The Association of Owners' struggle with the energy transition

Analysing the restraint of Associations of Owners in The Netherlands to reduce the energy consumption of their apartment buildings

J.L.H.C. Bakker – 4139305

ABSTRACT

Apartment owners in The Netherlands are struggling to successfully reduce the energy consumption of their apartment buildings. The energetic quality of especially the apartment buildings that are managed by Associations of Owners is lagging. A literature study and interviews with experts are used to identify two sets of issues that currently withhold Associations of Owners from improving the energetic quality of their apartment buildings. Firstly, the issues with the organisational structure of the Association of Owners complicate the decision-making process on the topic of energy saving measures. Secondly, issues with the administrator also have an impact on this decision-making process. Both sets of issues need to be addressed to make the decision-making process of the Association of Owners on energy saving measures less troublesome and less time-consuming.

Keywords: Association of Owners, apartment building, energy transition, energy saving measure, The Netherlands

1. INTRODUCTION: ENERGY CONSUMPTION IN THE BUILT ENVIRONMENT

The built environment is the sector with the largest share (34%) in the Dutch energy consumption (ECN, PBL, Centraal Bureau voor de Statistiek & Rijksdienst voor Ondernemend Nederland, 2015). The total energy consumption of the built environment has been decreasing steadily with an average of 2,5% per year in the period 2010-2015 (Rijkswaterstaat, 2016). This trend is observed for all building types in the built environment (PBL, 2014). However, the reduction of the energy consumption for apartments is less strong, compared to other types of dwellings (Rijkswaterstaat, 2016). Moreover, the energetic quality of apartments is slightly less than the energetic quality of other dwelling types, according to the energy label system in The Netherlands (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2012a). For some reason, apartment owners are less successful in reducing the energy consumption of their apartment buildings.

In general, there are two types of owners of apartment buildings. Firstly, all apartments in an apartment building may be owned by one owner. In most cases, this owner is a social housing association or a large private landlord, such as a pension fund. Secondly, the apartment building may be managed by an Association of Owners (AOO). The individual apartment owners are members of this AOO. Together they take joint decisions about their apartment building.

The first type of owner - a social housing association or private landlord - is more successful in reducing the energy consumption of its apartment building. Both the social housing associations and some private landlords have signed covenants with the national government on reducing the energy consumption of their property (Aedes, Vereniging van Nederlandse Gemeenten, Woonbond, Ministerie van Binnenlandse Zaken en Koninkrijksrelaties & Rijksdienst voor Ondernemend Nederland, 2016; Rijksdienst voor Ondernemend Nederland, 2016). The interim results of these covenants are that especially the social housing

associations are catching up with the average energetic quality of all dwellings in The Netherlands (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2016a; Tigchelaar & Leidelmeijer, 2013).

Similar results are not to be expected in the short term from the second type of owner: the Association of Owners. Most AOOs are facing issues with the execution of normal maintenance, let alone with the improvement of the energetic quality of their apartment buildings (Meijer, 2013; Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2012b; Vegter, 2012). These issues are the result of insufficient financial resources, a lack of long-term maintenance plans, and difficult decision-making processes with owners who are simply not willing or able to act (Hazel van den, Vaessen, & Wolff de, 2007; Meijer, Visscher, Kloosterman, & Guerra Santin, 2009; Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2012b; Vegter, 2012; Waals van der, 2015). It is because of these and other, yet to be identified, issues that AOOs find it difficult to improve the energetic quality of their apartment buildings.

These Associations of Owners manage approximately fifty percent of the apartments in The Netherlands (CBS, 2016; Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2016b). Given this relatively large number of apartments, given the AOOs' apparent struggle to improve the energetic quality of their apartment buildings, and given the national ambition to reduce the energy consumption of the built environment, it is both socially and scientifically relevant to answer the following research question:

Which issues currently withhold Associations of Owners from improving the energetic quality of their apartment buildings?

An answer to this question is formulated based on the combined insights from a literature study and interviews with experts. This research method is described in section two. Two important sets of issues emerge from the literature study and interviews: issues with the organisational structure of the Association of Owners and issues with the administrators of Associations of Owners. An analysis of these issues is presented in, respectively, section three and four. Subsequently, section five illustrates the impact of these issues on the decision-making processes of AOOs. Finally, section six provides a conclusion and some recommendations for further research.

2. RESEARCH METHOD: LITERATURE STUDY AND EXPERT INTERVIEWS

The research method is a combination of a literature study and expert interviews. The literature study identifies issues that currently withhold AOOs from improving the energetic quality of their apartment buildings. However, it is expected that the resulting list of issues is not complete. The limited body of literature on the topic of AOOs and energetic quality does not include all relevant issues due to knowledge gaps, irrelevance from a theoretical perspective, and a time-lag between the identification of an issue in practice and the documentation of this issue in literature. The input from interviews with various experts from the AOO practice is used to complete this list of issues.

