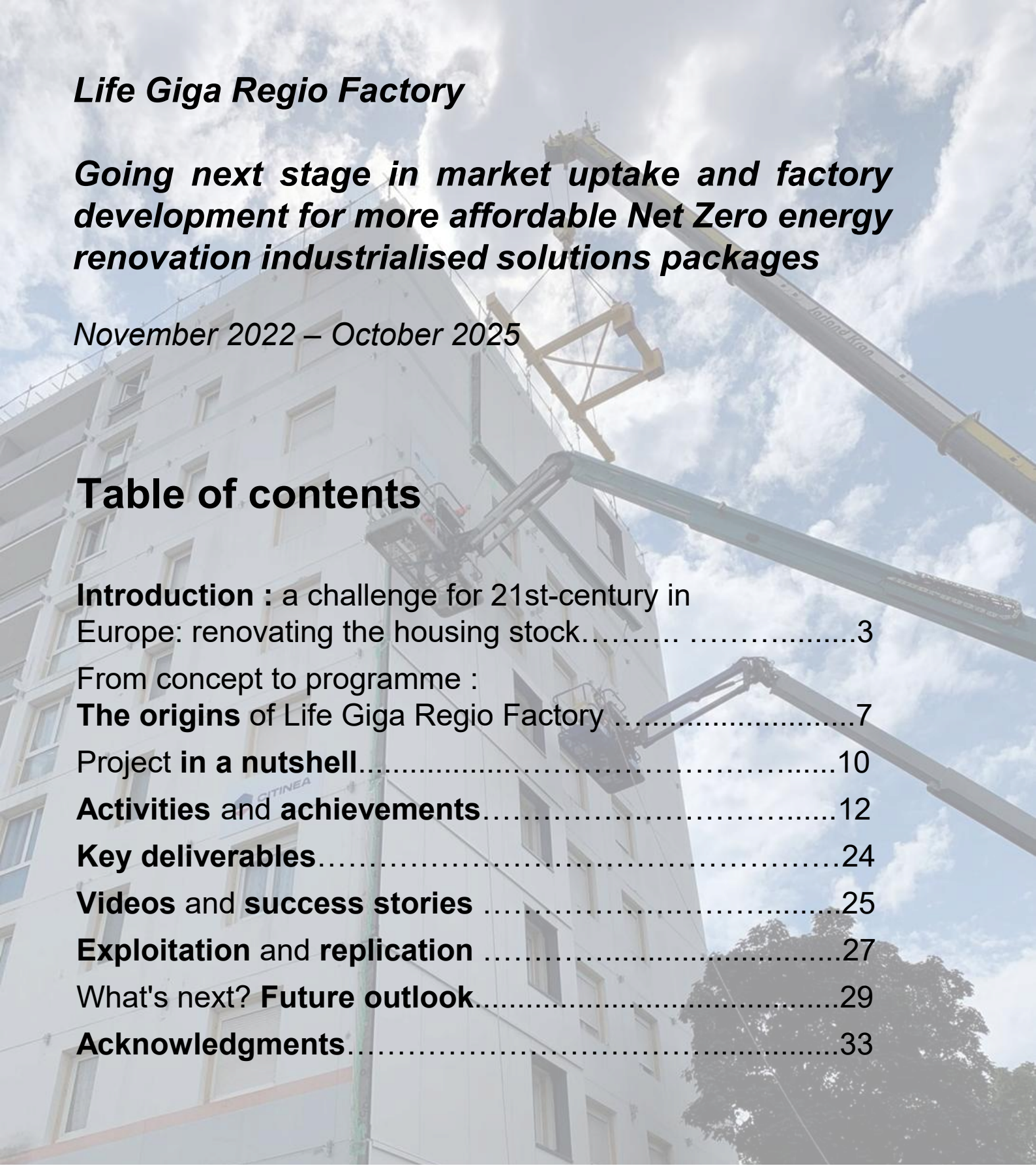
Life Giga Regio Factory

Scaling up industrialised and off-site deep renovations

Final report

giga regio factory
by energie sprong



Life Giga Regio Factory

Going next stage in market uptake and factory development for more affordable Net Zero energy renovation industrialised solutions packages

November 2022 – October 2025

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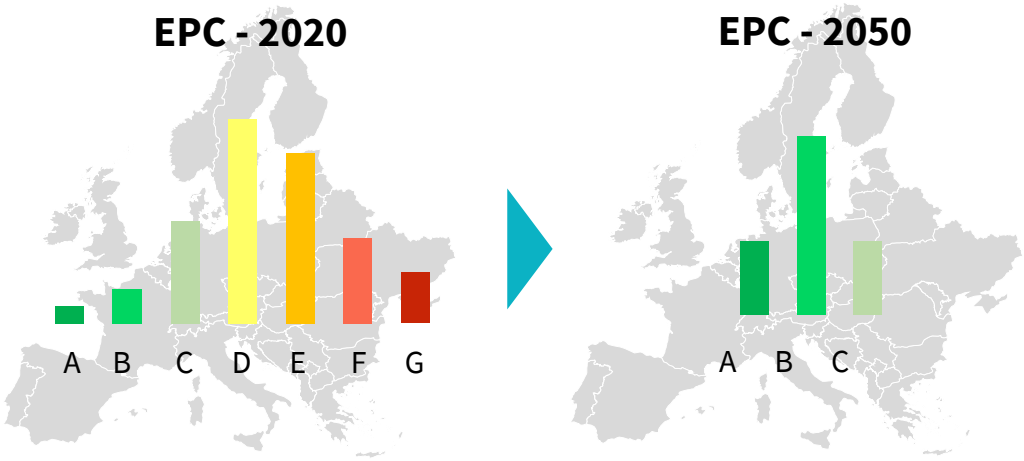
Co-funded by the European Union

The project has received funding from the European Union's LIFE programme under grant agreement No 101077258 — LIFE21-CET-BUILDRENO-LifeGigaRegioFactory. Views and opinions expressed are, however, those of the author(s) only and do not necessarily reflect those of the European Union or CINEA. Neither the European Union nor the granting authority can be held responsible for them.

Introduction : a challenge for 21st-century Europe: renovating the housing stock

Accelerating renovation for a decarbonised, resilient, and energy-sovereign Europe: we must make the jump forward



According to the European Commission, more than 85% of the 2050 building stock is already built [*European Commission, June 2020, A Renovation Wave for Europe – Greening our buildings, creating jobs, improving lives*]. Achieving climate goals is foremost about cutting fossil fuel from existing stock. The carbon budget left in the coming decades leaves no space for other than massive net zero carbon buildings market penetration when looking across sectors and acting responsibly, according to UNFCCC findings. The slow current pace of improving our existing building stock, the limited energy efficiency of retrofits carried out, and most countries still connecting new builds to fossil fuel infrastructure and using carbon-intensive construction materials, are not getting us anywhere near fast enough to cut GHG emissions from European building stock.

Therefore Europe is facing a dual challenge: drastically reducing its greenhouse gas emissions and improving the quality of life for millions of citizens. The building sector, which accounts for around 40% of energy consumption and one-third of CO_2 emissions, stands at the heart of this transformation [*Fit for 55: making buildings in the EU greener*]. Deep renovation of housing is therefore not an option, it is an environmental, social, and economic imperative. However, the scale of the challenge - millions of homes to be renovated by 2050 - requires us to rethink our methods.

As part of the European Green Deal, the European Commission published on 14 October 2020 a new strategy to boost renovation called *A Renovation Wave for Europe – Greening our buildings, creating jobs, improving lives*. It aims to double annual energy renovation rates in the next ten years and renovate 35 million inefficient buildings by 2030. These renovations will enhance the quality of life for people living in and using the buildings, reduce Europe's greenhouse gas emissions, and create up to 160,000 additional green jobs in the construction sector.

Introduction : a challenge for 21st-century Europe: renovating the housing stock

However, there are many barriers we need to overcome to achieve our goals:

Costs not affordable

Workforce shortage

Skills shortage

Disturbances for residents

Poor quality Lack of trust

But this is not a mission impossible: Energiesprong has proven that there is a market for deep, rapid, affordable, and desirable retrofits

In this context, the industrialisation of renovation emerges as a strategic solution. By relying on prefabricated components (facades, roofs, technical modules, energy pods, etc.) and proven processes (digitalisation, Lean management, continuous improvement), it helps reduce construction time, minimise disturbance for occupants, improve implementation quality, and ensure long-term performance. It also paves the way for a low-carbon approach, integrating bio-based materials, logistics optimization, and waste reduction.

Energiesprong E=0 is the first standardised net-zero standard…

… Enabling the development of standardised solutions

Energiesprong: origins and early implementations

Early market activation and scaling efforts

In 2014, the government of the Netherlands began with a bold ambition: deeply renovate the housing stock while making the market lead the way. Backed by €40 million in government funding, the goal was to unlock scalable, market-driven innovation. This gave rise to the Energiesprong approach co-developed by a team of self-starters: housing organisations, construction companies, and a newly formed Market Development Team (MDT). The MDT, an expert team, develops tools, networks, and structures to drive real market change, by initiating volume deals, piloting innovative retrofits, and adapting the Energiesprong approach to country's context.

