Life Giga Regio Factory

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

giga regio factory
by energie sprong

Co-funded by the European Union

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> Methodology for collective buy-in-scheme

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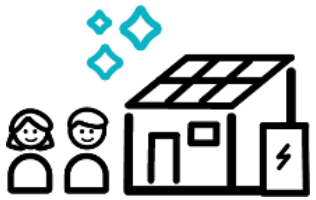
Introduction & context

3

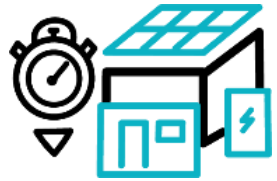
EnergieSprong in its early days: an ambitious renovation standard to drive off-site renovation

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

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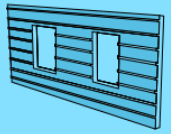
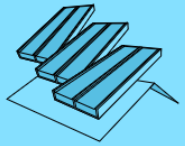
Façades



- Panneaux de façade 2D simple
- Panneaux de façade 2D complexe
- Eléments de façade en kit/manuportables

Toiture

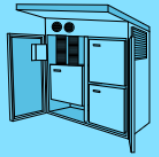


- Caissons de toiture isolants

Plancher bas

- Solutions traditionnelles uniquement

Solutions pré-fabriquées



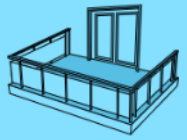
- Module énergie individuel extérieur
- Module énergie individuel intérieur
- Module énergie collectif
- Systèmes techniques en kit

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

https://ressorts.life/wp-content/uploads/2025/02/Ressorts_Referentiel_3101.pdf

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

Depending on short-term/long-term challenges

Examples :

