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# **The socio-economic analysis of collective behavior and decision making of co-owners to invest in thermal retrofits in private multi-family buildings**

Final report of the research project MurMur2 funded by Grenoble-Alpes Métropole

September 2019

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## **1. Goal of the study : to better understand the factors leading to the collective decision of investing in thermal retrofit in multi-family buildings**

The massive energy retrofit of the private building stock is crucial to reach the GHG emission reduction targets set in France's national low-carbon strategy. Knowing the motives underlying the decision to renovate is necessary to define efficient public policies in this field. This knowledge has considerably increased in individual housing over the last years but it is still very scarce in collective housing. More specifically, in private multi-family buildings, the collective decision turns out to be complex, due to the number of actors who participate in the decision-making process, and to the heterogeneity of individual situations and preferences.

The goal of the research undertaken by Gael Laboratory of Grenoble-Alpes University is to shed light on the collective behavior of the co-owners in the decision making-process for energy retrofitting their multi-family building.

Our research draws on the thermal retrofit incentive programme called MurMur2, which is currently underway and targets the private multi-family buildings of the Grenoble urban district "Grenoble Alpes Métropole", shortly named "Metro".

## **2. Research protocol : analysis of the dialogues of the collective moments in the building process of the retrofit decision**

The research process analyses the dialogues between the various stakeholders involved in the decision to invest or not in thermal retrofitting. It is innovative as, to our knowledge, it has never been undertaken in the context of energy retrofitting of multi-family buildings thus far.

### ***Research material***

Within the MurMur2 programme, the decision to undertake the thermal retrofit comes after four formal steps with which each condominium has to comply. The steps of the "Parcours de service" (service process) include the following meetings of the co-owners:

- a preliminary information meeting (called REP meeting) organized by ALEC (Agence Locale de l'Énergie et du Climat), presenting the thermal characteristics of the co-owners' building, the advantages and challenges of insulating, as well as the general collective financial support brought by MurMur2;

- a general assembly of the co-owners (called MOE meeting) to select and vote for a prime contractor ; if the general assembly votes against the selection of a prime contractor, the condominium cannot benefit from the MurMur2 Program; the next two meetings described below do not occur;
- an information meeting (called SOL meeting) organized by SOLIHA, focusing on all the possible financial assistance mechanisms for co-owners (including MurMur subsidies, loans and individual financial support)
- a general assembly of the co-owners (called FIN meeting) to make the final decision whether to invest or not in the thermal retrofit of their building.

Among the 200 condominiums entered in the MurMur2 program, we selected twenty-three condominiums representative of the diverse situations found in the Metro area (condominium size, heating type, energy used for heating, location). For each selected condominium, we had planned to attend all the meetings of the service process, as observers. As of August 2019, we have attended 51 meetings overall, of which 20 REPs, 13 MOEs, 10 SOLs, 8 FINs, and 3 other optional meetings. We have not been able to attend all the meetings that we had initially intended, as we were not always informed of the meetings. Each meeting lasts between one and two hours; some of them may even reach almost 3 hours.

At the stage of the MOE meetings, a few condominiums of our sample decided to vote against a prime contractor, which brought the MurMur2 Programme to a halt for them. Another one decided not to join the Programme after their SOL meeting. All the condominiums of our sample that went through the four steps decided to invest in a thermal retrofit of their building. Some condominiums have not gone through the whole service process yet, due to slow procedures within the condominiums: their SOL and FIN meetings will be planned before the end of 2020.

