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FINANCIAL AND ECOLOGICAL INTEREST OF COHOUSING: IMPACTS OF AUTOPROMOTION AND MUTUALIZATION OF SPACES AND/OR SYSTEMS

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Abstract:

Rising prices in real estate and demographic evolution make access to the individual property an important issue for many families. This leads to a clear demand for low-cost constructions.

In this perspective, the research Opticost - Technical-Economic Optimization of the Construction Costs - led by "Belgian Building Research Institute" aims to suggest alternative solutions. As project partners, "Architecture et Climat" worked on conceptual optimization in order to limit construction costs.

This paper focuses on cohousing as an economical and sustainable alternative solution.

Cohousing is commonly defined as "a place where several entities live and where self-managed private and collective spaces are organized" (Definition from "habitat et participation", a non-profit organization).

Cohousing, this very complete model deals with the three pillars of the sustainable development.

The research is based on interviews with architects, and an online survey sent to inhabitants of cohousing.

Cohousing in general and four case studies in particular are detailed. Research is structured on the following key elements:

- Definitions of cohousing
- Characteristics of cohousing: collective facilities and spaces
- Objectives pursued in cohousing projects
- Pros and Cons encountered in cohousing

Keywords: cohousing, construction costs, sustainable architecture, ecological solution, collective spaces

Introduction

Rising prices in real estate and demographic evolution (in particular: increasing number of family units) make access to the individual property an important issue for many families. This leads to a clear demand for low-cost constructions.

In this perspective, the research Opticost - Technical-Economic Optimization of the Construction Costs - led by "Belgian Building Research Institute" (www.bbri.be) aims to suggest alternative solutions according three different perspectives: technical, organizational and conceptual optimizations.

As project partners, "Architecture et Climat" worked on conceptual optimization in order to limit construction costs. We studied:

- Design of the whole project:
 - Multiple constructions: Economies of scale;
 - Contiguity: Economies on the number of facades;
 - Cohousing.

- Sustainable architectural design:
 - Bioclimatic: Compaction - Orientation – Glass surface;
 - Simplicity : Rationalization of the spaces - Similar and repetitive plans;
 - Size: Decrease of private surfaces thanks to the enjoyment of the common spaces.
- Temporal dimension:
 - Energy savings;
 - Adaptability and flexibility;
 - Ease of maintenance.

Cohousing could be a strategy to reduce construction costs. This hypothesis has been the starting point of a research on cohousing.

Research is structured on the following key elements:

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- Objectives pursued in cohousing projects
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Methodology

To answer this issue, four Belgian cohousing projects were studied in detail:

- Biplan, in Brussels: 6 passive apartments
- Bois del Terre, in Ottignies: 6 energy-efficient houses and 1 shared home
- Brutopia, in Brussels: 27 passive apartments and 2 apartments very low energy
- Pic au Vent, in Tournai: 20 passive patio houses, 14 garden-houses with positive energy and 8 balcony-houses with positive energy

They were chosen according to:

- the availability of information: website, documentations, contact with architects
- their situation: 2 in a rural and 2 in an urban context;
- type of promotion: 2 projects in self-promotion with local input since the beginning; of the process and 2 projects where the architects are sponsors and look for buyers when the construction is ended.

Data have been collected from interviews with the architects of these projects, and from an online survey sent to the inhabitants of cohousing dating less than 10 years. The questionnaire of fifteen questions was realized via the site "SurveyMonkey". Unfortunately, although the sending was relatively wide (public listing of cohousing, knowledge and addresses available on cohousing blogs), we only had only 18 answers.

After that these case studies are detailed in particular, an attempt is made to highlight possibilities and specificities related to cohousing.

Results

It is difficult to give a good definition of cohousing because its characteristics are multiple and often personal. Here are a few examples from interviews:

- "A life plan - A human adventure - A single place for several dreams - The support for an ecological and collective project;
- A tool to live better - The creation of a village in the city - A lifestyle together in the city, harmoniously and close to the other;
- A catalyst for a more intense and more just social life - A vector of self-fulfillment - A privileged place where the life of each is respected, maintaining a high degree of intimacy;
- A sharing of time, tasks, bad adventures and success - Meetings, intergenerational relations and common values;
- A laboratory, a compost of experiments - A beautiful experience of life where we learn every day - Another way to live - The future. "

Some people consider that inhabitants live real cohousing experience only if their commitment to the project takes place from the very beginning. However, from case studies analyzed in the research, even in case of project realized by architects or real estate developers, from the time occupants live in the building, they quickly feel like being part of a real cohousing project.

