Net Zero Carbon Cities
Building Value Framework

Case Study
Project: Gare Maritime
Company: Extensa
Location: Brussels, Belgium

January 2022

In collaboration with Accenture
Accelerating the transition to a greener built environment

About the Building Value Framework initiative

The Building Value Framework has been developed in collaboration with World Economic Forum’s stakeholders, multi-sector and cross-industry leaders from the building ecosystem, to accelerate flow of capital investment towards decarbonization of the urban built environment.

The framework aims to shift how the value of decarbonization is perceived and defined by proposing a more holistic decision-making approach, which recognizes the importance of social and environmental outcomes and system performance. It guides decision-makers in linking holistic performance outcomes to traditional financial outcomes (e.g. improved tenant satisfaction increases rental value).

Case studies on new-construction and renovation/retrofit building projects were conducted to demonstrate and map how applying the BVF methodology can accelerate decarbonization while generating more value for project stakeholders.

Click here to learn more about the framework methodology, to read the briefing paper, and to find additional case studies.
Extensa turned a bold vision into reality by utilizing the full investment potential

**Project background and vision**

- Real estate developer Extensa renovated an old freight station in the Tour & Taxis quarter in Brussels, Belgium
- The Gare Maritime turned an old railway station into a covered neighborhood that hosts offices, shopping, leisure activities and public events
- The vision was to develop a flagship multi-purpose complex as the heart of the up-and-coming city quarter with industry-leading standards for sustainability and wellbeing
- Wooden construction, Geothermal heating and cooling, and Solar PV panels were key investments to reach high sustainability and user standards

**Key investments to realize the vision**

- **10,000 m² wooden construction**
  - Mechanically connected cross-laminated timber (CLT) elements
  - Finishing of the interior oak facades (EU origin)
  - Avoids 3,500 tonnes of CO₂ emissions compared to use of traditional building materials (concrete, steel)

- **10 wells for Geothermal heating/cooling**
  - Heating and cooling generated by geothermal energy
  - Adiabatic cooling: evaporation of water to cool the air
  - Air-conditioned ceilings
  - Natural ventilation in the halls (summer)

- **10,000 Solar PV panels**
  - Solar panels on a surface of 17,000 m²
  - Production of 3,000 MWh/year = consumption of 850 households
  - Building integrated Photovoltaic (BIPV) in the south facades
Identifying outcomes that maximize the value of building investments

The framework brings together a set of holistic outcomes that optimize the value of building investments. Extensa’s building, user and system vision resulted in achieving the following featured outcomes:

- **Asset Outcomes**
  - **Emissions reduction**
    - Minimize embodied carbon
    - Minimize operating carbon
    - Maximize use of locally generated clean electricity
  - **Environmental improvement**
    - Minimize water usage
    - Minimize waste
    - Increase biodiversity
  - **User satisfaction**
    - Health, well-being, and productivity improvements
  - **Systemic value efficiency**
    - Improve efficiency
    - Increase flexibility
    - Improve resilience
    - Improve grid services

- **City Outcomes**
  - Reaching a higher standard of circularity to minimize water usage
  - To create the foundation for a locally self-reliant energy community
  - Job creation
  - Lower energy costs to consumers

*Note: Key project outcomes identified by Extensa are marked by blue colored boxes in white font*
Wooden construction reduces embodied carbon while attracting high-quality tenants

Minimized embodied carbon and the unique atmosphere of wooden construction enables Extensa to increase brand value and rental premium by attracting high-quality tenants.

<table>
<thead>
<tr>
<th>Non-financial Outcomes</th>
<th>Financial Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset Outcomes</td>
<td></td>
</tr>
<tr>
<td>Minimize embodied carbon</td>
<td>Rent increase</td>
</tr>
<tr>
<td>Health, well-being, and productivity improvements</td>
<td>Revenue increase</td>
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<tr>
<td></td>
<td>OPEX reduction</td>
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<td></td>
<td>CAPEX reduction</td>
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<tr>
<td></td>
<td>Asset Value increase</td>
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<tr>
<td></td>
<td>Compliance cost reduction</td>
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<tr>
<td>10,000 m³ wooden construction</td>
<td>Financing cost reduction</td>
</tr>
<tr>
<td></td>
<td>Brand value increase</td>
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</tbody>
</table>

The uniqueness and atmosphere of wooden construction in combination with lower embodied carbon enables Extensa to charge a premium for higher well-being and sustainability standards.

High sustainability and performance standard of building increases Extensa’s brand value as a developer of visionary building projects.
Geothermal enables zero operating carbon and operating cost reduction

Zero Operating Carbon, free cooling and better thermal comfort allow Extensa to reduce building and tenant operating expenses and increase rents to high-quality commercial tenants.

### 10 wells for Geothermal heating/cooling

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<td>✓ Rent increase</td>
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<td>Health, well-being, and productivity improvements</td>
<td>Revenue increase</td>
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Extensa is able to charge a rental premium to commercial tenants expecting high sustainability and well-being standard of the building.

No fossil fuels from building operations and higher energy efficiency reduce utility cost. Thermal comfort and well-being furthermore reduce OPEX of tenants through reduced absenteeism.

- Rent increase
- Revenue increase
- OPEX reduction
- CAPEX reduction
- Asset Value increase
- Compliance cost reduction
- Financing cost reduction
- Brand value increase
Solar PVs supply electricity for 850 homes and generates new revenue source

Locally generated renewable electricity reduces operating expenses, provides the foundation for a long-term local energy community and unlocks additional revenue sources from selling back electricity.

10,000 Solar PV panels

Non-financial Outcomes

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<tr>
<td>Maximize use of locally generated clean electricity</td>
<td>✓ Rent increase</td>
</tr>
<tr>
<td>Improve grid services</td>
<td>✓ Revenue increase</td>
</tr>
<tr>
<td>Production of 3000 MWh/year</td>
<td>✓ OPEX reduction</td>
</tr>
<tr>
<td>Local energy community with reselling of electricity and EV as Energy storage/source</td>
<td>✓ CAPEX reduction</td>
</tr>
<tr>
<td></td>
<td>✓ Asset Value increase</td>
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<tr>
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Revenue increase from generating, storing and selling back electricity to the grid during peak hours

Lower electricity cost through local power generation