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

1 step

2.a. Envelope

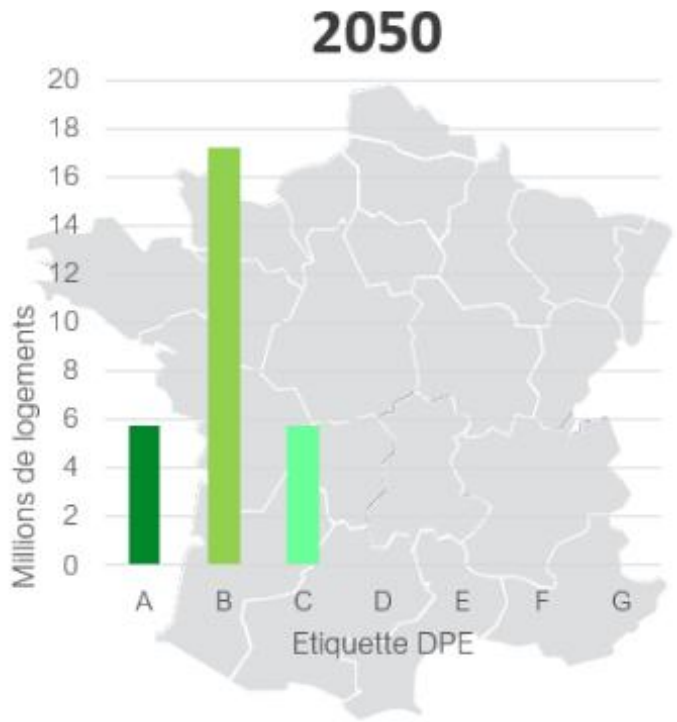
1 step

2.b. System

1 step

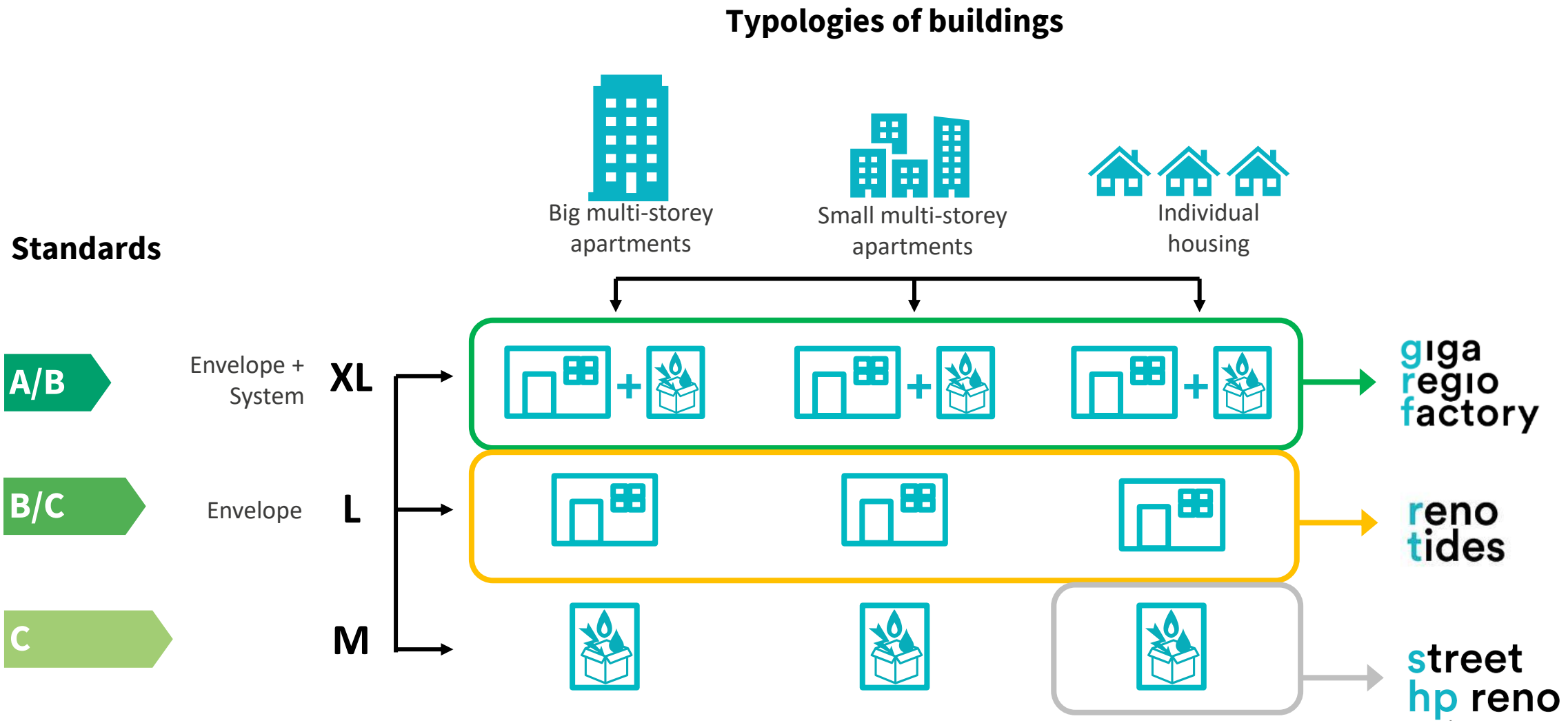
3.a. Envelope or 3.b Systems

1 step



➔ **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

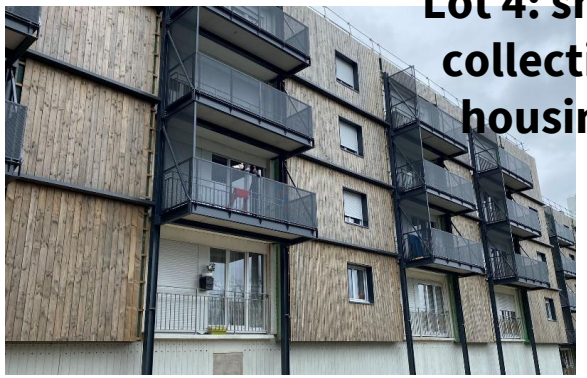


> To test a first wave on a large scale, there was the first regional mass market: MASH Pays de la Loire in France (approx. 1,500 homes)

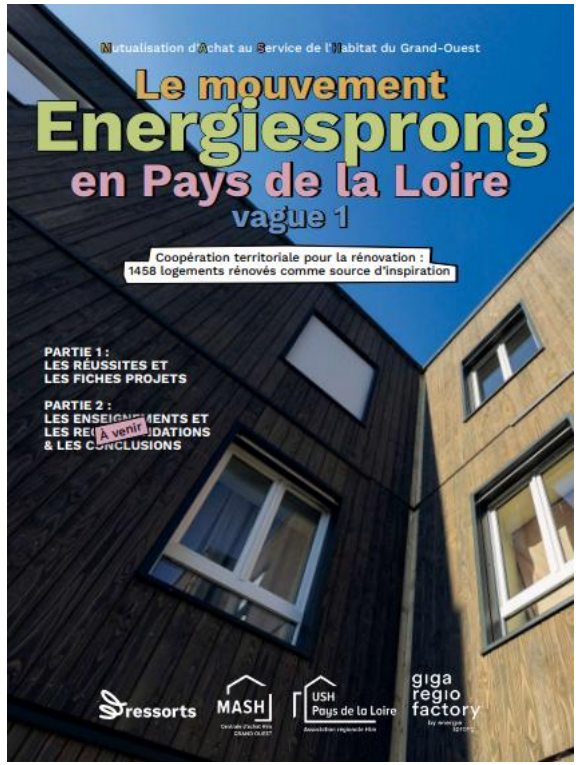
Lot 1: individual housing

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

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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.