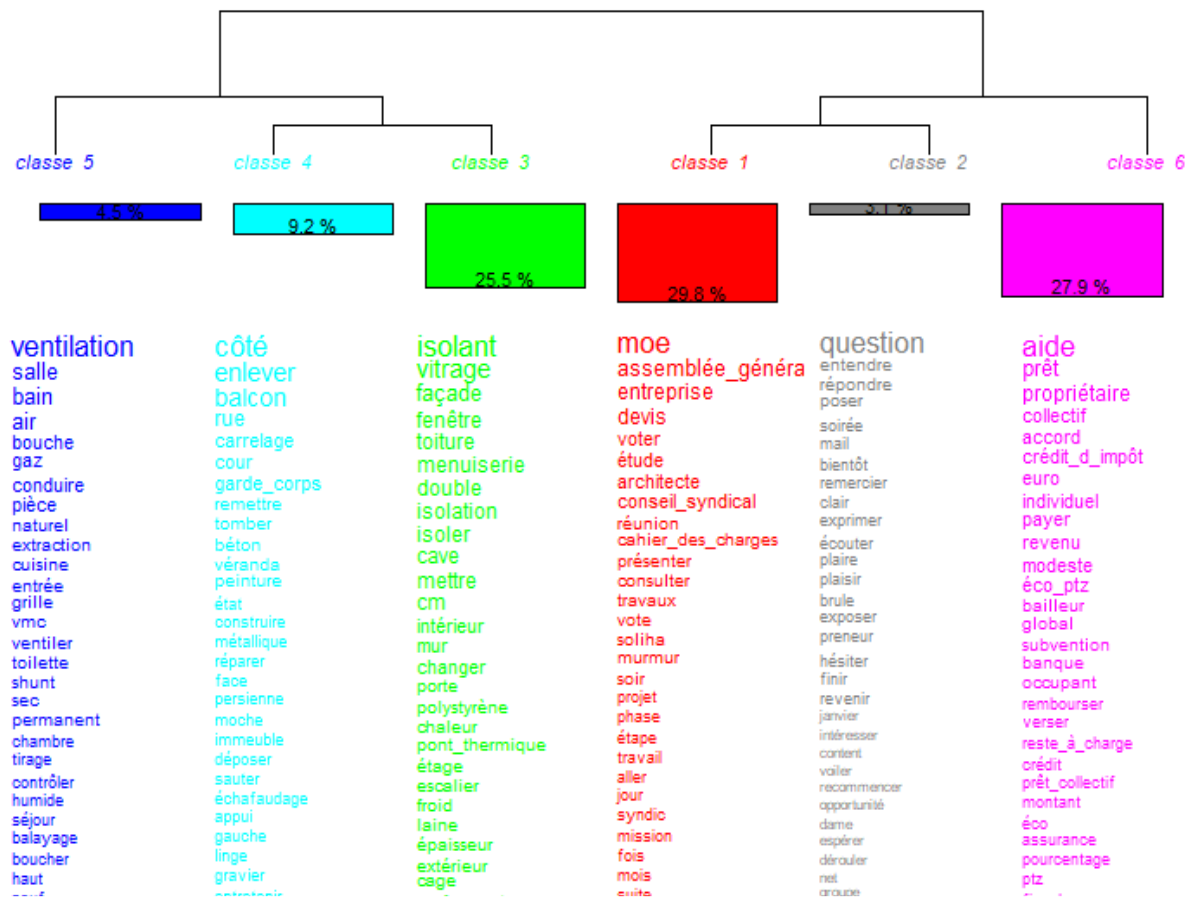
Our research process starts with our presence in the REP, MOE, SOL and FIN meetings of each condominium. We act as observers in these meetings, on the basis of an observation protocol. While watching, taking notes, and qualifying the interactions between the actors, we record all the dialogues. After the meetings, we have all the dialogues transcribed and anonymized by two well-trained students. This written corpus is our main analysis material.

The considerable corpus stemming from the transcripts is then analyzed with two different softwares of textual data analyses, namely IRAMUTEQ and N'VIVO.

### ***Research softwares***

The first software, IRAMUTEQ, is a tool for the automatic analysis of textual data. It analyses the structure of text segments, the distribution and concomitance of the words used within the segments. Therefore it identifies the prevailing subjects addressed in the dialogues, without defining them *ex ante*. Its output is automatic classes of words sorted by similarities found by the software. Figure 1 is an illustration of IRAMUTEQ output.

Figure 1: main subjects addressed during the REP meetings (IRAMUTEQ)



The second software, N’VIVO, requires us to code the transcripts of the meetings ex ante, before any analysis. We code different types of information in N’VIVO. First, we code and qualify all the people taking part in the dialogues e.g., “co-owner”, “property manager”, “ALEC officer”, so that we know which type of person says what. Then, we identify and code the dialogues according to the various subjects addressed, based on the subjects identified by IRAMUTEQ. Finally, we also code some rhetoric elements that may be important in the decision making process, e.g. “disagreement”, “expertise”, “question”. Overall, we have defined 7 speaker codes, 20 subject codes, and 13 rhetoric codes. Once the coding has been carried out, we can start analyzing the content of the dialogues through N’VIVO. The outputs of N’VIVO are multiple graphs and numerical tables at the discretion of the researchers.

In conclusion, IRAMUTEQ and N’VIVO are complementary tools to carry out textual data analysis: while IRAMUTEQ automatically analyses the content of the dialogues, N’VIVO leads to a finer analysis of the dialogues because fine codes are defined and N’VIVO combines the content of the dialogues with the speakers.

### Analysis process

Several processes were carried out, using IRAMUTEQ and N’VIVO outputs, as well as the notes that we have taken during the meetings.

The first process is a cross-sectional analysis that compares the contents of the dialogues in all the condominiums at each step of the service process: REP, MOE, SOL, FIN.

A second process is to carry out comparisons of the condominiums that have voted in favor of the thermal retrofit with those that have voted against the retrofit. The goal is to find out major differences that may explain their respective votes.