The most used definition of cohousing in Belgium is "a place where several entities live and where self-managed private and collective spaces are organized" (Definition from "habitat et participation", a non-profit organization - www.habitat-participation.be). Indeed, many collective facilities and spaces might be integrated in a cohousing (Figure1).

Cohousing is more than a place to live. Cohousing is a way to develop a construction project but also a living mode. Analyze of case studies showed that many objectives were achieved, answering multiple challenges of sustainable development.

- Environmental objectives: reduction of environmental impacts of housing
 - Achieve high energy performance (reduce consumption and produce renewable energy);
 - Reduce greenhouse gas emissions;
 - Enhance biodiversity;
 - Reduce impacts on the water cycle.
- Social objectives
 - Create a community, sometimes to answer specific situation (support of single parents, intergenerational housing as a solution for old people...);
 - Collective commitment for a social or cultural project (support of precarious people, artistic project, religious community, vegetable gardening...).
- Economic objectives:
 - Answer to the housing crisis: way to reduce costs and access other categories of field / buildings to buy;
 - Cohousing ease action to fight against individualism and short term profit dictatorship.

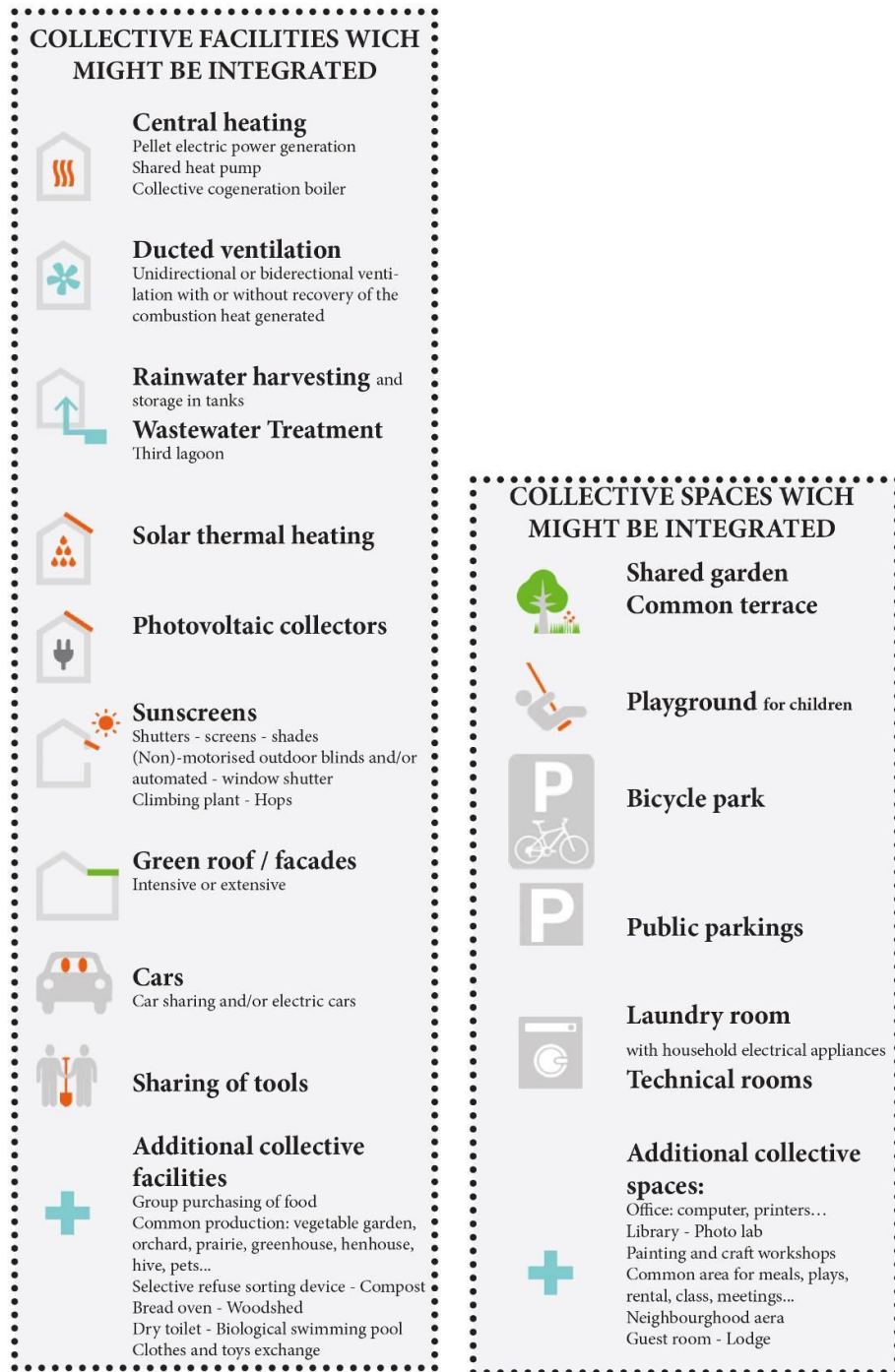


Figure 1. Examples of collective facilities and spaces, which might be integrated into a cohousing

According to case studies, interviews, definitions and context, cohousing cannot be considered only for its economical features. Those very complete models deal with the three pillars of the sustainable development: environmental, social and economic.

The following tables (Figures 3-5-7-9) show Pros and Cons encountered in cohousing for economic, social, architectural and environmental aspects. Extracts from interviews and literature have been added to illustrate the topics with numbers or facts from the field.


Pros - Economic	Cons - Economic
Organization and management: <ul style="list-style-type: none"> - Participation in a common project; - Self-promotion 	Organization and management: <ul style="list-style-type: none"> - Time and energy consuming project for the inhabitants.
