Urban Partners – Copenhagen, Denmark

Case Study ESG

Ripple Residence: Denmark's lowest-carbon residential building

PROJECT:
Ripple Residence

COMPANY:
Urban Partners

LOCATION:
Denmark

Challenge

Ripple Residence is part of the Urban Partners Earth Shot initiative which aims to deliver Denmark's lowest-carbon multistory residential building to date and demonstrate commercial attractiveness of developing low carbon residential projects.

In light of Denmark's increasingly stringent regulations on whole life-cycle emissions, the key challenge is to significantly reduce both embodied and operational carbon while maintaining strong financial performance.

Solution / Approach

Ripple Residence is designed to achieve low emissions, with embodied emissions of 250 $kgCO_2e/m^2$/year (5 kg m^2/year), and operational emissions of 0.35 $kgCO_2e/m^2$/year – both significantly below the current average of a Danish new residential multi-story building. The development integrates learnings from prior projects such as Resource Rows and UN17 Village, informing both material selection and construction methodology.

Timber was prioritised as the primary construction material, replacing traditional concrete where possible. Upcycled materials, such as reclaimed granite tiles, concrete, and stainless steel kitchen fittings, were selectively used where they aligned with project needs. Prefabrication, modularity, and design for disassembly were key strategies employed to further minimise emissions.

An advanced energy system was implemented, combining geothermal heating and cooling, heat recovery, solar panels, and smart controls. Though associated with higher upfront costs, this system significantly reduces operational expenses and emissions. The project also benefitted from access to green financing.

Results

- **Certification:** DGNB gold and DGNB Planet
- **EPC:** A2020
- **Energy intensity:** 16,3 kWh/m^2/year
- **CRREM compliant (kWh) until:** 2050
- **Operational emissions:** 0,4 kgCO_2e/m²/year
- **CRREM compliant (CO_2e) until:** 2050
- **Embodied emissions**: 4,7 kgCO_2e/m²/year
- **Paris Agreement aligned:** Yes

Outcome

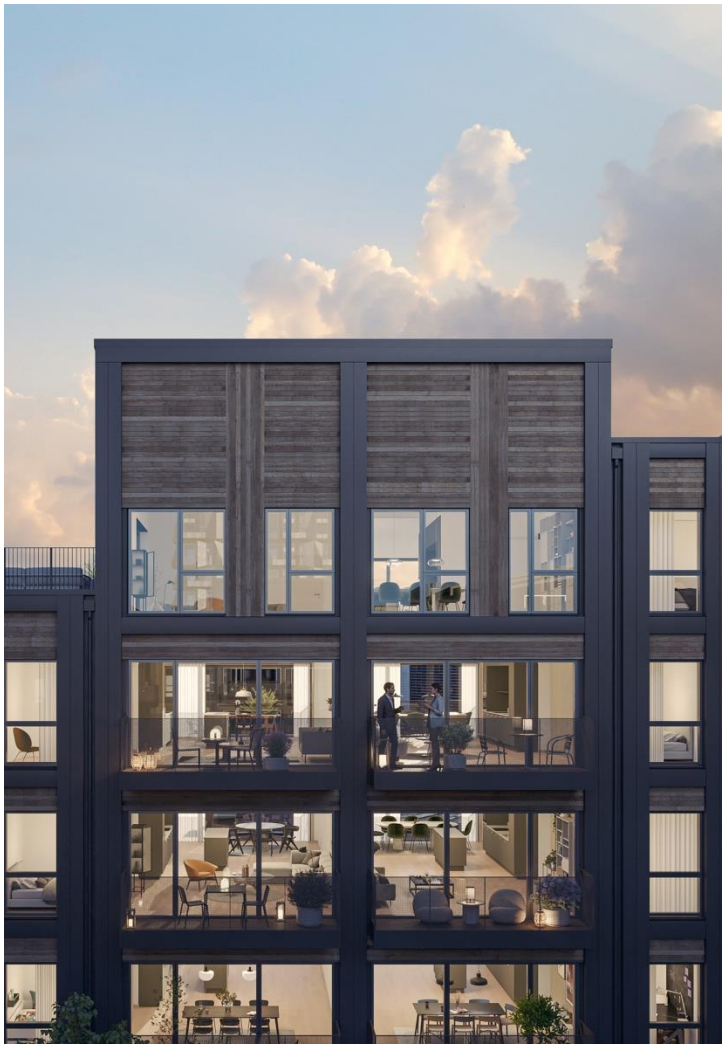
Ripple Residence exemplifies how low-carbon residential construction can be achieved without compromising commercial feasibility. Early engagement across the value chain – suppliers, contractors, and partners – was essential to integrating innovative materials and systems at scale.

Innovation in action: To drive carbon reduction innovation, the developer must be very close to the value chain players, bringing in the right contractors and main suppliers at a very early stage. It is critical to be involved in decision-making from the early stages to gauge new solutions and related risks with the latest knowledge. Data-backed insights guided the selection of energy solutions and materials based on practical experience.