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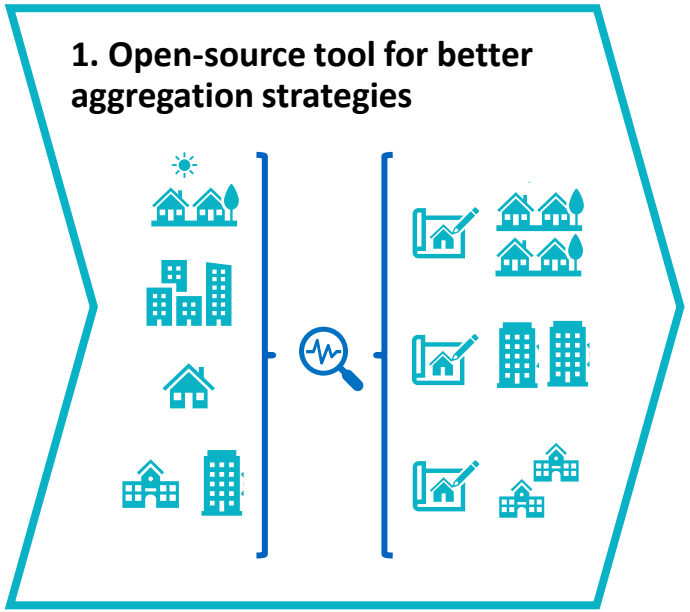
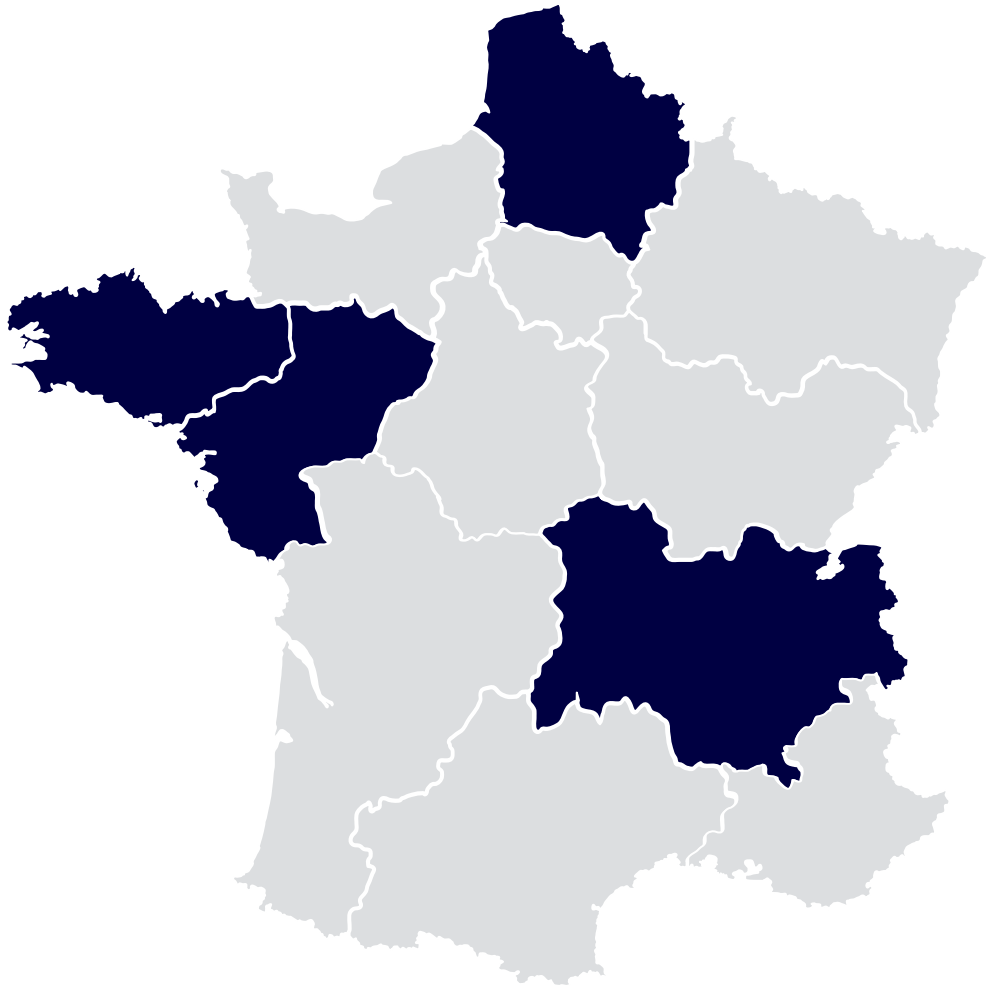
The idea is to do better for those who come after us:

1. Open-source tool for better aggregation strategies





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

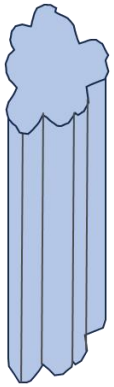
➔ **Consolidate demand aggregation to increase volume and visibility**

Technical presentation

- Presentation of the Life Giga Regio Factory methodology

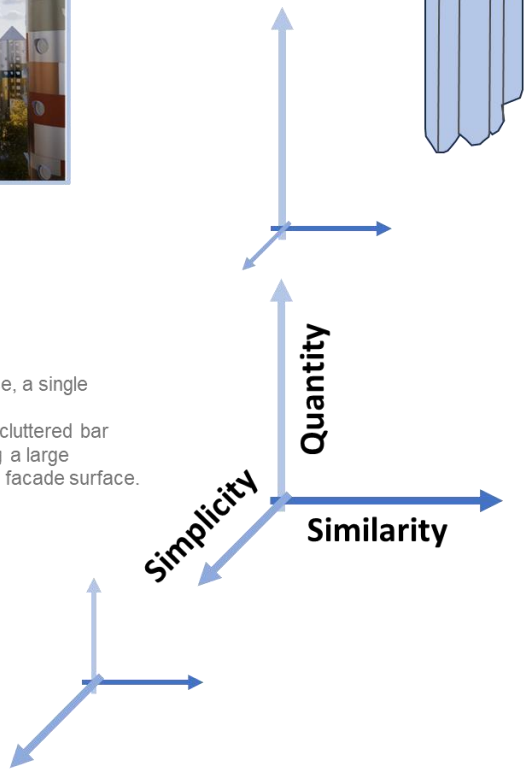
The three dimensions of rapid, coordinated rehabilitation

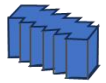
Nuage Towers, Nanterre
RVA, in progress
Perspective of RVA



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.