The Energiesprong movement started by activating markets in a "domino manner" and focused first on the biggest European markets: Germany, UK, France, and Italy. As well as creating giant market potential to trigger better solutions and investment, these markets represent a wide range of buildings and climate typologies. They are open to solutions from all EU, and the idea was that the developed solutions will be rapidly disseminated in other European countries.

Energiesprong is a European movement involving all stakeholders, aiming to activate the industrialised renovation market through the first standardised net-zero standard

energie sprong global alliance

www.energiesprong.org

Energiesprong: origins and early implementations

An approach to connect industrialisation to scalable markets

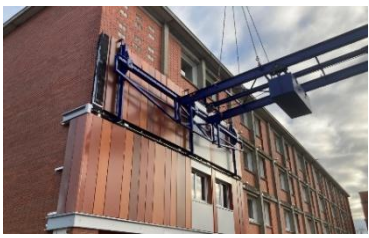
No outcome can be achieved with a single concept alone; the market will only evolve if all barriers are addressed simultaneously. This is a recurring observation across many other initiatives. Energiesprong has always focused on solving the interdependency problem among stakeholders, something only possible when all parties trust that the others are also advancing toward a shared objective at the same time.

Despite increasing demand, the construction sector's supply side has failed to improve productivity, implement lessons learned, or standardise approaches, which has led to rising deep retrofit costs. This challenge is expected to persist as more productive sectors attract talent, a trend further exacerbated by Europe's demographic outlook.

For consumers, the experience of purchasing a retrofit remains far from seamless. Long planning and delivery times cause major disruption, in an opaque market where offers are hard to compare. Unreliable energy and comfort performance, combined with the poor reputation of construction companies, undermines confidence in the sector. All these factors reduce the attractiveness of investing in deep energy retrofits, on top of the fact that many people are not inherently excited about what is often perceived as a highly technocratic solution.

The market faces a classic "chicken-and-egg" dilemma: without supply, there is no demand; without demand, there is no supply. Market share for net-zero deep energy retrofits must be significantly increased, which requires reducing costs. Two main levers can be used to achieve this: 1) increasing demand volumes through stable subsidy schemes (higher volumes leading to lower costs), and better organization of this demand, and 2) developing better solutions to optimize production and installation at lower costs, thereby generating more demand and supporting market growth.

This means there is significant work to be done to improve the offer's appeal: it must be attractive, easy to purchase, affordable, quick to install, and reliable over time.



From concept to programme: the origins of Life Giga Regio Factory

From hundreds to thousands of renovated homes: social housing organisations in the French Pays de la Loire region have made it happen

In 2021, the first collective buying scheme for industrialised net zero energy renovations among housing organisations took place in France, in the Pays de la Loire region, led by USH PDL / MASH Grand-Ouest. The objective was to achieve a change of scale by standardising the ambitions of the demand - guaranteed, industrialised net zero energy renovations - at a sufficient volume to allow market players (manufacturers, solution providers and integrators/general contractors) to develop their solutions and offers to deal with these massified deep renovation contracts, with enough visibility to secure their investments.

One of the first lessons from this project was that the aggregation of buildings needed to be improved and rethought. Difficulties arose in establishing homogeneous packages of buildings: on what criteria, what age, and what urban and social characteristics should be considered?

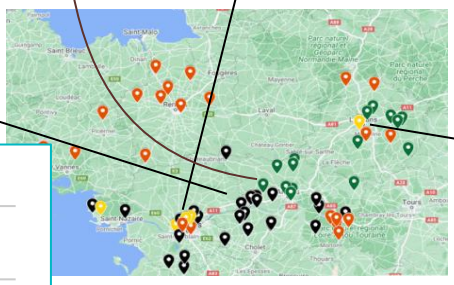
MASH Centrale d'achat Hlm GRAND OUEST

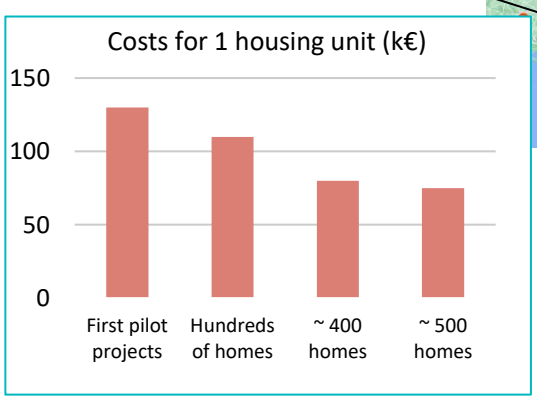
USH Pays de la Loire Association régionale Hlm

- Responding to challenges **collectively**
- Pooling **skills** and **feedback**
- Developing **regional supply chains** able to deliver at affordable costs

➔ 1.500+ houses* renovated to E=0

(*single-family houses, small and large apartment buildings)





… But further progress is needed :

- Choice of **building typologies**
- **Economic evaluation** of operations
- Cultural change for **product-based approach**
- Development of **industrial capacity**

From concept to programme: the origins of Life Giga Regio Factory

To imagine what comes next, we must be clear about the findings: there is potential for progress in understanding costs and typologies

Cost of operations

Costs have come down but are still **too high**, which is an obstacle to achieving the necessary pace

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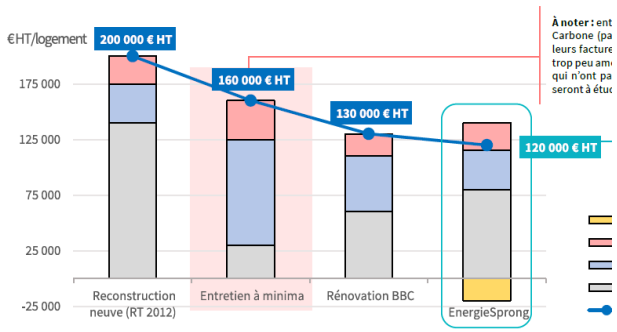
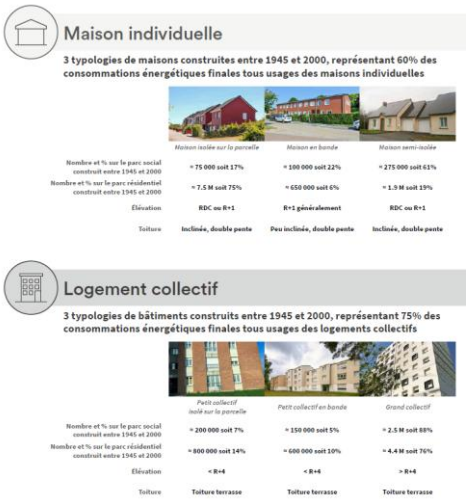
There is a need for better thinking in terms of **overall cost**: the first Energiesprong E=0 operations demonstrated the best economic balance

Coût global sur 30 ans en individuel – pour la typologie de référence –



Housing typologies



The choice of **housing types** is key to carrying out industrialised renovations

→ We need to better understand them to standardise orders and ambitions, within the framework of grouped and time-planned approaches

It is not only a question of volumes; building typologies are also important, and better selecting them should help us reduce costs

Construction companies & contractors

The sector suffers from **lack of industrial culture**, which is particularly noticeable among construction companies

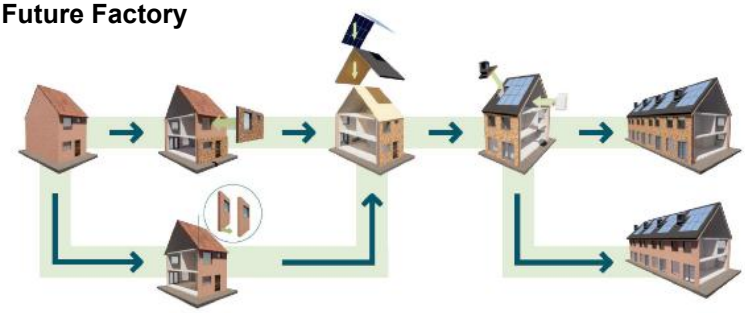
There is a need to **move beyond project-based thinking** to develop a **product-oriented approach**: create catalogues of solutions and industrialise pricing

Industrial capacities

Solutions exist and pioneers **are starting out**, but they now need to **change scale** in terms of industrialisation: production capacity, digitalisation, standardisation, etc.

