

“There is a tree growing into my living room”

Nature-inclusive project development: the incorporation of natural capital in housing projects



ACT Team 2436

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Executive summary

Due to an increase in human population density and expanding urban areas, many conflicts between nature conservation and human wellbeing arise. One million houses have to be built in the Netherlands in the coming 10 years. There is a need of sustainable ways to minimize human-environment conflicts. One way to achieve this, is to mainstream nature-inclusive housing development. This requires a thorough understanding of what current and future residents appreciate in living in nature-inclusive neighbourhoods, and how they are willing to accept the negative effects that could be associated with the presence of natural elements around the neighbourhood.

The goal of this project was to explore which value-orientations motivate future residents to have the willingness to live in nature-inclusive neighbourhoods. Besides, this project explored whether nature as valued by residents is in line with expert valued ecological knowledge about nature inclusiveness.

To answer that question, several activities have been conducted:

Interviewing stakeholders: Stakeholders have been interviewed to gain insight in different realities regarding nature-inclusive living. We demonstrated that the unclarity of resident's perception towards nature-inclusive housing primarily affects project developers, construction companies and municipalities. The challenge appears mostly during the house construction planning phase. With this interview, we were able to understand to what extent stakeholders are being affected by multiple views of residents. This information also helped us to formulate the conclusions by targeting a key group of people involved in nature inclusive housing.

Distributing online questionnaire: An online questionnaire has been used to get the key information from both current and future residents. We distributed our questionnaire by using a snow-ball sampling method, where we provide the questionnaire to one individual and request him to redistribute it further. Our social network has been used to make sure that we got enough respondents in a short time frame. Moreover, we posted the questionnaire on social platforms such as Facebook, LinkedIn, Twitter, WhatsApp groups, etc. Our target group was people who are at least 18 years old and have completed secondary school education. We have got a total of 148 respondents.

Interviewing (potential future) residents: To add to quantitative survey, a set of qualitative interviews with a selection of respondents was conducted. The qualitative responses thus offered a complementation to the quantitative survey results. The interviews were semi-structured. The target was to get more detailed information to some questions we asked in our surveys. All interviewees were asked for their informed consent, both for the format of interviewing and the permission to record and quote their answers. Purposive sampling was used to get a more diverse group of interviewees. We provide a room for survey respondents to fill their emails, to be contacted for interview. We selected them based on their demographic data. All interviews were conducted via Skype, the phone or another online tool for communication. We have conducted 15 interviews in total.

Results: People find nature in their environment to be highly important. They want their environment to look pretty but are not as motivated to work on that themselves in cooperation with their neighbours. They mention nature as something that is good for both their physical and mental wellbeing and they find it important that children grow up in a green environment. Our respondents also notice that nature in the living environment can cause certain disadvantages, like nuisance by insects. The interview results teach us, however, that these things are accepted as a part of life.

Our respondents would like to have a greener environment, but they also mention that it is not always possible. Multiple interviewees highlight the lack of space in the Netherlands, resulting in less space for natural elements. The respondents mention the government (municipality, province and national) as the most important actor, as they are the ones that are responsible for the communal natural elements.

The respondents are willing to pay more for a green environment, but it is difficult to state a concrete value, as it is dependent on many contextual variables. They also see monetary value in a more natural environment. They are willing to change their garden for the sake of biodiversity and water infiltration, but most of them do not have the ecological knowledge to do this themselves.

Nature-inclusive project development is often related to communal living spaces, where people share gardens and other facilities. However, most respondents indicate that they like to have their own spaces and are concerned with the distribution of responsibilities.

In this project, we came up to various recommendations based on typical kind of stakeholders involved in nature inclusive housing development. We referred to public administrators, other stakeholders involved in project development, and Wageningen University Science shop.

Recommendations for public administrators

1. Political parties should be more indicative of goals on nature inclusive project development in their political decisions. This will be in the interest of residents as they show high preferences towards a greener environment. This also should be in relation with residents' concerns. Nature-inclusive living connected to living remote and poorly connected to urban centres. If this is to be the case, providing better infrastructure to such remote areas is advised to become part of the political agenda as well.
2. Further, the incorporation of citizens into the project-development process is advised to receive a higher priority for municipalities.
3. Campaign regarding the advantages of nature-inclusive living and co-creating the living environment through a citizens' initiatives, while highlighting this existing framework of assistance. Such a campaign should treat particularly the topics of financial value of nature-inclusive houses, legal restrictions and the location for greener environments.
4. Another recommendation for public administrators is the creation of an organisation or institution, that gives advice and guidance for the procedures of citizens' initiatives. At this point, there is no such official organ, that supports residents with little expertise on initiatives on nature inclusive project development, while the stakeholders acknowledge the advantages of these projects.

Recommendations for stakeholders involved in the project development of housing

1. Lobbying, in which Ballast Nedam is also involved, is of great promise. Lobbying will inform political actors, which can result in both more knowledge for lay people, as it can become part of the political agenda, and resulting in new laws for project development.
2. Ensuring both project developers and residents have the same goal. For example, it is needed to have a clear picture of what plant species appreciated with residents to live with. This knowledge could be matched with ecological perspective in nature to balance both needs. Further, thus will reduce the unwillingness attitudes on the side of residents and help in the success of dual role of nature inclusive housing.
3. The awareness raising is needed to project developers. They must know that resident's value most the natural elements in the neighbourhoods. Therefore, they are willing to pay more money to the neighbourhood where the degree of nature inclusion is high.

For Wageningen University Science Shop:

Nationwide survey, with detailed information about respondents should be conducted, in order to detect striking demographical characteristics about residents in this regard, from which generalizable conclusions could be drawn from.

1 Introduction

1.1 Introduction to nature-inclusive development housing

Conventional construction is prone to cause severe environmental damage, especially in the building phase. It involves complex machinery that could provide huge amounts of greenhouse gases. It is associated with direct removal of natural resources that could help in receiving these gases before causing harm to the ozone layer (Ding, 2008). As a countermovement, nature-inclusive housing development came up in the 21st century to reduce these environmental effects. Its aim was to incorporate nature in all aspects of life to reverse severe landscape degradation and destruction of ecosystem services that have been mostly affected during this time period (McMichael, 2012).

The concept of nature inclusion can help in biodiversity conservation, but also by maintaining the well-being of human beings, who will always depend on natural resources to survive. Nowadays, this theme has been accepted by landscape architects/construction companies who were formerly accused to be unaware of sustainability projects (Thompson, 2005). They are now interested in working with communities/citizens on communal values, promoting biodiversity conservation through the creation of diverse habitats. In this project, we define nature-inclusive housing development as developing housing projects, which integrates natural elements into construction in explicit ways.

1.2 Context and multi-perspective problem analysis

In this post-modern world, we are living in a complex system in which different factors, including ecological, social and economic ones, must interact to improve life on the planet (Folke et al., 2016). Due to the increase in human population density and a related expansion of urban areas, impacts of humanity on the environment increase. Consequently, conflicts between the conservation of natural environments and human well-being arise. There are several practices that have been set in place to improve human wellbeing while maintaining biodiversity and natural resources, such as agroecology, the 'polluter pays' principle and nature-inclusive development (McMichael, 2012). These and other measures have been implemented world-wide, but the complex social-ecological system we are living in is highly inert to changes (Folke et al., 2016). Before a new approach or strategy is widely accepted in society, a paradigm shift towards this new practice is needed. Though parts of the system might gradually change, only after a long time period when a certain threshold is reached, the system will shift towards a new paradigm (Folke et al., 2010). Therefore, even if the essence for change is recognized by experts, it will take time before this change is accepted in society and become common practice (Scheffer et al., 2003). For instance, experts have well agreed upon the added value nature-inclusive building can provide for society, such as the mitigation of urban heat problems, preventing fast surface water runoff, psychological well-being and both biodiversity and aesthetic values (Schwartz et al., 2014). However, the common practice is still building on an empty area (tabula rasa).

A societal paradigm shift towards nature-inclusive building remains necessary. Several reasons for difficulties in changing the current paradigm or practice are discussed in literature, such as uncertainty and habit to common practices preventing adaptation to new ones (Gajjar et al., 2017). Uncertainty can have different causes, such as unpredictability, incomplete knowledge and ambiguity due to the presence of multiple knowledge frames (Brughnach et al., 2012). These knowledge gaps affect a variety of stakeholders, who are involved in the process, and are therefore obstacles for the full development of such nature-inclusive building-trends.

1.3 Commissioner's long-term goal

Our commissioner is Wageningen Environmental Research. Regarding the million houses that are planned to be built in the Netherlands in the coming 10 years, and the challenges that this will bring to natural environment and human wellbeing, Wageningen Environmental Research aims to identify how nature-inclusiveness has been embraced by different societal levels. To change the mainstream practice from building on an empty area (tabula rasa) towards an alternative approach in which natural elements are included (tabula scripta) a shift in society is needed towards a broad acceptance of the latter. Understanding the perspectives of multiple stakeholders, such as project developers, current and future residents and municipalities is crucial to facilitate this shift. To minimize barriers, Besides, it is necessary to identify success factors of existing nature-inclusive neighbourhoods and therefore the best ways for

executing nature-inclusive projects. Wageningen Environmental Research aims to find proof of the added value of nature-inclusive project development which may enable the shift in mainstream praxis from housing development on an empty area towards more nature-inclusive approaches.

1.4 Aim of the project

The aim of this project is to advise Dutch project developers, and other stakeholders that are involved in construction, on the improvement that could be made regarding nature-inclusive housing development practice in the Netherlands, in order to meet the preferences of both current and future residents to live in nature inclusive neighborhoods. This will include the possible impacts of changes made in Dutch legislation on this topic.

The following chapter will provide an overview of the problem definition, objectives and different stakeholders concerned to this project. Chapter 3 will elaborate on a theoretical framework to identify the main concepts used in this research project. Chapter 4 will explain the methods used, followed up by the results in chapter 5. Chapter 6 will elaborate on the interpretation of the results from different stakeholders and different backgrounds. Chapter 7 will be a discussion, interpreting the results and explaining the limitations of the research. Finally, based on our findings we will provide recommendations for different stakeholders in Chapter 8.

2 Problem Definition

2.1 Problem definition from different stakeholders' perspectives

The main knowledge gap identified is on what current and future residents' values are, regarding a nature-inclusive living environment. Therefore, we aim to identify which value-orientations, attitudes and norms current and possible future residents hold regarding nature-inclusive living environments, as well as their willingness to deal with related inconveniences. Another knowledge gap is whether the natural elements that people value, are indeed benefits from a scientific ecological perspective, to identify possible opportunities or risks in such project development. There is little consent on how stakeholders involved in the project-development even rely on residents' perceptions. Thus, the third knowledge gap we will address is on to what extent such perceived values of residents are known and taken into consideration in the planning and execution phase of project development.

Based on our preliminary research, we have identified the main stakeholder to be possible future residents and current residents of nature-inclusive housing-areas. As the final users/ customers of nature-inclusive housing projects, more knowledge is needed on what people value about nature-inclusive settings (aesthetic health, ethics, appreciation of bird-watching, etcetera (Monti, 2019)), and how much would they be willing to pay for them (monetarily and practically, like travelling time and connectivity). What are perceived obstacles that natural elements could cause, as for instance legal problems that are often being reported by law firms and consults (Reichmuth et al., 2014). Others could be existing habits of residents in urban areas that would collide with the integration of natural elements (Roggema, 2020). Important to know is thus, and how much of these perceived obstacles would people still willing to accept or be motivated to mitigate? Crucial here is also to understand, how the possession of ecological knowledge on added value of nature influences this perception. In this project work, we have investigated how perceived ecological values of people reflect the ecological benefits from a scientific perspective. The motivation of such an investigation is to draw a comparison of different realities - the one of residents and the other on the side of the scientific perspective (ecology experts). This knowledge will be primarily helpful for project developers in understanding which natural elements will be accepted and could be implemented, as for instance in terms of plant species selection that could be included in nature inclusive development in future. There would be a need of balancing both social and ecological needs at large scale to make nature inclusive development more sustainable in future. Departing from that, municipalities could take action to inform their population better on the benefits of nature in a scientific sense.

Following preliminary literature research, this information about residents' perspectives will be mainly beneficial for actors within the sector of project development. We can observe how relatively small project developers, or neighbourhood-initiatives like EVA-Lanxmeer, have successfully taken the challenge to integrate nature into their housing settings by engaging communities in a participatory approach (Tambach & Visscher, 2011); EVA-Langmeer, 2019). Especially Ballast Nedam Development plays an important role in providing knowledge on this integration, as they have already worked a lot with the concepts, being aware of the wishes of future residents. Such an extensive method serves to assess possible residents' needs in order to construct an appropriate nature-inclusive design. Whereas the value of real-estate properties closer to nature is usually higher (Swingbourne, & Rozenwax, 2018), and ensure faster selling rates, the process is more costly, as more people and time are involved (bounatuurinclusief.nl, n.d.). So far, this is a niche-practice of project-development. Uncertainty on the willingness of residents and the economic benefits ask for the translation of human-nature interaction into monetary values (Tammi et al., 2017). A large group of "conventional" project developers approach project development as something that is strictly based on costs and benefits, in which nature is often seen as a troubling cost factor and obstacle to overcome. Particularly bigger project-developers, who want to implement nature inclusive projects only rely on computer-models to assess broad criteria of sustainability and stakeholder's interests, but do not investigate further potential residents and their objectives, positions and perception towards nature (Sánchez, 2014). As such, the results of our report could cater project-developers with an overview of possible client's preferences, attitudes and values concerning nature-inclusive projects, without having to rely on an expensive community approach, and still adapt their offer for future clients. Project-developers are also important to address this kind of knowledge gap, as they possess knowledge on the practical boundaries (such as limited resources, time and money) of municipalities, construction-firms and customers. (More in Appendices in "stakeholder long-list").

