



Topic Group: Construction & Architecture

Meeting Report | April 3–4, 2025 | Lille, France | Hosted by Vilogia





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INTRODUCTION

As every year, the Topic Group on Construction and Architecture came together to make the most of the European Lab! Off-site and industrialized construction methods are gaining momentum across Europe, and this two-day meeting once again provided a great opportunity to showcase some of the most exciting projects designed with off-site solutions. Participants shared valuable experiences from various social housing organizations and countries, offering insights into the progress and challenges of industrialized construction.

I'm truly proud to have hosted our Topic Group this year. I'm confident that our discussions have supported the participating organizations in developing and strengthening their future off-site initiatives.

The European Federation for Living (EFL) gathered its Topic Group on Construction and Architecture in Lille for a two-day deep dive into the evolving world of off-site construction and renovation. Against the backdrop of a continent-wide housing crisis and intensifying environmental pressures, the group focused on a central question: can industrialised, off-site building methods provide a scalable and sustainable answer for Europe's social housing sector?

Hosted by Vilogia, the event brought together housing professionals, architects, researchers, construction companies from across Europe. With more than 25 participants, it was an opportunity not only to learn from real-world case studies but also to engage in knowledge exchange through workshops, discussions, and field visits.

Fabien Lasserre (Topic Group Leader)

Jonas Kröber (Topic Group Leader)

Joost Nieuwenhuijzen (Executive Director EFL)

MEETING OBJECTIVES AND CONTEXT

The objectives of the meeting were multifaceted:

- To explore the practical application and scalability of off-site and industrialised construction in the social housing sector
- To share current practices and innovative approaches in deep energy retrofit and new construction
- To compare strategies across countries and organisations
- To reflect on the alignment between off-site methods and environmental goals

Given the pressing need to decarbonise the built environment and address Europe's housing shortages, off-site construction is increasingly viewed as a tool with both environmental and economic potential, although it's clear that offsite construction is still more expensive than 'traditional' construction methods (15% additional construction cost).

BEFORE



- Year of construction : 1956
- 32 appartments (T2/T3)
- Energy consumption de 8000kwh/yr.appart
- Energy cost 1300€/yr.appart
- Light brick structure
- Light wood framework roof
- Low performant windows



AFTER



- Prefabricated beam
- 174 off-site façades
- Roof inversion
- 316 solar panels (electricity)
- Basement ceiling insulation
- Technical cubicles at each landing with :
 - Heat pumps
 - Hot sanitary water cumulus
 - Double flow ventilation
- Energy recovery
- Restructuration inside the flats
- Refurbishment coverings



SETTING THE SCENE: STRATEGY AND EUROPEAN PERSPECTIVE

The meeting began on Wednesday, April 3, at Vilogia's headquarters in Villeneuve d'Ascq. After a welcome coffee, the host organisation presented its strategic view on off-site construction. Vilogia sees modular and prefabricated approaches as key to delivering affordable, sustainable homes at scale, particularly in urban regions with tight land supply and labour constraints.

Fabien Lasserre head of technical and transition department of Vilogia provided concrete examples:

- Wasquehal project: 1 week for structure installation, €120,000 per house (metallic frame)
- Maison pour Tous: wood structure, €170,000 per house
- Rooftop extensions in Poissy: 33 houses added on rooftops, 2.5 years, wood frame, introducing new architectural elements
- Hem: 10 homes retrofitted in 3.5 months, €110,000 per home, reducing energy consumption from 8500 to 4500 kWh/year
- Roubaix 2024: €85,000 per apartment (metallic frame), retrofit and PV installation
- Hem 2024: 220 houses retrofitted in 3 weeks, €80,000 per unit, bio-based façade with quick installation

Energiesprong France

Frederic Laupretre, Strategy Director of Vilogia, explained that rent adjustments post-retrofit are based on tenants' energy savings to keep overall living costs stable. However, legal constraints and the need for tenant consent remain challenging.

Sébastien Delpont of Energiesprong France offered a broader European perspective. Energiesprong is originally a Dutch approach for energy efficient renovation, using industrial solutions for both insulation, roofs, windows and technical installations (pv, heatpumps) and also an economic model that guaranteed for the tenant remaining equal 'living costs (rent + energy) after the renovation.