To move from **projects** to **products** adapted to specific typologies to really obtain **Giga Factories** allowing serial renovations

Future Factory



Product development is the most important to bring down costs and deliver large series: doing off-site for single projects is not enough to solve the problem

From concept to programme: the origins of Life Giga Regio Factory

A need to work better together: plan, enable industrial development, and reduce costs

Project owner issues

- **To be aware** of existing solutions
- To ensure **economically balanced** operations

Integrator's issues

Companies must work **faster and cheaper**: need for new methods

Manufacturers issues

- **To understand** the existing heritage
- To have **market visibility** over time to support development

Shared need for **COLLABORATIVE VISIBILITY**

To jump in terms of planned renovation strategies:

To aggregate homogeneous housing based on construction typologies and adapted industrial solutions, enabling more efficient grouped approaches

To jump in terms of industrialisation:

To catalogue products and solutions according to the characteristics of existing buildings, enabling fast and reliable technical and economic feasibility

Planned volume over time

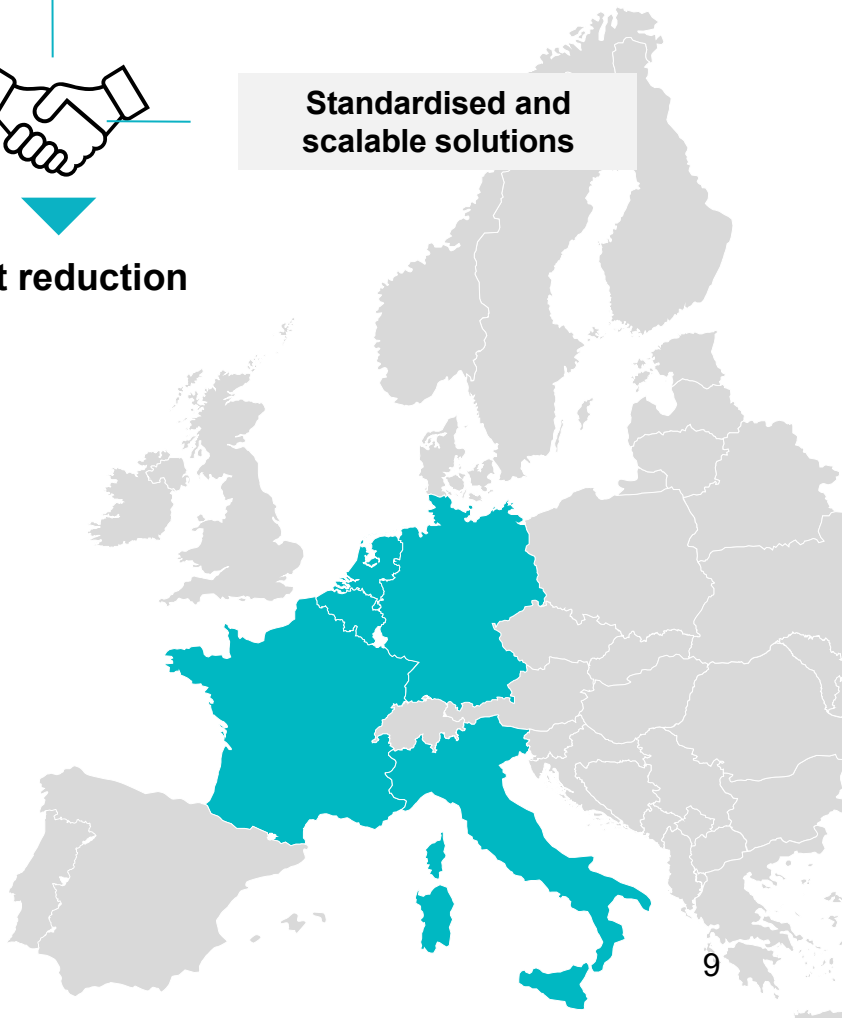
Standardised and scalable solutions

Cost reduction

After successful pilots, time to scale up

A regional **giga factory** approach - developing a dedicated off-site renovation supply chain - can lower costs and deliver large series.

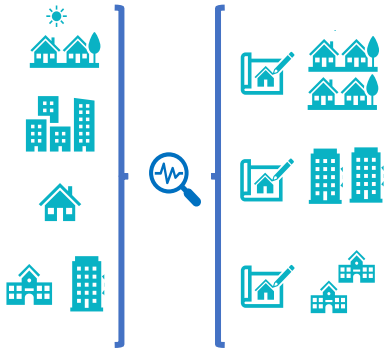
Product-focused development is key: off-site solutions for single projects alone won't solve the challenge of deep & affordable renovations.



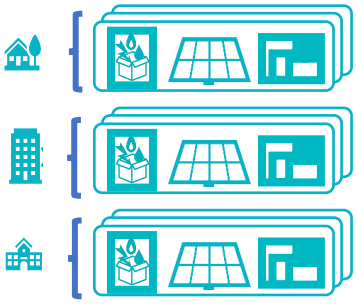
Life Giga Regio Factory: facilitating scale-up for demand and supply actors

Life Giga Regio Factory is our collective response to the renovation challenge:

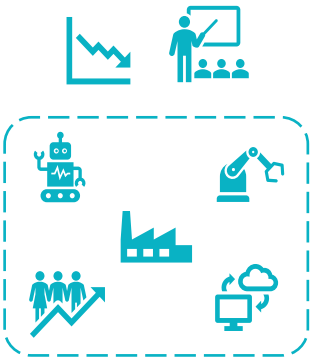
1. Open-source tool for better aggregation strategies



2. Integration accelerator of industrial solutions



3. Giga Factory Kit for industrialisation



Enable more efficient collective purchases of serial renovation across several regions of Europe ➔ **Massify demand to provide volume and market visibility**	Industrialise the offer ➔ **Support the evolution of the market & change methods of contracting**	Helping manufacturers and solution providers scale up to meet growing demand ➔ **Develop industrial capacities**
1 Order	**2 Contract**	**3 Deliver**
Aim	**Help social housing organisations better select and allocate buildings suitable for off-site renovation**	**Helping construction companies industrialise and develop their solution catalogues**	**Support solution providers in scaling up their production capacities**
Completed works	✓ Method for analysing the building stock and selecting buildings, free and open-source ✓ User guide for the method ✓ Support for collective initiatives: AURA Hlm, PDL	✓ Collective support program for companies and training kit ✓ Solutions catalogue: off-site renovation reference framework ✓ Lessons learned from the MASH project	✓ Business planning tool for solution providers ✓ Lessons learned from Giga Regio Factory ✓ Strategic guide for the industrialisation of high-performance renovation

Life Giga Regio Factory: facilitating scale-up for demand and supply actors

Planning the next stage of industrial progress

The objective of Energiesprong since its beginning has been to change the offer-demand paradigm, by aggregating project contracts that leverage digital tools and off-site manufacturing to bring replicable, mass-customized retrofit packages to market. Streamlined installation processes and performance guarantees increase the appeal and long-term reliability of these solutions, reduce costs, and significantly enhance customer experience. The performance assurance embedded in these integrated retrofit packages also facilitates financing, as guaranteed low energy and maintenance costs can be used to secure affordable funding.

Initially, five Energiesprong MDT operated in Europe (NL, France, UK, Germany and Italy). France, Germany and Italy were joined by Belgium in 2022 to form the backbone of the consortium of the Life Giga Regio Factory project. Project teams work with an expanding group of frontrunners across the supply chain and ambitious housing organisations, forming regional metaclusters of innovation leaders.

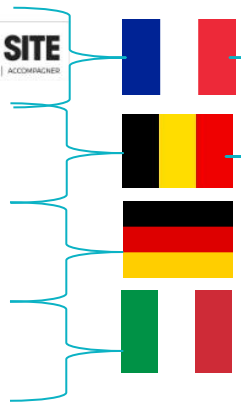
The Life Giga Regio Factory project focuses on two existing markets, France and Germany, to support their progression to the next level, while also kick-starting two emerging markets: Italy and Belgium. The United Kingdom and the Netherlands, which are already quite advanced, were not included in the project proposal. However, connections with these countries, as well as with the State of New York, USA, and Canada, where EnergieSprong market development activities are also underway, will be pursued for replication efforts.

The project aims to leverage three main drivers: a) a better organisation of aggregated demand batches, b) a more effective development of industrialised mixes of prefab solutions, and c) planning the next stage of industrial progress, where scaling demand will enable the construction of giga factories in each EU region.

To carry out this project, a consortium of 12 partners from France, Germany, Italy, and Belgium has been formed