2.2 Research questions

2.2.1 Main research question

Regarding this problem definition, we have formulated the following main research question: What value-orientations motivate future residents' willingness to live in nature-inclusive neighbourhoods?

The answer to this question will be a piece of the puzzle to the problem regarding the preference of citizens to live in a nature inclusive neighbourhood in future. We have divided the research question into six sub-research questions. They are based on the four key constructs "Value Orientation", the "Willingness to pay", "willingness to accept", and "ecological benefits", which will be discussed further in the theoretical framework.

2.2.2 Sub-questions

- What norms and attitudes of (future) residents are involved in the context of nature-inclusive living?

With this sub-question on norms and attitudes, we aim at the general feelings of citizens which could influence them to live in nature inclusive areas at certain point. We could understand for instance whether they feel responsible for nature conservation. At this point, we could even get their feelings about communal living. This information could be a basis for project developers to know what residents think about regarding nature inclusive neighbourhood.

- What different value orientations can be identified on WTP?

For this sub-question, we can explore at what extent people are willing to provide time, money to maintain the nature. Moreover, we can understand what citizens appreciate, which further influence them to collaborate and provide their resources in nature inclusive housing process.

- What issues limit (future) residents' WTP the most?

This sub-question adds to the information provided by the previous sub-question. We can understand why residents do not want to spend money, energy and time. From that point of view, project developers can use that information, and take those issues into consideration in planning for future nature-inclusive housing.

- What different value orientations can be identified on WTA?

This sub-question provides clear insight on non-monetary values that could be gained in order to accept the negative effects of living in nature-inclusive neighbourhoods. This gives insight in what makes nature-inclusive development housing more beneficial for the residents.

- What issues limit future residents' WTA the most?

This sub-question complements the previous sub-question. It will add information regarding the main issues that may prevent people to rely on values that could be obtained in living nature inclusive neighbourhood. This point provides a room for formulating some recommendations to project developers and construction companies.

- To what extent do perceived ecological benefits correspond with scientifically proven ecological benefits for the natural environment?

This sub-question targets to explore the ecological knowledge of the citizens. Identifying the unknown values of nature to the residents contributes to raising awareness by municipalities and project developers on possible improvements regarding both ecology and human well-being.

2.3 Analysis of stakeholder's realities

Additionally, part of this project is the evaluation, how much such residents' value-orientations indeed have an influence in the domain of project-development on the domain of project-development. As

described in our Stakeholder-Analysis above (Section 2.1.), the unclarity of residents' perceptions on nature-inclusive living seems to be an obstacle to the planning of project. However, it is unknown so far, how much stakeholders as project-developers, municipalities and construction-firms are affected by this knowledge-gap, and what they have been doing so far, to mitigate it. Therefore, another component of this project-work is an overview-analysis of stakeholders involved in the projected-development regarding the integration of residents. With this information, an academic advice and recommendation based on our research questions can be formulated in an appropriate way, that directs itself to these relevant stakeholders.

3 Theoretical framework

3.1 Value orientations

To investigate values in the context of the living environment, we will base our research on value orientations. As explained by Whittaker et al. (2006), value orientations are patterns of beliefs

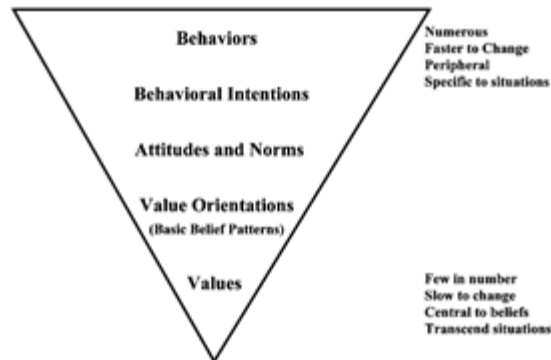


Figure 1: Source: Vaske & Donnelly (1999)

that give meaning and direction to basic values in a certain context. Two measurable concepts are related: attitudes (mental dispositions to favour or disfavour object to a certain degree) and norms (beliefs about what people should do; sense of obligation). Both concepts are highly context-specific, meaning a certain value can have different manifestations of basal beliefs when applied to a different case (Whittaker et al., 2006); also see Figure 1. The concepts of attitudes and norms are thus both measurable and dependent on context, making them applicable to our multi-method approach. This creates the possibility for us to compare the value orientations on different aspects of different cases in nature-inclusive project development. Attitudes can be measured in this context through statements on (not) being in favour of elements of nature-inclusive living. Norms can be measured through statements on responsibility towards nature and culture attributed related to nature-inclusiveness.

Basic Human Values Theory & Scheartz's Value Survey

We base our definition of values on The Basic Human Values Theory, which was developed in the 1950's by sociologists and psychologists, to further understand international cultural differences (Schwartz, 2006). According to this theory, values are motivational constructs that inform peoples striving for attaining for them desirable abstract goals. They function as criteria that inform individuals to evaluate what he experiences in his daily life. They are standing in relation to other values, forming a "system of value priorities that characterize [them] as individuals" (Schwartz, 2006). The ten different basic values of the theory are presented in Figure 2: Source: Schwarz (2006).

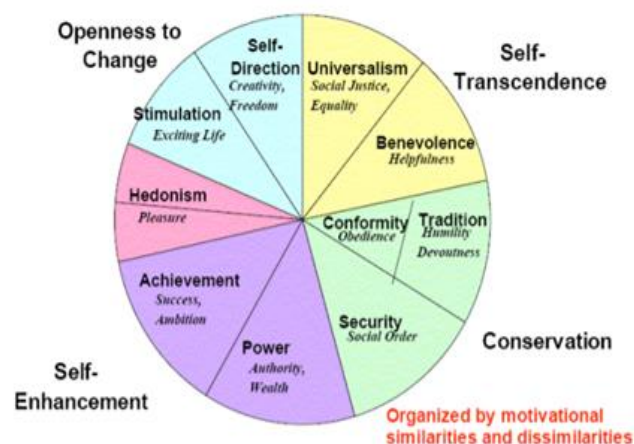


Figure 2: Source: Schwarz (2006)

Based on this theory, the Schwartz's Value Survey was constructed as a tool for researchers to relate the perceived importance of certain values to other statements that are part of the survey (Schwartz, 2006). We have implemented the Short Schwartz Value Survey (SSVS) in our survey, as it is a valuable tool for measuring the importance of basic values (Lindeman & Verkasalo, 2005). In the SSVS, the participant is asked about the perceived importance of the different values on a 7-point scale (see Appendix 8.7.) (Lindeman & Verkasalo, 2005). In case of a further interest in the working of these tools, we refer you to the literature by Schwartz (2006) and Lindeman & Verkasalo (2005).

3.2 Willingness to Accept & Willingness to Pay

In economic literature, Willingness to Pay (WTP) entails the maximum amount of money someone is willing to pay for an object, while Willingness to Accept (WTA) entails the minimum amount of money someone is willing to accept for the same object (Hanemann, 1991). However, our project also considers benefits apart from their monetary dimension. That is why, in this project, WTA is aimed towards values, norms and attitudes about nature, mainly on the maximum amount of discomfort an individual is willing to accept regarding the negative sides of living in a nature inclusive neighbourhood, in order to measure the concept of WTA. WTP will be defined as the relative amount of money someone is willing to pay for getting one object (housing in a greener area) over another (housing in a less green area). As such, the concepts of WTP & WTA inform the type and extent of motivation of (future) residents.

3.3 Ecological benefits

This concept is understood in terms of ecosystem services, which are divided into 4 main groups (Fisher et al., 2007; Hausmann et al., 2015). (1) Regulating services: the benefits associated with the regulation of ecosystem processes (crop pollination, wastes management, pest control, climate regulation, water purification, erosion control). (2) Provisioning services: they are the products obtained from the ecosystem services (drinking water, wood, fibre, genetics resources, medicine). (3) Supporting services (nutrients cycling in ecosystems, habitat for birds). (4) Cultural values (providing recreation opportunities): non-material benefits obtained from the ecosystem (spiritual enrichment, intellectual development, recreation and aesthetic values). These ecosystem services will be used to understand (future) residents' knowledge and attitudes towards the ecological benefits of green elements in their living environment.

4 Methodology

4.1 Literature analysis

Several different literature sources are used for construction of the introduction, problem definition, theoretical framework, methodological tools, and discussion. Different keywords have been used in publication search engines, such as Google Scholar. Moreover, some literature was provided by the commissioner to extend the scope of the literature analysis.

4.2 Quantitative data collection

A questionnaire was developed to gain insight into the quantitative metrics that are at the background of respondents' qualitative value orientations on nature-inclusive housing. The quantitative information was directed to generate descriptive statistics of various demographic strata and basic values (see SSVS, theoretical framework). Additionally, a set of photo research questions were implemented. This is useful for eliminating different interpretations of words by providing visual input. In total, the response rate to the questionnaire was 148 respondents.

The survey was designed in an online format (Google Forms), so that it could be forwarded easily. The survey was distributed through network sampling, trying to reach as many respondents as possible. For the sake of speedy distribution, the survey was shared with several people within our personal network, with the request to pass it on through their network, creating a snowball effect. The survey was also published at several social media platforms, such as Linked-In and Facebook, to reach a bigger number of respondents. The survey addressed people living in the Netherlands, who speak Dutch, who are 18 years or older.

4.3 Qualitative data collection

4.3.1 Interviews with (future) residents

Qualitative interviews with fifteen respondents (Dutch, aged between 22 and 64) were conducted. This allows for asking the respondents' motivations behind the answers to questions in the survey, gaining a more in-depth understanding and delivering quotes that entail thick descriptions. The qualitative responses thus offered a complementation to the quantitative survey results. The interviews were semi-structured, allowing to compare reliable data, yet remaining flexible (Bernard, 2011). All interviewees were asked for their informed consent, both for the format of interviewing and the permission to record and quote their answers. Interviews were conducted via Skype, Zoom or phone call.

A purposive sampling strategy was applied (Bernard, 2011). At the end of the questionnaire was the option for respondents to leave their e-mail address if they were willing to participate in a follow-up interview. For a diversity of interviewees, the survey's respondents were selected according to their variety in demographical data and again network sampling.

After the interviews, summarizing transcriptions were made, meaning the exercise of transcription only actually useable answers to our research purpose, instead of a full transcription of the entire interview. This is done to efficiently focus on the parts of the interviews that were most interesting in relation to the output of the questionnaire. A coding tree was used to refer to the concepts formulated in our research questions.

4.3.2 Interviews with key informants

Six key informants were interviewed (2 councillors, 2 directors of a housing corporation, 1 project developer and 1 resident of a nature-inclusive neighbourhood designed by himself). The aim of these semi-structured interviews was to represent the complex realities and procedures that the key informants (Appendices 8.4.) are facing in (nature-inclusive) project development. As such, we provide an insight on how the value orientations of residents meets possible practical boundaries. Initially planned was to use these key informants' insights on informing the development of the quantitative survey. Due to certain difficulties of getting in contact with these stakeholders and the constant time constraints, we were only able to use their additional insights apart from the conducted interviews and

survey, as interviews with them were conducted in a later stage of our project. Key informants were reached through network sampling and purposive sampling methods (Bernard, 2011), being contacted via E-mail or phone call. Choices on whom to contact were mainly informed by a list of different actors involved in the Dutch project development (NEPROM, 2020). Furthermore, the personal networks of other involved actors in our project were used to organize contact with these key informants.

4.4 Discussion of Methodology

Network sampling inherits some biases. The results are not generalizable for the Dutch population, due to the lack of randomized respondents. The snowball effect that was created can create the result of more respondents from around Wageningen, and a higher proportion of students. The online setting of our survey also indicates an exclusion of participants who do not have access to internet. However, considering that in 2018, 98% of the Dutch population has internet access, (Statistics Netherlands, 2019), this proportion is significantly small.

The output of the questionnaire was based on non-randomized sampling, thus providing no possibility to draw statistically significant conclusions over a generalized research population (Checkmarket, 2020). We were lacking access to demographic information (such as the Dutch national database) and possessed limited resources, namely time and money. As such, our quantitative survey does not fulfil the criteria of external validity.

Furthermore, we are aware that semi-structured interviews conducted by different interviewers expose data by different respondents-effects, and thus could lead to certain biases. Due to the limited time during our project, we however needed as many interviewers as possible and mitigated certain respondents-effects by a higher degree of standardization of the semi-structured interviews. We also suspect a certain degree of social Desirability Effect. This effect can create a certain degree of biases in responses, when people respond or behave accordingly to what they assume will make "them look good" (Bernard, 2011). As our research was conducted with the theme, some people may have emphasised their affection towards nature, or the degree of natural elements in their surroundings, to present their housing particularly "positive" in line with nature-inclusiveness.

To mitigate the danger of questionable scientific research on this method of transcription, a preconceived coding tree was used to decide on what parts are relevant to transcribe beforehand. By that, the internal validity of our interview output could be guaranteed. Even though we will have a deductive coding scheme, we do want to know what is being said in relation to a quote, and not necessarily how often something is being said.

5 Results

In this section the results obtained through the questionnaire and interviews are presented. An integration is made between the questionnaire answers and interview excerpts. The topics discussed are norms and attitudes of respondents (with respect to nature-inclusive environments), benefits and disadvantages of nature-inclusive living environments, the willingness to pay and the willingness to accept related to changes in living environments; and the perception of the ecological benefits of nature-inclusive neighbourhoods.

5.1 Norms and attitudes towards a nature-inclusive environment

Several instruments were used to test people's orientations towards nature-inclusive environments. Photo research methods, multiple choice questions and ranking exercises were used to distill people's preferences.

5.1.1 Photo research

Questionnaire respondents were asked the question: Which of these three houses do you find the most appealing?



Figure A presents a house which is mostly surrounded by a single plant species (small bushes). In total, only 4.7% (7) of all respondents selected this image. People explained that they prefer this house due to the wide view that it provides, and "less shade and probably more light in the house in comparison to the other two images".