A third process is a longitudinal analysis of the dialogues in the condominiums that voted against the retrofit, over all the steps that they went through in the service process.

### 3. Results in a nutshell

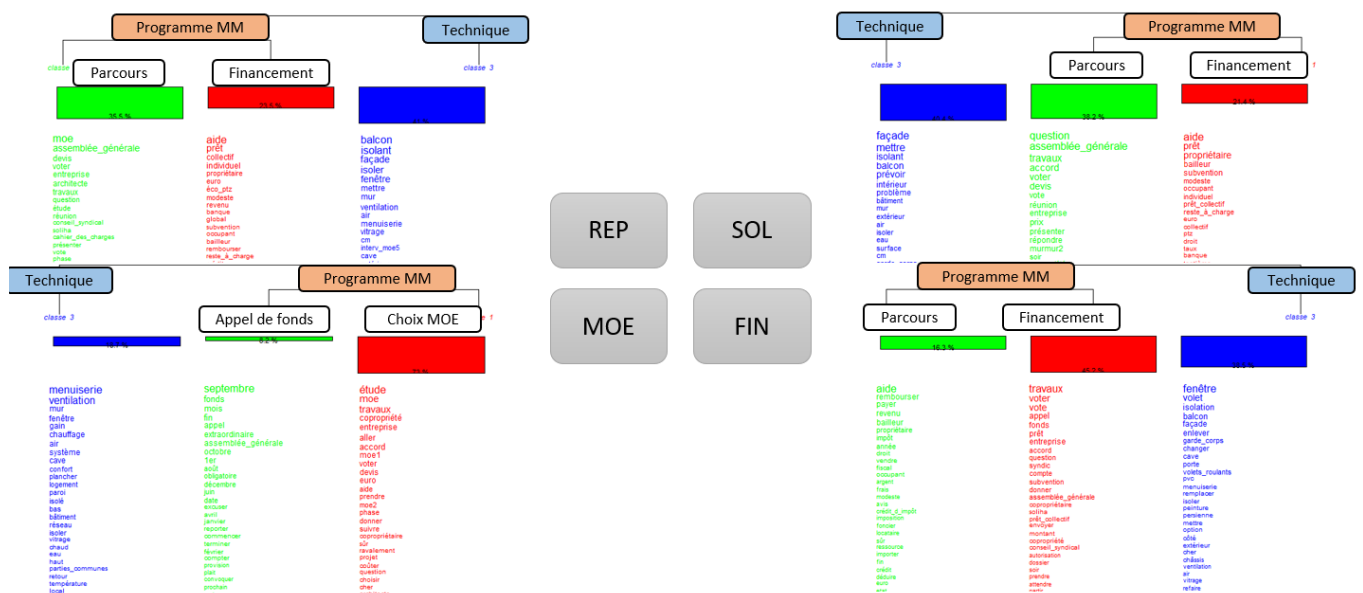
#### *Three main subjects addressed during the four types of meetings*

Surprisingly enough, it comes out that three types of meetings out of four (REP, SOL, FIN) addressed three main subjects, although the goals of these 3 types of meetings were very different. The subjects addressed were the following:

- Technical questions
- Questions relating to the MurMur process
- Economic and financing questions

The distribution of the dialogues relating to each subject differs across the three types of meetings, as shown below on figure 2. But the three main subjects are at the core of the meetings, with the financing subject a bit less pregnant on a general basis.

Figure 2 : main subjects addressed by the condominiums during the 4 types of meetings (using Iramuteq)



Similarly, the distribution of the three subjects varies across the condominiums and across the types of actors. But the three subjects always come out as the most pregnant ones.

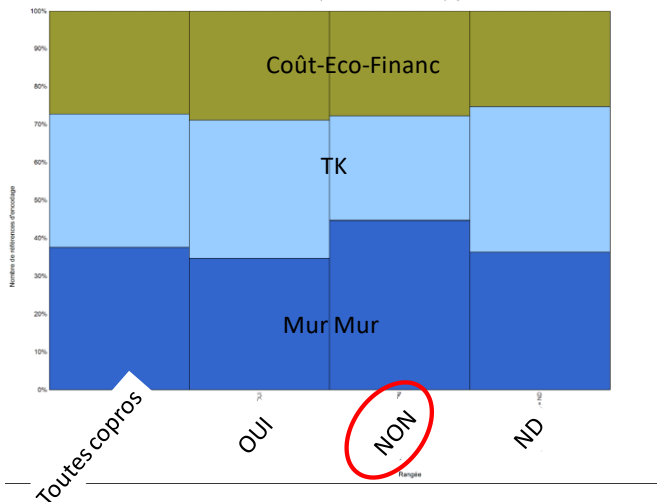
#### *Focus on the condominiums that voted against the MurMur programme*

The three condominiums that voted against the MurMur programme stand out differently from those that voted in favor of the programme, or have not voted yet. Indeed the

condominiums that voted against the programme address questions relating to the MurMur process relatively more than the other condominiums. The latter, conversely, focus more on technical questions.