8 experts in consulting and social and environmental innovation

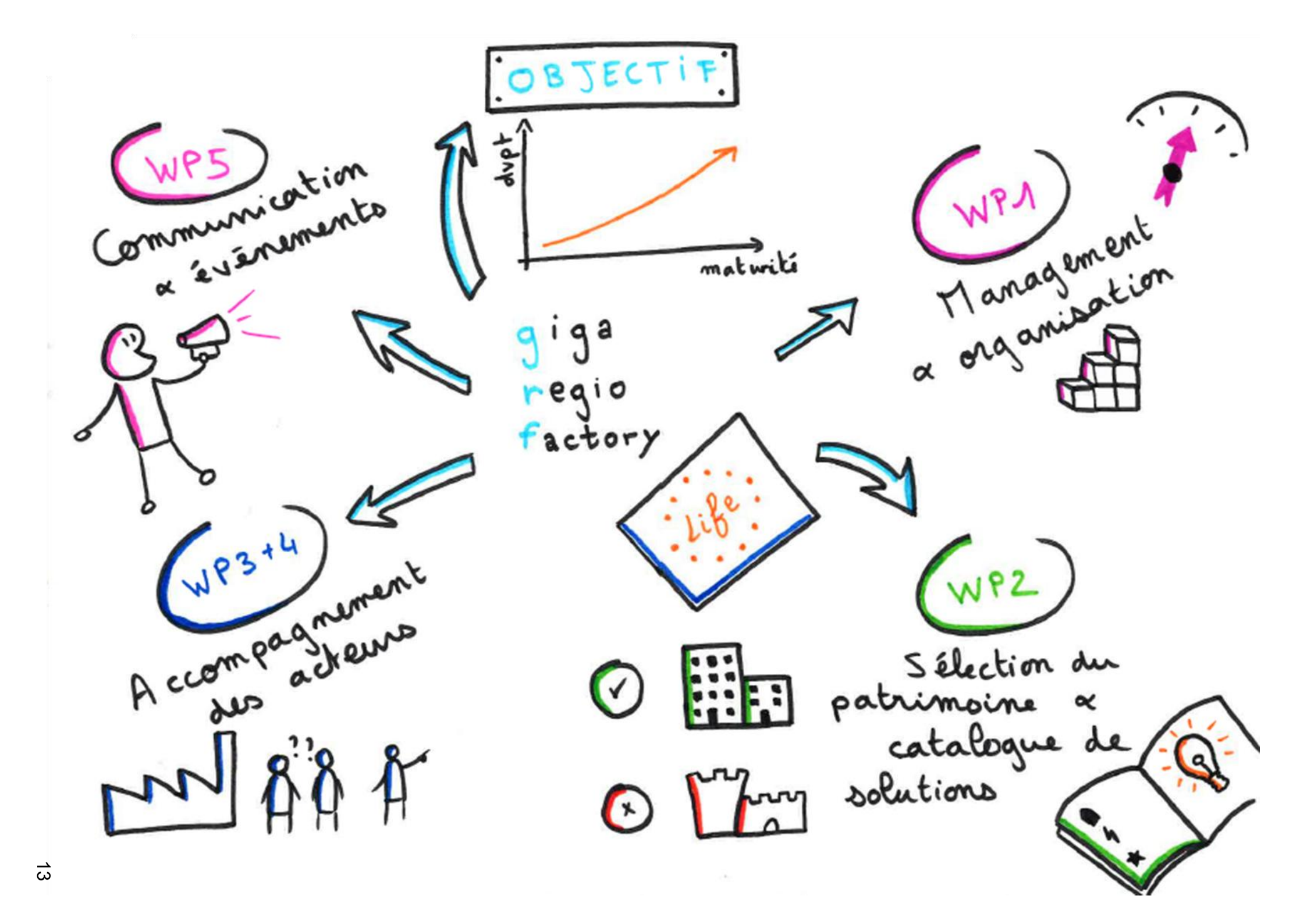
GreenFlex, Ressorts, Pouget Consultants, energies demain, HORS SITE, Buildwise, GREEN WIN Cleantech Innovation Booster, greenInvest Berlin, EDERA



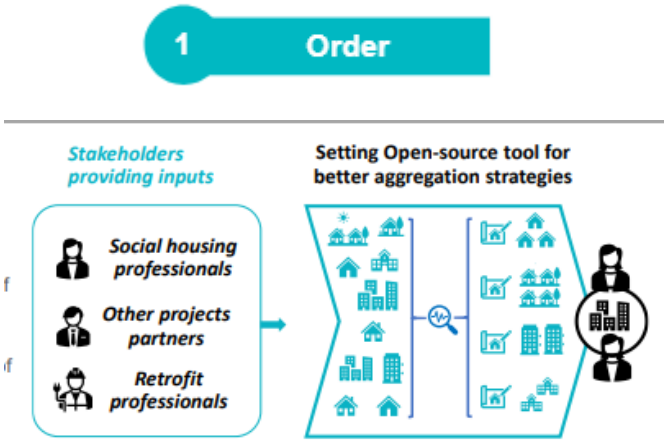
4 beta testers: supply and demand side partners

est Métropole Habitat, AURA Hlm Auvergne-Rhône-Alpes Association régionale Hlm, BUILD, Housing Europe

Activities & Achievements


OBJECTIF
dvpt
maturité
WP5
Communication
& évènements
WP1
Management
& organisation
giga
regio
factory
Life
WP3+4
Accompagnement
des acteurs
WP2
Sélection du
patrimoine &
catalogue de
solutions

1. Identifying key buildings for collective buy-in with an open-source method



To enable housing organisations to provide the market with more homogeneous "batches of buildings," facilitating the industrial development of cheaper and better solutions, the Life Giga Regio Factory team saw value in developing an open-source retrofit tool to support better selection and aggregation strategies for industrial retrofitting at A or B energy levels, by combining detailed knowledge of building typologies with solutions offered by state-of-the-art providers.

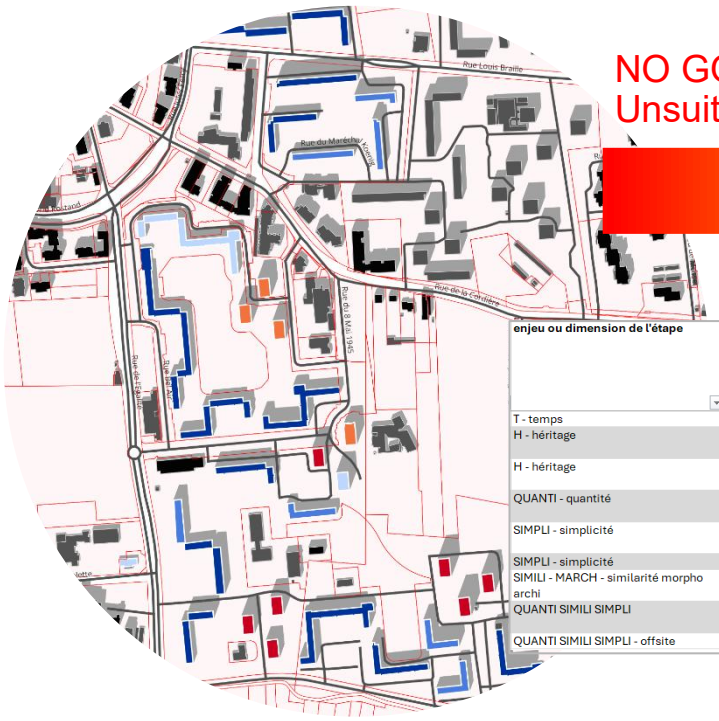
An exhaustive library of renovation solutions was first developed and tailored to each key housing archetype, highlighting the use of biobased and circular materials and consolidating the innovative techniques provided by leading solution providers. Based on this data, an open-source buildings and district qualification tool was created, enabling a more granular analysis of building portfolios, identifying families of homogeneous building types from the perspective of industrialised and off-site renovation methods. The tool also assesses the potential for aggregating multiple sites at a regional level, facilitating planning and scaling of renovations. By cross-referencing data from solution providers with the building and district archetypes, the project will provide estimates of costs, overall economic balance, and environmental impacts. This includes indicators such as the deployment of renewable energies, allowing stakeholders to make informed decisions on both economic and sustainable aspects of industrialised renovation.

Initial tests were carried out on the portfolio of several housing organisations, focusing primarily on collective housing in urban areas, with the participation of the beta-testers of the consortium and their stakeholders. These tests allowed the team to explore clustering methods, generate building groups, and assess potential aggregation strategies for industrialised retrofits.

Far from being a final solution, the tool is designed as a flexible platform for experimentation. Its open-source nature provides an excellent opportunity to test and refine aggregation methods across larger and more diverse portfolios, involving multiple housing organisations and different types of buildings. This ensures that the approach can be adapted and expanded, supporting future collective renovation initiatives well beyond the project's lifetime.

Furthermore, the method presented here can be used to aggregate buildings for other retrofit scenarios (partially or non-industrialised retrofits, façade insulation only, change of energy systems, etc.).