Figure B, a house surrounded by trees and small herbs with quite some open spaces was selected by 28.4% (42) of all respondents. A recurring explanation for this choice was the combination of light and shade and the fact that one is not "isolated" there.

The last image (Figure C), a house surrounded by a complexity of many tree species and different small herb species, was ticked by most respondents, (62.2 %, 92). As such, of all respondents, the majority prefers to live in a house that is characterized by a high degree of nature-inclusiveness. The most recurring explanation provided by respondents was the large number of (different) trees and living "in nature" and in a sheltered environment with privacy. Regular, but less frequently, mentioned explanations were related to the charm of nature and the presence of more biodiversity.

4,7% of the respondents indicated that none of the three images is appealing to them, because they prefer to live in a city: "Too remote"; "I enjoy living 'amongst the people'ⁱⁱ", though some of them like nature ("I really love nature, but I'd prefer living in a city with a lot of natureⁱⁱⁱ"). In the responses of the participants, there was no correlation between age, gender or education level al the respondents.

The preference of different houses was equally distributed among the demographic characteristics of the respondents.

5.1.2 Ranking of preferences related to the living environment

People's preferences of their living environment are further influenced by different attitudes towards certain aspects of living. The survey measured how important respondents found the following elements to be:

- 1) A short commuting time to work; 2) Living in a green environment; 3) Having space for nature in the neighborhood; 4) Having low maintenance on the garden; and 5) Cooperation with neighbors in maintenance of living environment.

The outcome of this exercise is presented in Table 1, below.

Table 1: Ranking of different environmental elements (1 being most important, 5 least important). The color is synchronous with the amount of respondents that chose a particular rank for a particular topic¹.

Importance	Commute length	Green environment	Space for nature	Low maintenance	Working with neighbors	Total
1	38	78	48	8	12	184
2	37	43	41	11	13	145
3	47	18	48	25	21	129
4	17	6	14	45	46	128
5	9	3	3	59	56	130
Total	148	148	148	148	148	

What stands out here is that people find living in a green environment the most important. As an interviewee mentioned: "For me, public green spaces have the priority. I don't need to have a large garden, as long as there is green space in my neighborhood^{iv}." What is typically of low importance is the amount of maintenance required for gardens and the importance of working together with neighbors in the maintenance of the neighborhood. Several interviewees confirmed this:

"Say there was an initiative in the neighborhood, then I think I'd join in, but I'm not somebody who'd start the initiative";

"Gardening together would be fun – I'm not opposed to that. However, it should not become an obligation^v";

"I don't want to be the only one to pull the wagon, especially not if I'm new [to the neighborhood]^{vi}"

5.1.3 Second ranking of preferences related to the living environment

In the second ranking exercise, respondents were asked to rank another five aspects related to their living environment. The results are indicated in Table 2, below:

- 1) A safe living environment; 2) A green living environment; 3) A child-friendly living environment; 4) An aesthetically pleasing (beautiful) living environment; and 5) A socially engaged living environment.

¹ Note: Due to limitations in the survey software (Google Forms), we were not able to make a proper instrument for ranking different variables. This has led to certain respondents choosing an option more than once, as indicated by the total numbers in red (which should have been 148 in total). This was particularly a problem for the category 'most important'.

Table 2: Second ranking of different environmental elements (1 being most important, 5 least important)

Importance	Safe	Green	Child-friendly	Beautiful	Social	Total
1	69	59	16	33	14	191
2	35	39	20	43	39	176
3	21	28	27	33	33	142
4	18	18	23	18	46	123
5	5	4	62	21	16	108
Total	148	148	148	148	148	

What is evident from this second ranking, is that people find a green and safe living environment most important. A child-friendly neighborhood is clearly the least important, although this may be biased due to the large number of people under the age of 25 that filled in the survey.

5.2 Norms and attitudes towards a nature-inclusive garden

5.2.1 Photo research on norms and attitudes towards nature-inclusive gardens

Furthermore, we also displayed different degrees of nature-inclusiveness regarding people's garden by using elements of photo research. For that, different types of gardens (depending on gardens in rather dense urban areas and more rural regions) were presented to the respondents, of which they could select their preferred option.

5.2.2 Series 1 on nature-inclusive gardens



A: 44%

B: 5 %

C: 51%

Image A was selected by 44% of all respondents. Most respondents who chose this option explained their motivations as finding the gardens "pretty", "Good for plant and animal wellbeing," and "practical". Image B was selected by only 5% of the respondents, differently justified for being "practical" and "low maintenance". 51% of all respondents prefer image C, mostly because it is "pretty" and "Good for plant and animal wellbeing". As one interviewee put it: *"We planted a special section [in our garden] where butterflies would be attracted to. I like that. And because there are many trees and shrubs, you still see quite some insects^{vii}."*

5.2.3 Series 2 on nature-inclusive gardens



A: 7%

B: 0%

C: 93%

In a photo-section of gardens that are placed in rather dense urban neighborhoods, (see also in Appendices Questions part 11-13) almost all respondents (93%) selected the garden-type with the highest degree of natural elements (C). Most often, the respondents argued, they chose this option, as it has most green elements. However, most participants also indicated that their choice was rather motivated by choosing the 'lesser of three evils'.

5.2.4 Series 3 on nature-inclusive gardens



A: 43%

B: 45%

C: 11%

Of all 43% who selected garden-photo A, the main reasons were, that the garden is "pretty", "wellbeing of plants and animals", and "practical". Respondents of garden option B mainly ticked of the reasons: "pretty", "wellbeing of plants and animals" and "drainage". 11% of all respondents chose garden C, because it is "pretty" and "practical".

To summarize these attitudes towards garden styles in different types of neighborhoods, it is salient, that in all nine examples, respondents prefer the garden-image that is characterized by the highest degree of nature-inclusiveness, i.e. with a large quantity and large variety of plants. The main motivations for respondents' choices were the aesthetic appearance of the gardens, the wellbeing of animals and plants (catering for biodiversity).

5.2.5 Ranking garden preferences

For gaining a deeper understanding into how the abovementioned motivations are prioritized, we included another ranking exercise. In our preliminary research, and later in the qualitative interview, when referring to nature-inclusive housing, the garden stood out to be the most tangible concept to describe nature-inclusiveness. In the survey, respondents ranked which of the following functions within their garden were the most important to them (

Table 3):

1) An aesthetically pleasing garden; 2) A practical garden; 3) A tidy garden; 4) The wellbeing of plants and animals; and 5) The possibility to be able to produce food.

Table 3: Ranking of preferences related to gardens

Importance	Pretty	Practical	Tidy	Wellbeing plants & animals	Food production	Total
1	60	22	7	47	7	143
2	41	41	15	50	31	178
3	33	40	32	29	21	155
4	12	34	42	17	39	144
5	2	11	52	5	50	120
Total	148	148	148	148	148	

From the table one can make up that aesthetics are the most important part of the living environment, with the wellbeing of plants and animals in the second place. Tidiness and the possibility to be able to produce food are not considered very important.

5.2.6 Attitudes to responsibility for green spaces

We have established in the sections above that the respondents highly value nature in their gardens and neighborhoods. This section shows what respondents' perceptions were of the responsibility for conserving nature.

Figure 3 illustrates that the majority of respondents (80%) clearly indicate that they find the conservation of nature to be the responsibility of individuals, society and the Dutch government.

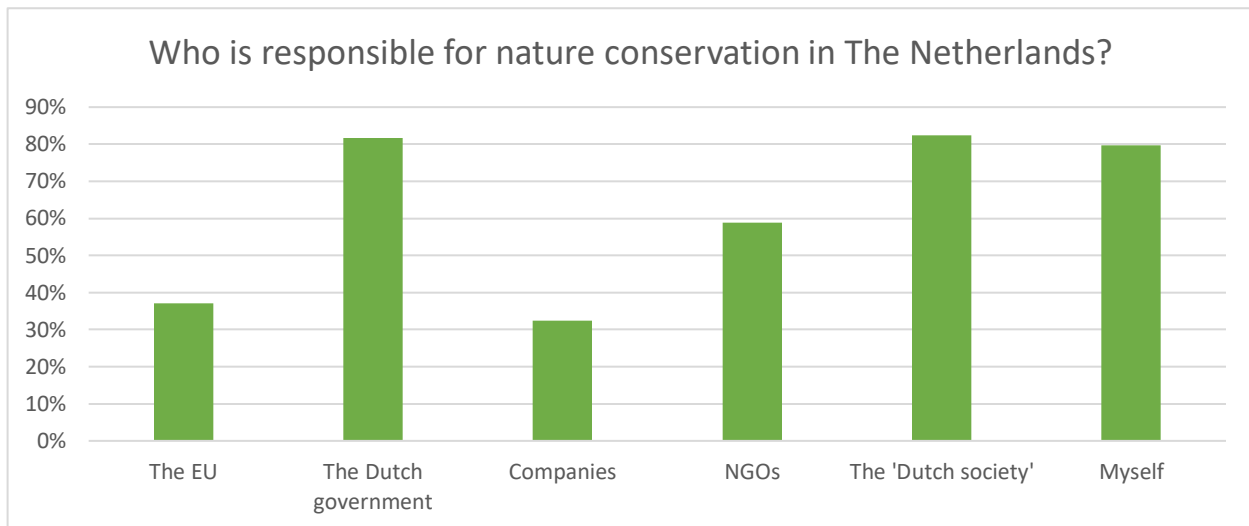


Figure 3: Perceptions on responsibilities for nature conservation.

5.2.7 Attitude towards green living environments for children

Moreover, 95% of respondents agree that it is important for children to grow up in a green environment, with 35% agreeing and 60% completely agreeing (Figure 4).

5.2.8 Attitudes and norms toward communal gardening

Respondents were asked to value two comments with regard to their attitudes and norms concerning the aspect of communality with regard to green spaces.

Figure 5 indicates that most respondents are quite neutral to spending time on maintain public green spaces at the expense of maintaining their own gardens. One related value that could impact related norms and attitudes is universalism. Namely, the stronger the agreement on this statement, the higher the score on universalism ($R_2 = 0,9753$; see Appendix section on Universalism, pp. 49).

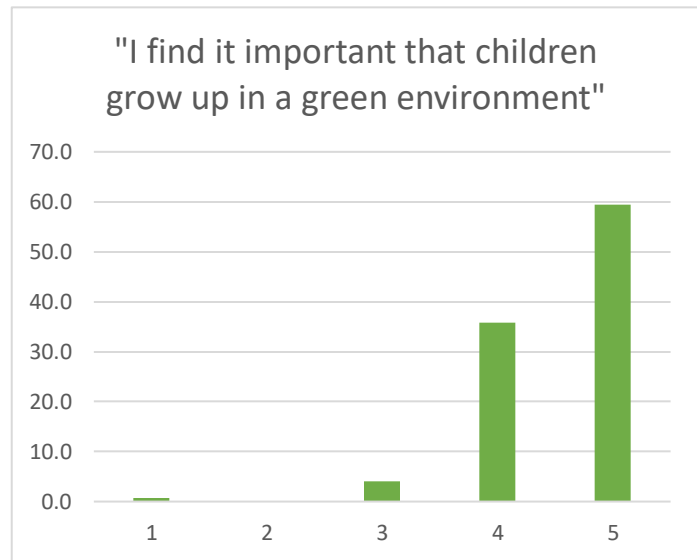


Figure 4: Valuation of the statement "I find it important that children grow up in a green environment". 1 is 'completely disagree' and 5 is 'completely agree'.

Moreover, Figure 6 points out that the enjoyment that people experience from working with neighbors on maintaining public green spaces is predominantly neutral, although there is more weight on the side of 'Disagree' and 'Completely disagree'. One value related to this statement is stimulation. The stronger the agreement on this statement, the higher the score on stimulation ($R_2 = 0,8533$) (see Appendix section on Stimulation, pp. 49).

These results – in relation to the previous findings – seem to suggest that people enjoy living in green spaces but aren't necessarily interested in maintaining public green space at the expense of their own gardens.

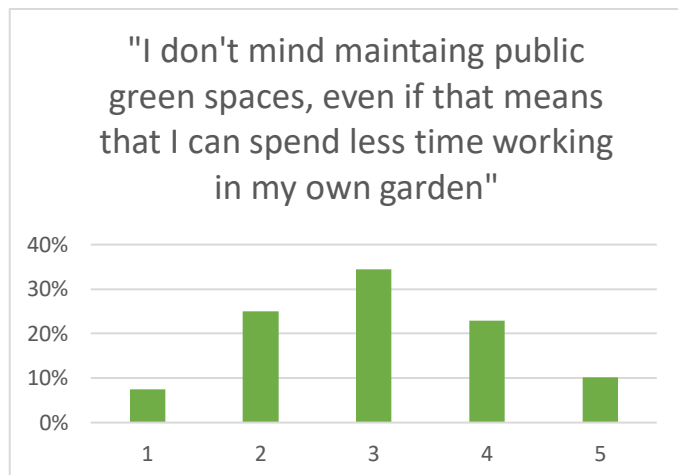


Figure 6: Valuation of the statement "I don't mind maintaining public green spaces, even if that means that I can spend less time working in my own garden". 1 is 'completely disagree', 5 is 'completely agree'.



Figure 5: Valuation of the statement "I enjoy working with neighbors on maintaining the shared living environment". 1 is 'completely disagree', 5 is 'completely agree'.

5.3 Benefits of nature-inclusive living

Respondents could select multiple perceived benefits related to the inclusion of nature in their neighborhoods. In total 937 benefits were selected by the 148 respondents (**Error! Reference source not found.**). In an open question, respondents indicated which other benefits they perceived to be associated with green neighborhoods.