Energiesprong projects have upgraded over 10,000 homes in the Netherlands, France, the UK, Germany, and Italy. He emphasised the importance of reducing total cost of ownership, including operating and maintenance costs, and introduced financing models incorporating green bonds, performance-based certificates, and flexibility markets. Delpont pointed to strong policy support in the Netherlands (questioned by some participants) and Germany, but noted the lack of strong public funding for market development teams in France. He concluded with a call for pan-European coordination through the EPBD and the new EU Housing Commissioner's industrial roadmap.



FROM CONCEPT TO PRACTICE: PROJECT PRESENTATIONS

Rabot Dutilleul – Energiesprong in Wattrelos

- Full retrofit of 160 homes in four zones (T4–T8) under the Energiesprong model
- Works included new roofs, façades, joinery, insulation, PVs, and MEP upgrades
- Modular “technical room” created outside the living area
- Internal works: ventilation, heat pump, electrical rewiring, energy-efficient appliances
- Monitoring system tracks energy use, alerts maintenance needs (e.g. if heat pump underperforms)
- Tenant relations managed through a resident guide, on-site coordinator, and newsletters

Alterea – Rue d'Oran, Roubaix

- 1966-built high-rise (label E), retrofitted to label A using off-site facades and PVs
- Transition from gas to electric, floor-by-floor MEP upgrades
- Overall energy reduction: 67%; CO₂ savings: 96%; financial gain: €900/year per household
- Façade cost: €18,750 per unit, prefab outside technical shafts for HVAC: €3,500; total: €101,000 per apartment

Bouygues Construction – BYWalli Retrofit in Hem

- Focus on ergonomics, labour productivity, and bio-based solutions
- 3D scans used to map façade dimensions; design converted to modular panels
- Panels made from wood, cotton wool, and grass; locally manufactured and assembled
- Time savings: significant due to plug-and-play system, though regulatory hurdles remain for biobased materials
- Works on 216 homes; already applied in Lens and Angers; future potential for cost optimisation

FROM CONCEPT TO PRACTICE: PROJECT PRESENTATIONS



Vestack – Maison Design Pour Tous

- High-tech prefab system using digital twin modelling, CNC robotics, and standardised production
- Up to 90% off-site assembly; buildings pre-finished with MEP included
- Highlights: 73% less CO₂ during construction, 4x waste reduction, circular material use
- Recent Wattrelos pilot: 8 homes built with 36 modules assembled in 6 days
- Products already rolled out in Savenay, Rennes, Cannes-Écluse, and Saint-Cyr-l'École
- Project of Wattrelos : develop a new design and way of living designed for par the designer matali Crasset using off-site technics.

Gewobag – Berlin Case Studies

- Neue Gartenfeld: 1,027 bathroom pods prefabbed in Prague and trucked to Berlin
- Landsberger Allee: modular apartments with pre-finished concrete elements
- Diesterwegstraße: social housing and refugee accommodation; elements include balconies, window sets, and wall panels
- Emphasis on quality control and urban integration; some projects blocked by architectural mandates (e.g., in Hannover)

GWH Hannover – Kronsrode Development

- Project: Kronsrode, the largest residential development in Northern Germany
- Focus: A large-scale urban project with multiple developers, delivering a mix of social and private housing
- Challenge: Off-site construction was not used due to Germany's architectural tender regulations which require at least five architectural offices per project. This complexity and variability hinder standardisation needed for industrial methods
- Innovation: A significant portion of the development was allocated for electric vehicle infrastructure, reflecting Hannover's urban mobility strategy
- Cost pressure: Architectural competitions and design complexity led to increased development costs; social housing rents are capped at €6/m², while private rents in the area average €15/m²



FROM CONCEPT TO PRACTICE: PROJECT PRESENTATIONS

Clúid Housing – Modern Methods of Construction (MMC) in Ireland

Definition: Modern Methods of Construction (MMC) refer to innovative construction techniques that improve efficiency, quality, and sustainability compared to traditional methods. MMC typically includes prefabrication, panelised systems, and modular construction, often leveraging factory-based production, digital design, and rapid on-site assembly.