1. Identifying key buildings for collective buy-in with an open-source method

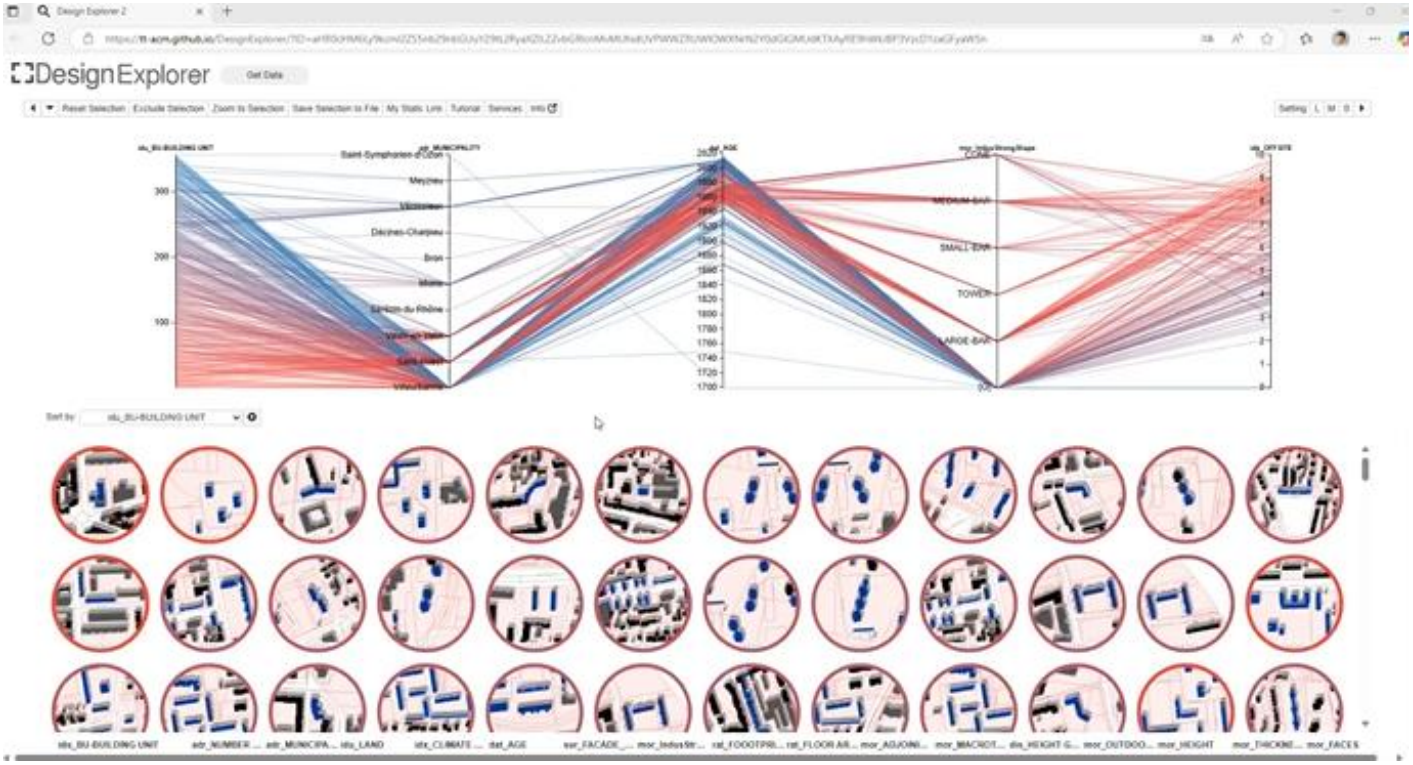


NO GO
Unsuitable for retrofit

GO!
Very simple for retrofit
using off-site methods

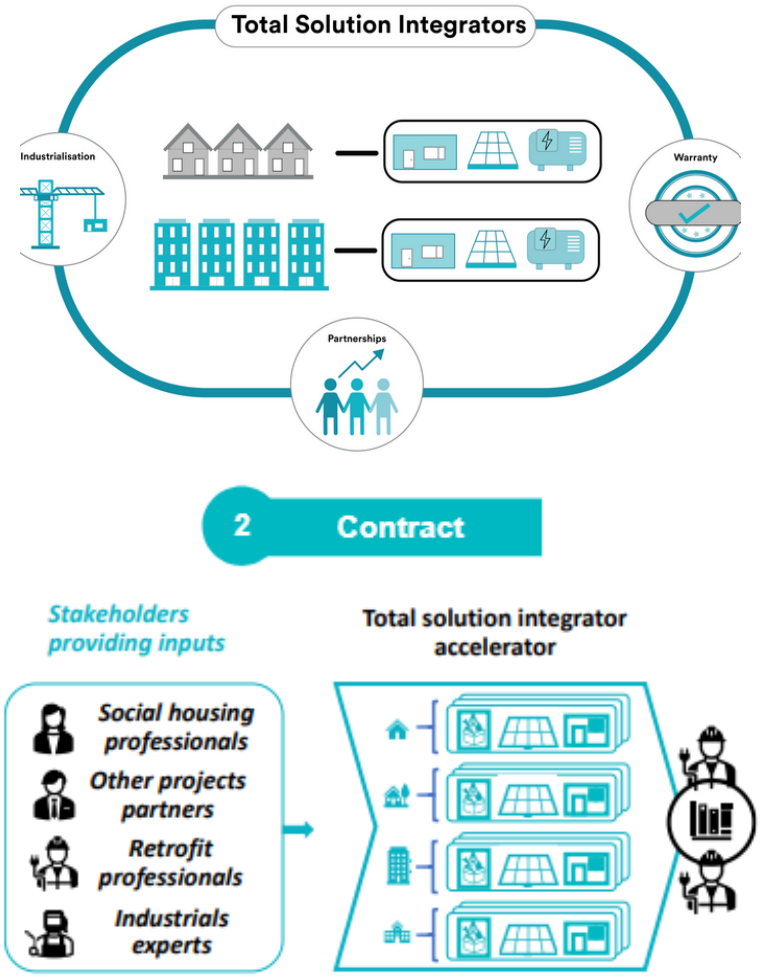
enjeu ou dimension de l'étape	nom attribut GRF	0 brut-source; 1 modélisé-calculé simplement; 2 modélisé-intégré/élaboré
T - temps	OFFS_A_AGE	0
H - héritage	OFFS_B_1_Liste Protégée_O	0
H - héritage	OFFS_B_2_Quartier protégé_O	0
QUANTI - quantité	OFFS_C_Surface de facade_O	1
SIMPLI - simplicité	OFFS_D_Densité de faces_O	1
SIMPLI - simplicité	OFFS_E_Hauteur_O	0
SIMILI - MARCH - similarité morpho archi	OFFS_F_Elancement_O	2
QUANTI SIMILI SIMPLI	OFFS_G_NormWeightPerim_O	2
QUANTI SIMILI SIMPLI - offsite	idx_OFFSITE_O	

- Date of construction
- Protected sites
- Morphology and structure
- Surface area and simplicity of façades
- Repeatability of typology
- Accessibility for construction equipments…



→ To help building owners set up their massified and collective deep renovation contracts

2. Supporting construction companies to develop their catalogue of solution



Another key component of the project objectives is to support construction and industrial companies in the development of a complete offer of industrialised net-zero energy guaranteed renovations. The goal is to accelerate a cultural shift within these companies, encouraging a product/solution library approach and embedding this paradigm change throughout their operational teams.

Life Giga Regio Factory addresses a fundamental bottleneck in the European retrofit market: the absence of coordinated, replicable, and industrialised solutions capable of meeting performance and scalability targets.

To tackle this, the project introduces a system-wide transformation anchored around prefabricated retrofit solution supplier on the one hand, and solutions' integrators on the other hand.

Across Europe, the supply of retrofit products (insulated façade/roof panels, pods, HVAC kits) and the demand for deep renovation are both growing, but the actors who can coordinate the process remain rare. This is where the solutions' integrators come in.

In the project context, an integrator is not only a construction company or general contractor. It is an orchestrator of the full value chain: from upstream design, digital modelling and procurement to off-site assembly coordination, on-site installation, and long-term monitoring of energy performance. Integrators ensure coherence across trades, interface with prefabrication suppliers, and ensure guarantees to housing providers and public authorities.

This profile is still emergent in many countries. Life Giga Rregio Factory was therefore tasked with identifying, benchmarking, and supporting the transformation of companies capable of taking on this integrator role.

The result is a structured profiling of over 250 companies across France, Italy, Germany and Belgium, each assessed using a harmonized grid of criteria related to industrial maturity, project integration, scalability, digitalisation, and engagement with Energiesprong-style models.

2. Supporting construction companies to develop their catalogue of solution

National Training Kits: introducing offsite renovation fundamentals to new stakeholders

Life Giga Regio Factory is more than a technology project strictly speaking: it is an ecosystem transformation programme. Its heart stands in a central, radical ambition: to empower a new class of actors, integrators, to coordinate industrial renovation end-to-end. From digital design to off-site assembly, from stakeholder management to post-works performance guarantees, these integrators are the linchpin of a scalable, affordable, and replicable approach. But integrators don't appear overnight. They must be identified. Supported. Challenged. Trained. Trusted. This is the mission of the national Training Kits.

A support programme at your disposal :

1. E-learning module

Aimed at operational teams or companies wishing to learn about the challenges of high-performance industrialised renovations

2. Training kit

For companies that want to :

- Resources linked to the development of EnergieSprong markets (Cost-Quality-Impact Observatory)
- Resources to **draw inspiration from best practice**

3. Personalised coaching

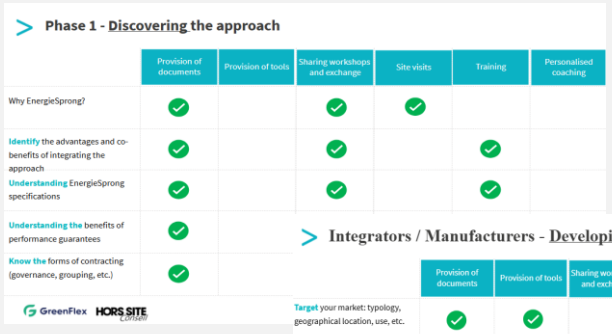
For companies wishing to take part in the initiative, **personalised coaching from** the group's experts may be made available in order to obtain additional assistance.