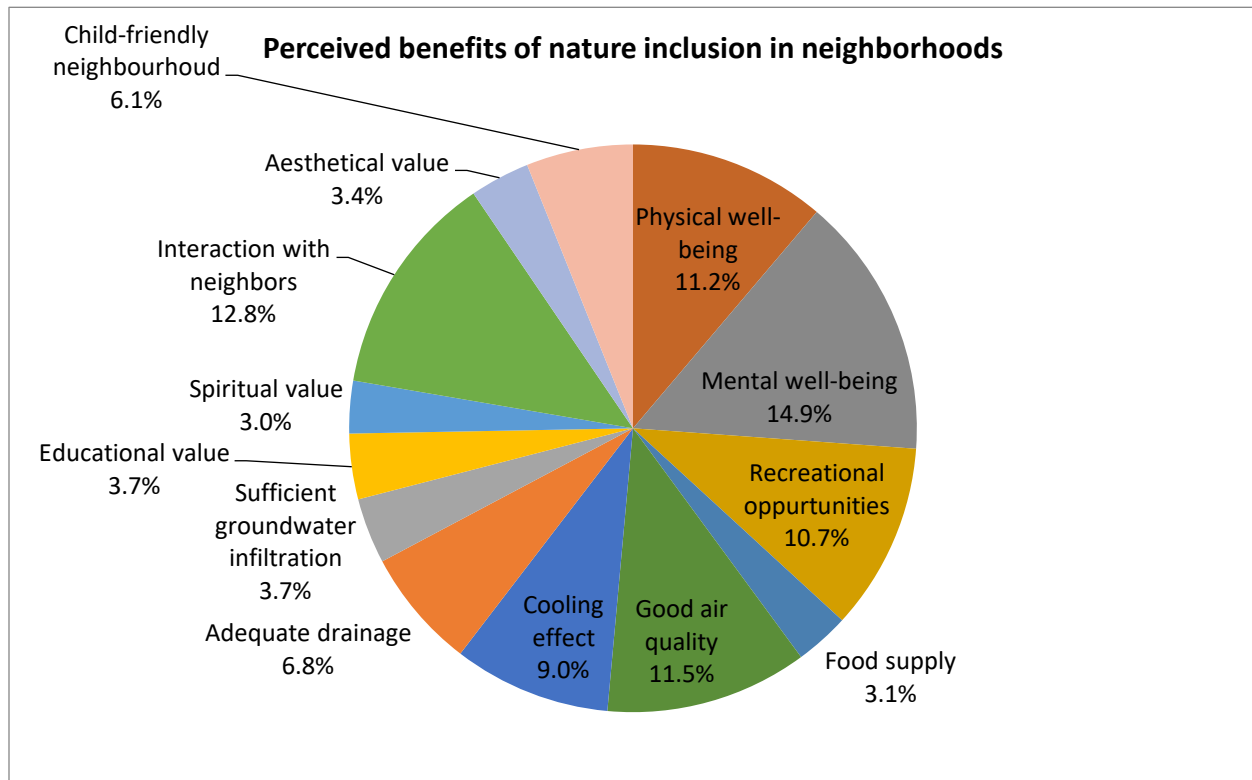


Figure 7: Perceived benefits related to nature-inclusion in neighborhoods. Percentages represent the share of a chosen benefit with respect to the total number of benefits selected by respondents.

The most valued advantages of living in a nature-inclusive environment are mental well-being (14.9%), interaction with neighbors (12.8%), good air quality (11.5%), physical well-being (11.2%), recreational opportunities (10.7%) and the cooling effect (9.0%). The latter was explicitly mentioned by an interviewee (M56) who said: *"We have lived in urban areas where you realize that heat is uncomfortable after a certain amount of time, and when you walk a bit to a park or [another] place where there are trees, then the climate becomes more enjoyable^{viii}."*

Interestingly, respondents associate a green living environment with social benefits (interaction with neighbors), whereas most respondents are fairly neutral with regard to working together in maintaining public green spaces. In other words, people see a green living environment contributing to social interaction, but not necessarily through interaction that revolves around 'working with' or 'working on' green spaces (see Figure 5 and Figure 6).

From the open questions, 14 respondents (9% of total) mentioned 'biodiversity value in general' and 4 specifically mentioned insects. Other benefits were more related to benefits for people themselves: 11 respondents mentioned benefits related to their happiness, for instance regarding animals or their hobbies:

"An environment where you see animals outside, such as birds, makes you happy^{ix}";

"Hobby related to 'green' such as gardening, watching birds, keeping bees, etc^x.";

"Many birds, has a calming effect and gives a feeling of freedom^{xi}".

Furthermore, some respondents mentioned tranquility as a benefit ("Silence, the absence of the din of traffic, is important to relax^{xii}"), 3 people indicated privacy as an advantage and some respondents indicated a better awareness of the seasons. Interestingly, (only) one respondent mentioned the increase in property value as an advantage.

5.4 Disadvantages of nature-inclusive living

A similar question regarding disadvantages of nature-inclusive living was provided, in which the respondents could select multiple options again. In total the 148 respondents selected 313 disadvantages (while 937 benefits were selected), of which 43 respondents (13.7%) indicated that they don't see any disadvantages (Figure 8). This indicates that people perceive more benefits than disadvantages related to nature-inclusive living.

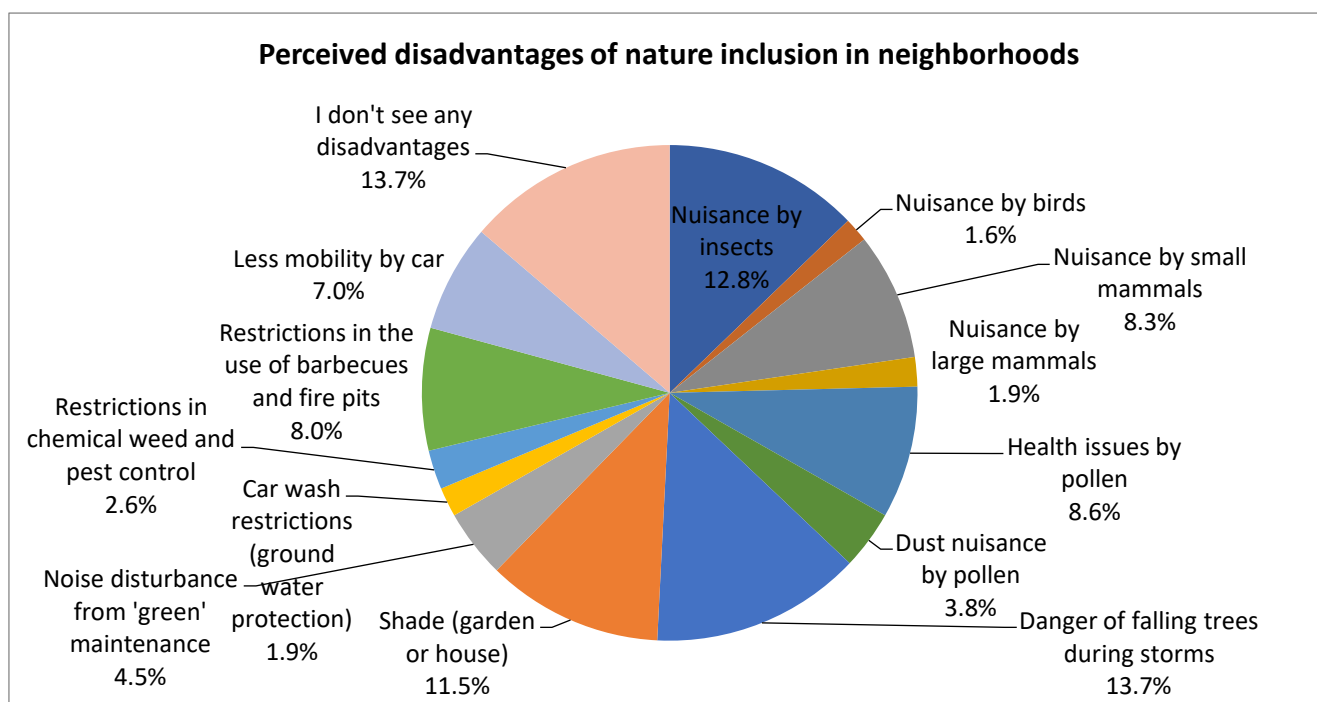


Figure 8: Respondents' perception on the disadvantages related to nature-inclusive neighborhoods

The most important disadvantages the respondents perceive are the danger of falling trees during storms (13.7%), nuisance by insects (12.8%) and shade in their garden or over their house (11.5%). Furthermore, some respondents indicated nuisance by small mammals (8.0%), restrictions in the use of barbecues (8.0%) and health issues by pollen (8.3%) as disadvantages. In an open question 27 respondents mentioned other inconveniences, of which remoteness (the lack of (good) public transport connections and other services) was mentioned 11 times:

"Depending on the location, possibly the [long] distance to shops, sports facilities, social life, etc.^{xiii}"

Nuisance from falling leaves was mentioned 3 times:

"I'm a cyclist, a lot of falling leaves in autumn is a 'thing'"; "Nuisance from falling leaves and acorns in my garden"^{xiv},"

As well as the costs and time spent on the maintenance of green spaces. Four respondents mentioned disadvantages related to the limited space in the Netherlands, as more space for nature would imply less space for housing, which would cause an increase in real estate prices.

"More green means less space for houses, which leads to a larger housing problem and more expensive houses"; "Housing prices are often higher, [as] 'green' costs space"; "Space is scarce [in The Netherlands]"; "Higher housing prices"^{xv}.

Thus, although some people perceive an increased value of their home as an advantage, others perceive the price increase of houses as a disadvantage.

5.5 Willingness to Pay and to Accept regarding increased nature

Most respondents showed to be prepared to pay more for living in a greener environment compared to the price of their current house, of which most people (31.1%) are prepared to pay 3-6% extra. 19.6% indicated to not want to pay any extra, which might partly be people that already live in a green environment (Figure 9) and partly due to the high respondents of people with an income between €0-€25.000 and/or aged below 25 years old. This overrepresentation of young students is also visible in our interviews. We solved this by asking questions of hypothetical questions about a future situation, where they would have the financial capacities to buy a house. As one participant answered: "Paying more? Depends on how much, but a house in a gray area would not pass the selection criteria^{xvi}".

Most participants that already owned a house also indicated that they would pay more for a greener environment, but this always ended up in "depends on how much". However, the quantitative study has already elaborated on these amounts.

Figure 10 is part of the photo research section of the questionnaire. Judging from the photo, people were asked what they wanted to change if this would have been their garden, to test their willingness to change their garden (related to WTP in terms of money, effort and time) and their motivations. Respondents could select multiple options and in total the 148 respondents selected 513 options (of which 3 indicated not wanting to change anything). Most of the respondents indicated they wanted to remove or replace the fencing for personal motivations (they like it more; aesthetical value, 24.6%) and/or for biodiversity values (23.0%). Besides, they showed a high degree of willingness to remove (parts of) the tills to improve drainage of rainwater (22.0%) and/or to increase biodiversity values (23.2%). Remarkably, removing the fence or replacing it for a more open one to feel more connected to their environment (communality, contact with neighbors) was selected less often (6.6%).

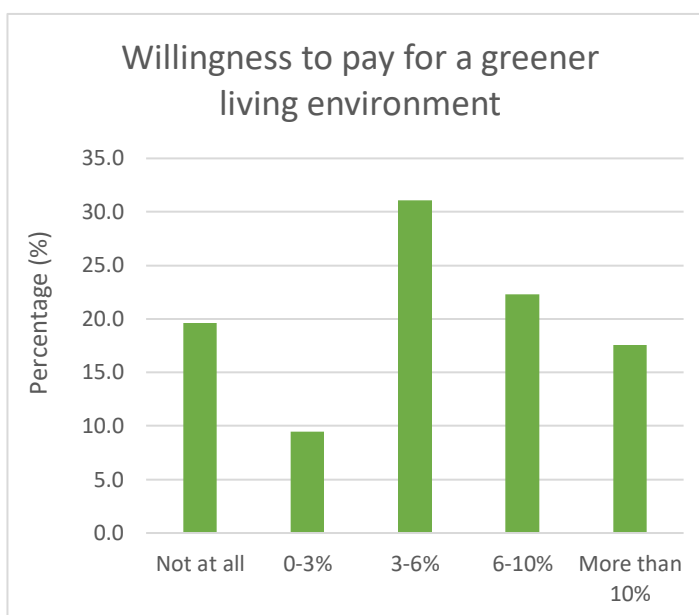


Figure 9: Amount of money people are willing to pay more (in terms of purchasing price or rent), compared to their current housing costs.

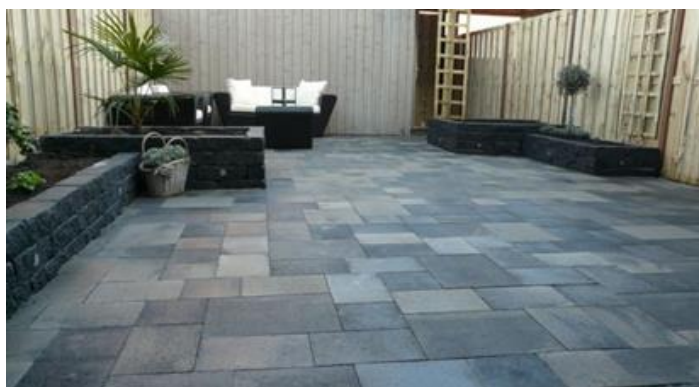


Figure 10: Image presented to respondents, with the question "Which changes would you be prepared to make on this garden?"

These outcomes are also reflected by the interviews. The aesthetics of a garden are pointed out numerous times, as mentioned in the previous section. Some interviewees indicated that they find it important that their gardens are easy to maintain and thus they are not willing to put too much energy

and time into their garden: *"The largest part is paved with some pots and planters. We are not much of the gardener types"; "Yes, it (a garden) has to be quite practical. I do not really like weeding"*^{xvii}. Others do seem more willing to put in the effort, but mention that they are not always able to do this: *"Yes that is the practical side and partially getting your act together to change your garden is a little bit of a project"*^{xviii}.