The literature study is comprehensive and includes many sources on Dutch AOOs. Any literature on AOOs abroad is not included, as the legal structure of AOOs in other countries differs from the legal structure of Dutch AOOs (Vegter, 2012). Moreover, the literature on these AOOs is often not available in Dutch or English. For the literature study, several databases are used, such as Scopus, the repository of the TU Delft, and several databases with (research) reports. In addition, searches via the internet are conducted to find sources for the literature study. Most searches are carried out in Dutch, with Scopus being the English exception. The basic search term is 'Association of Owners', in Dutch *Vereniging van Eigenaren (VvE)*. This search term is combined with subjects such as '(national) policy on saving energy', 'positive examples of implemented energy saving measures', 'financial, legal, and process aspects', or 'improving the quality of the maintenance level of apartment buildings'. The

bibliographies of the sources, that were initially found, are used to find additional relevant sources (snowball effect).

The intention of the interviews is to supplement and improve the insights derived from the literature study. Relevant respondents for the interviews are invited based on the results of a brief actor analysis within the literature study. In total, 28 interviews are held with 32 respondents over the course of two months. Given the diversity of some groups and organisations, multiple respondents are interviewed from the following groups: the owner occupants in AOOs, the energy and process consultants, the construction, maintenance and renovation companies, the social housing associations with property in AOOs, and the *Platform Duurzaam VvE Beheer*. Table 1 indicates the number of respondents from each group or organisation.

Table 1: respondents in the interviews

Respondents	#
Administrators in AOOs	I
Construction, maintenance and renovation companies	III
Energy and process consultants	VI
Ministry of the Interior and Kingdom Relations	I
Municipality of Rotterdam	I
Owner occupants in AOOs / board of the AOO	VI
Platform Duurzaam VvE Beheer	III
Social Housing Associations in AOOs	III
SVn	I
VNG region Rijnmond and Goeree Overflakkee	I
VvE Belang	I
VVE-010	I
WoonWijzerWinkel	I

The formulation and content of the questions in the interviews are slightly adjusted for each respondent. With these adjustments, the questions correspond to the expertise of each respondent. The questions have an open character to trigger respondents to identify various issues. Given the open character of the questions, oral interviews are considered most suitable. Each interview consists of the following four discussion topics: a) the relation of the respondent to the subject of research; b) the experience of the respondent with energy saving measures in AOOs; c) the issues that currently withhold AOOs from taking energy saving measures; and d) suggestions for other relevant respondents for the interviews.

Two important sets of issues emerge from this literature study and these interviews: issues with the organisational structure of the Association of Owners and issues with the administrators of Associations of Owners. These sets of issues are presented and analysed in sections three and four.

3. THE ASSOCIATION OF OWNERS' ORGANISATIONAL STRUCTURE

The analysis of the issues with the organisational structure of an Association of Owners requires a solid introduction. What is an Association of Owners? How does the Association of Owners work? Sub section 3.1 answers these questions. Subsequently, sub section 3.2 discusses the issues with the organisational structure. These issues have an impact on other issues that may arise during the decision-making process of an AOO. These impacts are discussed in sub section 3.3.

3.1. Introduction to the Association of Owners

The Association of Owners is a multiform actor, as figure 1 indicates. The organisational structure of the AOO includes several components: the board of the AOO (*bestuur*), the audit committee (*kascommissie*) and the general meeting of owners (*vergadering van eigenaars*). This general meeting of owners may consist of owner occupants, social housing associations and private landlords (*particuliere verhuurders*). In the general meeting of owners, decisions are made on the management, maintenance and the use of the apartment building (Vegter, 2012). If the owners of at least 50% of the apartment rights are present during the general meeting of owners, such decisions can be taken by a qualified majority (Vegter, 2012; Waals van der, 2015). The board of the AOO is responsible for the execution of these decisions and for the management of the financial resources of the AOO. The audit committee is the component of the AOO that checks the execution of the tasks of the board (Vegter, 2012). Any decisions on

the maintenance (and energetic quality) of the apartment building are preferably included in the multi-year maintenance plan of an AOO (*meerjarenonderhoudsplanning in Dutch*).