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

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

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

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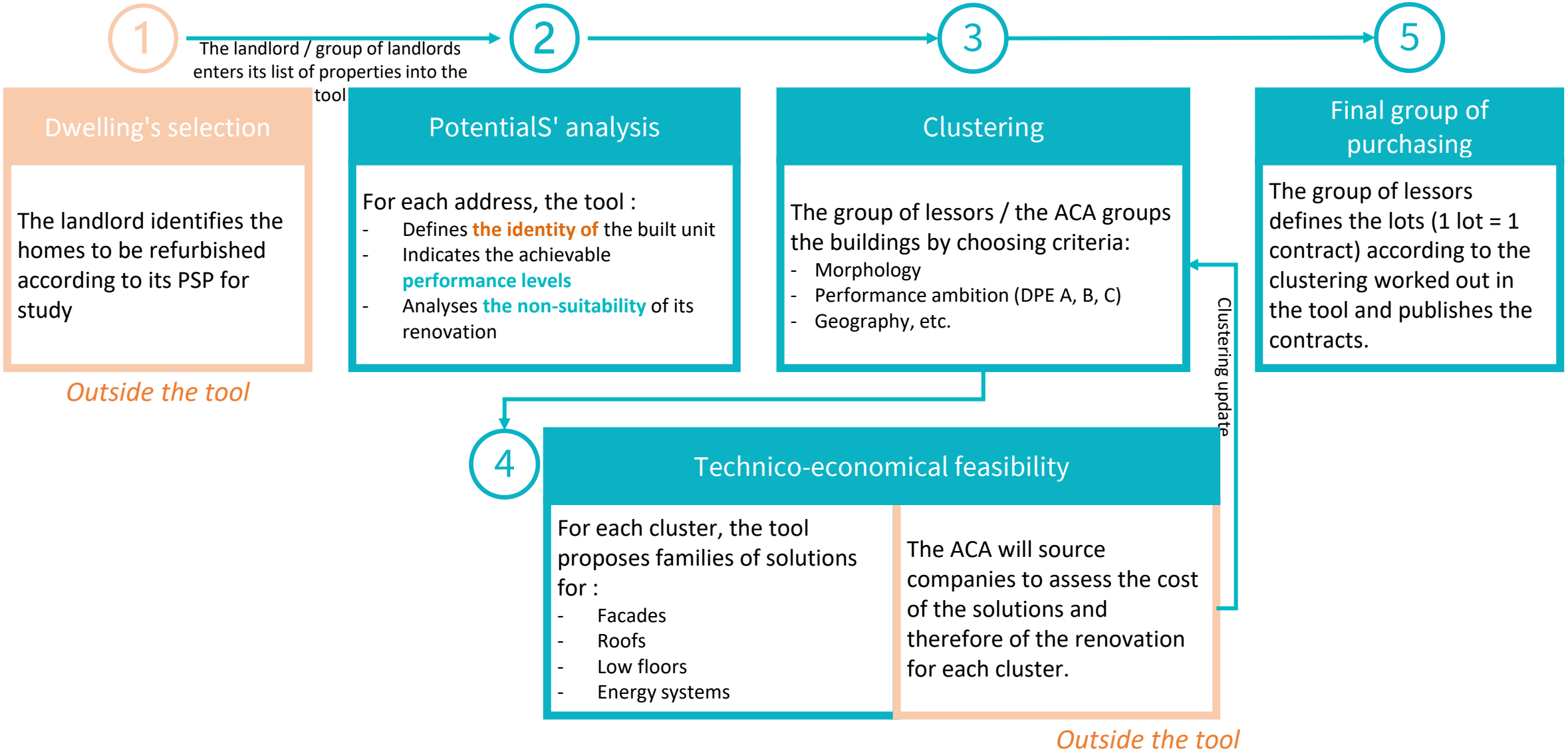
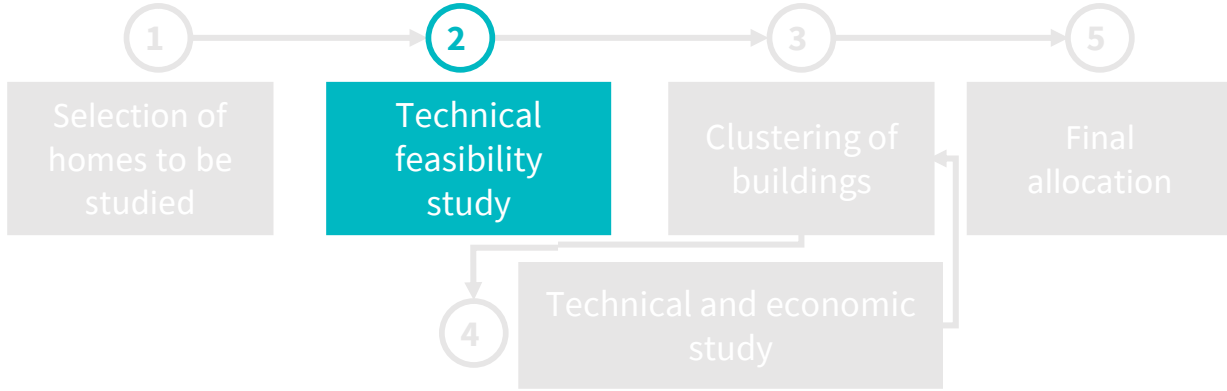
A method that fits into a collective renovation strategy