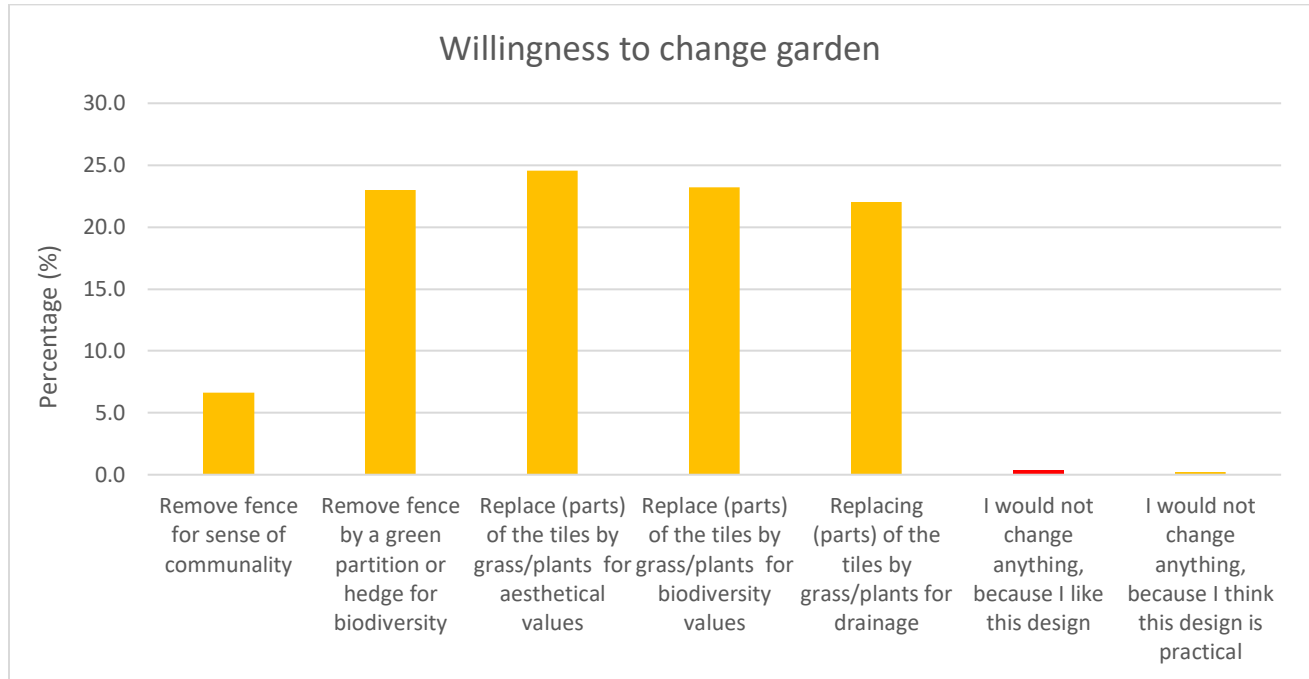


Figure 11: Respondents were asked whether they would like to make changes if this would have been their garden, and for what reasons.

The fact that having a garden takes up time and energy is regarded by all. For this reason, some interviewees mention that they would like to take some action regarding their garden, as long as it does not demands too much from them: *"I would include some easy things that are good for nature"* (M22).

The interview respondents are quite willing to accept possible negative outcomes of more nature in their living environment. Things that have been discussed in these interviews are bird droppings, fallen leaves and branches and insect life. Bird droppings are perceived as annoying, but acceptable. Insect life can sometimes be bothering, but none of the participants say that they would rather have that they are not there: *"Yes insects, they can be a bother, but not a nuisance"*^{xix}.

Fallen leaves are not perceived as a problem. One participant (M22) highlighted that he *"would not mind [fallen leaves] that much that I clean it up, it has something to it. I think it is a mix of healthy laxity and involvement with nature"*, also highlighting the benefits of these leaves.

In many nature inclusive living spaces, people have to park their cars further from their homes or have to deal with smaller living spaces to increase the amount of nature in their environment. Most interview participants appoint this as a problem, people like to have their cars close to their houses and floor area is perceived to be more important than public nature. However, the participants also see experience certain positive outcomes, as are described in the section on benefits.

5.6 Ecological knowledge

The final part of the questionnaire was devoted to getting a clearer understanding of respondent's knowledge on biodiversity and ecology, and how that relates to their own garden practices.

Interestingly, most respondents strongly agreed with the statement that gardens can contribute to biodiversity values, while they acknowledged that their own garden contributes to a lesser extent (). Yet, the interview participants have little ecological (scientific) knowledge, except for the one individual who works as an ecological expert. A clear recurring theme, however, is people planting certain plants for the sake of bees and butterflies. One interviewee (M25), living in an urban living environment and without a garden, even indicates that *"those three balcony planters that we have sown, those are seed mixtures that attract bees, to put it that way_{xx}"*.

We also related our interview findings to perceptions on ecosystem services. However, after coding the interviews, we found that the interviewees mostly talked about the "cultural" part of ecosystem services. In this, we made a distinction between "Aesthetics" and "Recreation".

In the Aesthetics category, people referred to nature as beautiful, while not really being able to tell why something is beautiful. This shows that nature's beauty is very primary to us, it simply makes sense that nature is beautiful: "For some reason, it (nature) is also aesthetically pleasing_{xxi}".

The Recreational category partially refers to the usability of gardens, for instance that it is a place where children can play: "But also for example as a confined playing area for the grandchildren, the gate door can be locked ... it is still a confined space_{xxii}". Another thing is how people describe parks, forests and water as something that they enjoy walking, sailing or just simply being in nature: "Most people feel good in nature_{xxiii}".

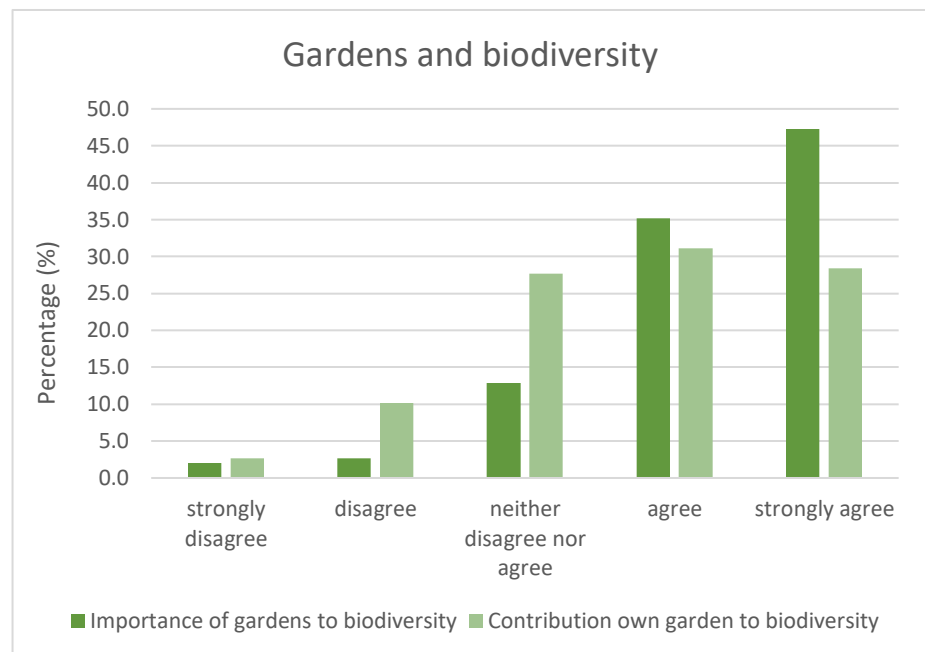


Figure 12: The degree to which respondents agreed with the statements "I believe it is important that gardens contribute to biodiversity values" and "I design my garden in a way that contributes to biodiversity values".

Figure 12 indicates that most of the respondents perceived the gardens of houses to be important contributions for safeguarding or conserving biodiversity. More than 80% understand the importance of green garden towards biodiversity conservation. 12% of respondents do not have any idea about the importance of green garden, and almost 5% do not agree about the contribution of green gardens towards biodiversity conservation.

Considering, our small sample size, we can say that 17% who do not understand the value of green garden towards biodiversity conservation, to be a large proportion. For the other section of the figure describing the way the citizens implement biodiversity

conservation while planning their garden. Other large proportion of the respondents (40%) do not reflect on biodiversity conservation while designing their gardens.

One value that could be related to the contribution of someone's garden to biodiversity is conformism. Namely, the higher the score on contribution to biodiversity, the lower the score on conformism ($R^2 = 0,6407$; see Appendix section on Conformism, pp. 49).

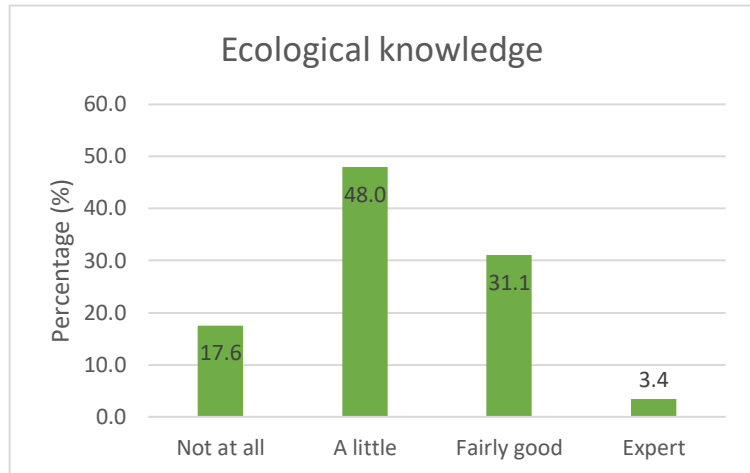


Figure 13: The way respondents of the survey valued their own level of ecological knowledge by answering the question "I know which plants contribute to the welfare of animals and plants (biodiversity values)"

5.6. Key informant knowledge

Building with nature does not always mean that a project becomes more expensive, as you can work with what is already there and people pay more for a greener environment. However, nature is seen as a liability which might lead to higher costs. As we know, project developers tend to evade these risks as margins are relatively shallow for project developers.

Law and legislation are recognized as the most powerful tools by almost all stakeholders and they also recognize the positive results of earlier changes in law and legislation. These results induce the stakeholders to be positive about the future of nature inclusion.

Municipalities (together with other governmental actors on different levels) seem to be important actors for nature-inclusiveness. They decide if they mainly want to make money out of a certain plot, or if they want nature inclusivity to be high on the agenda. This is something that has been noticed by the municipality representatives and by the project developer. The fact that politics play a big role in this can be perceived as a problem. For instance, in Amsterdam, the tenders are put out by the "Grond & Ontwikkeling" department of the municipality of Amsterdam. Although this is not a political organisation as such, its goals are determined by the municipality council, the province and the national government, which all are (of course) heavily dependent on politics. Jorine Noordman, specialized in nature inclusive development at the municipality of Amsterdam, recognizes a trend in moving towards nature-inclusive project development within her municipality. She feels as if this is the responsibility of both the municipality and its citizens.

Harrie Hamstra, a key informant living in a communal nature-inclusive neighbourhood, indicated that one of the success factors of a nature-inclusive neighbourhood is the residents' social coherence and their shared sense of responsibility for nature and their common living environment. To enable this, it is important that residents are involved in early stages of the design. This was also indicated by Bernard Smits, representative of a housing association within the province of Gelderland (WBVG, Woningbouwvereniging Gelderland) working a lot with collectives of future residents. He indicated that people are willing to accept negative sides of nature-inclusive housing development - for instance in the construction itself - if they are involved early in the process, while these aspects are normally not accepted. He also addressed that the aims of these residential collectives to integrate nature and the degree of acceptance is always higher than those of project developers. The involvement of residents can be a challenge, as the development process will be more time and money consuming. Maarten Wittens, project developer at Ballast Nedam, acknowledges this, but he indicated that all advantages nature-inclusive building provides can be a good marketing tool and therefore the projects are not necessarily more expensive. For instance, by creating a green and healthy living environment the value of houses increases, which is a good future investment. Ballast Nedam is a frontrunner in nature-inclusive development and the proof of success they have gained in earlier nature-inclusive projects can help in their lobby to make nature-inclusiveness more common practice. Besides, both Maarten Wittens and Bert van Rossum – former director of a housing corporation Vecht en Omstreken – stated that nature present in an area can be a value for new housing estates, Maarten Wittens: "We really see those existing trees as an added value [...], what makes an area so pleasant are those mature trees, they contribute to the quality of an area".

Linking the insights of these key informants, success factors of nature-inclusive projects seem to be a sense of communality, citizen initiatives and a shared feeling of responsibility for the common living environment. However, when linking this to the respondents of the survey, a challenge is shown as they valued their own privacy and did not show a high degree of communality to work on public green spaces. Besides, several of the interviewees indicated they are not someone wanting to start initiatives. One of the interviewees addressed that the linkage of gardens would be ideal in terms of biodiversity, but this is socially probably very difficult to reach. On the other hand, the respondents did associate a green living environment with social factors, such as contacts with neighbours, and they highly valued a green living environment, both for aesthetical and biodiversity values. Although nature-inclusive building and the involvement of residents can be more time and money consuming, all key informants agreed that

this will be outweighed by the long term benefits it brings – both financially and in terms of a healthy, green and biodiverse living environment.

6 Discussion

6.1 What Norms and attitudes of future residents are involved in nature inclusive housing?

We can recognize from our findings that the attitude of many residents towards nature-inclusive living is positive. Most participants of our project would like to live in an environment that is characterized by a high degree of nature inclusiveness (meaning for instance houses that are surrounded by a complexity of many tree and herbs species, gardens that entail “wilder” vegetations). They are most often liked because of aesthetical reasons and because people find such highly nature inclusive environments important for the welfare of plants and animals. This is also reflected by residents’ shared recognition that the conservation of nature is the responsibility of individuals, society and the Dutch government. A green living environment is often perceived to be linked to social factors, such as interactions with their neighbours in their gardens. The latter is however characterised by a mix of attitudes. While about half of all participants indicate that they do not mind working in their gardens or neighbourhood for maintenance, others perceive it as an issue. Having a garden that requires only little work is thus perceived to be for some an important asset, and for others not detrimental at all.