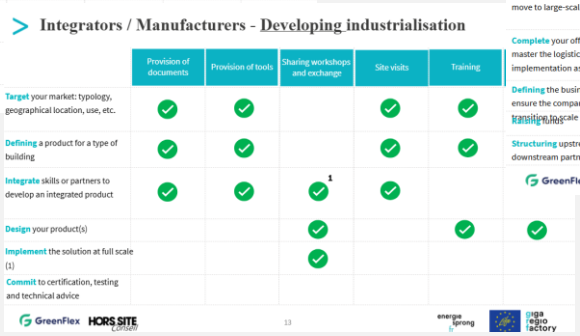
4. Networking & collaboration

Throughout the skills-building process, **workshops** and meet-ups will be organised to structure offers and groupings.

The aim of this support programme is to create an « incubator » dedicated to the industrialisation of deep renovation.

The national Training Kits are not simply a catalogue of training materials: there are a cornerstone of the project's transformation logic. They translate the analytical work conducted in confidential profiling and public mapping into a set of actionable, field-tested, and customisable coaching tools. It bridges actor capacity building and solution consolidation, ensuring that those who integrate have a deep understanding of what they are integrating, and how.





2. Supporting construction companies to develop their catalogue of solution

A methodology both at European scale (shared content between national markets) and adapted for each national context

- In **France**, the training strategy led by Ressorts and Groupe Hors Site has been deployed as a full modular coaching framework, blending collective workshops, thematic deep-dives and collective business support. It serves as a structural backbone and methodological inspiration for other countries.
- In **Belgium**, GreenWin and Buildwise (ex-CSTC) have piloted a cost-structure-centered coaching approach, focused on business modelling, scaling challenges and industrial investment scenarios for promising actors.
- In **Germany**, Green Invest Berlin (GIB) has developed a strategic training kit including operational coaching templates and an upcoming video tutorial series tailored to construction SMEs and product suppliers.
- In **Italy**, the partners are progressively replicating the French model, focusing on adaptation, localisation, and stakeholder activation, with support from EDERA and drawing from Energiesprong materials.

In all countries, the project has deliberately prioritised collective coaching formats, such as shared workshops, cross-sector sessions, and group-based diagnostic tools. This choice is intentional: it reflects a commitment to fairness, transparency, and impartiality in the selection and support of companies, particularly in the context of future pilot projects and public tenders aligned with Energiesprong methodology. By avoiding exclusive one-on-one coaching in the early stages, Life Giga Regio Factory safeguards the neutrality of its ecosystem facilitation work while maximizing peer learning and cross-fertilization among actors.

All these efforts are coordinated within a shared European framework and converge on five key learning dimensions derived from the scoring matrix developed through profiling and public mapping.

The training kits are accompanied by a library of resources designed to facilitate skill development, regardless of the level or maturity of the target companies. Each region implements these resources gradually, according to its level of development in the Giga Regio Factory approaches.

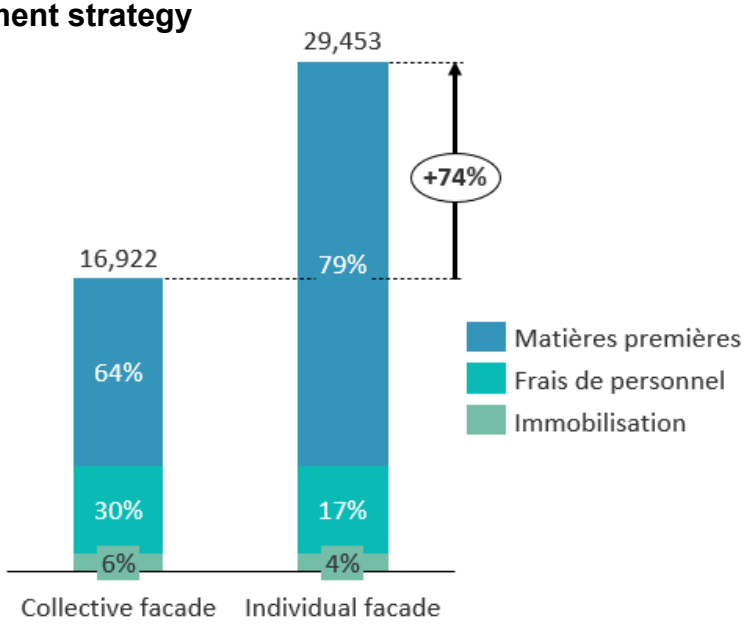
3. Supporting solution providers to develop their industrial capacities

Starting by assessing the maturity of manufacturers/solution providers in terms of the industrialisation of their products: industrial maturity diagnosis tool

The profiling approach was structured around **five evaluation axes** common to all countries: industrialisation maturity, project implementation capacity, scalability and market coverage, digital readiness and interoperability.

Companies were scored on a scale from 1 (low maturity) to 5 (high maturity) in each category. Assessment methods included interviews, desk research, expert workshops and validation by national coordinators. Companies were also categorised by functional role (pure manufacturers & solution providers, prefab-enabled contractors, digital orchestrators, etc.)

Business plan tool : to model production costs, test profitability, and structure a multi-year investment strategy



A business plan tool has been developed to help industrial solution suppliers **consolidate their cost structures**: investment in new production lines, associated revenues, multi-year development, etc. Fully configurable, this tool can be adapted to each business and is intended to serve as a standard tool to help solution suppliers find financing or raise funds.

The main purpose of this tool is:

- To show how the industrialisation of production (i.e. mainly at factory level) has an impact on total cost containment, and
- The cost reduction increases as scalability increases, i.e. as demand increases (amount of work done).

➔ **The aim is to stop thinking in terms of projects and start thinking in terms of products, with associated investments and depreciation reflected in costs to balance the business model.**

Specifically, the objectives were to:

- Establish a shared, cross-country methodology for solution suppliers profiling
- Evaluate companies along strategic dimensions to identify their strengths and gaps
- Enable country partners to prioritize support actions for the most relevant actors
- Lay the foundation for public mapping and supplier analyses.

3. Supporting solution providers to develop their industrial capacities

Guides and briefs for industry and project stakeholders

It is necessary that other building companies, solution providers and social landlords appropriate the work accomplished during our project (tools, studies and training materials) to be able to replicate the approach: to create a massive demand and to allow the supply side to be able to face it by industrialising their processes and allowing them to scale up.

A manual guide '*Industrialising deep renovation: a strategic guide for manufacturers, construction companies and designers*' was created based on experiences in France, Germany, Belgium and Italy, and enriched with practical resources, operational recommendations and inspiring examples.

It is primarily intended for construction companies, off-site solution designers and manufacturers, suppliers of technical modules, as well as actors in a position to become industrial integrators of renovation. The guide is both educational and pragmatic: it offers concrete levers to collectively organise the value chain, standardise solutions, and build a robust and sustainable European renovation ecosystem.

Référentiel de la rénovation hors-site (FR)

This reference framework develops a shared terminology and a classification of solutions to foster collective reflection on the practice of off-site renovation. The roadmap provides an overview of the sector, introduces project owners and designers to the main families of existing solutions, and offers concise fact sheets on current and emerging solutions. It documents:

- Catalogue of solutions
- Design guide on Energiesprong projects
- Business model of an offsite retrofit with respect to a traditional one.

The work carried out over these years has produced the first results, collected in the guides that can now be downloaded for free by registering on the Energiesprong website.

This is the outcome of a collective, systemic innovation process that must now open up to the entire value chain. That's why we are sharing guidelines, insights, references, and future challenges to enable new actors to learn, find inspiration, contribute, and collaborate in a joint effort toward developing a mass market for deep renovations.

4. Full-scale beta testing to implement and consolidate our work

One of our key methodological choices was to include beta testers in our consortium

These beta testers are market players directly concerned by the resources and tools we have produced as part of the Life Giga Regio Factory project: they are project owners, social housing associations and industrial solution providers. What they all have in common is that they are users of our work within the framework of the project.

Their role has therefore been to beta test our work: testing our deliverables, challenging them, providing us with feedback to improve them, etc. throughout the Giga Regio Factory project. The intention is to produce resources and tools that are as useful as possible to players in the off-site renovation market.

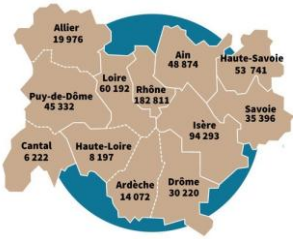
Beta-testing of demand-side tools & deliverables

Wallonie logement SWL

AURA Hlm Auvergne-Rhône-Alpes Association régionale Hlm

ARO Hlm BRETAGNE Association régionale de l'Habitat Social

est METROPOLE HABITAT



SWL is the public housing operator in Wallonia, supporting several housing organisations (around 100k homes). **AURA Hlm** and **ARO Hlm Bretagne** are the federations of social housing organisations in the Auvergne-Rhône-Alpes & Bretagne regions of France (around 800k homes). These 3 institutions participated in the development and testing of the GRF WP2 method. **Est Metropole Habitat (EMH)** is a French social housing organisation which was directly involved in testing and improving the method.

Beta-testing of offer-side tools & deliverables

BuildUp

Retrofitt

Buildup Offsite is an industrial solution provider already involved in off-site renovation, including Energiesprong collective housing and schools in the city of Lille. BuildUp has tested and experimented the tools developed as part of offer-side work packages, including diagnostic tools, business plans, off-site renovation standards, training kits, etc.