Figure 3 shows the subjects addressed during all the meetings (of all types) across all the condominiums (toutes copros), and across those that voted in favor of the programme (OUI), against the programme (NON), or have not voted yet (ND)

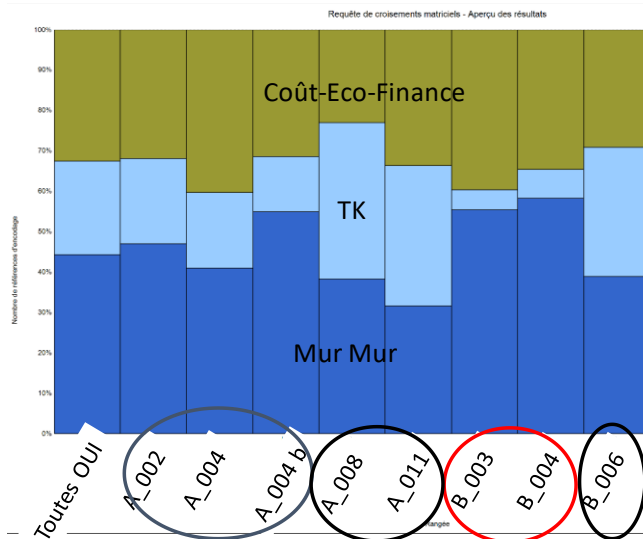
Figure 3: subjects addressed by all the condominiums in all the meetings (using N'Vivo)



**Focus on the condominiums that voted in favor of the Mur Mur programme**

Even at the final general assembly, the co-owners continue to raise technical questions about how their windows and balconies will be renovated during the retrofit. But these technical issues are more or less pregnant depending on the condominiums. Condominiums B\_003 and B\_004 focus very little on these issues. Interestingly enough, debates in those two condominiums about whether to vote positively or negatively went on for a very long time at the general assembly compared with the other condominiums : the outcome of the vote was not straightforward at all. The profile of these two condominiums looks close to that of the condominiums that voted against MurMur earlier in the process: the co-owners put more emphasis on the MurMur process than on what their building might look like after the retrofit.

Figure 4 : subjects addressed at the final general assembly by the condominiums that voted in favor of the MurMur programme (using N'Vivo)



#### 4. Discussion and public policy recommendations

Major lessons learned from our research :

- The speech registers are stable and variable at once: in all meetings, co-owners speak of three subjects, ie technical issues, the MurMur process and economic and financing questions, but they do so in variable proportions ;
- When they address technical issues, co-owners project themselves into the future retrofit. This corresponds to the profile of the co-owners who, in the end, vote for the retrofit. In some way, they are already on the verge of retrofitting their building;
- But co-owners who, in the end, vote against the MurMur programme, do not tackle technical questions during the meetings so much. They are much more focused on the MurMur process.
- Technical questions relating to private parts of the building (windows and balconies of the apartments) are prominent relative to those linked to the common parts.
- Still some wealthier co-owners point to the need to vote in favor of the MurMur programme as it brings substantial subsidies to the poorer households. Altruism is called for in some discussions.
- The outcome of the collective decision often seems uncertain during the meetings as different elements come into play such as uproars, testimonies of previous (good or bad) experiences with Mur Mur in other condominiums, emerging leaders among the co-owners.
- The consistence of the speeches of the various speakers of the MurMur process (ALEC, SOLIHA) is very important, as it reassures the co-owners

### *Public policy recommendations*

Our recommendations mainly stem from the observation of the 51 meetings that we attended.

- It is very important to take the whole context of the condominium into account before accepting the condominium into the Mur Mur program. An additional set of criteria could be defined so as to target even more the condominiums. It could avoid spending time in organizing meetings with condominiums that may have a high probability to vote against the programme. This includes condominiums for which the façade retrofit is not an urgent matter and for which the added value brought by a thermal retrofit does not make much difference on the real estate market;
- As technical questions relating to private parts of the building are prominent, raising those issues first could be an entry-point for ALEC, SOLIHA and property managers to lead co-owners to questions relating to the common parts of the building;
- Working on the consistency of the speeches of ALEC and SOLIHA, and enhancing the strategic role of the SOLIHA meeting may help to make the co-owners vote in favor of the MurMur program
- Reassuring co-owners with additional information tools may contribute to the same goal. Such tools may include a timeline of the various cash flows between the decision to do the retrofit and the time when the retrofit work starts
- Training all the actors of the MurMur process (ALEC, SOLIHA, co-contractors, property managers) to facilitate meetings may also help