Presentation of step 2 : PotentialS' analysis

Step 2: Technical feasibility study



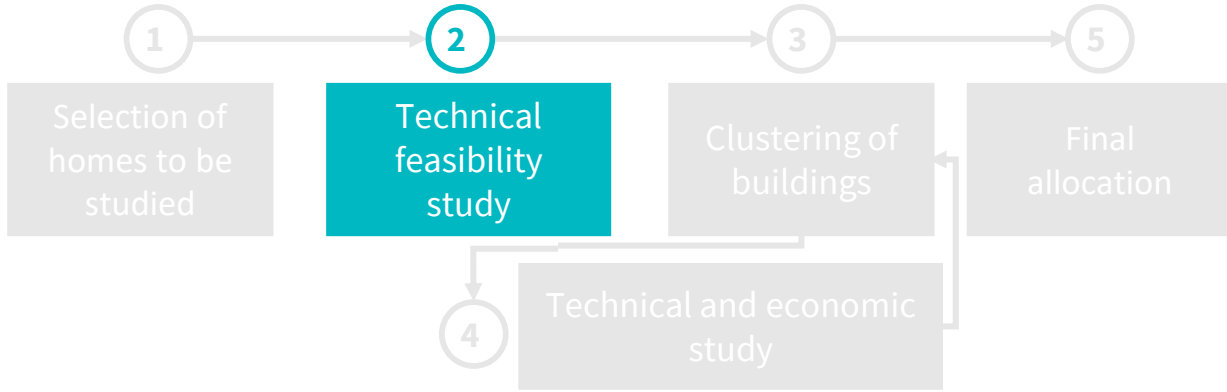
The collective of social organization enters the list of buildings to be studied into the tool, which, for each address:

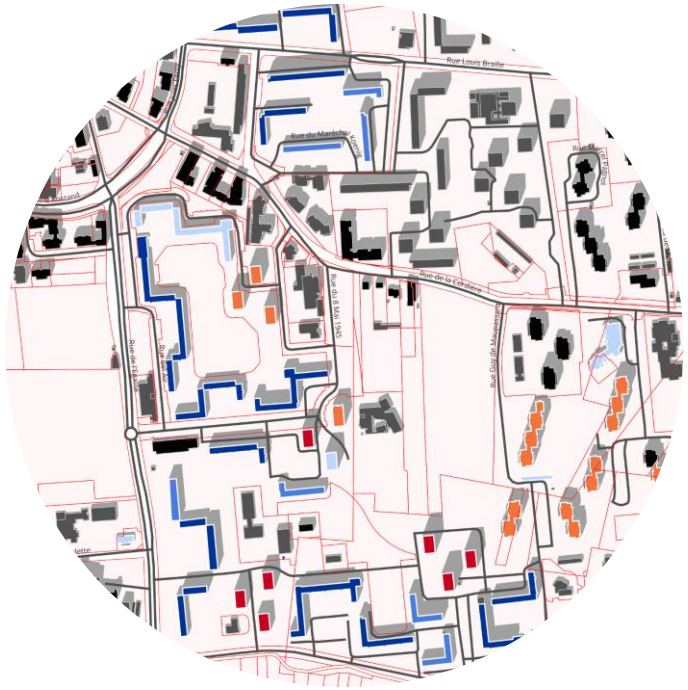
2.1 Built unit identity: a spatio-temporal and parametric study

2.2 Define potential for decarbonising systemps

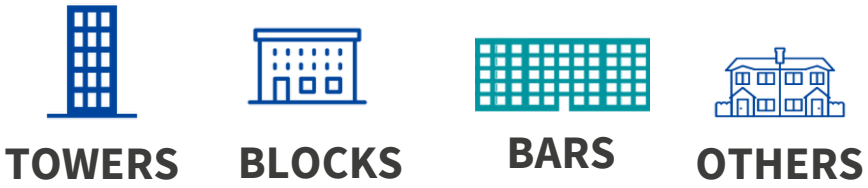
2.3 Analyse the off-site potential for renovation

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.

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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

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

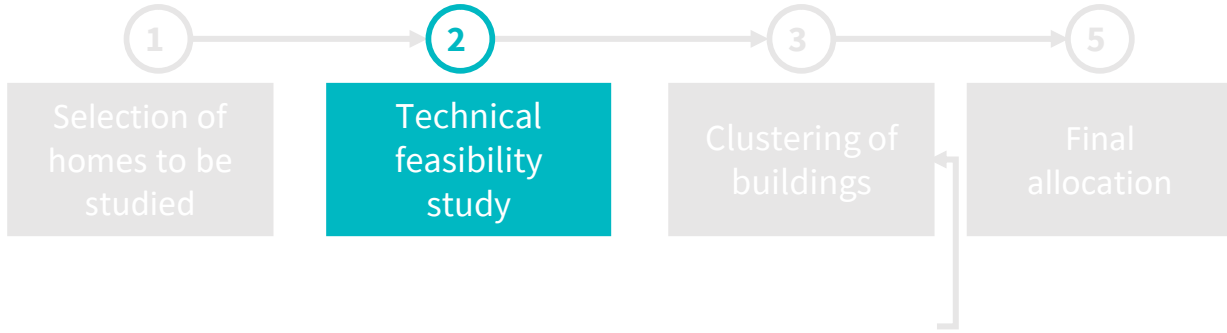
Explanations: District heating grid nearby, good insulation