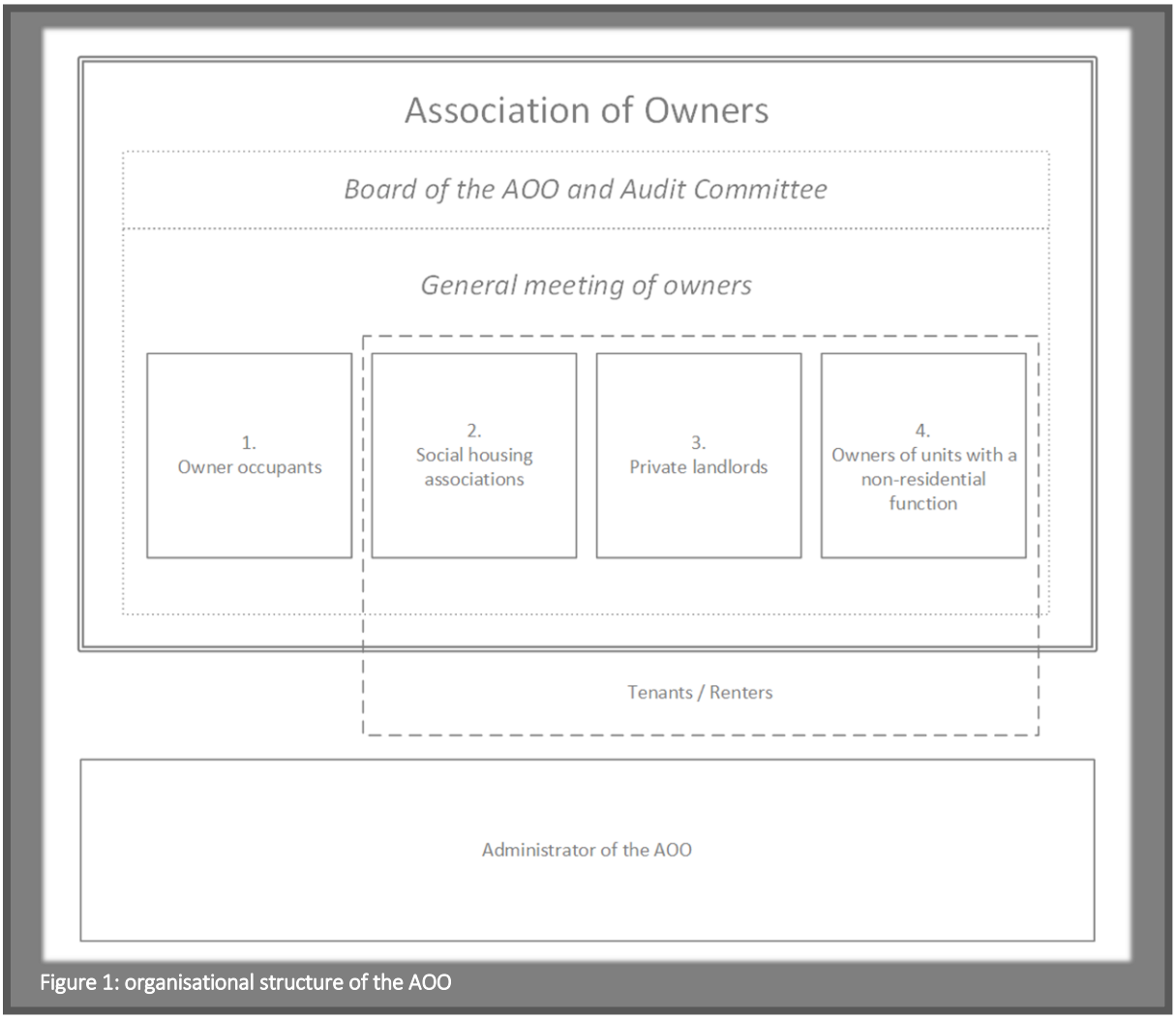

Figure 1: organisational structure of the AOO

The topics for the assembly of the general meeting of owners, such as the implementation of energy saving measures, can be proposed by both the board of the AOO and by individual apartment owners (Waals van der, 2015). There might be three types of owners in the general meeting: owner occupants, social housing associations and private landlords. These three types of owners have differing interests, objectives and resources.

The owner occupants, in general, have an interest in an apartment with an appropriate value for money, given their personal situation. On the long-term, preserving or increasing the property value of the apartment is an additional interest (Gruis & Budde, 2012). Within the preconditions of sufficient financial means, limited nuisance, and significant benefits in terms of the reduction of the housing expenses or the increase in comfort, the owner occupant might be willing to invest in energy saving measures in the AOO (Gruis & Budde, 2012).

Social housing associations, in their core, have an interest in providing good and affordable housing to the target group of low-income households, e.g. families with an income below €29.000 per year (Aedes, 2016). Regarding energy saving measures in AOOs, social housing associations have an objective to meet the ambition level in the covenant with the national government (Aedes et al., 2016). At a national level, social housing associations aim to improve the average energy label of the social housing stock to label B in 2025 and label A in

2030 (Aedes et al., 2016). Implementing energy saving measures in AOOs is certainly no business as usual for social housing associations (Nieboer et al., 2011). Part of this has to do with the fact that social housing associations should take the interests of their tenants into account, especially if a big renovation or a rent increase is required to improve the energetic quality of the apartment building (Gruis & Budde, 2012; Stroomversnelling Nederland, 2015).

The private landlords have an interest in a profitable exploitation of their real estate. Within the preconditions of improving the rentability of the apartments, a sound business case, and limited risks, the objective of the private landlords is to invest in energy saving measures in AOOs. Private landlords who are a member of Vastgoed Belang, an association that is committed to the interests of private landlords, aim at 80% of their housing stock having at least energy label C in 2020 (Rijksdienst voor Ondernemend Nederland, 2016). As well as social housing associations, private landlords need to take the interests of tenants into account during the decision-making processes on energy saving measures in AOOs (Stroomversnelling Nederland, 2015).