<p>« Generally, you can save 20% on overall costs with self-promotion. » (DELLESKE A., architect, Freiburg - Germany, 2011)</p>	
Design of the whole project: <ul style="list-style-type: none"> - A single team of architects and/or only one planning permission for the whole housing project; - Multiple constructions - Contiguity 	Setting a longer timescale: <ul style="list-style-type: none"> - Slowness on administrative processes; - Very long set up the process. Problem for new constructions: <ul style="list-style-type: none"> - Important common investment before each entity has its own part.
Sustainable architectural design: <ul style="list-style-type: none"> - Bioclimatic - Simplicity - Size 	Sustainable architecture: <ul style="list-style-type: none"> - Costs of the construction higher than for a traditional project.
<p>« Apartments can be smaller thanks to the common spaces and to a rationalization of the plans, for an economy from 10 to 20 %, according to the experience feedback. » (PARASOTE, 2011)</p>	<p>« (...) The diversity of housing pulls a largest number of architectural specificities (...). The additional costs for this freedom of design can be estimated at 5 % of the total cost. » (PARASOTE, 2011)</p>
<p>« A factor of economy is in the rationalization of space by an intelligent spatial design to limit corridors and by limitation of private space by mutualizing the common spaces. For example, a washing machine occupies approximately 0,80 m² on the ground, that is (for an average price of EUR 2.000 including taxes) EUR 1.400 including taxes of construction costs! The mutualization in a laundry allows to save space and money. It is the same for the guest room (...). We consider approximately 10% space savings. » (PARASOTE, 2011)</p>	
Renewable energy: Investment divided among the inhabitants – Power saving.	
<p>«A house has a dry toilet which offers 35 % water savings and composting.» (COUPEZ J., architect, about cohousing “Bois del Terre”, 2016)</p>	
Construction : <ul style="list-style-type: none"> - Only one contractor for the whole project; - Possibility for self-construction; - Multiple constructions: Economy of scale; - Same and local materials: Savings due to bulk and local purchase; Fixed costs shared between all inhabitants in proportion to surfaces.	

