

<b>GENERAL INFORMATION</b>	
<b>Name of the public building renovation</b>	Verlaine residence
<b>Building Good Practice number</b>	BGP n°1 – Bordeaux
<b>Social housing sub-group</b>	
<b>Description</b>	 
Address	11 rue Paul Valéry – 33 150 Cenon - France
Public sector contractor	Social landlord Mésolia Habitat
Architect	Architect : Serge Andrieux-Laclavetine
Engineering consulting	Engineering consulting : Regaud
Date of construction	1972
Legal aspects (e.g.: protected property)	/
Date of renovation	From January 2011 to March 2012 (14 months)
Nature of the work (short description)	<ul style="list-style-type: none"> <li>-Roof insulation</li> <li>-Low-floor insulation</li> <li>-Wall external insulation</li> <li>-Double glazing</li> <li>-Heating pipes insulation</li> <li>- Hygro B mechanical ventilation</li> <li>-Photovoltaic solar panels (3 800 m<sup>2</sup>)</li> </ul>
Budget and source of financing	-Global budget : 7 M€ including 1.7 M€ for PV

		<p>panels</p> <p>-Source of financing (without photovoltaic panels):</p> <ul style="list-style-type: none"> <li>➤ Eco-loans Caisse des dépôts &amp; consignations : 56%</li> <li>➤ Capital stock : 21%</li> <li>➤ Europe (ERDF) : 18%</li> <li>➤ Regional council of Aquitaine : 5%</li> </ul> <p>Source of financing (concerning photovoltaic panels):</p> <ul style="list-style-type: none"> <li>➤ Electricity resale : 70%</li> <li>➤ Capital stock : 28%</li> <li>➤ Europe (ERDF) : 2%</li> </ul>
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<b>AVAILABLE RESULTS</b>	
<p><b>What were the big problems (in terms of energy efficiency) to tackle?</b></p>	<p>-The cost of energy for heating was very expensive.</p> <p>-Bad thermal, acoustic and sanitary comfort</p> <p>-Decrepit flats, damaged building (any big renovation since construction in 1972).</p>
<p><b>Has this building been already analysed and certified?</b></p>	<p>The 212 flats should acquire the BBC label, with energy consumption objectives higher than actual regulation (energy consumption reduction: 70%).</p>
<p><b>What are the key innovative energy efficiency measures undertaken through the renovation?</b></p>	<p>-Photovoltaic panels have been installed on an adding roof, which is used to insulate and to ensure waterproofing.</p> <p>The combination of waterproofing and photovoltaic production was useful in this case because they had to change flat roof, create attics to insulate and orientation was good.</p> <p>-Photovoltaic panels produce electricity for almost 200 flats (550 MWh during 20 years): the resale permits to finance the project.</p>
<p><b>What are the measurable improvements in terms of energy efficiency in electricity and heating (kWh saved)?</b></p> <ul style="list-style-type: none"> <li>• kWh saved, kWh before/after, kWh given in the studies/real kWh</li> <li>• carbonated energy kWh substituted</li> </ul>	<p>The objective is :</p> <ul style="list-style-type: none"> <li>- to reach BBC level, i.e. 72 kWh/m<sup>2</sup> (5 uses : heating, hot water, ventilation, electric motors and pumps, lighting).</li> <li>- Reduction of 70% for heating and hot water consumptions.</li> </ul>

<p>by REN</p> <ul style="list-style-type: none"> <li>• kg CO2 saved</li> </ul>	<ul style="list-style-type: none"> <li>- Through PV electricity production (550 MWh during 20 years), 40 tons of CO<sub>2</sub> will be saved.</li> </ul> <p>During the first year of working, there is a reduction of 54% for heating and hot water consumptions.</p>
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<b>ENERGY EFFICIENT MEASURES</b>	
<p><b>Energy efficient measures of the building envelope</b></p>	<ul style="list-style-type: none"> <li>-Roof insulation - 30 cm</li> <li>-Low-floor insulation – 15 cm of polyurethane foam</li> <li>-Wall external insulation – 14 cm of stone wool</li> <li>-Double glazing – PVC - 4/16/4</li> </ul>
<p><b>Energy efficient measures of the heating system</b></p>	<p>Any work on the heating system, just the balancing of heating networks - the building is connected to a district heating network.</p>
<p><b>Energy efficient measures of monitoring energy</b></p>	<p>There is a system to follow energy consumptions remotely and daily.</p>
<p><b>Energy efficient measures regarding behaviour</b></p>	<ul style="list-style-type: none"> <li>-A test flat has been created for the work period, with the permanent presence of the supervisors' team to answer tenants' questions.</li> <li>-Work has begun with the acoustic insulation of flats (change of landing doors and windows) for tenants' well-being.</li> <li>- A guide to eco-friendly behaviours is distributed to each new tenant.</li> </ul>
<p><b>Stakeholders' involvement in the energy efficient measures</b></p>	<p>The operator has a contract with bonus on energy performance.</p>
<p><b>Others?</b></p>	<ul style="list-style-type: none"> <li>-Water saving: change of plumbing in each damp room. With this action, water consumptions have been divided by two.</li> <li>-They planned 18 months of work but after all it lasted 14 months due to the good building site organisation.</li> </ul>