The combined available resources of the three types of owners are both formal and informal. Financial resources such as the reserve fund of the AOO[1], a single deposit to the reserve fund or a loan, are the most important formal resources (Vegter, 2012). The right to propose topics for the general meeting of owners is another formal resource. Informal resources of an apartment owner may be the contribution of expertise, information and time to inform other owners on the topic of energy saving measures (Gruis & Budde, 2012).

Lastly, AOOs may contract an administrator, an external organisation, to take over several (administrative) tasks of the board of the AOO (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2012b). Most administrators do not feel the urgency to take a leading role in advising their AOOs on energy saving measures (Waals van der, 2015). These issues with the administrators of Associations of Owners are discussed in section 4.

3.2. Issues with the organisational structure of the Association of Owners

The literature study indicates that issues with the organisational structure of an AOO significantly obstruct the decision-making process for the implementation of energy saving measures. This is confirmed by several respondents during the interviews. “The AOOs that (successfully) try to improve the energetic quality of their apartment buildings have a good organisational structure”. “These AOOs have a multi-year maintenance plan and are therefore more susceptible to notions such as ‘invest now and earn back later’”.

So, what are the characteristics of an AOO with a good organisational structure? According to the literature study and the interviews, these are the most important characteristics of a properly functioning AOO:

1. *The presence of a qualified daily management of the AOO:* the board members have sufficient expertise to execute the decisions of the general meeting of owners and to manage the financial resources of the AOO.

2. *High attendance or commitment to the general meeting of owners:* a prerequisite for an effective decision-making process, as the decisions on energy saving measures need to be taken by a qualified majority.

3. *A periodic deposit of the owners to the AOO is made:* the height of this periodic deposit needs to be in line with expected costs for maintenance works and energy saving measures.

4. *The presence of an active board of the AOO with regard to energy saving measures:* they can propose the energetic quality of the apartment building as a topic for the assembly of the general meeting of owners.

[1] Normally, the general meeting of owners has decided that each owner must pay a monthly contribution to the AOO. These contributions together form the reserve fund of the AOO, which is used to pay for maintenance and unexpected expenses.

5. *The presence of a reserve fund, preferably of sufficient size:* to allow for investments in the maintenance of the building, preferably in combination with energy saving measures.

6. *The presence of a multi-year maintenance plan:* as a tool to create a long-term vision for the future of the apartment building.

If one or more of these characteristics is missing, issues with the organisational structure of the AOO arise. These issues with the organisational structure make it difficult for an AOO to successfully complete the decision-making process and to take the first steps towards an energetic improvement of the apartment building. Moreover, the issues with the organisational structure of the AOO have an impact on other issues that may arise during the decision-making process of an AOO.

3.3. The impact of issues with the organisational structure of the AOO

If an AOO misses at least one of the characteristics of a properly functioning AOO, other issues may arise during the decision-making process. The poor organisational structure of an AOO may have an impact on four types of issues:

1. Financial issues

Due to issues with its organisational structure, an AOO may have insufficient spending power to invest in the energetic quality of the apartment building. The total spending power of an AOO is the sum of the following financial resources:

- *a.* The *reserve fund of the AOO* that is being filled by the periodic deposits of apartment owners to the AOO;
- *b.* A *loan* from the SVn, a bank, or a commercial organisation;
- *c.* A *single deposit* to the reserve fund of the AOO by each individual apartment owner;
- *d.* A *subsidy* for the implementation of energy saving measures provided by the government.

The issues with the organisational structure of the AOO have an (in)direct impact on the first three financial resources. The failure of an AOO to comply with 'the presence and sufficient size of a reserve fund and a periodic deposit of the owners' has a negative effect on its spending power. And in practice, "it proves to be difficult to increase the spending power of the AOO with a single deposit to the reserve fund, due to the individual financial situation of apartment owners or due to a focus on the short-term". Moreover, "AOOs with a limited size of the reserve fund are often not eligible for a loan to replenish the financial resources to a sufficient level". Thus, in case of insufficient spending power, an AOO cannot help but decide to postpone or to reject the implementation of energy saving measures.

2. Ineffectiveness of providing information, advice, and support

Secondly, the provision of information, advice, and support to an AOO is less effective if this AOO has issues with its organisational structure. For example, the AOO is not open to information on energy saving measures if the board is not interested in improving the energetic quality of the apartment building. "It is difficult to create enthusiasm for the reduction of the energy consumption among apartment owners, who are not intrinsically motivated to energetically improve their building".

3. Mismatch with national and municipal policies and laws

Thirdly, the national and municipal policies and laws imply that AOOs are, at least to a certain extent, functioning properly. This implication is causing a mismatch between the policies and laws and the numerous AOOs with issues with their organisational structure. In addition, there are some issues with the national and municipal policies and laws itself. For example, "a sense of urgency is missing in the current policies on the reduction of the energy consumption". "This is, among others, caused by the objective for 2050, which is too far away and does not stimulate AOOs to start moving towards this horizon". "Even some of the best AOOs do not get any further than the implementation of one energy saving measure, while the objective in 2050 requires multiple energy saving measures,

let alone AOOs with issues with their organisational structure."