- Implementation: Clúid Housing, one of Ireland's largest housing associations, has been actively implementing MMC in its development pipeline. It currently has over 2,400 homes under construction using MMC approaches.
- Methods: Their projects utilise 2D panelised timber frame systems, 3D volumetric steel modules, and Insulated Concrete Form (ICF) solutions.
- Case studies:
 - Portlaoise: 52 houses using 2D panelised timber, built on KORE Foundation System over 18 months
 - Cavan: 34 houses using 3D modular steel frame with a 12-month programme
 - Killarney & Miltown, County Kerry: 127 homes using ICF with foundation systems tailored to local site conditions, timelines ranging from 18 to 21 months
- Benefits: Clúid noted that MMC provides high-quality, low-maintenance homes faster and with less construction waste. It also leads to better energy performance and reduced embodied carbon.
- Challenges: In some cases, costs were noted to be 15–20% higher than traditional methods. Resource allocation for refugee accommodation and supply limitations have further impacted scalability. Nonetheless, Clúid aims to increase MMC's role in its future developments.
- Adaptability: Notably, some MMC projects initially developed for Ukrainian refugees are designed to be seamlessly integrated into Clúid's long-term social housing portfolio.

Ad Straub – Industrialisation and Policy

- Dutch housing: 20% of new builds are industrialised
- Energiesprong's long-term strategy: standardisation, preferred supplier frameworks, and volume contracting
- Step-by-step renovations still dominant due to financial logic
- Calls for cross-project learning and policy alignment to break inertia

LEARNING ON LOCATIONS: SITE VISITS

On Wednesday afternoon, participants embarked on a half-day tour of four innovative off-site construction sites in the Lille metropolitan area:

- Wattrelos (Beaulieu): Rabot's Energiesprong retrofit for 160 homes, focusing on energy performance and tenant comfort
- Maison Design Pour Tous: Vestack's fully modular housing pilot, showcasing rapid deployment and low-carbon construction
- Hem: BYWalli's 200-home retrofit using prefabricated biobased facades and smart logistics
- Roubaix (Oran): A smaller Energiesprong pilot with 32 homes undergoing comprehensive renovation

Several projects were co-financed by European programmes. Site visits revealed not only the construction innovations but also the critical role of tenant communication, aesthetic integration, and site-specific adaptation.

DAY TWO: WORKSHOPS AND REFLECTIONS

Thursday's agenda focused on collective reflection. The participants gave feedback on the previous days and presented their own projects (see above).

Participants noted:

- Off-site is promising but not suitable for highly customised projects
- Appearance and flexibility in design remain sticking points
- Legal limitations prevent organisations like Villogia from creating their own factories (unlike in the UK: Accord Housing)
- Tender outcomes in France show off-site can be 15–20% more expensive
- Biometric design and 3D definition are being tested in Ireland
- Off-site often most viable for standardised housing (e.g. student homes, refugee housing)

KEY LESSONS LEARNED

- Off-site is not plug-and-play: It requires strategic planning and ecosystem coordination.
- Tenant engagement is essential: Especially for retrofits, communication and support mitigate disruption.
- Biobased solutions are advancing: But they need stronger legal and technical frameworks.
- The digital advantage is real: Digital design and prefab go hand-in-hand for quality assurance and efficiency.
- Finance must evolve: Scaling industrialisation requires upfront investment, long-term planning, and appropriate risk-sharing.
- Design flexibility remains limited: Custom architecture increases costs quickly, especially outside standard modular systems.
- Rethinking how needs are expressed: Social housing companies may need to shift their mindset—focusing more on delivering a consistent product rather than approaching each development as a standalone project. The example of L&Q's approach to development illustrates this change in thinking.





PARTICIPANT FEEDBACK AND REFLECTIONS

Participants expressed strong appreciation for the mix of theory and practice. The ability to physically walk through project sites while reflecting on technical, social, and policy angles was highly valued. Several attendees noted that the event clarified misconceptions about prefab's rigidity, and instead highlighted its potential flexibility and customisability when well-designed.

Guests from Nordic Homes, Vilvoorde, and Stream Modular shared their national perspectives. Some flagged concerns about cost increases and appearance, while others noted the value of off-site for specific market segments like student housing or refugee accommodation.