6.2 What values can be found in regard to residents' willingness to pay for the benefits of nature, and what issues can be found that limit future residents willingness to accept inconveniences of nature?

In general, one of the most limiting perceived issue of nature-inclusive housing is remoteness and the lack of (good) public transport-connection and other services, even though it is not clear if nature-inclusive housing necessarily means such low connectivity to more urban centres. In interviews that we conducted with specialists that work with residents' initiatives for the creation of nature-inclusive neighbourhoods, often such projects can happen in urban areas in which nature is added to already existing structures. Besides that, one of the biggest advantages that come with nature-inclusive housing has been identified as the danger of damages that natural elements as trees could do to properties (e.g. trees falling on cars during storms). Also, further inconveniences such as disturbances of animals have become visible as disadvantages of nature inclusiveness, followed by the negative effects of shade, legal restrictions (as for instance for barbecues close to forests) and health related reasons (pollen). Last, the increase of monetary value due to closeness to nature represents an issue related to nature inclusiveness that has been mentioned by residents. There are however opposing views on the monetary value-increase of “greener” properties. While, as mentioned, for some this represents a disadvantage, as they fear it could minimize the amount of affordable housing, other residents find this increase of financial value as a benefit. This insecurity about monetary value of nature-inclusive properties has been identified in the key informant interviews as well, as it does not only concern residents, but also project-developers who intent to evade financial risks.

In general, it is observable that problems regarding nature-inclusive housing are perceived as way less dominant than natures benefits that are brought to the living environment. Sensed benefits of nature-inclusiveness vary from mental and physical wellbeing, interactions with neighbours and the room for recreational activities. As such, most residents (80%) would be willing to pay more for a “greener” house. 10% of the residents would pay up to 3% more, 31% of the respondents indicate to be willing to pay 3-6% more, 22% would pay 6-10% more and ultimately about 18% mention to pay more than 10% more for a property that has a higher degree of nature inclusiveness. Further, for the sake of the wellbeing of animals, plants and the environment and biodiversity, people would also be willing to remove a variety of constructions around their garden and house. This however also has to do with residents' perception that “greener” is almost always described as more aesthetically beautiful. However, not all residents are willing to invest work into the maintenance of their green environment. As mentioned above, only few participants indicate that practicality of their living environment is crucial. Many residents would also be eager to work in their gardens and would not mind doing that together with their neighbours. However, there is in general no particular interest in engaging in such a socially invested way of maintaining green spaces of the communally shared environment. In the framework of

this project, the team was not able to find remarkable correlations on demographical characteristics concerning the tendency of these diverse opinions. These results are particularly interesting, as many people link a green living environment with social factors. In this regard it is important to take into consideration, that according to our findings, people's willingness to integrate nature into their housing meets certain limits when it comes to the notion of privacy. Only few would be willing to remove fences for more natural restrictions to mark the property-boarders. This aspect of privacy and the limited interest in engaging in a too much communal way of living with neighbours becomes important, as - as discussed in key-informants' interviews - the creation of nature-inclusive neighbourhoods are often linked to residents' initiatives. Those initiatives often rely on extensive participation of all residents and create a special dedication to the communal aspect of living. As a final remark that was gained in qualitative interviews with potential residents, the active participation during the design of a neighbourhood however might have a positive effect on the willingness to pay for natural benefits and to accept natures inconveniences.

6.3 What extent do perceive ecological benefits correspond with scientifically proven ecological benefits for the natural environment

In this project, it was found that most of the citizens consider the benefits of natural elements in the same way as ecological science proves it. They are aware that the ecosystem services that are provided by natural elements are highly beneficial to their well-being and could influence them to participate and safeguard nature surrounding their neighbourhoods. Furthermore, the residents showed that they are interested in a complex mixture of plant species rather than relying on single individual tree species in neighbourhoods. This is also in line with biodiversity conservation, as more plant species available in an area, more animal species could be getting microhabitat to live in. However, other considerable number of residents showed that they do not know what plant species needed to sustain wildlife in their neighbourhoods. For instance, once they design their gardens, certain residents refer primarily to the beauty of the landscape, with little considerations on what is needed to conserve biodiversity in neighbourhood. This implies that, they should not always be happy with the design that should be made by project developers and construction companies at some points. This is because project developers take into considerations the conservation of biodiversity in nature inclusive housing plan in explicit way compared to the residents. The line of thinking of project developers about certain plants species inclusion, could be different with what residents need at some extent. This should further create the unwillingness to live in nature inclusive neighbourhood for future residents.

6.4 Limitations of our research

The discussion on the methods used in this project can be found under 5.4. Discussion on methodology. For the interviews, we indeed found some instances in which participants seemed to give socially desirable answers, as they were already aware of the subject of our interviews. This made some interviews more useful than others. Since there were two different interview teams, the application of the coding tree differed a little bit.

6.4.1 Survey

Our survey results were heavily dependent on people with higher education and it seems that it was difficult to reach people in their 30s or early 40s, while we had sufficient respondents in the other age categories. This was a little bit disappointing, as within that particular age group there is the biggest tendency to move into a bought house, as they start to earn money and have/want to adapt their new living environment to their children.

Only a few respondents used the option of "strongly disagree". This means that our results are skewed towards the more agreeing options.

The SVSS (Short Schwartz Value Survey) was very difficult to apply to our project in the end. We thought that it would be useful to find certain typologies of people that preferred certain nature inclusive measures. In the end it was difficult to connect these results to the answers on other survey questions. Furthermore, more familiarity with this method would have been useful to interpret its results.

Due to time constraints, we were not able to correlate all the survey outcomes. For this reason, the quantitative results are mainly based on descriptive statistics.

6.4.2 Interviews

As mentioned, our coding tree was used a little bit differently by the different interview teams, but this did not lead to problems in our results section, as we tried to apply the interview findings on the survey outcomes, which of course did not always correspond with our coding tree, so this flexibility was needed nonetheless.

In our coding tree, we used the different ecological benefits, based on ecosystem services. Even though these make a lot of sense with an ecological background and it helps to make sense of the possibilities of nature-inclusive project development, it does not reflect the feelings or thoughts of the interview participants, as most of them do not have this ecological background. Most interviewees mention that they find nature pretty and calming and that it has a lot of value, without actually describing these different values. In a hypothetical future project, we should have adapted our coding tree more to the “real world”.

6.4.3 General

For both the survey and the interviews, it was hard for the participants to highlight how much they were wanting to pay. This makes sense, as this is dependent on a lot of contextual variables. Especially when people feel like they are already living in a nature inclusive environment, it is difficult to find if they are willing to pay more. We could have asked if they had paid more for their nature inclusive environment, or if they would have paid more because of their environment. However, we can say that we have found that most people are willing to pay more for a greener environment, at least for our participants.

It was difficult to highlight difference between WTP (Willingness To Pay) and WTA (Willingness To Accept) in both the survey and the interviews. There is quite a lot of overlap between the concepts. For future projects, it would be more useful to make a different distinction to understand what people are willing to pay and what they are willing to accept as certain disadvantages of a more natural environment.

6.4.4 Interviews with key informants

The stakeholder interviews were very useful to understand the field of construction and project development. However, we were not able to talk to a “conventional” project developer. Ballast Nedam establishes itself as a frontrunner in nature-inclusivity and it would have been good to see the differences between them and another, more conservative, project developer. We tried to contact a lot of them, but they were either not willing to participate, or were not available as they were not in office due to the COVID-19 pandemic.

6.4.5 Ethical considerations

Our survey results were anonymized. E-mail addresses were collected to award three gift cards and to contact possible interview participants (if they indicated that they were available for this). After awarding these gift cards, all e-mail addresses will be deleted. The survey results will be kept and will be made available to the project commissioner.

The interviews recording started after consent of the participant. The interview results were anonymized. The interview participants will be approached if they are available for future interviews with the commissioner. This will be done by the project team. A list of respondents that indicate their availability will be sent to the commissioner afterwards.

All stakeholder interview participants were asked if their names and the names of their organisations could be used. One individual asked if he/she could read the outcomes first before publicizing the project, but this was not possible due to time constraints. For this reason, this participant was left out of the results. This did not harm the quality of our final product.

6.4.6 Constraints due to COVID-19

Due to the current outbreak of COVID-19, all our research activities had to be conducted in an online setting. Using tools as skype, ZOOM and phones enabled the team, to however get in contact with respondents and key-informants. This however implied some limitations in the interpretation of our qualitative collected data. In interviews, additional information such as body-language are important sets of data as well, that during digital meeting are only observable to a certain extent. In many cases, interviews were however conducted with a webcam, for which a semi-face-to-face atmosphere was possible. As already discussed above, this online-working environment excludes people without access to these kinds of tools, or that feel uncomfortable with using them. We therefore always left it up to the interview-partners, to leave their cameras on or to switch them off.

Another problematic aspect regarding the global COVID-19 pandemic was the unavailability of key-informants. While contacting them, often offices were not occupied or understaffed and therefore had limited capacities to talk to us. Therefore, we shifted our selection-strategy towards a network-oriented sampling, as it guaranteed a higher rate of responses.

A limitation regarding the online-setting of this project was further, that no field-visits were possible. Due to ethical considerations regarding the protection of participants and our team-members, we were not able to visit any nature-inclusive neighbourhoods, which would have enriched our holistic understanding of such housing projects, by adding a more visual component. Further, in interviews, we were not able to gain different perceptions on the level of "nature-inclusiveness" of houses and neighbourhoods. In some interviews, respondents for instance referred to a high incorporation of nature in their garden or street. As we were not able visit and see these environments, we had no scale to evaluate, what people consider to be "high" on nature-inclusiveness. This issue was mitigated to a certain extent, as interview-respondents shared the view on their gardens by using their web-camera. As such, we had the possibility to grasp, what degree of "nature-inclusiveness" people referred to.

6.4.7 Qualities of our research

Even though we had to deal with the constraints due to time and the COVID-19, we think we have made important steps in young field of research on nature-inclusivity in project development. We expect that our results can help shape future research, as well as having an impact on a political level, as the results of our stakeholder interviews are unanimous in their opinion that law and legislation is key to change nature-inclusivity in project development.

7 Recommendations

7.1 Recommendations for public administrators

Based on our findings, we recommend that political parties should consider the more indicative of goals on nature inclusive project development in their political decisions. As our findings have shown, this will be in the interest of residents as well, as they show high preferences towards a greener environment. As such, promoting nature inclusiveness in the housing sector as part of their political agenda will benefit political parties in convincing possible voters. A crucial topic that political actors should pay attention to, is the concern of residents, that nature-inclusive living is automatically also connected with living remote and poorly connected to urban centres. If this is to be the case, providing better infrastructure to such remote areas is advised to become part of the political agenda as well.

Further, the incorporation of citizens into the project-development process is advised to receive a higher priority for municipalities. A medium for that are currently particularly citizens' initiatives, that are however still a niche-procedure in the project development. As it has already started in certain areas of Dutch municipalities, laws and regulations towards such initiatives that aim to create a greener environment should therefore receive more attention, so citizens are more induced to take up these initiatives.

Making nature inclusive project development part of the political agenda to support citizen's initiatives to arise can have different facets and does not only have to be induced on a legislative level. As Jorine Noordman (representative of the engineering company of the municipality of Amsterdam) has mentioned, educating people can easily increase their acceptance of nature inclusive living. We therefore advice public entities to create a campaign regarding the advantages of nature inclusive living and co-creating the living environment through a citizens' initiatives, while highlighting this existing framework of assistance. Such a campaign should treat particularly the topics of financial value of nature-inclusive houses, legal restrictions and the location for greener environments, as many residents assume that neighbourhoods that are embedded into more natural elements are usually remote and not well connected to urban centres. By that, instead of trying to mitigate perceived problems and concerns of residents who are not familiar with nature inclusive projects can gain more awareness and are informed about such problems in an earlier stage.

Another recommendation for public administrators is the creation of an organisation or institution, that gives advice and guidance for the procedures of citizens' initiatives. At this point, there is no such official organ, that supports residents with little expertise on initiatives on nature inclusive project development, while the stakeholders acknowledge the advantages of these projects. There are already existing niche-organisations that support these citizens' initiatives, like the social housing corporation WBVG, as explained by Bernard Smits, or private persons like Harrie Hamstra, who have gathered experience who voluntarily help citizens initiatives with their expertise. Those are highly useful and help shaping participatory projects to a larger extent. However, an organisation aiming towards the actual creation of these initiatives (the first step of the citizens' initiatives) is still absent.

In this regard, such an organisation should also have the task, to offer a broad variety of approaches to accompany citizens' initiatives. As our findings have shown, not everybody is eager to engage in such communal design and maintenance of shared space. Referring to shared experience of Harrie Hamstra, in the early stage, residents agree upon the degree, that they would like to co-create their environment, and how much they aim to share in their environment with neighbours. A low degree of communal living should also be a choice, that residents can decide for when joining a citizen's initiative.

Further, citizens' initiatives often collide with the plans of project developers, architects and construction firms, as they are integrated in the early stage of the project – and "become the project developers" themselves. Certain architects might reject certain projects due to the resident's participations, due to unwillingness to engage with too many opinions and the concern of a longer time-investment. As a support for enhancing those stakeholder's willingness for engagement with residents' initiatives, municipalities are advised to offer certain incentives.