4. *Problematic relation with the building industry*

Finally, "many companies from the building industry are unwilling to do business with and pre-invest time and money in AOOs, as they are perceived as cumbersome and slow decision-makers within an uncertain and lengthy process". The issues with the organisational structure of the AOO strengthen this image of an 'unwanted customer' among companies in the building industry. These companies do not want to be involved in payment issues or in a discussion on the validity of a decision that is made by the AOO. If a company decides to do business with an AOO, it will include these perceived risks in its price calculation. Thus, even if an AOO is able to overcome the issues with its organisational structure, it might be difficult to find a company that is willing to implement the energy saving measures for a reasonable price.

To conclude, the impact of the issues with the organisational structure of the AOO on its decision-making process is significant. This is illustrated in section five.

4. THE ASSOCIATION OF OWNERS' ADMINISTRATOR

The issues with the administrator are withholding AOOs from improving the energetic quality of their apartment buildings. The administrator of an Association of Owners requires a brief introduction in sub section 4.1. Subsequently, sub section 4.2 discusses the issues that AOOs may have with their administrator. The impact of these issues on other issues that may arise during the decision-making process of an AOO is discussed in sub section 4.3.

4.1. Introduction to the administrator

An AOO may contract an administrator, an external organisation, to take over several (administrative) tasks from the board (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2012b). The administrator may assist the board in the execution of the decisions of the general meeting of owners or in the management of the financial resources of the AOO. For example, the administrator may request quotes from a few companies from the building industry for maintenance works. Moreover, the administrator may monitor the payment of the periodic deposit to the reserve fund by the apartment owners. The administrator can charge the AOO for these basic tasks based on the contract between administrator and AOO. However, not every AOO has an administrator.

4.2. Issues with the Association of Owners' administrator

The issue with the administrators is that they do not feel the urgency to stimulate AOOs to improve the energetic quality of their apartment buildings (Waals van der, 2015). "These administrators have a lack of interest in stimulating AOOs to take energy saving measures, as the administrator cannot charge the AOO for efforts that are not in the contract". If these efforts would be included in a new contract, "providing advice on energy saving measures to AOOs may still cause a conflict with the business model of administrators". "Some administrators receive a fee from energy suppliers or middlemen for every kilowatt-hour and m^3 natural gas consumed by AOOs". "Any advice on energy saving measures that reduces the energy consumption of an AOO will decrease the revenues of the administrator".

In general, the presence of an administrator does not guarantee that an AOO becomes interested in improving the energetic quality of its apartment building". This is because the administrator is missing one or more of the following characteristics:

1. *An adequate level of knowledge on the topic of energy saving measures:* to make objective information more accessible for AOOs.

2. *Motivation to raise the awareness among and inform the AOO on the topic of energy saving measures:* despite the limited scope of the contract between an AOO and its administrator.

3. *Decisions and behaviour of the administrator that are fully in the interest of the AOO:*

and are not based on (secret) deals with, for example, energy suppliers or middlemen.

If one or more of these characteristics is missing, it is not likely that this administrator will be helpful in the decision-making process of an AOO on energy saving measures. An administrator who is missing one or more of the characteristics above, is a poor-quality administrator.

4.3. The impact of issues with the administrator

The issues with the administrator do not have a positive effect on the decision-making process of an AOO. Moreover, these issues have an impact on other issues that may arise during the decision-making process. For example, *the provision of information, advice, and support* to a poor-quality administrator *is not effective*. These administrators will not stimulate AOOs to take energy saving measures. Thus, these poor-quality administrators will not share this information and advice with their AOOs. In addition, this type of administrator will not stimulate the AOO to take the *national and municipal policies on energy saving measures* into account. These additional efforts are not included in an administrator's contract with the AOO. Moreover, a reduction of the energy consumption of an AOO may result in less revenues for the administrator.

5. DECISION-MAKING PROCESSES OF ASSOCIATIONS OF OWNERS

The literature study and interviews have identified two sets of issues that currently withhold an AOO from improving the energetic quality of its apartment building: the issues with the organisational structure of the AOO and the issues with the administrator. In section three and four, the impact of these issues on the decision-making process of an AOO is explained. Moreover, the impact of these issues on other issues that may arise during the decision-making process of an AOO is discussed. These impacts are illustrated in this section, starting with figure 2. This figure shows, for example, that the issues with the organisational structure of an AOO have an impact on the financial issues of an AOO. These issues may cause new financial issues or may worsen existing financial issues. The impacts of these two sets of issues on the four other issues are indicated in figure 2.