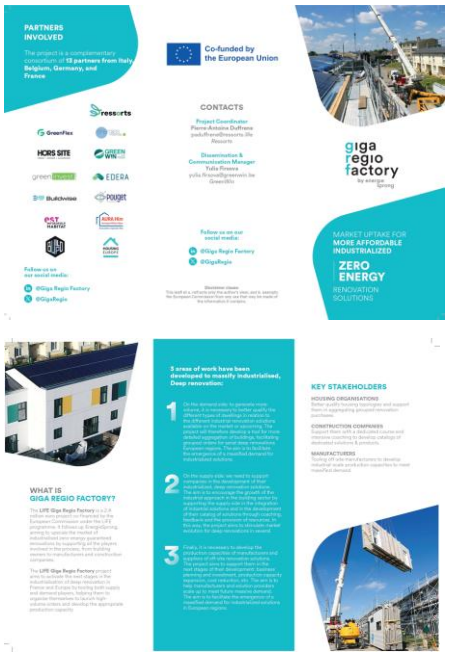
5. Finally, communication and dissemination

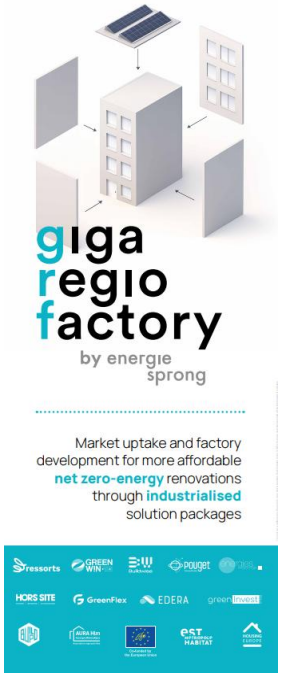
Media products

Several designed media tools and products, including leaflets, rollups, and videos are developed aiming to extend the reach to diverse target groups.

A website **scaleupretrofit.be** supported by Life Giga Regio Factory and Energiesprong Global Alliance aims to bring together the actors involved in net-zero and affordable energy renovation in Belgium, to share tools developed within local and European projects, and foster synergies between public and private partners committed to the transition towards zero-carbon renovation.

A **video** was produced to explain the project : link to the video

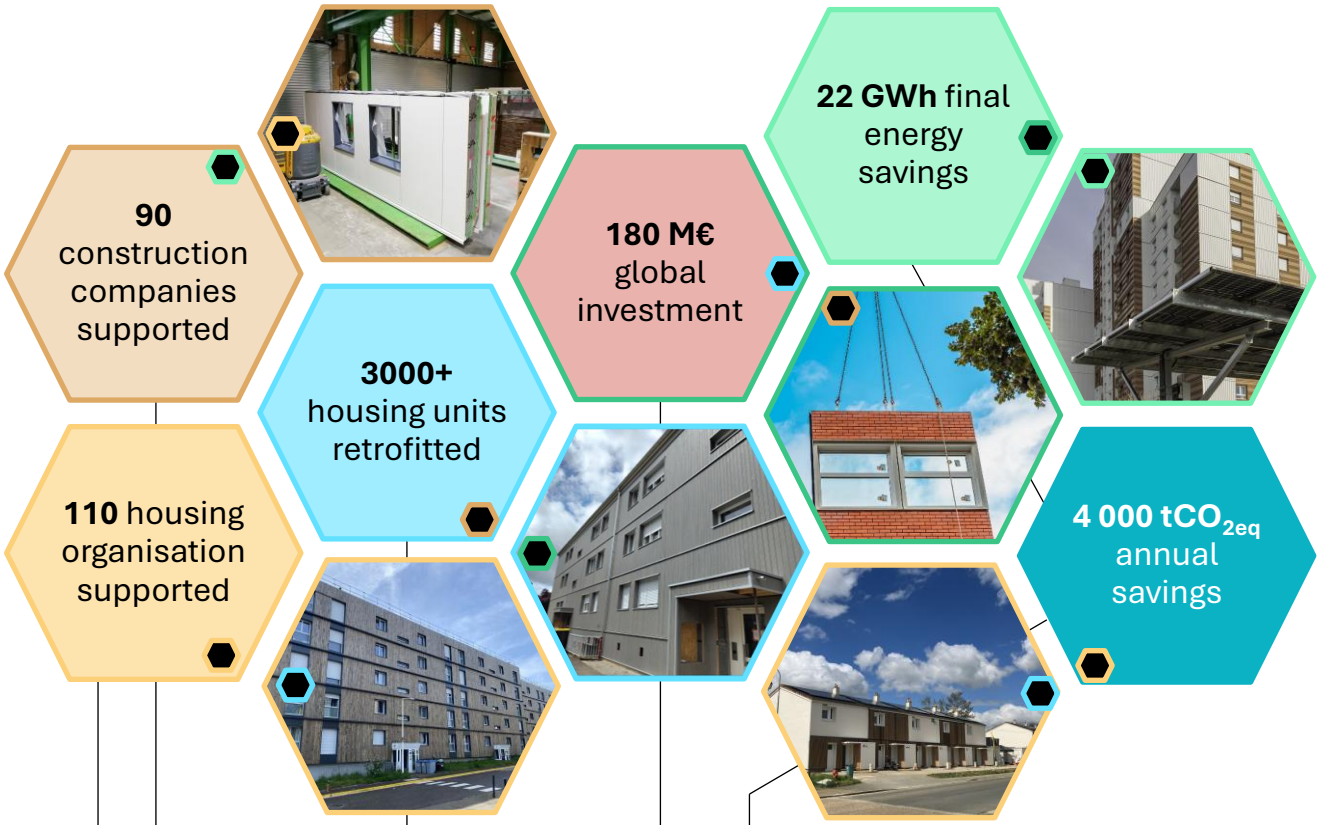




Events and stakeholder engagement

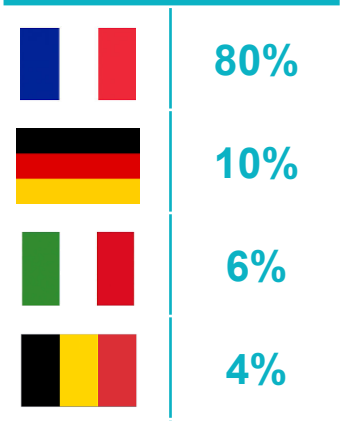
Achievements at the end of the project : many building owners & renovation companies supported, leading to 4,000 tCO_{2eq} annual savings

Working with and for renovation market stakeholders, the work we have carried out as part of the Life Giga Regio Factory programme aims to accelerate collective and efficient off-site renovations. We therefore selected and monitored **Key Performance Indicators (KPIs)** throughout the project, which enabled us to measure our impact.



- Number of housing organisations supported, as part of the work carried out in WP2
- Number of construction companies supported, as part of the work carried out in WP3 and WP4
- Number of homes renovated directly or indirectly thanks to the project: directly if it was launched following the use of deliverables of the programme, indirectly if it was launched/carried out by a stakeholder who participated in the project (workshops, training sessions, etc.)
- Total investment in off-site deep renovation: linked to the number of homes renovated directly or indirectly
- Annual final & primary energy savings, Annual GHG emissions savings : linked to the number of homes renovated directly or indirectly

Projects' breakdown by country



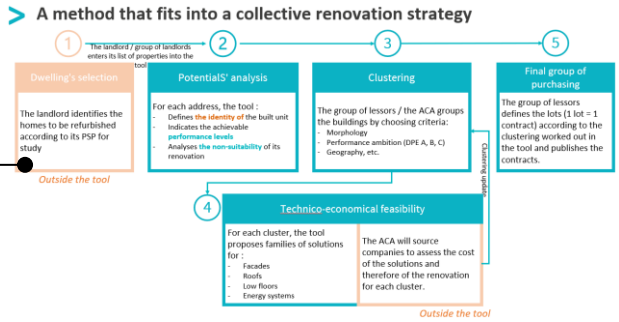
Achievements at the end of the project : Key deliverables

For building owners: to carefully select your buildings and organise your off-site renovation collective buy-in schemes:

Energiesprong catalogues of existing solutions for France and Italy

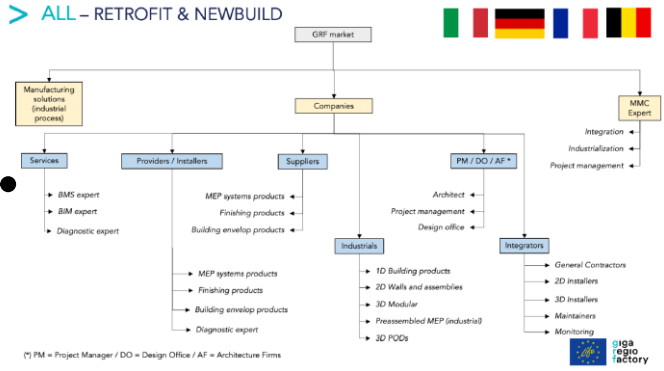
The complete Giga Regio Factory methodology for selecting the most suitable building types for off-site renovation