<b>SUSTAINABILITY OF THE RENOVATION</b>	
<p><b>Design and choice of sustainable materials?</b></p>	<p>No</p>
<p><b>Sustainable building site management? (sorting waste, water...)</b></p>	<ul style="list-style-type: none"> <li>-Clean building site</li> <li>-Sorting waste : underground containers outside for a better integration in the urban area (before, there were rubbish chute</li> </ul>

	areas inside building).
<p><b>Application of a valuation method (BREAM? HQE? Others?)</b></p> <p><b>Carrying out consultation process with dwellers? Concerted choice on the work program? Which external partners?</b></p>	<p>Use of techniques, materials and process which were compatible with HQE objectives of the social landlord.</p> <p>Dwellers have been invited to information meetings concerning planning and organisation of work.</p> <p>If they had any question during work period, they could ask supervisors' team which was in the test flat or send an email (an email box had been specially created for that).</p>

<b>BUILDING MAINTENANCE: life of the building after the renovation</b>	
<b>Is the building subject to energy monitoring? Is there a responsible manager?</b>	The social housing organism is responsible of the management of the building. There is a team which controls energy consumptions.
<b>Who is in charge of the maintenance of the heating system of the building?</b>	A private operator is in charge of the maintenance and of the good results of energy consumptions.
<b>Who is in charge of the day to day energy management?</b>	/
<b>Are there some specific measures to raise energy awareness and to implicate users in energy efficiency?</b>	A guide to eco-friendly behaviours is distributed to each new tenant.

<b>FUNDING</b>	
<b>What financing plan?</b>	<p>-Source of financing (without photovoltaic panels):</p> <ul style="list-style-type: none"> <li>➤ Eco-loans Caisse des dépôts &amp; consignations : 56%</li> <li>➤ Capital stock : 21%</li> <li>➤ Europe (ERDF) : 18%</li> <li>➤ Regional council of Aquitaine : 5%</li> </ul> <p>-Source of financing (concerning photovoltaic panels):</p> <ul style="list-style-type: none"> <li>➤ Electricity resale : 70%</li> <li>➤ Capital stock : 28%</li> <li>➤ Europe (ERDF) : 2%</li> </ul>
<b>Innovative or specific aspects in the method of financing (European funds or</b>	<p>-European funds ERDF</p> <p>- Eco-loans from Caisse des dépôts &amp; consignations</p>

<b>loan, energy performance contract, ...)</b>	-The resale of electricity photovoltaic panels production, which permits to finance a part of the project.
<b>What is the balanced budget for each stakeholder</b> <ul style="list-style-type: none"> <li>• Energy costs for tenant before /after</li> <li>• Increase in the rent</li> </ul>	<p>After this renovation, the rent didn't increase and the service charge decreased.</p> <p>There was a large reduction of heating costs.</p>
<b>Is there any specific economical indicators (payback time on investment, global cost, ...)</b>	Photovoltaic panels' payback time: 8 years.

<b>TRANSFERABILITY</b>	
<b>Transferable aspects according to the partner in charge of this example of good practice</b>	<p>Transferability of planning (forming a partnership, choosing priorities, setting up a renovation building teams, etc.)?</p> <p>To begin work with the acoustic insulation of flats (change of landing doors and windows) for tenants' well-being.</p> <hr/> <p>Transferability of the process of renovation (management structure, monitoring system, implication of end users, participation, etc.)?</p> <p>-The creation of a test flat with the permanent presence of the supervisors' team to answer tenants' questions during the work period.</p> <p>- Photovoltaic panels have been installed on an adding roof, which is used to insulate and to ensure waterproofing.</p> <p>- The resale of electricity photovoltaic panels production has permitted to finance a part of the project.</p> <hr/> <p>Transferability of results (good solutions, adaptability, change of behaviour, etc.)?</p> <p>-Energy consumptions reduction.</p> <p>-The rents didn't increase and the service charge decreased.</p> <p>-Dwellers were very satisfied of work. Today there is any vacant flat whereas before work there were always 4 or 5.</p>
<b>Transferable aspects according to all the partners of Serpente project</b>	<p>The other partners will analyse and validate these good practices. During the process of validation the partners will take on the role of auditors because they will assess and improve the effectiveness and portability of good practices in their context.</p> <hr/> <p>The validation process will promote a systemic approach in local</p>

	<p>competent public administrations. Moreover, this process of selection and validation is a peer review and entails the mutual role of experts and auditors depending on typology of buildings and partner's expertise.</p>
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<b>SOURCES</b>	
<b>Publications</b>	Press release
<b>Website</b>	
<b>Interviews</b>	<p>Julie FORT - Sustainable development adviser – Mésolia Habitat</p> <p>Hervé EMERAS – Service engineer – Mésolia Habitat</p>