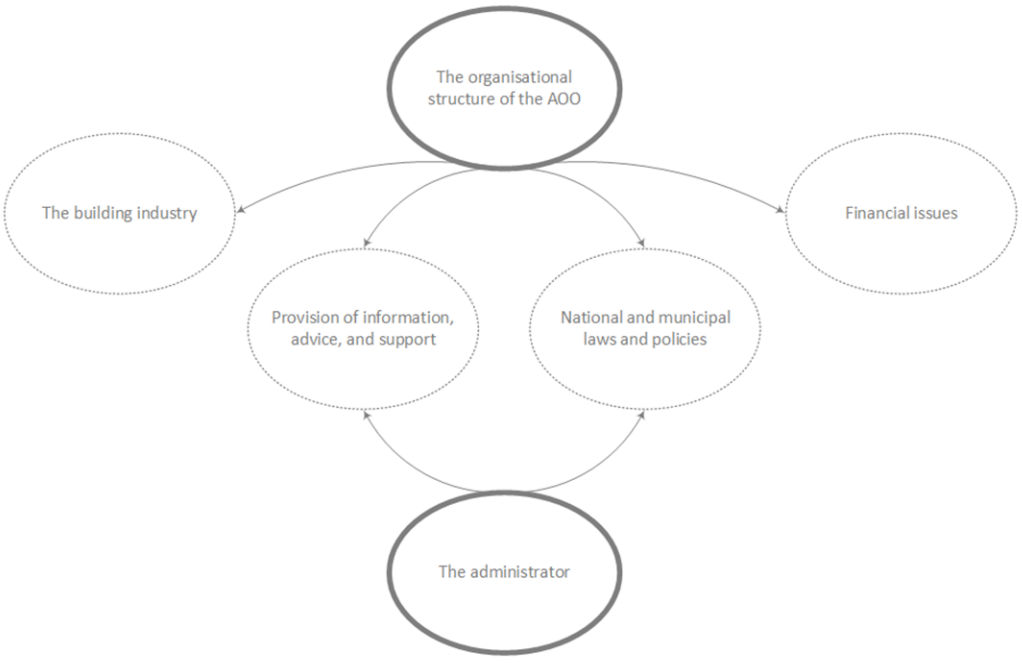

Figure 2: impact of issues with the organisational structure of the AOO and with the administrator on other issues

These impacts are complicating the decision-making process of an AOO. This decision-making process can be described as a customer journey. During this customer journey, the AOO will make several decisions, will meet and interact with several actors and will move step-by-step towards its goal: improving the energetic quality of its apartment building. However, the identified issues and their impact on the decision-making process make this customer journey rather difficult. Currently, only a small number of AOOs is able to finish the customer journey and to meet their goals. The other AOOs have to discontinue or completely stop their customer journey for the above reasons.

This customer journey is visualised with the funnel shape and the sequence of steps in figure 3. The 'cluster' column refers to the different sets of issues that have an impact on the decision-making process of an AOO. The following numbers are used for the issues with: 1) the administrator; 2) the provision of information, advice, and support; 3) companies from the building industry; 4) financial issues; 5) organisational structure of the AOO and 6) national and municipal laws and policies.

The issues with the organisational structure of the AOO affect the entire decision-making process (cluster 5). This is because these issues complicate every decision of the board or general meeting of owners of the AOO. For example, board member may not be motivated to guide the apartment owners through the customer journey. Or the attendance to the general meeting of owners may be too low. Thus, the issues with the organisational structure of the AOO may cause a deadlock or negative decision at various points in the decision-making process. The organisational structure of the AOO is a recurring risk for the effectiveness and the result of the decision-making process.

Furthermore, the customer journey in figure 3 illustrates that the (absence of the) administrator has an important impact on the first stages of the decision-making process. The administrator may or may not raise the awareness among the apartment owners on energy saving measures and may or may not stimulate the discussion on this topic. Pending the actual decision of an AOO to implement the energy saving measures (in steps six and seven) the administrator has a similar effect on the decision-making process. During both parts of the customer journey, the administrator may play a decisive role. However, the analysis of the issues with the administrator reveals that only a very limited number of administrators is currently fulfilling this decisive role.

This section illustrated the insights from section three and four. The issues with the organisational structure of the AOO and with the administrator have a significant effect on the decision-making process of an AOO. Moreover, these two sets of issues have an impact on four other issues, as is illustrated in figure 2. Together, these six clusters of issues complicate the decision-making processes of AOOs on improving the energetic quality of their apartment buildings. The effects of these six clusters of issues on the decision-making process are illustrated with the customer journey in figure 3.

6. CONCLUSION

In the period 2010-2015, the first successes of the energy transition in the built environment can be observed. The energy consumption of this sector is decreasing steadily. Moreover, the average energetic quality of dwellings is improving. However, one segment of the Dutch housing stock is breaking with this trend: the apartment buildings that are managed by Associations of Owners (AOOs). For some reason, these AOOs are less successful in reducing the energy consumption of their apartment buildings. This research identifies these reasons and answers the following research question:

Which issues currently withhold Associations of Owners from improving the energetic quality of their apartment buildings?

A literature study and interviews with experts are used in this research to analyse the struggle of AOOs with the implementation of energy saving measures, in order to identify these issues.