An overview of the methodology



To enhance the skills of solution providers & renovation companies:

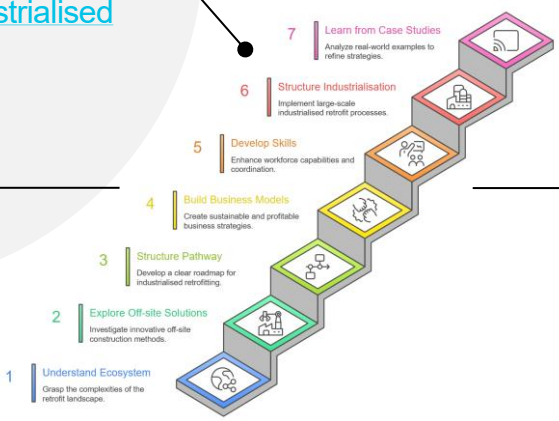
The mapping off-site renovation players

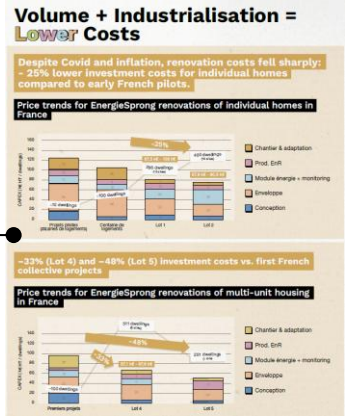


The training kit for developing off-site renovation offers and solutions

The manual guide to scaling industrialised retrofit

The lessons learnt from MASH





Videos and success stories

Discover the Life Giga Regio Factory approach in motion

Renovation of the Noirettes and Grand-Bois residences in Vaulx-en-Velin (FR): (138) Réhabilitation des résidences Noirettes et Grand-Bois à Vaulx-en-Velin - YouTube

Timelapse of the large-scale renovation of the Bel Air 930 residence in Saint-Priest (FR): https://youtu.be/RHVjkTrFUk0

The Energiesprong renovation works at the G. Gauthier residence in Le Mans (FR):
Les travaux EnergieSprong de la résidence G. Gauthier au Mans
L'avant / après de la résidence Georges Gauthier au Mans - ALTERESCO

Retrofitt (BuildUp Offsite): Réalisations - BuildUp (BE-FR)

- Energy renovation in Wattrelos
- EnergieSprong project in Roubaix
- Energy renovation of 6 schools in Lille

The off-site construction site on Via Russoli in Milan (IT): L'intervento Offsite di via Russoli a Milano

A new vision for public housing (IT): Una nuova visione per l'abitare pubblico

Ludwigsfelde mbH “Märkische Heimat” by SeeriaRenova (DE).(19) Post | LinkedIn

Voices from the Field: Offsite Renovation Experience in France

Fabien Lasserre – Offsite Renovation Pioneers [EPISODE 1]: Fabien Lasserre - Les pionniers de la rénovation hors-site [EPISODE 1]

Rodolphe Deborre – Offsite Renovation Pioneers [EPISODE 2]: Rodolphe Deborre - Les pionniers de la rénovation hors-site [EPISODE 2]

Paul Sachot – Offsite Renovation Pioneers [EPISODE 3]: Paul Sachot - Les pionniers de la rénovation hors-site [EPISODE 3]

Armelle Langlois – Offsite Renovation Pioneers [EPISODE 4]: Armelle Langlois - Les pionniers de la rénovation hors-site [EPISODE 4]

Exploitation and replication

Maximising project impact across Europe

Continuity of the exploitation and replication activities of the Life Giga Regio Factory project will be ensured through several key actions:

- Making our work available as **open source**, accessible to all stakeholders, so it can be used, replicated, and improved to enable more large-scale, deep renovation projects across different regions of Europe.
- The **Energiesprong Global Alliance (EGA)**, a foundation that maintains our work online and freely accessible, will keep ensuring all stakeholders can access it after the conclusion of the project.
- **New European projects** building on Life Giga Regio Factory have just started : Life Street HP Reno and Life AREC Reno, which implement collective buying schemes for heat pumps and deep retrofits at district scale; Life Reno Tides, focused on collective purchases of staged renovations; and Life Cosme Reno, promoting cooperation between SMEs in the construction industry.
- The continuation of our work aggregating renovation projects and supporting social housing organisations, businesses, and manufacturers in developing regional group purchasing initiatives for renovation will extend beyond the Giga Regio Factory project, as this remains a core part of our mission as **Market Development Teams (MDTs).**
- The **enhanced skills** of supply and demand stakeholders will enable the replication of methodologies (property selection, training kit) and thus ensure the long-term sustainability of the Life Giga Regio Factory project's outcomes.
- The replication and exploitation of the project results will extend **beyond social housing** to include private housing as well, with the next concrete step being the launch of Market Development Teams (MDTs) in Belgium.

These activities include applying for new research projects within consortia, strengthening collaboration with national and local governments, and maintaining ongoing dialogue with EU policymakers.

The regional network of Life Giga Regio Factory partners will continue to function as both a knowledge platform and a **community of practice**, while local engagement in the target neighbourhoods will be sustained.

Finally, cooperation with **other European and regional projects** will remain a priority to further reinforce the initiative.

What's next ?
Future outlook

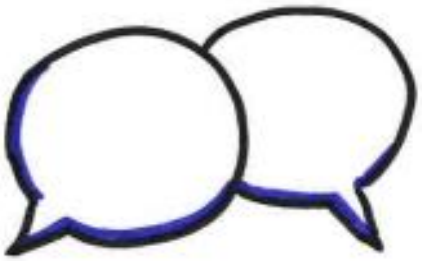
giga
regio
factory

What should continue ?

Promote technical standard

&

common language

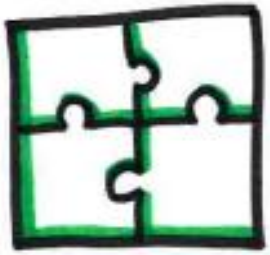


New financial models

Collective & massified buying contract

Highlight references

Interoperable solutions



Support housing organizations

in order to

entrust projects to industrials

Putting our work at the service of future projects built on the same foundations: collaboration, deep renovation, industrialisation

Continue promoting collective regional renovation initiatives involving multiple housing owners, including other stakeholders such as local authorities

Initial projects in France and Germany have provided valuable feedback and helped reduce costs through the development of new offers and solutions. This activation of the industrial supply chain at regional level should be replicated in other regions and countries. It is essential to continue developing regional partnerships, purchasing groups among multiple building owners and central purchasing offices. The Life Giga Regio Factory building selection tool should facilitate these future initiatives.

To continue activating the sector despite economic conditions that are slowing investment, the Life Reno Tides project is developing collective purchasing contracts among several project owners for renovations carried out in two or three stages, enabling EPC classes A or B to be achieved by 2050.

reno tides by energie sprong

Continue supporting supply-side players to enable them to deliver large-scale renovation contracts

street hp reno by energie sprong

cosme reno by energie sprong

The support programme and training kit developed in the LIFE Giga Regio Factory programme form the basis of a broader support framework for all supply-side players. It now needs to be complemented by several additional dimensions:

- Cooperation between players
- Development of new services and new business models (performance guarantees, leasing, etc.)
- Skills development in Lean practices (continuous improvement) to ensure quality delivery, etc.
- Logistical aspects (supply chain) to enable the delivery of large-scale renovation contracts.

The Life Street HP Reno, Life Cosme Reno, and Life Reno Tides projects are taking up the baton to this end.


Crédit : @Julien Gazeau


Crédit : Meldomys


Crédit : @Julien Gazeau

Putting our work at the service of future projects built on the same foundations: collaboration, deep renovation, industrialisation

Testing new economic and financing models to demonstrate the full benefits and co-benefits of deep renovation

Building owners currently lack economic analysis frameworks that integrate all relevant dimensions: overall life-cycle cost analysis, inclusion of green real estate value, valuation linked to climate change adaptation, decarbonisation of operations, building extension or elevation, and resident comfort, among others. We must continue to provide them with tools in these areas to highlight the cost of inaction vs. the cost of action, thereby demonstrating the economic benefits of deep renovation. The LIFE Reno Tides project aims to evaluate these economic dimensions to incorporate them into decision-making parameters, while the LIFE Renew It project focuses on the opportunities offered by assisted self-renovation.

reno tides by energie sprong

renew it by energie sprong

Finally, beginning deployment in the private residential market

Some market-ready solutions can already be deployed in private housing. The tools developed in LIFE Giga Regio Factory can be adapted to analyse private residential buildings and facilitate the setup of purchasing groups. Local authorities can use these tools to launch citizen-led renovation initiatives at the neighbourhood level. The LIFE AREC and LIFE Street HP Reno projects therefore aim to organise collective renovation projects at street or neighbourhood scale.

arec reno by energie sprong

street hp reno by energie sprong


Crédit : Spie Batignolles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Crédit : ALTYN


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Acknowledgements

Co-funded by the European Union

We sincerely thank all project partners, funders, and contributors.

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:

We would like to acknowledge all our stakeholders who commit every day to making deep renovation more affordable and accessible.

European Union, November 2025