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:

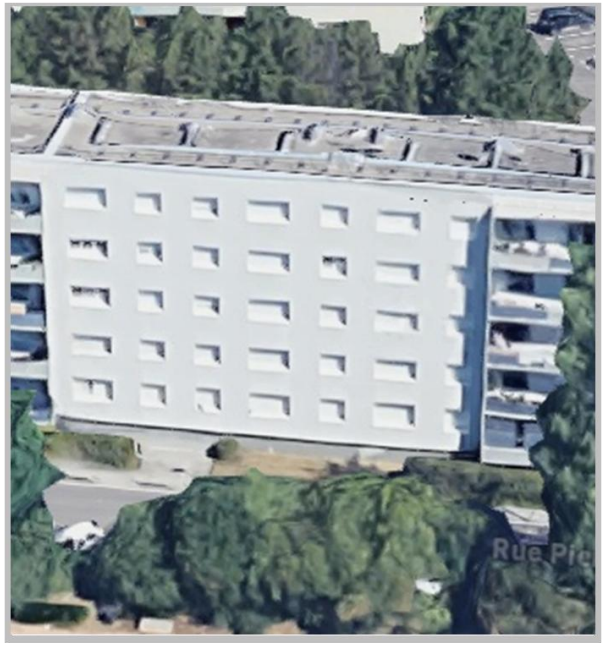
- Height of the built unit
- Frontage area
- The compactness of the living space
- The simplicity of the facades (projections, recesses, redents)
- The presence of balconies
- The property boundary
- Whether it is part of our heritage (MH inventory or SPR district)
- The slope of the roofs
- Accessibility 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 → 5 Final allocation

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

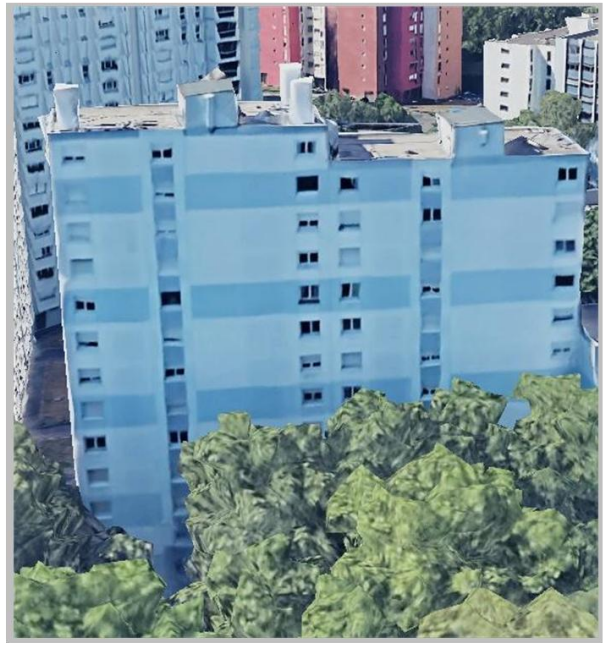


Off-site feasibility score: 8.59 (/ 10*)

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

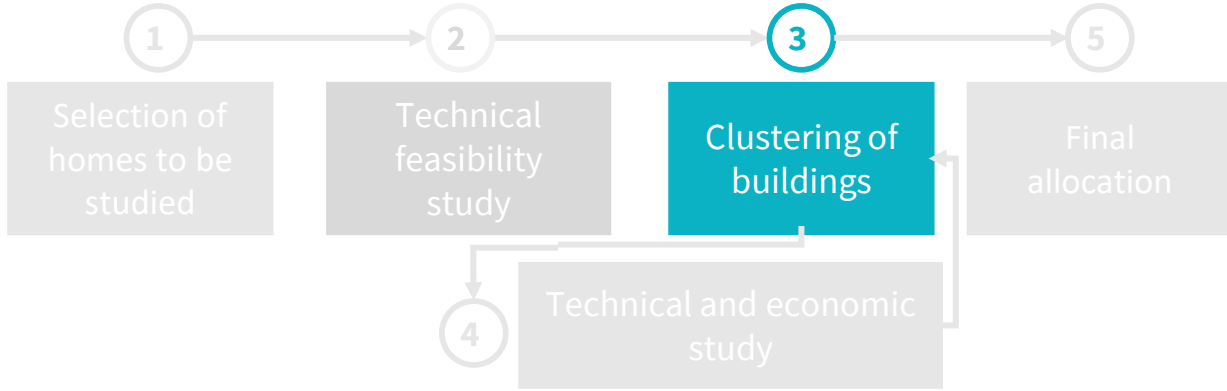
Off-site feasibility score: 3.1 (/ 10*)

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:

Geography

Regionalism, landscape, altitude...