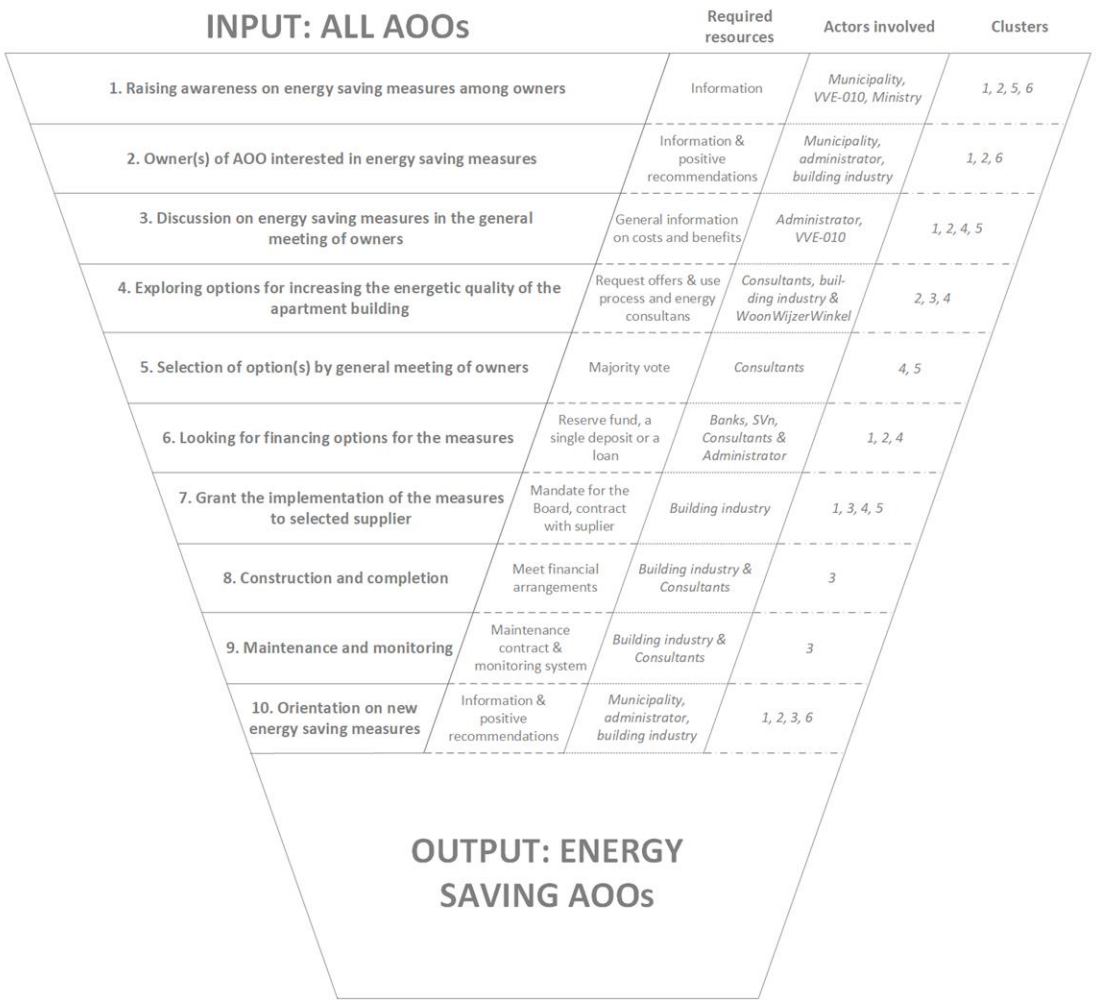

Figure 3: positioning of issues along the steps of the customer journey of the AOO

This analysis shows that the issues that currently withhold AOOs from taking energy saving measures are related to the organisational structure of the Association of Owners and to the administrators of the Associations of Owners. The absence of a good organisational structure significantly complicates the decision-making processes of AOOs. The following six characteristics are found in the literature study and interviews for an Association of Owners with a good organisational structure:

1. *The presence of a qualified daily management of the AOO.*
2. *High attendance or commitment to the general meeting of owners*.
3. *A periodic deposit of the owners to the AOO is made*.
4. *The presence of an active board of the AOO with regard to energy saving measures*.
5. *The presence of a reserve fund, preferably of sufficient size*.
6. *The presence of a multi-year maintenance plan.*

Secondly, the issues with the administrator are keeping AOOs from a successful decision-making process on the implementation of energy saving measures. An AOO may contract an administrator to take over several tasks from the board. The literature study and interviews show that these administrators do not feel the urgency to stimulate AOOs to improve the energetic quality of their apartment buildings. This is because these poor-quality administrators lack one or more of the following characteristics:

1. *An adequate level of knowledge on the topic of energy saving measures.*
2. *Motivation to raise the awareness among and inform the AOO on the topic of energy saving measures.*
3. *Decisions and behaviour of the administrator that are fully in the interest of the AOO.*

Both sets of issues – issues with the organisational structure of AOOs and with the administrator – have an impact on four other types of issues that may arise during the decision-making process: 1) financial issues; 2) the ineffectiveness of the provision of information, advice, and support; 3) the mismatch with national and municipal policies and laws and 4) the problematic relation with the building industry. Together, the combined effects of these six clusters of issues are the reason that apartment owners in AOOs are less successful in reducing the energy consumption of their apartment buildings, in comparison to the overall results in the built environment.