7.2 Stakeholders involved in the project development of housing

For creating a political environment that enables different actors to involve easier in nature inclusive project development, related stakeholders can also contribute. Lobbying, in which Ballast Nedam is also involved, is of great promise. Lobbying will inform political actors, which can result in both more knowledge for lay people, as it can become part of the political agenda, and resulting in new laws for project development. This can then result in laws that are more innovative than nowadays, accompanied by more community involvement in the shape of citizens' initiatives, which are likely to be even more transformative and ambitious.

To increase the preference of future residents to live in nature inclusive neighbourhoods, it is important to make sure that both project developers and residents share the common goal. For example, it is needed to have a clear picture of what plant species appreciated with residents to live with. This knowledge could be matched with ecological perspective in nature inclusive housing to balance both needs. Besides, the provision of common direction through public awareness, could even help in success of the nature inclusive development housing by tackling the issue of biodiversity crisis. Through the interview with one of our key informants, we informed that the normal way of nature inclusive neighbourhood attracts many insect species, as well as hedgehogs. However, having domestic cats in many households, has predated the hedgehogs. Therefore, the awareness raising between all stakeholders involved, could also sharpen the common responsibility of the residents to safeguard wildlife.

Moreover, the awareness raising is needed to be provided to project developers. Knowledge on what resident's value most the natural elements in the neighbourhoods is crucial. Therefore, they are willing to pay more money to the neighbourhood where the degree of nature inclusion is high. This will help in removing barriers to project developers who are worried about the loss, that could be observed once they want to sell their houses. As residents have a strong sense of responsibility for their green environment, as indicated in our findings, we recommend to project developers to work together with stakeholders (like for instance "NL GreenLabel"), who can certify "ecological beneficial" houses. This might increase the value of such houses and give further incentives for residents to invest into such projects.

7.3 Recommendation for Wageningen Science Shop

As described in the discussion section, residents position themselves in a diverse manner towards the willingness to work communally for the design and maintenance of their green environment. As currently, such communal engagement in the shape of residents' initiatives and neighbourhood representatives is often central to the creation of nature inclusive neighbourhoods, such findings are particularly important. As this project-research however cannot give significant information on statistical correlations between resident's attitudes towards such communal participation, we advise Wageningen Science Shop or other academic entities, to further conduct more extensive assessments on residents and their tendency towards their engagement in participatory living-environment creation. A nationwide survey, with detailed information about respondents could be conducted, in order to detect striking demographical characteristics about residents in this regard, from which generalizable conclusions could be drawn from. Such a survey could also be conducted in cooperation with municipalities.

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9 Appendix

9.1 Fact sheet

Below is the factsheet that can be used as a brief to inform interested parties of the main findings of our research.

Nature-inclusive development project: Integration of natural capital in housing project		
Introduction - o 1 million houses have to be built in the Netherlands in coming 10 years - o Huge integration of natural elements in those houses is needed for both human life and biodiversity conservation. - o There is a need of shift from traditional way "tabula rasa" to "tabula scripta". - o To make it more feasible in practice, there is a need of understanding the resident's perception towards living in nature inclusive neighborhood. Research question: What value-orientations motivate future residents' willingness to live in nature-inclusive neighbourhoods?	Methods Interview with stakeholders: Project developers, construction companies, municipality. This was needed to get the insights on the influence of unclear residents' perception on nature inclusive development plan. Survey: Online questionnaire to residents, who are 18+ years old and completed secondary school Interview: Sake for detailed information to complement our survey	
Key results * Residents value living in a green environment, based on aesthetical and biodiversity values * Residents associate a green living environment with social factors * However, they valued their own privacy and do not show a high degree of communality, which might be a challenge in the development of nature-inclusive projects * One of the success factors of nature-inclusive neighbourhoods is social coherence between the residents and their shared sense of responsibility for nature and maintaining the common living environment * It is important to involve future residents in early stages of the development, to increase their understanding of natural elements in their house construction and incorporate their own ideas * This is a more time and money consuming process, but it will increase their degree of acceptance. * Besides, creating healthy green neighbourhoods is a good marketing tool, simultaneously improving biodiversity values and increasing the value of houses (future investment) * Examples of successful nature-inclusive projects can help in a lobby to make nature-inclusive building more common practice		
Recommendation for stakeholders engaged in the project-development for housing: *Lobbying for new laws concerning nature-inclusiveness to enhance a more practical regulatory landscape for nature inclusive house construction. *Integrate certifications for nature-inclusiveness to increase the incentives of residents to live in environments that are officially certified to be beneficial for the biodiversity of plants and animals.	Recommendations to municipality *Make nature-inclusive housing part of political agenda to enhance more awareness *Implement more laws and legislation: → To strengthen more citizens initiatives that engage in the co-design of nature-inclusive neighbourhoods to make them part of the project-development at an early stage →To enable a shift towards the higher integration of nature-inclusive project development among stakeholders that are engaged in the housing-sector, including incentives for project developers to work with citizens initiatives *Establish official organization to support citizens initiatives that offer different degrees of participation & Communal living *Create awareness-campaigns for citizens and project-developers on the benefits of nature-inclusive living & participatory citizens initiatives →Integration of topics: Monetary value of greener neighbourhoods, remoteness of greener neighbourhoods, privacy, benefits on health, biodiversity	Recommendations for Science-Shop Wageningen *Conduct nationwide survey to assess more in-depth and statistically significant information about resident's willingness to engage in participatory citizens-initiatives
WUR-ACT Team	WUR science shop	

9.2 Interview Plan

Below, the interview plan can be found. The plan is in Dutch and indicates the general course of the semi-structured interviews that were conducted with individuals from different demographic backgrounds.

Tijdsduur: 30 min. met maximaal 15 minuten uitloop

Mededeling

Anonimiteit

Soort vragen die we gaan stellen

Het gaat om meningen! Er zijn geen foute antwoorden.

Doel: Om natuurinclusief bouwen in Nederland beter te begrijpen, wat zijn elementen die mensen graag in hun buurt hebben of wat is juist helemaal niet belangrijk? Met dat advies kunnen we projectontwikkelaars, beleidsmakers, enz. in de toekomst helpen.

Waarom met zijn tweeën: Een persoon zal aantekeningen maken en zal zich niet mengen in het interview.

Vragen vooraf?

Heeft u de vragenlijst ingevuld?

- Ja / Nee

1) Demografische vragen

- * Beroepssector?
- * Leeftijd?
- * Familie situatie?
- * Woonplaats en vier cijfers?

2) Beschrijving van eigen leefomgeving

- * Beschrijf de omgeving waarin u momenteel woont (landelijk/stedelijk/dorp/appartement/huis etc)
- * Wat waren uw motivaties om daar te gaan wonen?
- * Bent u van plan te verhuizen?
- * Beschrijf de mate waarin natuur is geïntegreerd in uw leefomgeving? En specifiek in uw buurt?
- * Welke natuurlijke elementen zijn daar?
 - * Wat voor planten vindt u belangrijk en waarom?
- * Heeft u weleens dieren in uw tuin? Welke soorten?
- * Wat is uw mening over deze elementen? Waar houdt u van en waarom?
 - Heeft u zelf maatregelen genomen? (bijv. verwijderen van vogelnesten)
- * Hoe veel tijd besteed u aan tuinieren?

3) Persoonlijke waarden met betrekking tot natuurinclusief wonen

Wat waardeert u het meest aan deze natuurlijke elementen in uw omgeving/ Welke elementen hebben voor u de meeste waarde in uw leefomgeving?

Doorvragen naar:

1. Veilig wonen
2. Groen wonen
3. Kindvriendelijk wonen

4. Mooie omgeving
5. Sociaal wonen (gemeenschapsgevoel)

* Welke voordelen ervaart u m.b.t. natuurinclusief wonen?

* Welke nadelen ervaart u?

- Bijv. Vogels in bomen -> vogelpoep op auto
- te veel schaduw van bomen
- bladafval in de herfst
- risico van omvallen

Welke functie moet een tuin vooral hebben? Denk aan:

- 1) Een tuin moet mooi zijn
- 2) Een tuin moet praktisch zijn
- 3) Een tuin moet netjes zijn
- 4) Een tuin moet bijdragen aan het welzijn van planten en dieren
- 5) Een tuin moet geschikt zijn voor voedselproductie

4) Willingness to Pay & Accept

* Zou u bereid zijn om meer geld uit te geven om een huis te kopen of huren in een groenere omgeving?

* Waarom? Welke omgeving precies? Hoeveel?

* Wat zou u nog meer willen accepteren?

- Langere reistijd naar werk?
- Auto verder wegparkeren voor meer groen voor de deur
- Kleinere huis accepteren in een groenere omgeving?

5) Ecological benefits:

* Welke functies denkt u dat de natuur kan leveren voor mensen en andere organismen?

* Denk je dat deze functies kunnen worden geleverd door de natuur in uw omgeving?

* Zo niet, waarom?

* Wat denk u dat er gedaan kan worden om deze functies te krijgen? (Wat zou u doen om deze functies te krijgen?)

Welke van de volgende acties zou u toestaan/accepteren in uw tuin/zou u aan bij willen dragen?

In hoeverre zou u bijdragen aan ecologische voordelen (welzijn van individuele organismen, bijv. bladeren laten liggen in de herfst voor egels; waar is de grens?)

- * Bomen laten staan (voor vogels) zonder te snoeien
- * Een tuin delen met burens (meer ruimte voor dieren)
- * Deel uitmaken van een buurtoverleg om bij te dragen aan een natuurinclusieve leefomgeving?

leefomgeving?

- * Vogels laten broeden
- * Een tuin zonder bestrating (voor afwatering, biodiversiteit etc.)
- * Bladeren in herfst laten liggen (egels)
- * Een insectenhotel of vogelhuisje plaatsen

1. Waarom? Verantwoordelijkheid? Normen (Here is a checking of values)

* Wie is verantwoordelijk voor uw leefomgeving? (Uzelf, gemeente, buurt etc.)

Laatste vragen:

* Wat kan er gedaan worden om de voordelen voor dieren en planten te verbeteren, of in het algemeen om meer bij te dragen aan natuur-inclusieve project ontwikkeling?

(Wat denkt u dat kan worden verbeterd in het aanwezig zijn van plantensoorten in natuur-inclusieve wijken?)

Waarom denkt u dat natuurinclusief bouwen nog relatief onderontwikkeld is in Nederland?

9.3 Survey

The survey (questionnaire) as it was presented to the respondents, can be found through the link: <https://docs.google.com/forms/d/1tBmlXeORqQ7OffKWl2JCxBMOR6ZrN0JY6i4ip7Pt3to/edit?ts=5e96f9be#responses>

9.4 List of interviewed key informants

This section provides a short overview of the six (potential) stakeholders that were interviewed for this project.

9.4.1 Harrie Hamstra

Harrie Hamstra spent a large part of his professional life working on the realisation of Natura 2000 areas in the province of Overijssel. As a private person, he was involved in the design of the nature-inclusive neighbourhood in which he lives. Now, he helps other citizens in the procedure of realizing co-designed nature-inclusive neighborhoods.

9.4.2 Lex Hoefsloot – Ede Municipality

Since two years, Lex Hoefsloot is wethouder at Ede Municipality for GroenLinks. Among others, he has in his portfolio the topics 'Programme Sustainability; Environment, Water and Waste; Climate, among which the energy transition; Management Public Spaces; and Housing and Healthcare.'

9.4.3 Jorine Noordman – Amsterdam Municipality

Jorine Noordman is Specialist Nature-inclusive Construction at Ingenieursbureau (Gemeente Amsterdam). Ingenieursbureau is a partner within the structure of Amsterdam Municipality that has expertise on civil constructions, water and delta technology, urban planning, infrastructure and traffic advice.

9.4.4 Bert van Rossum – Former CEO of housing corporation

Former CEO of MKW (social housing corporation). Has seen the developments in nature-inclusion over time. Highlights the value of keeping natural elements that are already at the building plot as it would be a waste when getting rid of them. Has co-created living spaces with residents, in which nature play a major role.

9.4.5 Bernard Smits – Woningbouwvereniging Gelderland

CEO of WBVG (Woningbouwvereniging Gelderland) (social housing corporation). His organisation works a lot with citizens' initiatives, often resulting in projects with a lot of nature-inclusivity. He sees some problems arise in the world of project development and highlights that they are "ten years behind".

9.4.6 Maarten Wittens – Ballast Nedam

Developer at Ballast Nedam Development. Ballast Nedam establishes themselves as a frontrunner for nature-inclusivity in the project development world. He recognizes the monetary value of nature and cooperates with different organizations to improve nature-inclusion in project development.

9.5 Preliminary Stakeholder Longlist

9.5.1 Possible future Residents of nature-inclusive projects

Who are interested in moving to a property (renting or buying it) that is more nature inclusive? They have most power in this purpose, as without their interest and willingness, any planning of nature-inclusive housing is redundant.

9.5.2 Current residents of nature-inclusive projects

Depending on availability residents of neighbourhoods like Kerkebosch Zeist, EVA-Lanxmeer or Almere Oosterwold or a mix of these three, or possibly also residents from the Roostenlaan neighbourhood in Eindhoven. They are important stakeholders, as they can share their concrete experience with their life in a nature-inclusive project and can inform others with their insights on values and possible misfits.

9.5.3 Neighbourhood-representatives/coordination

For example:

- Projectbureau Bewonersvereniging EVA-Lanxmeer (Alexander van Setten)
- Wijkontwikkelingsmaatschappij Kerckebosch
- Gebiedsteam Oosterwold

These representatives and planners are important stakeholders, as they can connect us more easily with current residents and possess knowledge on current constraints. They are powerful actors as they can share their “success-secrets” with future neighbourhoods and also help future project-developers to replicate their models of nature-inclusive project development. They are further important, as they are familiar with policies of the government, as for instance legal boundaries for trees and other natural elements. Through neighbourhood-assemblies and planning with residents, they have an overview on how inhabitants chose to make use of their legal rights and possibilities to implement nature or not. As such, they will be part of our whole project.