OUTLOOK AND NEXT STEPS



Looking ahead, the topic group identified several priorities:

- Deepen the exchange on tenant-inclusive renovation processes
- Explore pooled procurement across housing companies
- Continue showcasing biobased material integration
- Examine models for digital twinning and lifecycle monitoring

The next meeting of the Topic Group Construction & Architecture is planned for spring 2026 in Berlin. Proposed themes include:

- New construction models and contract types
- Role of the architect in industrial design
- Integration of industrial production lines in housing delivery



APPENDIX: VISUAL DATA

Figure 1: Cost per Unit of Off-site Construction Projects

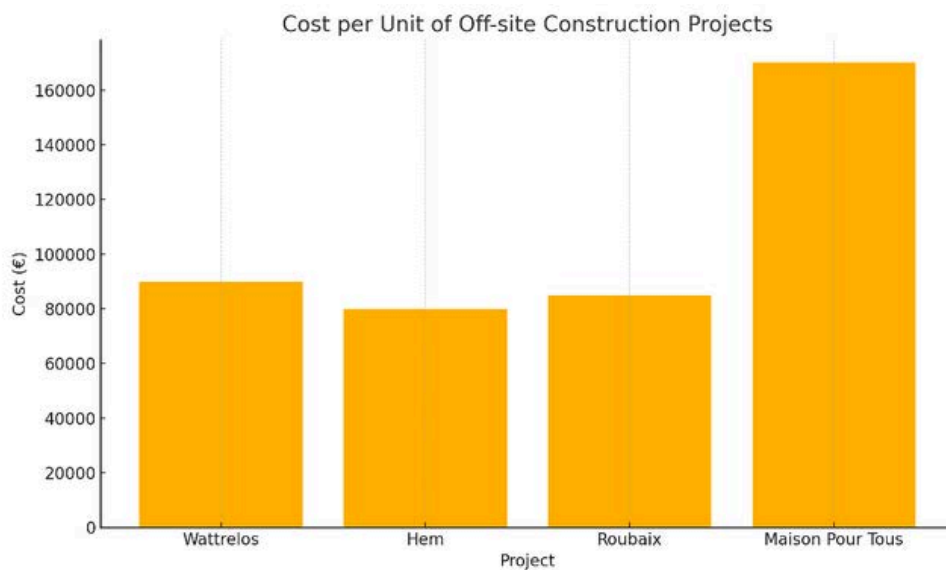
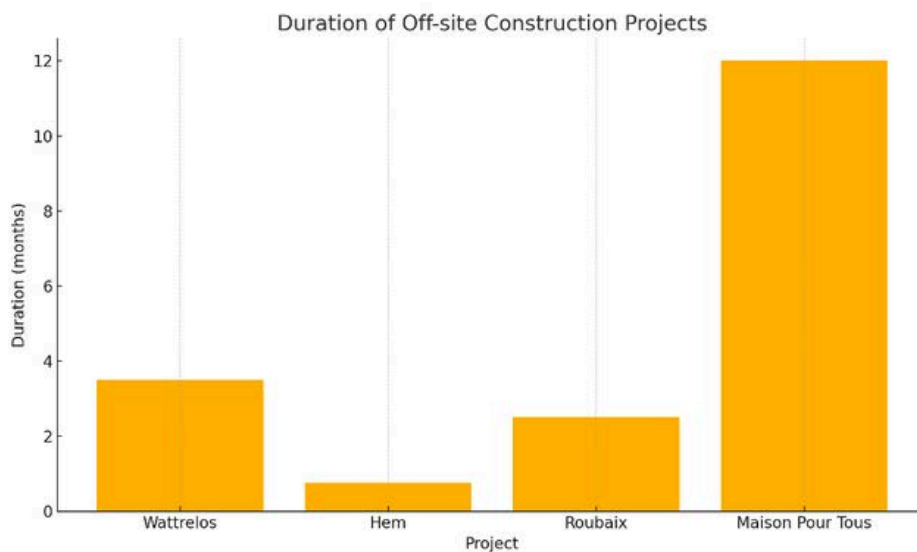


Figure 2: Duration of Off-site Construction Projects





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