These six clusters of issues need to be addressed, starting with the issues regarding the organisational structure and the administrators, to enable AOOs to improve the energetic quality of their apartment buildings. It is recommended to focus on these two sets of issues and to consider their impact on the four other types of issues in a later stage. Furthermore, it is recommended to design and test various alternatives for improving the organisational structure of Associations of Owners and for increasing the quality of administrators in a further research. Finally, it is recommended to improve the monitoring of this segment of the Dutch housing stock, such that the actual progress of improving the energetic quality of apartment buildings that are managed by AOOs can be followed.

REFERENCES

Aedes (2016). *Dutch social housing in a nutshell: examples of social innovation for people and communities.* Den Haag.

Aedes, Vereniging van Nederlandse Gemeenten (VNG), Woonbond, het Ministerie van Binnenlandse Zaken en Koninkrijksrelaties (BZK) en de Rijksdienst voor Ondernemend Nederland (RVO) (2016). *Inspiratiegids energiebesparing in prestatieafspraken voor huurdersorganisaties, woningcorporaties en gemeenten.*

CBS (2016). *Aantallen en kenmerken van Verenigingen van Eigenaren: een verkennend onderzoek.* Den Haag.

ECN, PBL, Centraal Bureau voor de Statistiek, & Rijksdienst voor Ondernemend Nederland (2015). *Nationale Energieverkenning 2015.*

Gruis, V. H., & Budde, P. (2012). *Samen onder één dak: VvE's renoveren duurzaam*. Rotterdam.

Hazel van den, R., Vaessen, M., & Wolff de, H. W. (2007). *Gemeenschappelijke Private Stedelijke Vernieuwing - een regeling voor samenwerking tussen eigenaren bij vernieuwing en beheer*. Arnhem.

Meijer, F. (2013). *Verbetering van particuliere woningen: ook in de toekomst een gemeentelijk belang*. Delft.

Meijer, F., Visscher, H., Kloosterman, W., & Guerra Santin, O. (2009). *Perspectieven voor energiebesparing in de particuliere woningvoorraad*. Delft.

Ministerie van Binnenlandse Zaken en Koninkrijksrelaties. (2012a). *Energetische kwaliteit woningen naar woningtype, 2012*. Retrieved from http://vois.datawonen.nl/report/cow13_707.html

Ministerie van Binnenlandse Zaken en Koninkrijksrelaties. (2012b). *Het functioneren van VvE's: update 2012 en verbetervoorstellen*. Arnhem.

Ministerie van Binnenlandse Zaken en Koninkrijksrelaties (2016a). *Cijfers over Wonen en Bouwen 2016*. Retrieved from https://www.rijksoverheid.nl/documenten/rapporten/2016/04/11/cijfers-over-wonen-en-bouwen-2016

Ministerie van Binnenlandse Zaken en Koninkrijksrelaties (2016b). *Wonen in beweging: de resultaten van het WoonOnderzoek Nederland 2015.* Den Haag.

Nieboer, N., Gruis, V., Hal, A. Van, & Tsenkova, S. (2011). Energy efficiency in housing management – conclusions from an international study. In *23rd Conference of the European Network for Housing Research ENHR, Toulouse, July 5-8, 2011* (pp. 1–13). ENHR.

PBL (2014). *Balans van de leefomgeving 2014: energetische kwaliteit woningvoorraad sinds 2000 verbeterd.* Retrieved from http://themasites.pbl.nl/balansvandeleefomgeving/jaargang-2014/wonen-en-vastgoed/kwaliteit-conclusies/kwaliteit-energetische-kwaliteit

Rijksdienst voor Ondernemend Nederland (2016). *Beleid en afspraken woningbouw*. Retrieved from http://www.rvo.nl/onderwerpen/duurzaam-ondernemen/gebouwen/woningbouw/beleidskader

Rijkswaterstaat (2016). *Klimaatmonitor Databank: totaal bekend energiegebruik Gebouwde Omgeving.* Retrieved from https://klimaatmonitor.databank.nl/jive

Stroomversnelling Nederland (2015). *4,5 miljoen woningen naar Nul op de Meter: hoe financieel adviseurs van banken en intermediairs hieraan kunnen bijdragen*.

Tigchelaar, C., & Leidelmeijer, K. (2013). *Energiebesparing: Een samenspel van woning en bewoner - Analyse van de module Energie WoON 2012*. Petten/Amsterdam. Retrieved from http://www.rijksoverheid.nl/documenten-en-publicaties/rapporten/2013/12/02/energiebesparing-een-samenspel-van-woning-en-bewoner-analy-se-van-de-module-energie-woon-2012.html

Vegter, N. (2012). *De vereniging van eigenaars*. Rijksuniversiteit Groningen.

Waals van der, T. (2015). *Wegnemen van belemmeringen bij het verduurzamen van VvE's: uitwerking SER-Energieakkoord*. Arnhem.