Morphology

Tall shapes, strong shapes, sinuous shapes...

Protected neighbourhoods

Administrative perimeters to protect our heritage

Optimisation optimization

Automatic or manual optimisation? WIP

Association manual

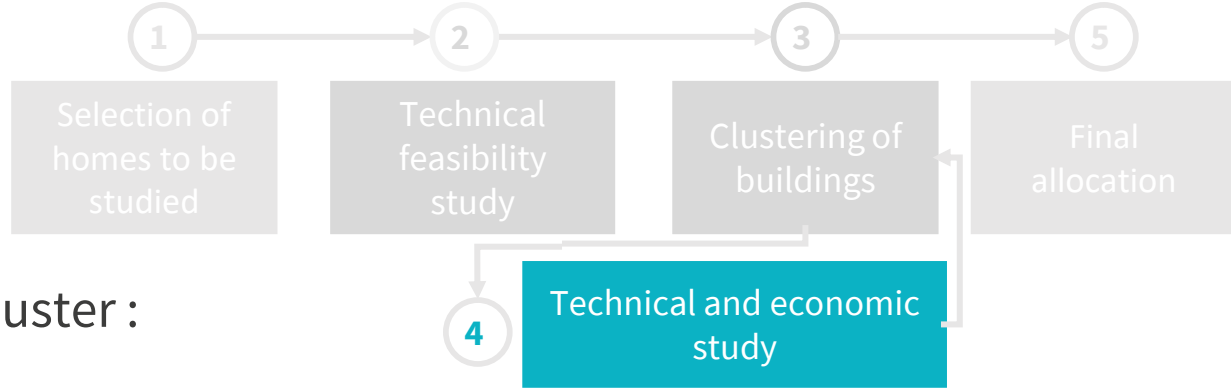
Carbon energy

Envelope and systems

History

Culture, date, period...

Step 4



The tool offers families of solutions tailored to each cluster :

4.1

Library of solution

Facade

Roof

Systems

4.2 *Off scope*

Economic sourcing

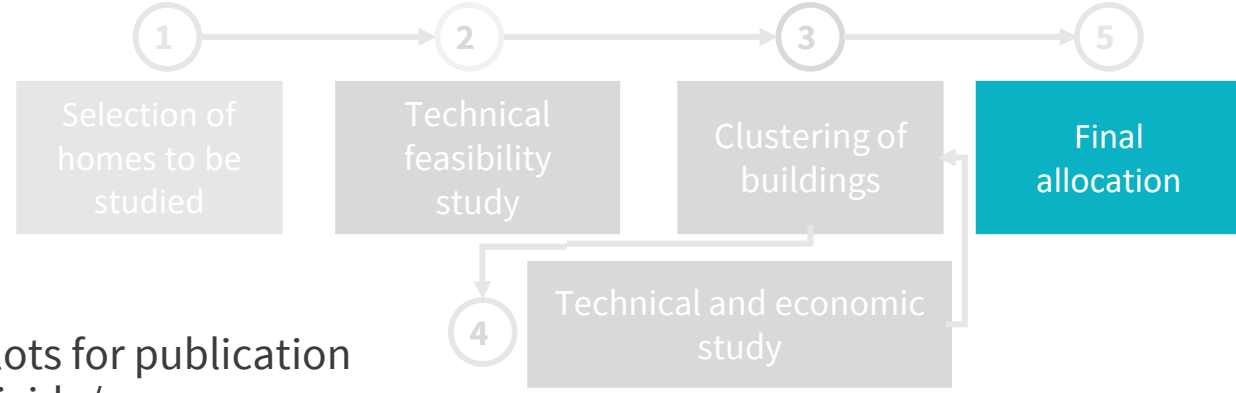
Local sourcing to find suitable products and estimate the cost of renovations for each cluster.

4.3 *Off scope*

Economic balance

Building owners conduct an economic analysis to determine the level of ambition and the work to be carried out for each of their buildings.

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
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

Association

Division

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