Figure 2. Terrace of cohousing « Brutopia »
Stekke + Fraas Office

<p>Collective facilities and spaces:</p> <ul style="list-style-type: none"> - Improving homeownership affordability; - Bigger surface area in collective buying than in private; - 100% enjoyment of facilities and additional surfaces but only a part of the costs; - Decrease of the private surfaces, the main characteristic of cohousing. <p>Fixed costs shared between all inhabitants in proportion to surfaces.</p>	<p>Collective facilities and spaces:</p> <ul style="list-style-type: none"> - Initial investment not to be neglected. <p>« <i>Common spaces have a price which you should not neglect, but in my case I pay only 50 thousandth and I benefit from 1000 thousandth of use.</i> » (A resident of cohousing “L’Echappée”, 2016)</p>
<p>Exchange of services:</p> <ul style="list-style-type: none"> - Daily group purchases; - Common Production: kitchen gardens - Orchards – Henhouses; - Household chores and works; - Children’s care - Assistance to older people. 	

Figure 3. Economic Pros and Cons

Pros - Social	Cons - Social
<p>Sharing:</p> <ul style="list-style-type: none"> - Participation to the common project - Investment according to our interests and skills; - Mixing of rooms and buildings functions; - Collective facilities and spaces which are places of meetings and intergenerational exchanges; - Household chores and works; - Children’s care - Assistance to older people. 	<p>Organization and management:</p> <ul style="list-style-type: none"> - Time and energy consuming project for the inhabitants: too long process for some families who have to give up the project for financial or organizational reasons - Loss of energy and enthusiasm for some inhabitants because of the slowness of the steps; - Difficulty in making discover this concept to professionals: Entrepreneurs - Solicitors - Bankers; - Big management of information, meetings and decision-making; - Definition of the Internal Rules to make it easier to live together, to protect the intimacy and to organize the use and the maintenance of collective facilities and spaces.



Figure 4. Guest rooms of cohousing "Pic au Vent" 36°8 Office

Relationship:

- Social mix and age diversity - Meetings - Extension of the social networks;
- Human and intergenerational relationship - Participation of all the generations in the process - Decrease of the individualism and the solitude;
- Equality - Solidarity - Consensus - Feeling of membership;
- Confidence - Collective dynamics - Effect of mass.

Relationship:

- Social mix limited by a relatively homogeneous level of income bound to the intrinsic cost of the project;
- Difficulty of integration and living together while protecting its values and his personal projects;
- Required to accept the differences and the complementarities;
- Difficulty to find consensus, to satisfy everybody and to adapt itself to the evolution of needs and objectives of everyone.

Figure 5. Social Pros and Cons

Pros - Architectural

Individual, collective and transition spaces:

- Collective spaces which allow to enjoy additional surfaces;
- Joints of private and common spaces to favor the meetings and to protect the intimacy;
- Evolutionary and flexible private spaces to everyone can appropriate the personal space and to adapt it to the evolution of the family unit.

Cons - Architectural

Architectural options:

- Non-priority aesthetic;
- Need of soundproofing between housing.



Figure 6. Square of cohousing « Bois del Terre » Coupez Office

<p>Conceptual optimizations: Cohousing offers an ideal context for the conceptual optimizations (multiple constructions; common ownership; bioclimatic architecture; simplicity of volumes; adjusted surfaces).</p>	
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Figure 7. Architectural Pros and Cons


Pros - Environmental	
<p>Cohousing are often a perfect opportunity to build more durably :</p> <ul style="list-style-type: none"> - Sustainable energies (reduction of the energy impact; decrease of CO₂ emissions) - Local materials. 	
<p>Optimization of the housing stock:</p> <ul style="list-style-type: none"> - Reduction of grey energy thanks to the density of built; - Collective facilities and spaces - Pressure strategies to improve public transport of the sector: bike paths - shared bikes - shared cars. 	

Figure 8. Orangery of cohousing « Biplan »
BxIECO Office

Figure 9. Environmental Pros and Cons

Conclusions

Economical approach was the starting point of the research project. Cohousing case studies quickly appeared to be difficult to compare with individual housing from many aspects linked to the process and related life mode.

Anyway, it seems also clear that none of the case studies analyzed could strictly be considered as a low cost solution. Costs are not low but there are lower than costs of a traditional individual housing with similar performance, equipment and available space. Cohousing characteristics always depend on choices of developers and occupants and reducing the costs is only one of many objectives pursued in the projects that have been studied.

As a conclusion, cohousing can be considered as a way of developing housing projects and living mode that permits to achieve a high quality of life and to answer challenges of sustainable development with relatively low extra-costs.

Many cohousing projects are currently being developed in Belgium and work could be done to ease the process and give support to developers to encourage this type of housing solution for its social economic and environmental advantages.

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