Upcycled materials: Lessons from the Resource Rows – another Urban Partners residential development –, showed that while upcycling supports circularity, it is only viable where materials meet both quality and emissions standards. Ripple Residence applied this selectively – reusing concrete and granite tiles from a nearby demolition and stainless-steel kitchen equipment – focusing on practical, high-impact applications.

Timber construction: Building on learnings from the UN17 Village, Ripple Residence replaced most concrete elements with timber. The building is almost entirely wood-based, apart from bathroom floors and the basement. Prefabrication and modular design support future disassembly and reuse, while a SiteCover roof protected the timber during construction, mitigating weather risks and delays.

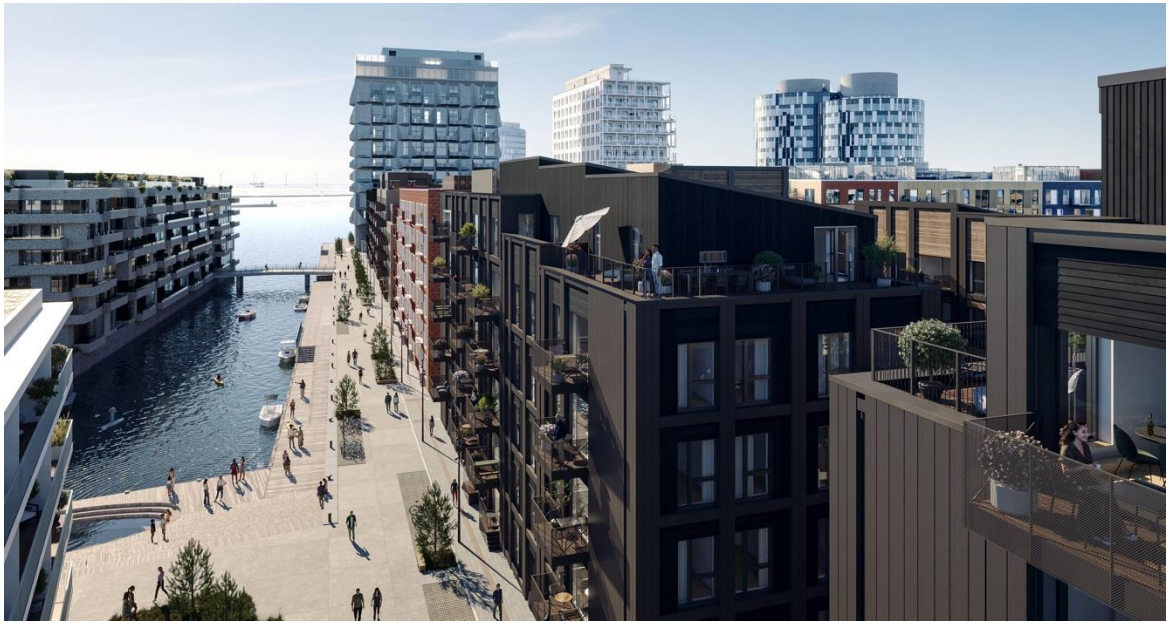
Energy: An advanced energy system combines geothermal heating and cooling, heat recovery and solar panels with smart controls, making the building almost energy self-sufficient. Although geothermal required higher upfront costs than a simple grid connection, operating costs are much lower, generating a meaningful uplift.



Commercial case: The sustainable profile unlocked attractive green financing options, highlighting that projects with strong focus on decarbonisation can attract financing, supportive of sustainability and long-term profitability. In Nordhavn, buyers are willing to pay a premium for sustainability, as it will reduce their operating costs. Though construction costs are ~20% higher, green financing and apartment sales made the commercial case equally as strong as had it been a traditional building.

Ripple Residence is expected to last over 100 years, and if the building is demolished, the construction wood can be reused. Thanks to timber's ability to bind CO2, emissions from construction are expected to be absorbed in the first 50 years.

Scalability: Urban Partners' long-term innovation investments are now yielding scalable solutions. With proven expertise in low-carbon construction, the team is well-positioned to replicate these approaches. Broader green finance availability and knowledge of integrated energy systems will support cost-effective implementation across future developments – demonstrating that ambitious decarbonisation is achievable on commercial terms.



The new wooden development leverages Urban Partners deep experience in CO_2-reduction initiatives. With this project, we will go beyond our previous projects, to prove that scalable solutions exists, and that sustainable real estate development can accelerate, when you make the effort.

Lars Henriksen,
Investment Developer

Urban Partners

For more than a decade, Urban Partners has taken a lead on integrating climate solutions as a central part of its business strategy. For real estate developments, it has meant taking on innovation as a corporate skillset, based on the projection that low-carbon development investments have a strong commercial case.