9.5.4 Project-developers

A particularly interesting actors could be: NEPROM – an association of Dutch Project Development Companies, as a bridging partner for governments (municipalities) and construction-firms, offering support to develop real estate projects. They are a conjunction of juridical persons that develop or redevelop real estate and / or territories. They are important stakeholders, who know demands and offers, as well as the practical and monetary boundaries between customers and construction-firms. As such, they are also in power to challenge the practical execution of projects that move away from tabula-rasa approaches. They offer support for smaller and middle-sized construction firms by for example offering coaching-sessions and educational activities. In these activities they intent to support all kinds of actors in the real-estate development to find innovative solutions and advice for a successful development of housing-, and space-development. Factors of time and money-management are crucial for project-development. For their selection-criteria of their members, as a guarantor of their quality, they have three basic criteria; Care, integrity and social responsibility. If the paradigms of the mainstream-project-development are to be changed into a tabula skripta-approach, a fourth category could be added; nature-inclusiveness, which could be integrated into their coaching as well. As such we see, how NEPROM could be an important stakeholder for our work as well, as they might inform us further on criteria that are evaluated in innovative processes of project-development, that are also bind to monetary and time-constraints of each constructor or other actor (NEPROM, 2020). In the first stage (still part of our proposal work), we will do further research on the question, how much the preferences of customers indeed influence the offer of project-developers. It would be interesting at this point to know, if there are many people who demand for nature-inclusive projects, and reasons why or why not these projects are executed. There is further a potential role for project developers that already do quite a lot with nature inclusive project development (often through community involvement), like Ballast Nedam Development, as they have already worked a lot with the concept and are aware of the wishes of future residents.

9.5.5 Construction-firms & Technical drawers

These are important stakeholders, as they need to adjust to the paradigm-change of project-development. There is a need to modify working procedures in order to move from a tabula rasa approach to a tabula scripta approach as efficiently as possible. As such, they also set practical limits of what is possible, and challenge further the construction-industry to develop further systems to work towards better integration of nature into housing-projects. Particularly the construction firms should be involved into this project at a later stage, as they possess important knowledge on what customers demand and what factors are all included in the decisive process of filling orders.

9.5.6 Municipalities

They are crucial actors when it comes to the process of planning a nature-inclusive project. Next to legal boundaries, public administration also has the power to influence the procedures of how properties can be used. Decisions to take concerning collaborations with project-developers or plans of creating more sustainable and green environments are thus in the hands of municipalities. They are a lock-point, where many actors come together, as for instance landscape architects, urban planners and project-developers. Important to notice is here, that there is not The municipality, but that it represents a broad network of actors that are different in each region.

9.5.7 National government

Ultimately, the Commissioners goal is to communicate with the parliament to contribute to the government's plan on creating more nature inclusiveness. The national government becomes important at a later stage of the Commissioner's goal. To think in the future, possibly laws and regulations regarding funding, property-development and construction could be adjusted, in order to offer more incentives to change the mainstream-practice of project-development.

9.5.8 Label-firms for nature-inclusiveness & sustainability

For example: NL Greenlabel, who offer a tool to make sustainability in project-planning and other domains of society more measurable. They offer incentives for project-developers and residents, to certify that the housing-projects promise the degree of "nature-inclusiveness" that it promises, and is therefore a trust-lable that can be a further incentive and advertisement-factor for project-developers to their customers. As such, comparisons between different projects can become visible. This gives them power to influence the outcome of the selling-strategies of project-developers. They could become crucial stakeholders for our analysis (for example for in-depth interviews), as they are already familiar with nature-inclusive projects.

9.5.9 Architects

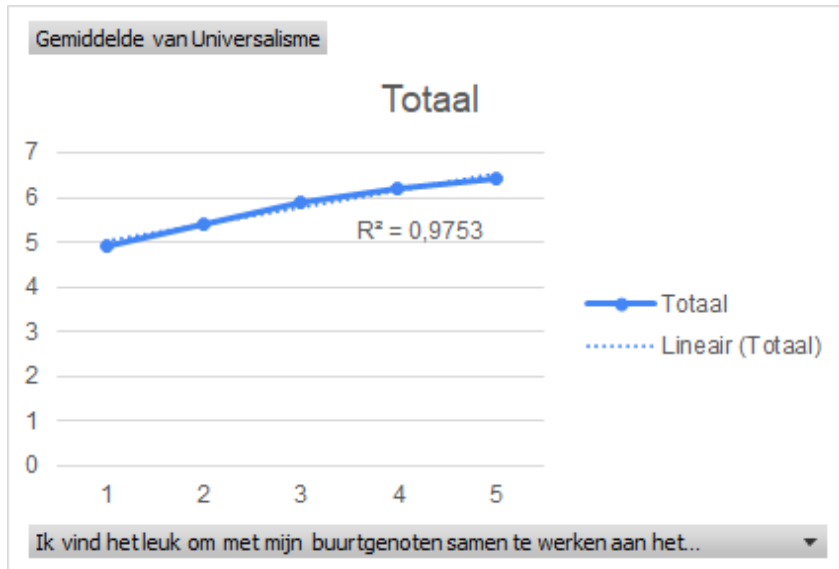
For this project, architects only have a small degree of involvement in this project. They could become more important in a later stage, when the practice of nature-inclusive project-planning is more common. Then, it becomes interesting to see, how they are able to help constructors and project-planners to compete with different housing projects.

9.5.10 Landscape architects & Urban planners

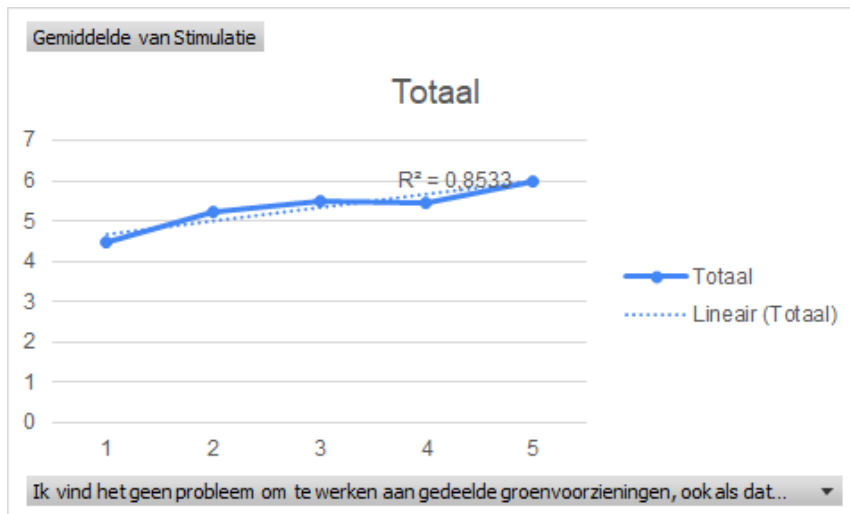
More interesting however could be landscape-architects, as for instance the "Netherlands Association for Garden- and Landscape Architecture", who are working in the domain of public life and are therefore also related to municipalities and urban-planners. For the creation of nature-inclusive neighbourhoods, the involvement of public spaces becomes important. Urban planners are involved into these kind of projects as well, as they contribute to a more holistic approach to transform urban spaces into nature-inclusive sites.

8.6. SVSS figures – Statistical correlations

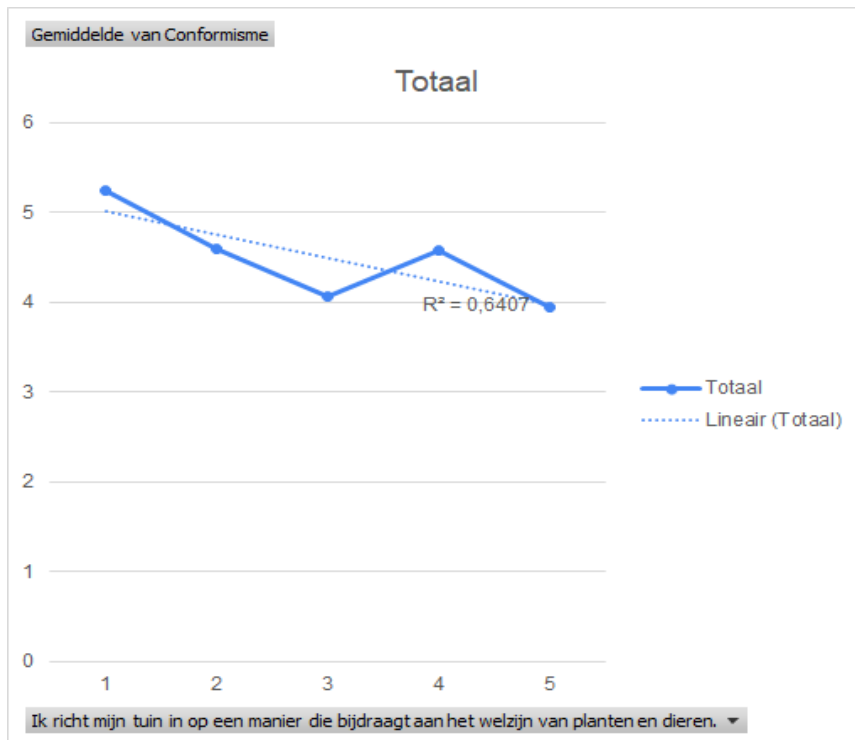
8.6.1. Universalism



8.6.2. Stimulation



8.6.3. Conformism



8.7. Short Schartz Value Survey (Lindeman & Verkasalo, 2005)

We ask you to rate the importance of the following values as a life-guiding principle for you. Choose alternatives on the scale 1 Not important...7 Very important

1. POWER (social power, authority, wealth)
2. ACHIEVEMENT (success, capability, ambition, influence on people and events)
3. HEDONISM (gratification of desires, enjoyment of life, self-indulgence)
4. STIMULATION (daring, a varied and challenging life, an exciting life)
5. SELF-DIRECTION (creativity, freedom, curiosity, independence, choosing one's own goals)
6. UNIVERSALISM (broad-mindedness, the beauty of nature and the arts, social justice, a world at peace, equality, wisdom, unity with nature, environmental protection)
7. BENEVOLENCE (helpfulness, honesty, forgiveness, loyalty, responsibility)
8. TRADITION (respect for tradition, humbleness, accepting one's portion in life, devotion, modesty)
9. CONFORMITY (obedience, honoring parents and elders, self-discipline, politeness)
10. SECURITY (national security, family security, social order, cleanliness, reciprocation of favors)

Original quotes of English translations featured in this report

- ⁱ *"Minder schaduw en waarschijnlijk meer licht binnen in vergelijking met de andere 2 afbeeldingen"*
- ⁱⁱ *"Te afgelegen"; "Ik woon graag tussen de mensen"*
- ⁱⁱⁱ *"Houd heel veel van natuur maar woon het liefst in een stad met heel veel natuur"*
- ^{iv} *"Voor mij heeft.... het openbare groen prioriteit. Ik hoef zelf geen grote tuin te hebben, als er maar groen in de buurt is"*
- ^v *"Gezamenlijk tuinieren zou leuk zijn, sta ik niet afwijzend tegenover. Het zou echter geen verplichting moeten worden."*
- ^{vi} *"Ik heb geen zin om als enige de kartrekker te zijn, zeker niet als ik net nieuw ben."*
- ^{vii} F.: *"We hebben een speciaal stukje aangelegd waar vlinders op afkomen. Dat vind ik wel erg leuk. En omdat er veel bomen en struiken zijn zie je toch ook wel veel insecten."*
- ^{viii} M56: *"Wij hebben in stedelijke situaties gewoond waarin je bijvoorbeeld merkt dat hitte niet prettig is op den duur, en als je een stukje loopt naar een park of als er bomen in de buurt zijn, dan wordt het klimaat prettiger."*
- ^{ix} *"Een omgeving waar je dieren buiten ziet zoals vogels word je blij van"*
- ^x *"Hobby verwant aan in het groen wonen zoals tuinieren, vogels kijken, bijen houden enzovoorts"*
- ^{xi} *"Veel vogels, werkt rustgevend en geeft een vrij gevoel"*
- ^{xii} *"stilte, de afwezigheid van verkeersgeluid is om uit te rusten belangrijk"*
- ^{xiii} *"Afhankelijk van de locatie, mogelijk de afstand tot winkels, sportgelegenheden, het sociale leven, etc."*
- ^{xiv} *"Ik ben een fietser, veel vallend blad in de herfst wel een dingetje"; "Overlast door vallende bladeren/eikels in mijn tuin"*
- ^{xv} *"Meer groen is minder plek voor huizen, is een groter woningprobleem en duurdere woningen"; "Huizenprijzen zijn vaak hoger, groen kost ruimte"; "Ruimte die schaars is [in NL]; Hogere woningprijzen"*
- ^{xvi} *"Meer betalen? Ligt eraan hoeveel, maar een huis in een grijze omgeving zou in de eerste instantie al niet door de selectie komen."*
- ^{xvii} *"Het meeste is dicht gestraat met potten of bakken, we zijn niet zo van die tuinierders."; "Ja, wel redelijk praktisch. Ik ben niet zo van dat schoffelen en het onkruid weghalen enzo."*
- ^{xviii} *"Ja dat is wel echt de praktische kant en gedeeltelijk ook getting your act together , om je tuin te veranderen is toch wel een beetje een project"*
- ^{xix} *"Wel last, maar geen overlast"*
- ^{xx} *"Bijvoorbeeld die drie balkonbakken die we nu hebben gezaaid, dat zijn ook van die zaadmixen die bijen aantrekken, goed voor de biodiversiteit zal ik maar zeggen"*
- ^{xxi} *"Op de een of andere manier is het ook esthetisch meer aantrekkelijk"*
- ^{xxii} *"Maar ook bijvoorbeeld als afgesloten speelterrein voor de kleinkinderen, de poortdeur kan op slot... het is toch een afgesloten ruimte"*
- ^{xxiii} *"De meeste mensen voelen zich toch wel lekker in de natuur."*