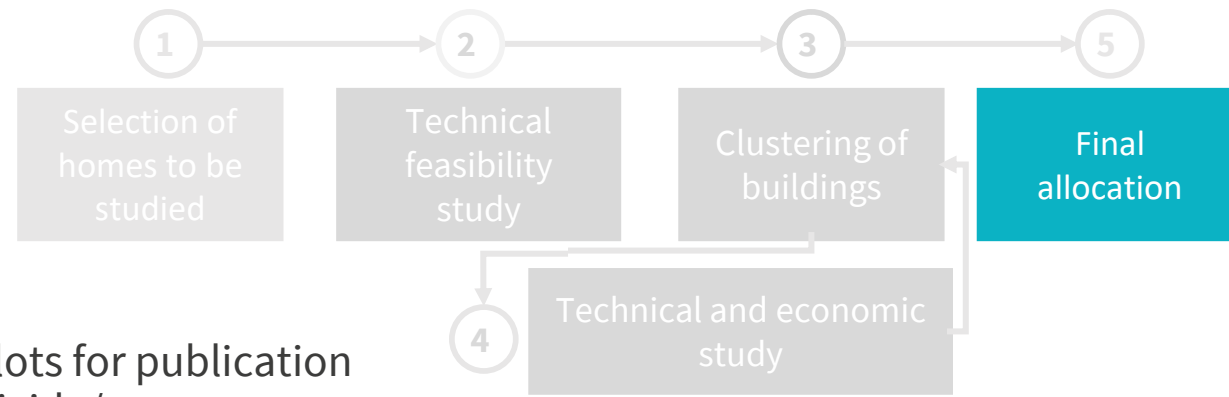
> Step 4



The tool offers families of solutions tailored to each cluster :



> Step 5: Final allocation



After finalizing the clustering, the group of lenders finalizes the lots for publication of the contracts. The lots may be identical to the clustering or divide/regroup clusters according to the number of dwellings desired in each lot. Example:

Lots	Morphology	Performance	Potentiel hors-site	Localisation	Number of dwellings
Lot = Clusters 1&2	Bars, tower	High-performance renovation	> 7/10	Département x	250
			> 7/10	Département y	210
Lot 3	Bars, tower	High-performance renovation	> 7/10	Département x	500
Lot 4	Bars, tower	High-performance renovation	> 7/10	Département y	540
Lot 5	Bars, tower	High-performance renovation	6/10 et 7/10	Département x	700
Lot 6	Bars, tower	High-performance renovation	6/10 et 7/10	Département y	800
Cluster 7	Bars, tower		6/10 et 7/10	Département x	850
Division → Lot 7.1	Bars, tower	High-performance renovation	6/10 et 7/10	Département x	430
→ Lot 7.2	Bars, tower	High-performance renovation	6/10 et 7/10	Département x	420

This document is a deliverable of Life Giga Regio Factory project. This project has received funding from the European Union's Life programme under grant agreement N°101077258 LIFE21-CET-BUILDRENO-LifeGigaRegioFactory



Implemented by:

