

Stimulating green communication: a bio-waste case study of Wageningen



Wageningen UR
Ramzan, Farahilde
880819-130-680
Msc Thesis: COM-80433

Supervisors:

Mrs. Van Paassen – MW Technology and Innovation
Mrs. Butijn – MW Sociology of Consumption and Households

Table of content

1.	Introduction	.....	1
2.	Research questions	.....	4
3.	Theoretical framework	.....	6
4.	Context of research	.....	28
5.	Methodology	.....	30
6.	Results	.....	37
7.	Analysis	.....	46
8.	In-depth analysis	.....	64
9.	Discussion	.....	68
10.	Conclusions	.....	73
11.	Recommendations	.....	75
12.	References	.....	78
Annex			
Annex I:	Results pilot interviews	.....	82
Annex II:	Demo questionnaire	.....	101
Annex III:	Results questionnaire	.....	109

1. Introduction

Nowadays, the average family household in the Netherlands is confronted daily with producing, collecting and eventually throwing domestic waste away. Each phase requires family members to go through certain household activities. For example, domestic waste can be produced by activities such as cooking, cleaning, peeling and gardening. Good examples of activities to collect domestic waste that has been produced are not only changing bin bags inside the residence and filling containers provided by the municipality with waste, but also separating specific waste from residual waste (such as batteries, plastic and bio-waste). Throwing domestic waste away can be done by taking containers to a central spot in the neighbourhood so that municipally employed refuse collectors can collect the waste (which is generally known as pick-up service).

In 2014 it was measured that 500kg of domestic waste is collected per person per year in the Netherlands. It was noted that only a little less than half of the Dutch households (49%) separate their waste. In concrete terms, 78kg of bio-waste was collected separately per person per year, which makes the Netherlands the fourth best separating country in the Europe (Milieu Centraal, 2014).

However, statistics of the Component-Based Servicing (henceforth 'CBS'), which is a municipal agency in the Netherlands, show that Dutch family households have separated more bio-waste in the past. The trend shows that 56% of family households separated bio-waste in the mid 80's. In the mid '90's the percentage of bio-waste separating family households dropped to only 38%. Although several factors contributed to this development, the most important one was the national introduction of a municipal requirement to separate bio-waste (which includes garden, fruit and vegetable waste) from residual and other types of waste in 1990. Until 2008 there has been a further decrease to 32%. From 2008 until 2014 it has been noted that more family households started to separate bio-waste again as the percentage in 2014 increased to 50% (CBS, 2010).

The year 2008 is an important year for this research as it is this year when a decrease in the collected amount of separated bio-waste was noticed. It seems that only few studies (such as studies from 'Milieuloket' and 'Vroege Vogels' which are news sources) have attempted to investigate the reasons behind the change in the (non-)separating attitude within Dutch households (since households separated waste more prior to 2008), but different reasons are mentioned in comparable studies (CBS, 2010). As a result, it remains unclear which reasons caused the deviation from the trend in separating bio-waste from residual waste from 2008.

As it is proven that recycled bio-waste can contribute to a healthier living environment, it is important that members of family households separate bio-waste as much and efficiently as possible (Milieuloket, 2007). Municipalities often explain how valuable bio-waste is for the environment members of family households live in. As bio-waste can be transformed into biogas, green electricity, CO₂, compost and biomass, it can deliver natural sources which each contribute to a healthier living environment. Recycling bio-waste can thus also improve the direct and indirect living environment of family households. For example, compost can be used to improve soils, which in turn can produce cleaner drinking water. Bio-waste can also be fermented so that biogas and green electricity can be produced. Biogas and green electricity

improve climate change as biogas and green electricity reduce the greenhouse effect (Milieuloket, 2007).

As recycled bio-waste contributes to a healthier living environment, it is therefore interesting to research the reasons behind the change in (non-)separating behaviour of bio-waste in Dutch family households in the domestic sphere from 2008 onwards so that members of family households will be engaged to separating bio-waste and it will become clear for municipalities what needs to be done to increase bio-waste separation among households. For that reason, this thesis research aims to explore which causes explain the change of the behaviour among members of family households in separating less bio-waste and the (possible lack of) factors which help to activate these individuals to separate bio-waste. The research thus concentrates on the problem area of which causes are responsible for the (non-)separating behaviour of household members and which health effects this considers for their living environments (both within and outside of the residence).

Several health communication interventions have been performed in the past to explore the non-separating (bio-)waste behaviour in the domestic sphere among members of Dutch households from 2008 onwards. The main aims of these interventions were to distribute credible information about bio-waste and to better engage family members in the topic of separating bio-waste, since such separation contributes to a healthier living environment (CBS, 2011). It is important to study which health communication interventions have been performed to create a certain point of departure so that it is clear from which point of departure this thesis draws on.

Causes that explain the intentions of members of family households of not separating bio-waste can be explained by intrinsic motivations, such as availability of municipal and household resources, social pressure, available space and perceived health risks. On the other hand, the information tools that have been provided in the past also play an important role in influencing family members to separate bio-waste. It is therefore worthwhile to study whether (and how) members of family households seek for information, how they process information and which (non-) separating acts they actually undertake after reading information concerning bio-waste. In this way it can be studied which factors are stimulating, which can still be improved and which factors possibly lack to engage family members to the act of separating bio-waste.

The municipality of Wageningen was chosen for this study as it offers the most practical opportunities for performing the research. Researching other municipalities could cause practical limitations, such as money and time issues. However, it is taken into account that Wageningen is generally known as a 'green' municipality; as such, and therefore the separating bio-waste behaviour in Wageningen could possibly be more positive than in other municipalities. On the other hand, 'greener' households could have more ideas for separating bio-waste. If these ideas are practical and simple to implement, they can perhaps be used in future research of family households in other Dutch municipalities.

In addition, statistics from CBS show that the national separating behaviour in bio-waste of family households can still be improved. The municipality of Wageningen has also acknowledged there is still a difference in separating bio-waste between high- and low-rise blocks. For this reason, this municipality still merits research regarding separating bio-waste. Therefore, this thesis is partly performed to inform the municipality of Wageningen concerning the present

separating behaviour of members of family households and to provide some recommendations the municipality which resources and services possibly need to be changed to activate members of households to separate bio-waste.

Furthermore, a decision was taken to focus on the most responsible members of the target group within the household since it is assumed that these members take the lead in doing household activities, such as cooking and taking out the garbage), which relate to bio-waste separation. For that reason, they are the most important individuals to concentrate on in this research. However, other household members (both partners and children) are still taken into account.

Based on the problem area and research aims presented above, it is clear that the focus of this research highlights how the problematic non-separating behaviour among family households in the municipality of Wageningen can be turned into separating bio-waste behaviour.

2. Research questions

The research question that is answered in this thesis is as follows:

'How can awareness be raised to engage members of family households with children (aged 4-12 years) in the municipality of Wageningen in the separation of bio-waste in order to contribute to a healthier living environment?'

Three objectives have been explained to clarify the research aims of the sub questions.

0. Point of departure

To find out in which ways awareness was raised to stimulate members of family households were to separate bio-waste in Wageningen in the past. No sub question has been constructed for this objective as the answer to this objective is explained in the base-line study in the theory. The base-line study has been executed to determine a certain point of departure so that this study can continue from thereon.

1. Influence of intrinsic motivations on intentional behaviour

To find out if (and how) intrinsic motivations are influenced by perceived availability of municipal- and household resources and to find out if intrinsic motivations are formed by attitude, subjective norm (possibly influenced by social pressure) and notion of self-efficacy (possibly influenced by resources, present knowledge levels, household activities and perceived health risks of produced emissions).

2. Influence of information resources on intentional behaviour

To find out what role present municipality services,-resources and municipality information resources (including prior health communication initiatives from 2008 onwards) influence intentional behaviour of members in family households. It is of interest from the *perspective of the municipality* to find out the aforementioned notions influence members of family information resources.

3. Engagement for action

To find out what members of family household *think* of present municipality services, -resources and municipality information resources (including prior health communication initiatives from 2008 onwards). It is of interest from *the perspective of the municipality* to find out which factors are stimulating an which are improving to *engage* members of family households to the act of bio-waste separation in the future.

The following series of sub-questions has been constructed to gradually answer the main research question:

1. Influence of intrinsic motivations on intentional behavior
 - 1.1. How do intrinsic motivations influenced by perceived availability of municipal and household resources influence intentional behaviour of members of family households?
 - 1.2. How do intrinsic motivations formed by attitude, subjective norm (possibly influenced by social pressure) and notion of self-efficacy (possibly influenced by resources, present knowledge levels, household activities and perceived health risks of emissions) influence intentional behaviour of members in family households?
2. Influence of information resources on intentional behaviour
 - 2.1. Which potential information resources are available to inform members of family households with children regarding bio-waste separation?
 - 2.2. What were the information seeking, processing and action behaviours of members of family households with children regarding bio-waste in the past?
 - 2.3. Which health communication interventions have been performed in the recent past to raise awareness about separating bio-waste and to activate members of family households in actually separating?
3. Engagement for action
 - 3.1. What do members of family households think of present information resources and prior health communication initiatives provided by the municipality of Wageningen?
 - 3.2. How do members of family households act on present information resources and prior health communication initiatives provided by the municipality of Wageningen?
 - 3.3. Which are the stimulating factors and the factors which can still be improved to engage members of household families in separating bio-waste in the future?

3. Theoretical framework

A base-line study has been set-up to take stock of which health communication interventions have been performed by the municipality of Wageningen to activate members of family households to separate bio-waste in the past. It is also of importance to get an overview of to what extent interventions have aimed to teach members of family households about the recycle process of bio-waste and how recycled bio-waste can contribute to a healthier living environment. It was chosen to start the base-line study from 2008 onwards as this year forms the turning point in the separating behaviour of family households. The base-line study thus forms a point of departure for this thesis research to draw on.

In addition, a couple of theoretical models were selected to explain what has been studied about a persons' seeking, processing and action behaviour on potential information sources. Next, a couple of theoretical models were selected to explain which stages a person has to go through to actually make a behavioural change. In the third paragraph a model about human behaviour in relation to separating bio-waste and the (perceived) health risks is explained.

These theoretical models are each based on a research objective and were explained and evaluated as it was chosen to merge different theoretical models into one model (the Integrated Household Model) which was used as the theoretical framework in this thesis. The Integrated Household Model is the last explained model. The evaluation of the previous models make clear which parts of the models have been selected to merge into the Integrated Household Model so that it is clear how all three research objectives fall in place. Not all explained models were used in the Integrated Household Model as a careful selection has been made.

Base-line study in the municipality of Wageningen

Prior (bio-)waste separation interventions have been undertaken by different initiators to stimulate inhabitants of Wageningen to separate more bio-waste from residual waste. The most important developments and initiatives related to raising awareness and engaging citizens in the separation of bio-waste are presented in chronological order in the next paragraphs.

In 2008, several initiatives were undertaken to distribute information to citizens regarding bio-waste separation. The goal of these initiatives was mainly to raise awareness, although some initiatives were aimed at further stimulating/engaging citizens to separate bio-waste. The examples of communication initiatives described below are fully based up the municipality of Wageningen's final report (Gemeente Wageningen, 2009).

- Distributing a so-called 'waste letter' devoted exclusively to bio-waste separation topics to family households. This letter included an article that provided information about how to separate bio-waste and provided tips for solving common problems.
- Displaying posters in public spaces such as central halls of high-rise blocks. These posters illustrated that separating garden and bio-waste is good for the environment.

- Organising a compost initiative on the market square in the centre of Wageningen (March 2008). The stand was used to display small countertop buckets, biodegradable garbage bags, small buckets stuffed with compost and information packages about the compost initiatives. To raise attention, a compost machine ‘animal’ was centrally placed in the market square to demonstrate how waste becomes compost. When the animal ate waste, the waste was transmitted to gas in its stomach and eventually was ejected in the form of compost. Visitors who fed the animal were allowed to take the compost home with them. Visitors could also answer some questions regarding compost to win a countertop bucket.
- Organising ‘National Compost Day’ events in Wageningen. The goals and basic set-up were the same as for the compost initiative outlined above. However, coloured pictures and paintings were also collected and displayed to create an open-air gallery. The most beautiful artwork received prizes.
- Placing green stickers with the slogan ‘*Keep green waste clean*’ on public waste containers in the municipality to make citizens aware that a high percentage of bio-waste is still found in residual waste and spur separation.
- Creating a standard style for websites, newspapers, posters and other readable communication tools (including a unified brand, colour scheme and writing style). This was done to make information sources more accessible and readable.

It is important to note that these communication and information initiatives did aim to reach as many citizens as possible in Wageningen. No distinction was made between families living in low- or high-rise blocks.

A larger bio-waste container was provided to family households in Wageningen in 2009. A relatively small study was conducted in relation to household family members that same year. A total of 1462 questionnaires that included questions regarding separating (bio-)waste were distributed among households in Wageningen. The questions assessed individuals’ *knowledge*, *motivation* and *capability* (Gemeente Wageningen, 2009). Results revealed that almost 50% of the citizens had seen the communication and information initiatives that were undertaken in 2007 and 2008. Of this number, 7% were motivated to separate better and another 14% actually did separate better.

One recent communication initiative has been the municipality of Wageningen’s effort to stimulate household family members in the ‘Noordwest’ district to separate bio waste, plastics, cartons, papers and packaging materials. The causes for setting up an intervention to stimulate inhabitants to separate more waste evolves from the fact that of all collected waste in Wageningen, 40% is separated and 60% is not separated. The non-separated residual waste is often burned by the municipality. However, burning this waste is quite expensive for both households and the municipality and is not environment friendly. Recycling would be cheaper for households, since processing costs are nowadays charged through waste collection levies (waste collection taxes); it would also be more environmentally friendly. The municipality of Wageningen therefore has set the goal of increasing waste separation to 60% in 2015 and then strive to reach 65% in 2018. At this moment, the municipality perceives that the waste

separation behaviour of households is inefficient. As a result, the municipality finds it important to improve the present municipal waste collection system by focussing more on collecting separated waste. This has led the municipality to setting the 'New Collecting System' initiative in motion (City of Life Science, 2013).

The 'New Collecting System' evolved from the communal waste policy plan that evaluated the waste separation percentages for the period 2006-2010. This evaluation finally concludes that the level of waste separation remains around 57%. The 'New Collecting System' intervention started in September 2013 in the municipalities Dalfsen, Hattem, Oost-Gelre and Zwartewaterland and ended September 2014 (ROVA, 2014). The 'New Collecting System' intervention specifies that plastics and packaging materials will be collected every four weeks and that residents can use the grey mini containers for this type of waste. Paper and bio-waste are collected every two weeks (once a week bio-waste and paper in the next week) from the containers with blue lids. If household family members use the facilities to separate waste correctly, only a small amount of residual waste should remain. This residual waste will no longer be communally collected on a weekly basis (which had been the case in the past), as household family members can instead throw their domestic residual waste into large containers placed under- and aboveground in the district (City of Life Science, 2013). It has to be noted that this collection method only applies to family members of households in low-rise blocks. In high-rise blocks, the same collection method applies, but household family members are provided different coloured buckets to use for separating their waste. These buckets can be emptied into the large containers placed below the building. The communal pick-up service empties the containers with the same frequency and according to the same timetable as they pick up separated waste in low-rise blocks (City of Life Science, 2013). Results in evaluation reports revealed that the collected amount of bio-waste had almost doubled (ROVA, 2014).

The municipalities of Utrecht, Wageningen, Arnhem and Sliedrecht have also executed the New Collecting System in 2014 so that it could be measured whether the positive results from the aforementioned municipalities are the same in other municipalities. However, results appeared to be less positive in the municipality of Wageningen. In total, an increase of 24% of the collected amount of bio-waste has been measured at the end of 2014 compared to the beginning of 2014 (Resultaten van het nieuwe inzamelen, 2014). The municipality of Wageningen is planning on evaluating their results to those of other municipalities. In the future it will be decided if the 'New Collecting System' will be introduced as the official collecting waste system (City of Life Science, 2014).

Theories

In this chapter, several theoretical frameworks are explained. First of all, information models are explained to understand how members of family households seek, access, process and act upon information. Secondly, a theoretical model is explained to offer more insight into how members of family households operate along their journey to separating bio-waste. Every model is evaluated by pointing out its strengths and weaknesses. In this way it becomes clear how the chosen theoretical framework (integrated household model) comes to being.

Theoretical information seeking, processing and action models

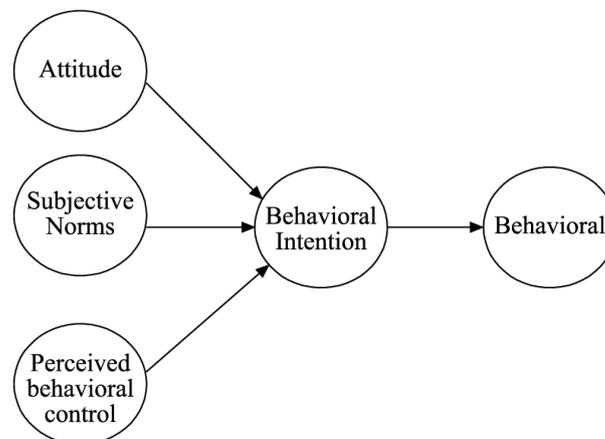
Four theories are discussed in this section: Ajzen's theory of planned behaviour (including its previous version, namely the theory of reasoned action), Helen's theory on the transtheoretical model of behaviour change, Bandura's social cognitive theory and Griffin's risk information seeking and processing model. These theories are chosen because they fit the main objective of this research, which is to research how members of family households with children (aged 4-12) in the municipality of Wageningen seek, find and process information regarding separating bio-waste from residual waste in order to determine the attitudes of these individuals towards bio-waste separation. The subsequent objective is to research the ways in which members of family households become engaged in the act of separating bio-waste. An intervention analysis of prior bio-waste separation initiatives in Wageningen is made to gain insights into what has been performed in the past to engage residents of the neighbourhood. These findings are used to research present knowledge levels and information-seeking and information-processing behaviour regarding bio-waste separation. In addition, the findings will also be used to discover (through interviews and questionnaires) if members of family households with children find aspects of these interventions useful and to determine how these interventions could be changed to better engage these individuals in bio-waste separation.

The aforementioned four theories construct conceptual frameworks that differ from each other, but each theory has a unique explanation of how to influence human behaviour. All of the theoretical models share that they describe one or more of the following subjects: how users find access to information, how users seek information, how users process information and finally how users engage for action. The conceptual framework of this thesis involves explaining the aforementioned theories and discussing the advantages and disadvantages of each with respect to the analysis of waste separation interventions, with the goal of finally choosing the theory that is most effective for this research.

The theory of reasoned action and the theory of planned behaviour

The theory of planned behaviour is a well-known model created by Ajzen in 1988; it is actually an extension of the theory of reasoned action that was developed by Fishbein and Ajzen in 1975. The core idea of both of these theories is the belief that intentional human behaviour can be understood and predicted through the occurrence of a particular behaviour and anticipation of a particular behaviour. It must be stated that intentional behaviour can never be 100% predicted. The theory of planned behaviour also claims to predict intentional behaviour to approximately 44% (Ajzen, 1991). The theory of reasoned action (henceforth 'TRA') and the theory of planned behaviour (henceforth 'TPB') are both seen as 'expectancy-value theories', meaning that one can use them to learn about human behaviour by studying the link between beliefs, attitudes and behavioural intentions. The TRA and TPB have been applied particularly in the fields of advertising campaigns, public relations and healthcare (Ajzen, 1991). Both theories pay relatively much greater attention to the subject of 'engagement for action' than they do to the subjects of 'information access, information seeking and information processing'. In order to describe how users engage for action, the theories propose using a model built around three general constructs (namely *attitudes*, *subjective norms* and *perceived behavioural control*) to measure how human actions are internally guided. These general constructs are outlined with the theory next to it suggesting how these variables enable prediction on the intentions of particular human behaviour (Ajzen, 1991).

In the TRA (which was proposed in 1975, before the TPB), the general constructs were *attitude*, *subjective norm* and *behavioural intention*. Over the years, Ajzen evaluated the TRA and continued his own theory since other studies confirmed that the relationship between intending behaviour and actual behaviour does not always lead to the specific act of behaving. Studies also revealed that the main reason for people not behaving as they intend to relates to circumstantial limitations. In the TRA, the only determinants for assessing the act of behaving were the general constructs of *attitudes* and *subjective norm*. In order to cover non-volitional behaviours for predicting behaviour that leads to the specific act of behaving, Ajzen added a third general construct to the TRA model, namely *perceived behavioural control*, which is now part of the TPB. This construct originally derived from the social cognitive theory that Bandura proposed in 1977 (which is explained later on). Ajzen chose to draw on the theory of Bandura because Bandura's theory contributes to explaining relationships between beliefs, attitudes, intentions and behaviour where the '*outcome expectancy*' takes a central role (Fishbein & Ajzen, 1977).



Source: Ajzen (1985, 1991)

Figure 1: Theory of Planned Behaviour

Within the TPB model (see figure 1), '*behavioural intentions*' take a central role. This term consists of all *predictive intentions*, including *attitude toward behaviour*, *subjective norm* and *perceived control behaviour*. These intentions eventually lead to a final '*behaviour*', which refers to an individual's observable response in a given situation to a given target. The term '*intention*' refers to the willingness of the individual to adopt a new behaviour. The term '*attitude*' refers to a person's positive or negative evaluation of self-performance of the particular behaviour. The term '*subjective norm*' refers to the perceived social pressure to perform or not perform the behaviour in question. The term '*perceived behavioural control*' refers to the ease or difficulty of actually performing that behaviour. The perceived control behaviour is quite an important determinant in the theory of planned behaviour, as it is directly linked to the belief of a person's own behaviour, also depending on positive and/or negative past experiences. For this reason, the perceived control behaviour reflects back to the first and second predictive intentions, namely '*subjective norm*' and '*attitude*'. It should also be noted that the *attitude*, *subjective norm* and *perceived behavioural control* do not always weigh the same. This means that *attitudes* and *subjective norm* sometimes determine how the *behavioural intention* and final *behaviour* come about. There is also an indirect link between *perceived behavioural control* and *behaviour* due to

the fact that the determinant *perceived control behaviour* includes a high level of motivational factors that influence the final behaviour (Ajzen, 1991).

The original TRA and TPB do not have an intervening variable that strives to engage people for action. However, the TRA and TPB can be re-designed in such a way that one or more of its determinants (namely *attitudes, subjective norms, or perceptions of behavioural control*) can be changed. Making changes to these factors means that *behavioural intentions* and eventually *behaviour* itself could possibly be changed as well (Ajzen, 1991). The TRA and TPB can be useful to this research, since it is valuable to explore the differences in weight between people's attitudes and subjective norms towards (bio-)waste separation.

The transtheoretical model of behaviour change

The transtheoretical model (henceforth 'TTM') was developed by Prof. O. Prochaska and his colleagues in early 1977. It is known as the 'transtheoretical model' as it is a blur of different analyses and theories of psychotherapy (see figure 2). The model was created to assess a person's 'readiness' to adopt and act upon a newer and healthier living behaviour. To do this, the model suggests six steps (and a seventh invisible step) to guide a person through the stages to eventually engage that individual in action and maintenance. In order to guide users from one stage to the next, the model provides different variables (which are explained later). The theory behind the transtheoretical model claims that change can be achieved through a process that involves progress through a series of stages. These stages are explained in the model below. The model focuses on decision-making as well as information processing (Prochaska et al., 1997).

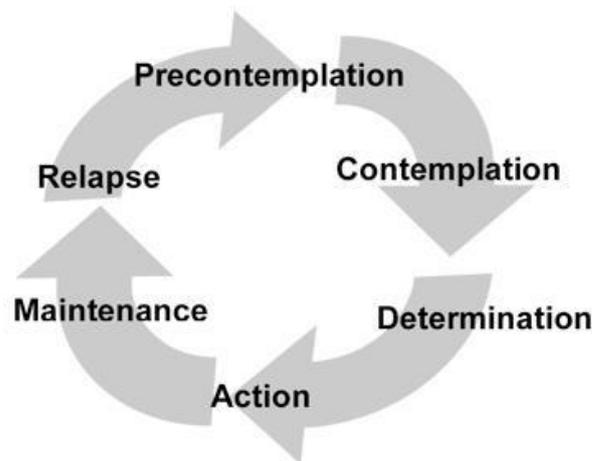


Figure 2: Transtheoretical Model

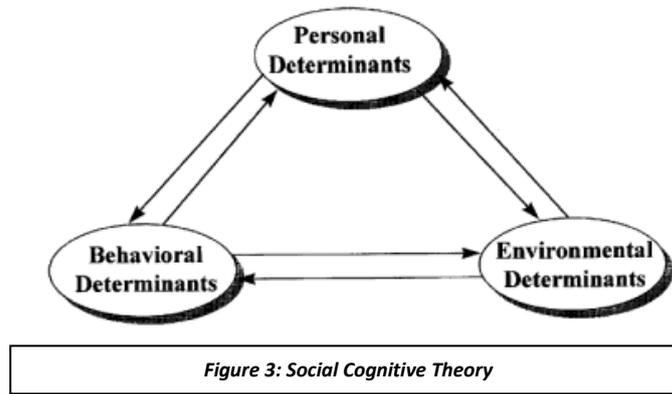
The first step is *precontemplation*, which means the level of 'not-readiness' of a person. In this stage, persons are not intending or are unaware of new behaviour. Two important variables for guiding users to the second stage are encouraging them to become both more mindful of decision-making and more conscious of the benefits of changing an unhealthy behaviour. When the second step, *contemplation*, is reached, people are starting to notice that their behaviour might be problematic and to analyse the pros and cons of this behaviour. An important variable that guides users to the next stage is self-reflection. Users learn about the person they could become if they adopt a new healthy behaviour. When people eventually find that the cons outweigh the pros of their behaviour, the *determination* stage follows. In this stage, people are ready to take action and slowly intend to change future behaviour by taking small steps in a

different direction. Since this stage often raises questions such as: 'When should I act?' and 'Will I fail?', an important variable to encourage users is to consult friends and loved ones who trust the process. The more they trust the process, the more users will have faith in not failing and continuing to make progress. When this stage is terminated, the *action* stage follows. At this point, people have made modifications to their old behaviour or adopted new healthy behaviour. One variable for working to the next stage is rewarding users for this new behaviour. Since the behaviour is still quite new and not yet part of a user's nature, rewards are necessary to keep them moving forward. For that reason, the sixth step is *maintenance*, which is when people have been able to successfully adopt their new behaviour and do not return to their old behaviour. To avoid falling back into old behaviour it is recommended that users seek the help of other users who have adopted the new behaviour and can remind them of its benefits. The influences of other users who have adopted the new behaviour is an especially important variable for maintaining new behaviour and old behaviour in moments of weakness. A seventh invisible step was introduced by researchers later on. This is the *relapse* stage, where people might have a break-down in relation to maintaining their new health behaviour. People may fall into the *relapse* stage when they have been through the *action* or *maintenance* stage. Prochaska also states that all stages of the model should be adjusted to the individual's personal circumstances (Prochaska *et al.*, 1997).

The transtheoretical model (henceforth 'TTM') largely consists of social components that strive to make users adopt new behaviour. The TTM evolves from Prochaska's comparative analysis of 18 leading theories of psychotherapy and behaviour change. The concepts of 'raising', 'social liberation', 'emotional arousal', 'self-evaluation', 'commitment', 'counter conditioning', 'environmental control', 'reward', and 'helping relationships' took a central role in this analysis. From these key concepts, seven stages of change were later conceptualized. The TTM is also known as 'stages of change model', since the broader theory around it does not perceive behavioural change as a single event, but more as a process of change that can go both backwards and forwards.

The social cognitive theory

The social cognitive theory (henceforth 'SCT') was initially founded by Millard and Dollard in 1941. The SCT was broadened in 1963 by Bandura, who refuted the theory to understanding learning (see figure 3). It has been widely used in health communication, as it explains how individuals acquire and maintain (new) behavioural patterns. The SCT can be linked to observing others in the context of social interactions, experiences and outside (media) influences. Unlike the aforementioned theoretical models, the SCT does not aim to teach individuals to practice new behaviours by simply trying them out. One can either succeed or fail in this new behaviour. This theory aims to make individuals replicate their actions depending on if they are rewarded or punished for this replication. Depending on the level of replication and the corresponding level of reward or punishment, certain ways of behaviour result and thus a type of behaviour will be modelled. The SCT also forms a basis for intervention strategies and is a model that pays more attention to information access, seeking and processing in the first place. However, in the second place the theory also treats the ways in which individuals engage in new behaviour (Bandura, 1997).



In the model of the social cognitive theory, the following three groups of determinants are described: *personal*, *environmental* and *behavioural*. However, the model consists of five core concepts that relate to SCT model, namely observational learning/modelling, outcome expectations, self-efficacy, goal setting and self-regulation. *Observational learning* means that learning can happen through observation. To modify old behaviour, others can model the improved behaviour so that other people can learn from it. *Outcome expectations* refer to the process of people understanding what the outcome of forming a different behaviour pattern might be. Whether the new/modified behaviour will be rewarded or punished will determine if the action will be repeated or not. *Perceived self-efficacy* refers to the belief of people in their own ability to master a new/modified behaviour. *Goal setting* reflects cognitive representations of desired future outcomes, which can also be learned through observation. Finally, *self-regulated learning* refers to the skills needed to manage a person's behaviour. Beliefs and attitudes are important determinants for motivating self-regulation. There is a sixth core concept that refers to the entire model, which is 'reciprocal determinism'. This concept refers to the person and his/her set of learned experiences, the environment and the external social context. Also the behaviour and its responses to stimuli to achieve goals is referred to (Bandura, 1997).

Overall, the SCT is based on the reciprocal nature of personal factors, existing behaviours, and social and physical environmental influences that produce behaviour. All of these concepts are inter-linked, which is why all of the arrows point to each other in the model). The underlying idea of the SCT is that users' reciprocal influences shape new behaviour, because users will engage in new behaviour when it has a consequent outcome. The SCT stresses that the expectations from the outcomes that results from engaging in a behaviour and the individuals' ability to actually engage in the behaviour have to be taken into account. The task that one is given to execute and the context of that task will thus determine the result of the reciprocal way of behaving (Riekert *et al.*, 2014).

Relevance Information Seeking and Processing

Finally, the risk information seeking and processing (RISK) model focuses particularly on information seeking and information processing (see figure 4). It is frequently used in communication to understand where individuals seek information concerning health and how they process that information. This model does not focus so much on engaging for action (Griffin *et al.*, 1999). It describes seven steps that determine to what extent individuals will seek and process risk information. These phases are as follows: 1) individual characteristics (such as demographic/sociocultural background), 2) perceived hazard characteristics (criteria such as

from past situations to guide behaviour), 3) effective response to the risk (such as one's perception of others to perform behaviour), 4) social pressures for relevant information, 5) information sufficiency (such as availability of information), 6) personal capacity to learn and 7) one's belief about the usefulness of information in various channels.

The RISK model is constructed in such a way that the front of the model largely belongs to the first group (which is the block to the upper left), whilst the back of the model largely (which are the blocks behind the arrows to the right) belongs to the second group. The two parts of the model are 'glued' to each other by different determinants to better fit the communication needs (Griffin *et al.*, 1999).

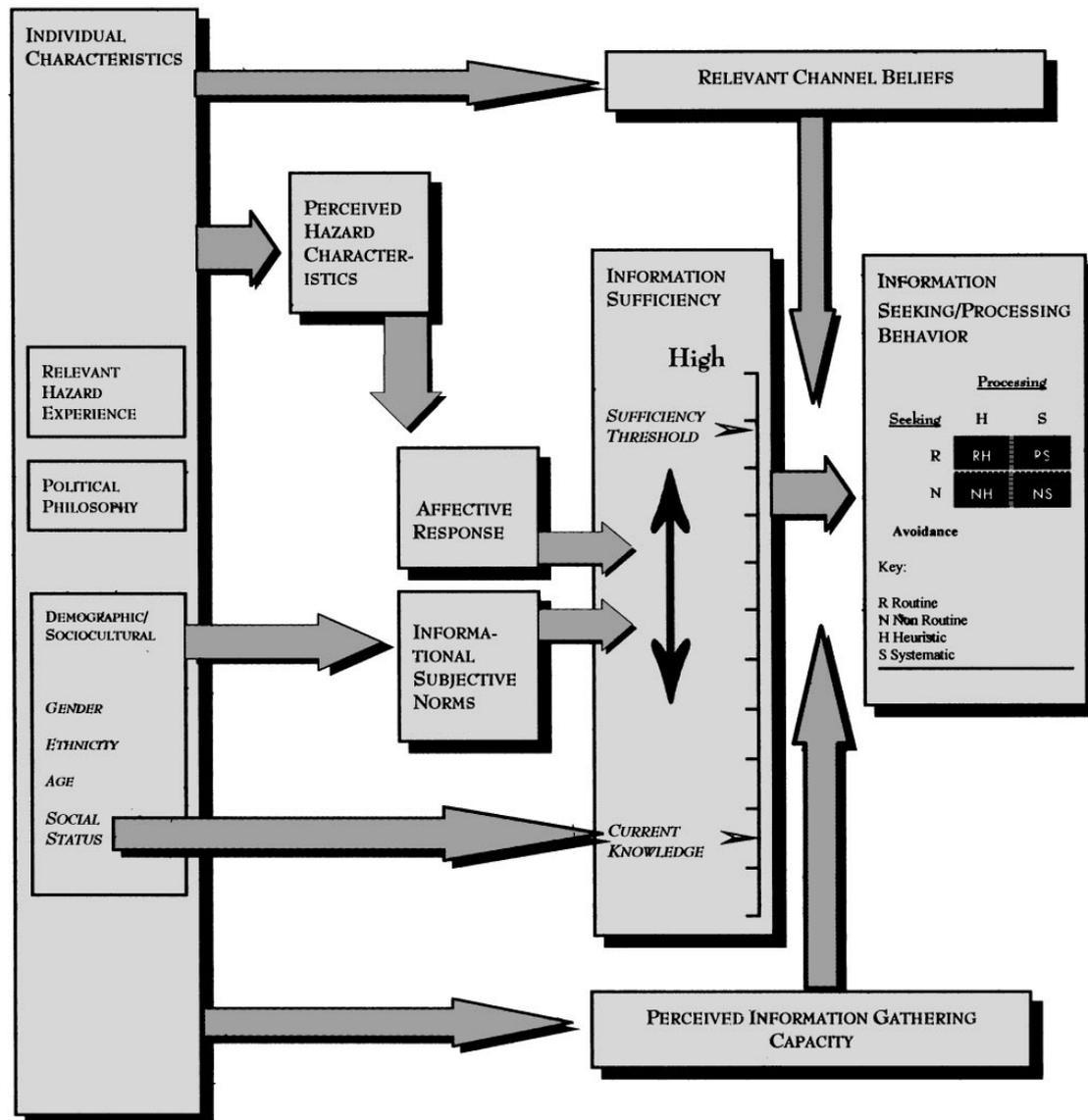


Figure 4: RISK Model

The core idea of the model is the belief that if individuals seek more information and process the information more effectively, the theory assumes that individuals develop risk-related attitudes, cognitions and behaviours that are more stable. The model has borrowed terms from both the theory of planned behaviour and the theory of motivated information management. It was developed because health information campaigns aim to get individuals more engaged in making lifestyle changes. The core idea of the RISK model is thus to guide individuals through all seven of the steps in order to overcome volatility of behavioural changes (Griffin *et al.*, 1999).

Strengths and weaknesses of the theoretical models

Now that all theoretical models have been discussed, it is important to analyse the advantages and disadvantages of each of them in order to understand if they can be useful for analysing interventions to engage people in separating bio-waste from residual waste.

Evaluation of the theory of planned behaviour & the theory of reasoned action.

- The TRA and TRB models contain components to predict intentional behaviours. There are three main norms that predict the intentions of behaviour: *attitudes*, *subjective norms* and *perceived behavioural control*. These norms are perceived as important determinants for directing how strong the intentions of users are to perform behaviour (Rieke, 2014). In this study, it could be important to assess these three norms to predict how members of family households with children in Wageningen intend to separate bio-waste from residual waste and to determine what each norm more or less weighs. This could help to explain why household members behave as they do now and how they intend to behave regarding bio-waste separation.
- Another important strength of the TRA and TRB is the claim that they can predict intentional behaviour in the shorter term more concretely than in the long term (Rieke, 2014). This strength is especially applicable to this research, as bio-waste separation behaviours of both the past and the near future are being studied.
- A very important disadvantage of the TPB is that it overlooks emotional variables, including threats, fears, moods and other negative and positive feelings. These feelings are often external factors that apply to particular non-health related behaviours. The model is therefore deemed to have a strong focus on cognitive processing and behaviour change and to lack a variable that takes external feelings into account (Sheppard *et al.*, 1988).
- Another important disadvantage of the TRA and TRB is that the predictability to detect intentional behaviour increases when a large number of users (at least 1000) utilize the model. In this research, only between 40 and 50 households maximum will be included, which is small in comparison to 1000. This could affect the validity and/or trustworthiness of the TRA and TRB, as these models cannot predict intentional behaviours as effectively as they can when the users number at least 1000 (Riekert, 2014).

Evaluation of the transtheoretical model.

- There is a debate as to whether the transtheoretical model should be seen as a 'one-size-fits-it-all' model in the field of health behavioural change. Psychologists often claim that it should (Brug *et al.*, 2004). However, the surplus value of a 'one-size-fits-it-all' model like the TTM is that the model is always applicable by users in health studies when it is desired to make behavioural change. The TTM may for that reason not fit seamlessly into all health studies because each health study may have a different context. Nonetheless, the TTM can always fit into some contexts of a study in the health behaviour field, since it can be seen as a universal model. The TTM thus fits into this research as well as the model prepares and stimulates users to make changes through six universal phases.
- Another strength of the TTM is that unlike the TPB model, it explains ongoing feelings of users in order to explain behaviour change. The TTM is therefore unique because it focuses on behaviour change from a different point of view (Riekert, 2014). Explaining ongoing feelings in this research could help to explain the causes of (not) separating bio-waste behaviour.
- A general yet important limitation of the transtheoretical model is that there is little evidence from prior research proving that stage-matched interventions are more effective than non-stage matched interventions (Kraft *et al.*, 1999). For that reason, the TTM may not fit this research.
- Critics argue that the TTM provides 'soft outcomes' in relation to behaviour change, since the model analyses the transition between the steps more than the steps that eventually lead to behaviour change. There is also a lack of evidence that people stick to their new behaviour (Brug *et al.*, 2004). Since this research is only studying a small number of households to find in-depth causes and explanations concerning users' bio-waste separation behaviour, the TTM may be too superficial to use.

Evaluation of the social cognitive theory.

- The SCT finds its strengths in the fact that the model uncovers key concepts about individuals, including their incentives, outcome expectations and efficacy expectations. Because users learn about these key concepts, the model enables users to engage in a certain new health behaviour. The new behaviour is always accompanied by the same consequent outcome. The replicate nature of the SCT makes it especially powerful, since unlike other models, the focus is on the connection between a certain task and a certain outcome. Studies have claimed that users have significant self-control over their learning and behaviour, these studies form a trustworthy basis for new behaviour (Omrod, 2001). The SCT could hence fit into this research very well, as it could clarify and perhaps stimulate users to engage in bio-waste separation.
- Another strength of the SCT is that besides including cognitive and motivational aspects, it also pays attention to situational determinants such as social support, role models, norms and values, and cultural practices. In this way, the SCT aims to understand behaviour by looking at certain beliefs of users without aiming to explain how users came to these beliefs. It does not matter for the SCT at which point in life an user may

start using the model. However, other models sometimes make prior assumptions or demands for users before they can start with the model (Omrod, 2001). The SCT is also very applicable to this research, as there is no prior inside knowledge concerning which phases of life household members are currently in.

- There is a debate as to whether the SCT is effective, since it describes learning as a process that may or may not be reflected in behaviour and therefore may or may not result in change. This could form a limitation within this research, since the theory depends on the level of a person's self-efficacy (Omrod, 2001).
- The SCT does not account for people with psychological disorders or disabilities; it assumes that users are mentally healthy (Omrod, 2001) and is thus only applicable when they are. It could be time consuming to determine if members of family households with children are psychological healthy.

Evaluation of the relevance information seeking and processing model.

- Overall, critics argue that the RISK model forms effective links between all variables and provides clear explanations concerning information seeking and processing (Yhan *et al.*, 2013). This model could therefore be useful for identifying how members of family households seek and process information about separating (bio-)waste.
- A weakness of the RISK model is that its explanations about information seeking and processing are poorer when users are less familiar with the risk (Yhan *et al.*, 2013). This could limit the current research.

Theoretical models concerning members of family households

This section looks at that consequences that can occur when members of family households with children (in the municipality of Wageningen) separate bio-waste. The following studies explain the way in which human (bio-waste) separating behaviour influences both the living and the domestic environments within family residences.

Earlier it was noted that there is a decreasing pattern visible in relation to waste separation by residents of the Netherlands. However, separating bio-waste seems to have decreased in particular more from 2008 onwards. The causes of this development still remain unclear (CBS, 2011).

The act of separating bio-waste often contributes positively to one's living environment. As explained in the literature, the most important consequence of collecting separated bio-waste (which is also perceived as 'green waste') is that it will not be burned together with the residual waste (which is also perceived as 'black waste'). This means no carbon dioxide emissions are released, which in turn prevents the greenhouse effect. On top of that, bio-waste can also be processed into compost and biogas (which is also known as green electricity). Compost is valuable for cultivating ground, as it protects the soil from insects and fertilizers. Biogas or green electricity is seen as sustainable energy; it is a better choice for houses and offices than grey electricity, since it saves fossil fuels. The most important impacts of green electricity are that it prevents carbon dioxide emissions and never runs out, which therefore makes it a sustainable type of energy. At the time of writing, researchers and developers are busy developing cars that run on biogas instead of petrol, which will eventually enable citizens eventually to drive their

cars on recycled waste. However, critics remain sceptical about green electricity, since the process of producing it could still affect the living environment and is not scientifically proven to be entirely environmental-friendly (Rijksoverheid, 2010).

However, there are also some other sides to collecting and separating bio-waste. Interza, a communal research centre that looks at health issues, has questioned whether storing separate bio-waste in a bio-waste container (as is often done in low-rise blocks) and/or buckets (as is often the case in high-rise blocks) is harmful for the health of the family members. Researchers of Interza has stated that it is scientifically proven that the percentage of micro bacteria and moulds increases if the depository time of bio-waste exceeds two days. However, Interza also confirmed that even though the percentage of micro bacteria and moulds increases as time passes, this does not affect a person's health any more than other sources within or outside of the residence (for example, carpets). However, family members who have asthma or allergies have a higher chance of becoming ill from micro bacteria and moulds (Interza, 2011).

Even though members of family households who are in good health usually do not become ill due to bio-waste being stored at or nearby their residence, Interza explains that members of family households should still take weekly measures to prevent illness. The research centre advises inhabitants who choose to store bio-waste inside their residences to always cover the bio-waste container/bucket to prevent air pollution, to clean it using plastic gloves at least twice a week and to empty the it at least once a week. Special attention needs to be paid to cleaning when bio-waste has leaked into the container/bucket (Interza, 2011).

As for members of family households who choose to store bio-waste outside their homes (which often happens in low-rise blocks), the advice is different. Members of family households are advised to not locate the container in the sunshine, to first drain the bio-waste before storing it in the container, to put paper in the bottom of the container so that less waste stays behind and to put natural dry material (such as leaves or twigs) in the bottom of the container to absorb released fluid and prevent drosophila (fruit flies) (Interza, 2011).

Interza also explains that members of family households have to take quite a few measures to store bio-waste hygienically; as a result, members of family households often do not make the effort to separate and store this type of waste. Members of family households are often also unaware of the measures that need to be taken to keep bio-waste hygienically and/or do not have the equipment and discipline to execute them correctly. If they do not, it is more likely that unhygienic living conditions will be created. In this way, human behaviour regarding separating bio-waste can affect the state of health when bio-waste is stored within or outside residences (Interza, 2011).

The consumer interaction model

The previous section explained human behaviour in relation to separating bio-waste and the possible health consequences thereof within and around residences and in the external environment. It is next important to understand how these factors relate to the case of Wageningen.

In this research, the bio-waste separating behaviour of family households with children in the municipality of Wageningen are studied through a literature review, questionnaires and interviews. In order to understand behaviour of the individuals in question regarding bio-waste

separation, attention is mostly paid to attitudes, household activities, household processes, facilities and/or external influences. The 'Consumer Interaction Model' is used for the analysis, as this model outlines daily household activities (such as separating bio-waste) as the behavioural component of the household (see figure 5).

The consumer interaction model (henceforth 'CTI') explained in the next section.

In the CTI model, households are perceived as systems in which humans interact with material resources and/or physical processes that form a part of household activities. The physical processes are especially important since for this research, '*physical processes*' relate to units of '*material resources*' that are used (such as energy and material) and the '*emissions*' produced (such as waste and energy) (Groot-Marcus *et al.*, 2006).

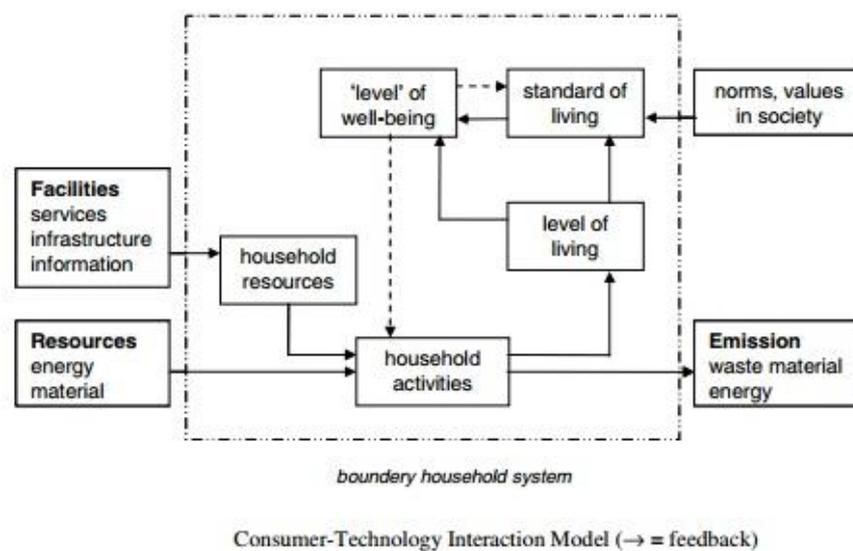


Figure 5: Consumer-Technology Interaction Model

'Facilities' mainly means the infrastructure and services that enter the household from outside. Good examples are transport and the provision of food. The '*household activities*' play an important role in the CTI, since they interact with almost all components of the model. The household activities relate to all of the material and mental processes and include activities such as decision-making, planning, organization and implementation. It is important that the '*resources*' lead the interrelated household activities. In order to do so, the '*feedback mechanism*' is important. The feedback mechanism ensures that all components of the model remain stable, as an unstable system can result from one component ceasing to interrelate with the others. The information that forms feedback mechanisms comes from '*the level of well-being*', '*standard of living*' and the '*level of living*'. The level of well-being means the level at which members of the system experience the quality of their lives/the household activities that form the system. For that reason, the level of well-being is indirectly related to the household activities. The standard of living refers to the quantity and quality of all goods and services consumed. The level of living consists of two questions: what does one has available? And what does one uses? The answers to these questions together form the result of the total living wishes, activities, habits and views of all household members. The '*household resources*' refer to characteristics of the household group

and are therefore differ by household. They include income, space, time, abilities, money and (learning) skills. The model also eventually takes '*external facilities*' into account. External facilities are dependent on social institutions and are not determined by members of family households themselves. Accessibility and availability especially belong to this category (Groot-Marcus *et al.*, 2006). For example, when the municipality decides to move a public compost container to another location in the area, members of family households can be affected.

Strengths and weaknesses

To justify the use of the CTI model, an evaluation is needed to identify its strengths and weaknesses and see how its fits into this research.

- An important strength of the CTI is that it studies the relationship between human behaviour, technology and environmental effects (Groot-Marcus *et al.*, 2006). The knowledge that can be produced by this model is credible for this research as this research is especially looking at the relationship between human behaviour in daily recurring households activities and environmental effects.
- The CTI includes several aspects of a family household, such as 'resources' and 'emissions' (Groot-Marcus *et al.*, 2006). These components are quite important to this research as well, because the study looks at resources (such as food provisions, information) that can lead to emissions (such as recycled materials, green electricity).
- A limitation of the CTI could be that it covers too many aspects of family households to study separating bio-waste behaviour in particular (Groot-Marcus *et al.*, 2006). However, it is not always necessary to consider all aspects of the model.
- Another limitation of CTI is that it is difficult to apply to all family households, as the theory explains that no two households are the same; every household has its own resources and plans and decides in its own way. This is because every family household has its own members and thus has different levels of well-being, standards of living and levels of living (Groot-Marcus *et al.*, 2006).

Integrated household model

The most effective theoretical framework to use for this research is a model that describes components in chronological order from 'information accessibility', 'information seeking', 'information processing' to finally 'engagement to action behaviour', as the aim is to study these steps among households in Wageningen in relation to bio-waste separation. However, such a model is not easily found in the literature, as most models (such as the models presented above), only explain separate components on their own. The decision has therefore been taken to merge the TPB, SCT, RISK and CTI models together in order to cover all components. The TPB and SCT models are selected as they cover aspects that together make them complete. The TTM model seems to have many overlapping aspects; one of its disadvantages is that it analyses the transition between the stages rather than the stages that eventually lead to behaviour change (Brug *et al.*, 2004). Since this research only studies a small number of households to find in-depth causes and explanations concerning users' bio-waste separation behaviour, the TTM may be too superficial for this research. The RISK model is chosen since it is the only model that

forms effective links among all variables and provides a clear explanation of information seeking and processing (Yhan *et al.*, 2013).

The integrated model is illustrated in the figure below. The framework of the CTI model functions as the base of the model, although it has been (slightly) adjusted in order to integrate components from the TPB, SCT and RISK models that strive to provide knowledgeable information, raise awareness and engage householders for action. A new explanation of the Integrated Household Model is given underneath the next figure. The components of the Integrated Household Model generally hold the meaning the CTI model has given to the components, but it is also explained how the components were used in context of this research.

The integrated model is illustrated in the figure 6. The framework of the CTI model functions as the base of the model, although it has been (slightly) adjusted in order to integrate components from the TPB, SCT and RISK models that strive to provide knowledgeable information, raise awareness and engage householders for action. A new explanation of the Integrated Household Model is given underneath the next figure. The components of the Integrated Household Model generally hold the meaning the CTI model has given to the components, but it is also explained how the components were used in context of this research.

The integrated model is illustrated in the figure below. The framework of the CTI model functions as the base of the model, although it has been (slightly) adjusted in order to integrate components from the TPB, SCT and RISK models that strive to provide knowledgeable information, raise awareness and engage householders for action. A new explanation of the Integrated Household Model is given underneath the next figure. The components of the Integrated Household Model generally hold the meaning the CTI model has given to the components, but it is also explained how the components were used in context of this research.

- **Facilities.** Facilities involve services, infrastructure and information provided by the municipality to enable members of family households to separate bio-waste in and outside their residence. Information such as waste calendars or services such as picking up containers from households help family members to separate bio-waste.
- Right underneath facilities, **resources** is mentioned. In the IHM, resources are tools provided by the **municipality** that help members of family households to separate waste. The municipality of Wageningen has for example provided the green container to members of households in low-rise blocks and bio-waste buckets to members of households in high-rise blocks to ease separating bio-waste.
- **Household resources** is the collective term for all the tools that members of family households have received from the municipality and individually purchased to separate bio-waste in their household. Household tools contain for example bins, bin bags, compost buckets etc. However, other important household resources include money, time, abilities etc. In this thesis, household resources also include present knowledge levels, availability of space and the willingness to separate waste.
- As there are different kinds of resources mentioned in the IHM (household- and municipal resources) it is important to understand how the term 'resources' is used in this thesis. Therefore, it is important to note that the term **resources in the IHM** refers to the total of household and municipal resources which influences the feeling of control of members of family households. However, from the **perspective of the municipality**, **resources** refer to *information-* and *municipal* resources (like the green container) that can have an influence on the separating behaviour of members of family households.
- **Knowledge** includes the present level of knowledge that family members of households have gained concerning bio-waste. What do members of family household still know of prior interventions that aimed to teach them about bio-waste? Or to activate them to separate bio-waste? Do they know which (food)items belong to bio-waste? Do they know what health effects recycled bio-waste materials have on their living environment (in and outside their residence)?
- **Level of living.** The level of living consists of two questions that need to be answered: Which municipal and household resources do family members have available; Which of these resources are actually used? The answers to these questions together form the result of the total living wishes and activities of all household members, which is called the *output of living*. In this stage, members of family households develop a perceived notion of self-efficacy, which in turn indicates their feeling control. Do members of family households feel capable and in control enough to separate bio-waste? Then it means that members of households have a high feeling of control. Or do members of households feel incapable and not in control enough to separate bio-waste? Then, members of households have a low feeling of control. The feeling of control is largely influenced by the resources. For that reason, a direct action line has been established between municipal-, household resources and the level of living. However, other notions can also influence the perceived self-efficacy of members of households, such as present

knowledge levels and *social pressure*. The notion 'knowledge' does not have to be of direct influence but can indirectly influence the perceived self-efficacy of members in households in a later stage as knowledge influences the *engagement for action* of members of households first, which influences the performed type of household activities. Then, the feeling of control of members of households could be influenced. The *standard of living* (explained later on) is directly influenced by social pressure, which can influence the members' feeling of control again through their household activities.

- **The standard of living** refers to the perceived *norm* (also called the *subjective norm*) that is set by members of family households as the standard to separate bio-waste. In this stage, members of family households have set a norm to separate bio-waste and strive to achieve the norm. If members of households have a low feeling of control in the level of living (for example because of a lack of household resources and/or a lack of knowledge) it might affect their *norm* to separate. For that reason, the standard of living is subsequent to the level of living, as municipal- and household resources, knowledge, engagement for action, household activities and the feeling of control play a role in achieving the norm members of households have set for themselves. However, the norm to separate, can be influenced by **social pressures**. Social pressures can influence mood and behaviour of members in family households, which can cause members of family households to separate bio-waste more or less frequently. Social pressures include pressures from numerous social angles such as colleagues, neighbours, family, peers and so on.
- In the **level of well-being** members of family households experience the quality of their lives and their household activities. In case members of households are unsatisfied about their quality of living and household activities, most likely changes will be made. In this stage, feedback is given on multiple criteria within a household to improve the quality of household activities. However, the household activities come to being by a lot of other components in the model. In order to improve the quality of the household activities, other components need to be improved first. For that reason, the level of well-being can also be seen as the *evaluative frame of reference* as the frame treats the needed variables in the IHM that are relevant to improving the quality of the household activities. The evaluative frame closely relates to the knowledge and mode of reasoning of members of households (Leeuwis with Van den Ban, 2003). As knowledge plays a role in the mode of reasoning when members of households aim to make a change if they want to improve the quality of their household activities, the evaluative frame of reference allows us to study an individuals' *attitude* towards a specific practice (Fishbein and Ajzen, 1980). The evaluative frame works as follows; The generated information in the level of well-being is led back into the system so that improvements can directly be made in the household activities, which will deliver an improved feeling of control in the level of living and an improved norm for members of households to reach in the standard of living. Hence, the established arrow from level of well-being to household activities. However, improvements can also be made in the standard of living, which results in improved household activities, which in turn improve the level- and standard of living again. Hence, the established arrow from the level of well-being to standard of living. Finally, improvements can also be made in the middle of the stage where household resources

and knowledge come together to engage members of households for action. If improvements are made in household resources and knowledge levels, it is assumed that household activities will subsequently improve as well and thus the feeling of control and the norm to separate as well. Hence, the established arrow from the level of well-being to the centre of where household resources and knowledge come together.

- In this thesis, the **engagement for action** are determined by facilities, household- and municipal resources, knowledge levels, the evaluative framework including wherein attitude is studied and social pressure. The aforementioned motivations can also be seen as the intrinsic motivations which determine the motivations for action.
- The **household activities** include all activities that are undertaken by family members within a household. The household activities form the heart of the model as this component is influenced by all other components.
- **Emissions** can for example be health risks of bio-waste or compost, which is a direct emission of bio-waste. Emission types depend per household as it depends on what household do with bio-waste and the municipal and household resources. However, emissions like bio-waste can relate to *perceived health risks*, which include risks to one's health perceived by members of family households. A **feedback mechanism** is established between emissions and the municipality. As the municipality researches the amount of collected bio-waste and feedback of the members of family households from time to time, possible changes can be made in the provided resources and facilities.

Theoretical concepts

The research objectives and sub-questions contain concepts that need to be explained concretely in order to understand how the main research question will be answered. The concepts that are important to this research relate to the fields of the communication changing behaviour models, information models, a healthy living environment and family households with children. Brief explanations of these concepts and how they are used in this research are presented below.

Communication and information models

The communication models described in this research are used to explore how present health behaviour can be changed into new behaviour regarding separating bio-waste. These models often relate to the *accessibility of information*, *information-seeking behaviour*, *information processing-behaviour* and *engagement for action behaviour*. In order to understand this research efficiently, it is important to understand what each of these terms pertains to.

- *Accessibility of information*. This refers to the area of research in which humans can access information regarding certain research objectives to simplify the complexity of the to-be-gained research information. The information can then become more effective for human users to access and further process information. In this research, accessibility of information means, that members of family households with children in Wageningen have multiple opportunities to access information sources such as television, radio, newspapers, posters and leaflets.

- *Information-seeking behaviour.* According to Wilson, information-seeking behaviour refers to the way in which people search for and use information. Wilson also described information behaviour as the ‘totality of human behaviour in relation to sources and channels of information, including both active and passive information-seeking, and information use’. Wilson also explained that information-seeking behaviour is the micro-level of behaviour employed by the seeker (in this thesis, members of family households in Wageningen) in interacting with information systems of all kinds between the seeker and the system (Wilson, 2000).
- *Information-processing behaviour.* According to Griffin *et al.*, individuals process information through what is perceived and interpreted. These researchers also stated that social information processing differs by person because not everyone can process information in the same way (Griffin *et al.*, 2005). In the current research it is especially, important to understand that ‘information processing’ means that processing depends on one’s interpretations.
- *Engagement for action behaviour.* According to Ajzen, action behaviour reflects an individuals’ observable response in a given situation with respect to a given target (Ajzen, 1991). In the current research, the term ‘engagement for action’ stands for the observable response of members of family households to separate or not to separate bio-waste in the domestic sphere (i.e. the given situation).

Healthy living environment

A living environment generally refers to the circumstances of the surroundings of the particular place where a person or a group of people live. In this research, the living environment of Wageningen is the focus, as this is where the family households being studied live.

Municipal waste

Much attention is paid to domestic waste in this research. According to the European Waste Categories and Codes, ‘domestic waste’ is part of ‘municipal waste’. Municipal waste refers to all of the waste produced within a household purely through living. This includes different types of households, such as caravans, residential homes and parts of educational facilities, hospitals and nursing homes (EWC, 2002). However, in this research the only municipal waste that will be considered is the domestic waste produced in family households with children. The other categories mentioned above will be excluded.

Biodegradable waste (i.e. abbreviation for bio-waste)

According to the European Commission, ‘biodegradable waste’ is officially defined as compostable garden, park, food and kitchen waste from households, restaurants, caterers and retail premises, and comparable waste from food processing plants. The European Commission also states that biodegradable waste excludes by-products from food production that cannot become waste (European Commission, 2012). In this research, biodegradable waste is used in terms of the garden, vegetable and fruit waste (in Dutch, ‘GFT’-waste) that is produced in family households with children. No attention is paid to biodegradable waste produced in other domestic environments.

Residual waste

Residual waste refers to the total collected household waste that cannot be re-used, recycled or composted. According to the European Commission, residual household waste includes garden waste, clinical waste, re-used waste material and any other household waste material collected by the authorities (EWC, 2012). In this research, the focus of residual waste is in the domestic context.

The greenhouse effect

There are different definitions given for the greenhouse effect. The term 'global warming' is often used as well. In general, the greenhouse effect refers to the act of atmospheric heating caused by solar radiation. The increasing quantity of atmospheric carbon dioxide (from the burning of fossil fuels), together with the release of other gases, is causing global warming (which is another term for the greenhouse effect) and high surface temperatures (Nordhaus, 1991).

Family households with children

This research frequently refers to studying members of family households with children. It is therefore important to understand what these households are and which domestic activities pertain to them.

- *Family households with children.* As explained by Groot-Marcus *et al.*, 'household groups' are social units, often families existing from one or more persons with a communal household who have communal activities, partly with common goals. These researchers also state that households can be considered as 'systems' in which an activity needs human input (Groot-Marcus *et al.*, 2006). In the current research, households are considered to be systems and must consist of at least three members (parents and child(ren)).
- *Domestic sphere.* The domestic sphere, which is often referred as 'the private sphere', is a certain sector of societal life in which individuals enjoy a degree of authority, unhampered by interventions from outside institutions. Examples include family and home (Ross, 2006). In this research, the domestic sphere only refers to the family's homes.

4. Context of research

In this research it was chosen to perform a case study in the municipality of Wageningen. The municipality of Wageningen was chosen as research area as other municipalities nearby (Arnhem and Ede) were not interested in the research objectives of this thesis. The municipality of Arnhem explained to have collected sufficient information in the past concerning the separating behaviour of family households in their municipality. As the municipality already had sufficient information they also did not have the time and motivation to point out a supervisor in the field of bio-waste and health to supervise my research. The municipality of Ede also explained not to have time to supervise my research. Unlike the municipality of Ede and Arnhem, the municipality of Wageningen acknowledged that there is a difference in the separating bio-waste behaviour of family households in low- and high-rise blocks. For that reason the municipality of Wageningen was interested in the underlying causes that might explain the difference in separating behaviour. This research was also an interesting way for the municipality to gain more insight in what they can improve on the present information tools they offer and also to find out which factors are still lacking to engage members of family households in low-rise and high-rise blocks to separate more bio-waste. The municipality especially focused on which material-, information resources and services needed are stimulating and which can still be improved to engage members of households for action. For that reason, two sub questions in this thesis are devoted to the needs of the municipality of Wageningen. Other municipalities than Arnhem or Ede were not approached for this research as other municipalities were located further away and could cause practical limitations (such as time and money).

As explained in the introduction, it is taken into account that the municipality of Wageningen might be 'greener' than other municipalities. However, the municipality of Wageningen also deals with a change in the separating behaviour of family households regarding bio-waste from 2008 onwards. Therefore, it is still worthwhile to research the separating behaviour of households in Wageningen. Especially when the municipality of Wageningen acknowledges that there is interest in gaining more information about the stimulating and lacking factors which drive members of family households to (or not to) separate bio-waste in general in low- and high-rise blocks.

It was chosen to focus on households in general and not on companies as statistics of the CBS showed a large decrease in the separating behaviour of bio-waste among households. Statistics of CBS also show that in general, companies tend to separate bio-waste more stable throughout the years (CBS, 2010). For that reason, it does not seem to be a large problem in society. As the municipality of Wageningen also explained to be interested in gaining more in-depth information about family households living in low- and high-rise blocks, it was more challenging to focus on family households instead of business communities.

It was chosen to focus on family households with children (aged 4-12) as it was presumed that family households with children are the bulk producers of bio-waste in comparison to other types of households. Therefore it was more challenging to focus on family households instead of one- or two-persons households (such as students living alone, singles or young couples without children) as it makes sense that the municipality of Wageningen gains more from a behavioural change in families with children (bulk producers) so that more bio-waste can be collected.

Furthermore, this research focuses on the health effects that bio-waste can deliver to the living environment members of family households in and outside their residence. A distinction is made between the 'direct' and 'indirect' health effects that bio-waste can contribute to.

Direct health effects reflect on the direct change in and outside the living environment of members of family households. For example the water they drink or the air they breathe on their balcony or in the garden. As recycled bio-waste can deliver more purified drinking water and cleaner air, members of family households can profit directly from these health benefits. However, separating bio-waste can cause fruit flies when it is stored for a longer period. Fruit flies and/or other insects can be seen as health risks which may directly affect the living environment in and outside the residence of family households as well. Examples of indirect health effects are for example what type of petrol members of family households use. If members of households use green petrol for their car or biogas to heat their residence, they help to reduce the greenhouse effect. In this way members of family households can indirectly profit from a healthier living environment in and outside their residence on the long term.

5. Methodology

Qualitative research methods

In this study, qualitative research is chosen as the method best suited for answering the research questions. Green and Thorogood have stated that qualitative research is an approach that aims to find answers to 'what, how and why questions about social aspects of the research phenomena' (Green&Thorogood, p. 25, 2004).

The thesis is written as a case study. The research takes place in multiple areas within the municipality of Wageningen. The results obtained in these different areas are compared with each other. A case study was selected as it is not feasible to study the complete population within the Netherlands with respect to the non-separating bio-waste attitudes of family members of households in the domestic sphere. Case studies enable researchers to study the same phenomena within a real-life context on a smaller scale (Green & Thorogood, 2004).

The methods used for this thesis research are as follows:

1. *Literature review.* A critical review of some of the existing literature on the topic of separating bio-waste behaviour in the domestic sphere has been undertaken. Literature reviews help to frame the research topic and provide information on current developments in the field of bio-waste separation and health consequences to the living environment. This background is necessary to understand the theoretical context of the research. Furthermore, an intervention analysis is conducted of past initiatives to raise awareness and engage members of family households with children to the act of separating bio-waste.
2. *Key-informant interviews.* Interviews are conducted with the most responsible individual(s) for the households' domestic chores. The selected households include parents with children aged from 4 to 12 years. The key members of the households are selected on the basis of their willingness to participate. The interviews are conducted face-to-face and recorded (with the interviewees' permission) so that they may later be transcribed. The interviews are completely open, since the aim is to find out about the causes and restrictions regarding bio-waste separation behaviour. Open interviews give interviewees the chance to express their feelings and emotions toward separating bio-waste and health consequences. Interviews were conducted anonymously and confidentially.
3. *Questionnaires for members of family households with children.* This method contains questionnaires with members of family households in general. The aim is to again question the key-informants of the households, although it is not always possible to select these individuals. Others can provide knowledgeable information as well, since they are also part of the household and have a share in separating bio-waste. The questionnaires are semi-structured and based on the Consumer Interaction Model (CTI), the Social Cognitive Theory (SCT) and the Relevance Information Seeking and Processing (RISK) models, which together form the Integrated Household Model (IHM). The IHM model is needed to estimate (existing) beliefs, norms and values regarding bio-waste

behaviour. At the same time, semi-structured questionnaires also leave space that allows answers to evolve during completion. Questionnaires are conducted anonymously and confidentially.

The aim is to conduct key-informant interviews first, then to use the questionnaires. This order is important as interviewees can provide more credible information before other participants are exposed to the questionnaires. The goal is to have different respondents (other than the interviewees) complete the questionnaires, in order to gather different opinions and beliefs.

A research plan has been set up for this study. The most important research definitions are explained in the next paragraphs.

Research methodology

Sample population

There were multiple obstacles that hinder access to household members. For example, members may be unwilling to participate. It is not possible to receive a list from the municipality with members of family households, which limits the access to reach members of households as well. As a result, it was feasible to include 40 family households with children aged 4 to 12. As this thesis is focussed on Wageningen, 20 households in low-rise blocks and 20 households in high-rise blocks have been randomly selected from multiple neighbourhoods within Wageningen.

Target group characteristics

The target group consists of members of family households with children aged 4-12 year. It is assumed that parents are aged between 20 and 60 years and live in either low- or high-rise blocks.

Sample recruitment of interviewees

Given the nature of the research question, it was chosen to use cluster sampling to recruit family households with children. In order to find a representative mix of interviewees, a gym called 'Enjoy Health Club' was visited to take interviews. As the owner of Enjoy Health Club explained to have measured members of Enjoy come from different social backgrounds and have different educational levels, it was presumed that members of Enjoy Health Club represent a good mix. In the gym, a small coffee corner is situated in the front (as illustrated in figure 7) for members to rest and socialise. To increase the willingness of interviewees to participate, it was asked if interviewees wanted to be interviewed during consuming a drink before or after working out.

In total, 15 interviews have been taken. From this number, only six most compelling interviews have been selected to use in this thesis. The criteria used to select these six interviews are based on gender, high- and low-rise blocks, separating and non-separating behaviour in relation to bio-waste and motivation to submit photos of bio-waste for use in further analysis. As it was difficult to apply all of these criteria to such a small population, some criteria ranked higher than others.



Figure 7: Gym 'Enjoy Health Club'

An equal selection between genders has been made (i.e. three males and three females), although it was difficult to find an equal division among households in high- and low-rise blocks. However, all six of the interviewees/household members do live in different types of housing and have different stories about separating bio-waste. It is therefore worthwhile to study their cases, particularly as they did also send in photos.

All research components of the IHM have been reflected in the pilot interviews. Much information has been shared by the members of family households who were interviewed. The results are further discussed in the analysis. To see an overview of the questions asked and the answers received, please see the appendix.

Operationalisation of interview questions

In order to determine whether members of family households in Wageningen truly act in accordance with the literature and the theories of the integrated household model (henceforth 'IHM'), interviews and questionnaires have been conducted to measure differences and similarities. Overviews of the interviews can be found in the appendix. In this paragraph it is explained which research intentions each interview question had. The interviews have been taken in Dutch, as it would become difficult for members of family households to take interviews in English.

Question 1: demographic data

This question aimed to collect the gender, level of education, age, type of housing, marital status, the number of family household and the composition of the family household (how many children and adults are involved).

Question 2: intentional behaviour

In order to find out as much as possible concerning interviewees' intentional behaviour, it was aimed to measure if interviewees separate bio-waste and which household resources and municipal resources they use to separate bio-waste, also when they would not separate bio-waste.

Question 3: household activities

This questions focused on the household activities regarding separating bio-waste it was aimed to measure which activities regarding bio-waste were perceived as easy and as difficult to do.

Question 4: knowledge

To measure what members of family households in general know about bio-waste, a quite open question was asked to see which topics popped up into interviewees' minds. It was also asked which association interviewees make between bio-waste, the living environment and health effects.

Question 5: information seeking, processing and action behaviour

In this question, it was asked if and how interviewees search for information concerning bio-waste. If interviewees did not search, it was asked where they would search if they had to. Other parts of the question researched how interviewees processed information (would they save information, throw it away, remember information etc.) and what they actually did with the information (do they separate more/better or are they discouraged to separate and why).

Question 6: level of living (motivations)

To research which resources (as well as household and municipal resources are meant with resources) interviewees have available to separate bio-waste. Even when they would not separate. Another question was which resources interviewees would actually use as the availability of resources and the resources that are utilized together form the level of living.

Question 7: subjective norm (motivations)

It was asked how often interviewees find it normal to separate bio-waste. In case interviewees would not separate, the subjective norm would be never.

Question 8: level of well-being (motivations)

To find out how satisfied interviewees are with their separating behaviour, it was asked if they would grade their separating behaviour within their household on a scale from 0 to 10. It was often asked whether their children and partner would separate as good or as bad as the interviewee. It was sometimes asked in the moment what needs to be changed to stimulate the interviewee to separate more or better. If they are unsatisfied, which changes are they going to make and to which stage do these changes reflect in the IHM. It was of interest to find out whether these changes are in accordance to what is suggested in the IHM. The IHM suggests, a change is most likely going to be made in the household activities or the standard of living but as it became clear that interviewees also would like to see changes in the type of resources they receive, the IHM had to be adjusted.

Question 9: social pressure

It was asked whether interviewees feel any form of social pressure from outside their household that pressured the interviewee and his/her family to separate bio-waste. No examples of social pressure were given, any answer would be correct in order to investigate which relations interviewees make with the idea of social pressure.

Question 10: awareness

The base-line study has been set-up to determine a point of departure of all the prior health communication interventions from 2008 onwards. By explaining that the municipality of Wageningen has performed several health communication interventions and then asking what interviewees still remember of these interventions, it was generally measured to what extent interviewees became aware of the performed interventions. It was an open question, no examples of interventions were given in order to find out which interventions raised more awareness than others.

Question 11 & 12: engagement for action

Both questions measure to what extent interviewees and their families engage to the topic of separating bio-waste. However, engagement for action can happen in two ways: members of family households can engage to separating bio-waste when they have more resources (for meaning information resources and materials such as the green container) or members of family households can engage to separating bio-waste when municipal services improve. As it is of interest for the municipality of Wageningen to know what the stimulating and constraining factors are from both perspectives, the questions about engagement for action have been asked twice. Question 11 measures engagement for action on the level of household resources and question 12 measures engagement for action on the level of municipal resources.

Question 13: facilities

It was asked if interviewees could point out where the common containers in their neighbourhood are located to research if members of family households know where to bring their bio-waste.

Question 14: perception

In order to measure the perception of the interviewees it was asked if the interviewee wanted to send in photos of their bio-waste from a close and far-way point of view. In this way it could be measured what interviewees *think* (as they give the explanation on bio-waste in the interview) they know and what actually *is* the case on the photos they send in.

Sample recruitment questionnaires

As for the questionnaires, it was also chosen to use cluster sampling to recruit family households with children. In order to find a representative group of members of family households, it was chosen to visit the canteen of swimming pool 'De Bongerd' in Wageningen during children's' swimming classes. Parents had to wait for 50 minutes in the canteen for their child, which gave me the opportunity to hand out questionnaires. With permission of the municipality of Wageningen and the swimming pool, the canteen had been visited three times in total to gain 20 questionnaires. It was aimed to select 10 males and 10 females. As it was difficult to find members of family households living in high-rise blocks it was decided to only select members of

family households living in low-rise blocks. In the picture below, the canteen of the swimming pool is illustrated.



Figure 8: Outside terrace of swimming pool 'De Bongerd'



Figure 9: Inside terrace of swimming pool 'De Bongerd'

After 20 questionnaires had been selected, 20 other questionnaires had been selected in high-rise blocks.

To work efficiently, a second researcher has helped to collect the remaining 20 questionnaires in high-rise blocks in four different neighbourhoods. The chosen neighbourhoods were selected as they were also mentioned in the 20 questionnaires coming from respondents living in low-rise blocks. In order to keep the members of family households living in low- and high-rise blocks as comparable as possible, it was chosen to select the same neighbourhoods. It was not always possible to distribute questionnaires in the chosen neighbourhoods, therefore other neighbourhoods have been chosen as well. Questionnaires would be distributed at the door and picked up later that day. To increase the level of participation, small delicacy and tasty snacks have been distributed to thank participants for their corporation.

All research components of the IHM have been reflected in the pilot interviews. Much information has been shared by the members of family households who were interviewed. The results are further discussed in the analysis. To see an overview of the questions asked and the answers received, please see the appendix.

Operalisation of questionnaire questions

In accordance with the IHM, the questions for the questionnaire treat all theoretical components of the IHM. However, the questions of the questionnaire are more specific. In some cases it was required to narrow down a question to clarify the meaning of the question better. In some cases questions were deleted or expanded as interviewees explained important topics that were in line with the theory but had gone unnoticed before.

In total, 31 questions have been asked in the questionnaire. Each set of questions, aims to measure a certain component of the IHM. The figure below illustrates which questions have aimed to measure which components. Please see annex, for an overview of the questionnaire.

Numeration of research questions	Research intention
Q. 1 -7	To collect demographic data: <ul style="list-style-type: none"> • Gender • Age • Level of education • Marital status • Composition of household • Neighbourhood
Q. 8	To research household activities: <ul style="list-style-type: none"> • Intentional behaviour
Q. 9 – 11	To research the level of living: <ul style="list-style-type: none"> • Availability of household resources (Q.9) • Availability of knowledge (seen as a household resource, Q.10) • Municipal resources (Q.11)
Q. 12 – 15	To research the subjective norm: <ul style="list-style-type: none"> • From the respondents perspective (Q.12) • From the respondents perspective of his/her partner (Q.13) • From the respondents perspective of his/her child(ren) (Q.14) • From the respondents perspective in regards to other family households (Q.15)
Q. 16- 18	To research the level of well-being: <ul style="list-style-type: none"> • Open question (Q.16) • Level of satisfaction (Q.17) • Motivation for the level of satisfaction (Q.18)
Q. 19 - 21	To research present knowledge levels: <ul style="list-style-type: none"> • Test-questions on general statements bio-waste according the 7-point Likert-scale (Q.19) • Test-questions true/false on bio-waste (Q.20) • Test-questions true/false on food-items (Q.21)
Q. 22 - 23	To research attitude regarding household activities: <ul style="list-style-type: none"> • Easy perceived household activities (Q.22) • Difficult perceived household activities (Q.23)
Q. 24	To research social pressure: <ul style="list-style-type: none"> • Norms & values in society (Q.24)
Q. 25 - 30	To research information seeking, processing and action behaviour: <ul style="list-style-type: none"> • Municipal information resources (Q.25) • Information processing behaviour (Q.26) • Information processing behaviour and awareness (Q.27) • Appreciation and depreciation of prior communication health interventions (Q.28) • Information seeking behaviour (Q.29-30)
Q. 31	To research the engagement for action of members of family households: <ul style="list-style-type: none"> • Stimulating and constraining factors

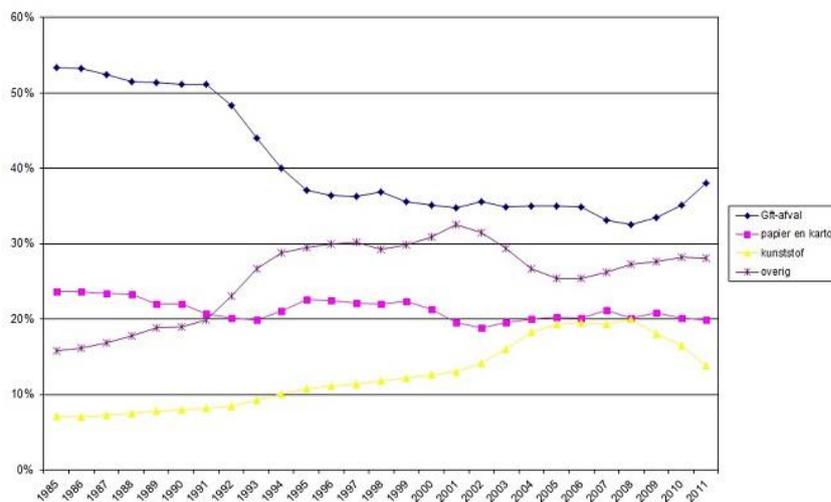
6. Results

In this paragraph, it is explained what information is already known about certain topics concerning separating bio-waste by members of family households. The used literature partly cover national studies or studies in regional areas other than Wageningen. However, the results of these studies may also add value to the problem of non-separating attitude of members in family households in Wageningen, since it is assumed that they can be generalized to a certain extent. The second part of the literature review considers prior health interventions undertaken on family households in Wageningen by the municipality.

Literature review

Statistics on (bio-waste) separation among households versus companies in the Netherlands

These days a lot of domestic waste is produced in the Netherlands. The Component-Based Servicing, which is a municipal agency in the Netherlands, is responsible for collecting and publishing reliable statistics. These statistics can be consulted by every inhabitant of the Netherlands. Component-Based Servicing (henceforth 'CBS') mainly researches societal aspects, then incorporates information from macro-economic indicators (such as economic growth and consumer prices) to the incomes of individuals and households (CBS, 2014). CBS statistics shows that Dutch households produced more domestic waste on average in 2012 in comparison to 1980. Not only has the absolute amount of domestic waste changed, but the composition of domestic waste has changed throughout the years as well. The CBS divides domestic waste into different categories, namely: bio-waste in combination with residual waste, paper, diapers, plastic, glass, iron, non-iron, textiles, small amounts of chemical waste and other waste. The trend between 1980 and 2014 strongly focuses on the reduction of total residual waste, which decreased from 53% in 1980 and to only 38% in 1998. Although several factors contributed to this development, the most important one was the introduction of a municipal requirement to separate bio-waste (which includes garden, fruit and vegetable waste) from residual and other types of waste in 1990. As a result of this development, bio-waste decreased further to 35% in 2000 and to 32% in 2008. The percentage then remained somewhat stable until 2009 and then increased slightly between 2009 and 2014 again (CBS, 2012).



According to studies from

several

Figure 10: Trend of waste separation 1985-2011

Rijkswaterstaat, annual surveys have been distributed among supermarkets, offices, retail and servicing companies to find out how much waste has been produced. It becomes clear that 300kg more waste has been burned than separated in 2012 compared to 2008. However, it is noted that the decrease in collecting bio-waste of supermarkets, offices, retail, servicing companies compared to households happened more gradual than in households. In 2014, supermarkets, offices, retail and servicing companies separated approximately for 60%, which is higher than in households. It remains unclear from the performed study what could be the reason for the higher separating behaviour of members in companies. In the results it is explained that members of companies feel more responsibility to separate as it is more often included in the companies' policy. This result might explain why there was not a sudden decrease noticed in separating bio-waste between 2008 and 2014, like in households (Rijkswaterstaat, 2014).

The municipality of Wageningen

The municipality of Wageningen collects 131 kg of waste on average per resident. Almost 51% of this number is collected as bio-waste and almost 49% is collected as residual waste. There is significant difference between the produced waste in high-rise blocks and low-rise blocks. Low-rise blocks in total deliver 170 kg of waste (114 kg per resident), whereas high-rise blocks deliver 102kg waste (12kg per resident). In low-rise blocks 67% of the waste is being collected as bio-waste, whereas this percentage is only 12% in high-rise blocks (Gemeente Wageningen, 2014).

Municipal resources

In the Netherlands, every municipality has the freedom to decide which colours are assigned to the mini containers to collect waste in. It is also decided per municipality how many mini containers are provided per household. The assigned colours, sizes and numbers that are provided to households, differ per municipality (Gemeente Dalfsen, 2015).

There are 26 national spots where bio-waste is recycled (Vereniging Afvalbedrijven, 2015). The municipality of Wageningen has provided every household in low-rise blocks three types of containers to separate waste: a green container to collect bio-waste, a grey container to collect residual waste and a grey container with a blue lid to collect paper and cartons. All containers are 140 litres in size. However, the 140 litre-sized containers do not always suit every household. For that reason, the municipality enables family households to exchange their containers for a smaller or bigger sizes whenever preferred. In case a family household desires to receive an extra container, the household needs to pay more taxes. Extra compost buckets can be purchased through the municipality as well. Households in high-rise blocks can make use of the blue, green and grey containers as well. In some cases, family households receive bio-waste buckets as well. However, members of households in high-rise blocks can also order more resources when needed (Gemeente Wageningen, 2014).

Every household must place their containers on the location where municipal workers pick up and empty the containers. Family members can recognize where to place the container in the communal pick-up area as the floor is symbolized with a pavement. Municipal workers come to pick up and empty the container at arranged times once a week. The pick-up service is for each neighbourhood on a different day of the week. The municipality allows family households to place their container on the local pick up spot one night before the pick-up time. However,

members of family households must collect their containers as soon as possible after municipal workers have emptied the containers. In case a container is stolen or destroyed, family members in Wageningen have to report this to 'ACV' (a municipal agency in Wageningen) so that they can receive a new container. The containers are property of ACV. For that reason, ACV will block the missing container in the municipal system so that municipal workers will not collect the container again. Mutually shared containers of high-rise blocks are less often emptied by municipal workers as they are larger in size than mini containers in low-rise blocks (Gemeente Wageningen, 2014).

Restraining factors to separate bio-waste by members of family households

As explained before, there are 26 general halls where bio-waste is recycled. The municipal association of bio-waste, is an association that is engaged to the topic of recycling bio-waste as efficient as possible. The association outlines the restraining factors that municipalities of the Netherlands have reported from members of family households in the separation of bio-waste. The association also studies how to overcome the reported problems by the municipalities and advise municipalities how to stimulate members of households to separate bio-waste more (Vereniging Afvalbedrijven, 2015).

Two most restraining factors

In cold winters, it was noticed that less bio-waste was separated in municipalities as interviews showed that members of households were less tempted to go outside to empty their waste. In hot summers it was also noted that less bio-waste was less separated as hot weather conditions would attract more insects, which members of household dislike. It was noted that seasons play an influencing role when it comes to separating bio-waste and is applicable to households that are living in low- and high-rise blocks (Vereniging Afvalbedrijven, 2015).

Another important notification is that, especially innovative tools are needed for members of households living in high-rise blocks as a lot of households in high-rise blocks do still not separate. Special household resources have to be established and provided by municipalities to members of households living in high-rise blocks. For example, city bins (bins made of light material) so it is not heavy to carry on stairs (Vereniging Afvalbedrijven, 2015).

There were no specific problems reported by the municipality of Wageningen but as the problems were reported on a large scale, it is applicable to the case of Wageningen as well.

Present information resources concerning bio-waste

Prior experiments to stimulate the separation of bio-waste

Multiple experiments have been performed nationally by municipalities to stimulate separating bio-waste among households in low- and high-rise blocks. From all performed experiments, results show that learning from each other and learning from example functions (i.e. learning from a bio-waste expert), are important to members of households. Other results shows that extra money that can be gained through taxes, do not play an important role to members of households. In general, individuals explained that the to be gained amount of money is too small compared to the effort that has to be taken to separate bio-waste (Vereniging Afvalbedrijven, 2015).

Advised information resources

Based on the restraining factors of households to separate bio-waste, which are reported by municipalities, the association also informs municipalities what municipalities can do especially for households so that more bio-waste can be separated as the national goal in 2020 is to separate bio-waste for at least 80% (Vereniging Afvalbedrijven, 2015).

Present advises focus on:

As municipalities often lack the time and effort to explain the complete journey wherein bio-waste travels from waste to a recycled material, the association has written ready-to-use text blocks that explain the journey of bio-waste. Many municipalities only communicate the travel process of bio-waste through the waste calendar and door-to-door papers (many of the door-to-door papers are not read because households refuse to receive door-to-door papers). The text blocks are allowed to use by municipalities, however, municipalities must take age groups into account as the text cannot always be applied to every age group because the separating behaviour might differ per age group (Vereniging Afvalbedrijven, 2015).

Organising coaching days on set dates within municipalities where points of mutual interest are located throughout the municipality. Households are enabled to visit the points of mutual interest and ask all kinds of questions. It is important that the points of mutual interest, form places that are well-known among households. For example, the church, a popular square in the city centre, soccer clubs, municipal centres etc. This way of stimulation is also called 'the social network approach'. The municipality of Arnhem already used the social network approach. It is assumed that introducing the benefits of bio-waste in generally well-known places, stimulates information access that can take away barriers of members of households to separate (Vereniging Afvalbedrijven, 2015).

Municipal infrastructure of bio-waste in Wageningen, Ede, Nijkerk, Scherpenzeel and Barneveld

When bio-waste is collected from family households, the waste goes through multiple phases to become recycled products. The municipalities of Wageningen, Ede, Nijkerk, Scherpenzeel and Barneveld have a communal contract with the organisation Twence, a fermentation hall in Enschede. Please see figure 11, for the illustrations of the process of how bio-waste travels to recycled materials. When ACV workers collected all bio-waste, they bring it to 'Twence', a fermentation hall in Enschede (the fermentation hall is the grey house in the middle). In the fermentation hall the bio-waste is reduced to small pieces. The small pieces are ready to be inserted into the fermentation reactor (see the large green pipe to the left in figure 11). In the reactor, bio-waste is converted to compost and biogas. After the fermentation process, pollution is filtered so that only clean compost can be used for soil improvement.

Finally, biogas is separated from compost in a different reactor. In this reactor, biogas is kept warm so that electricity can be produced for family households (Gemeente Wageningen, 2014).



Figure 11: fermentation hall in Enschede

Results interviews

In line with the research objectives, the results of the interview have been divided into the objectives so that it is clear which answers belong to which research aims. Photos of the interviews are treated in the photo-analysis, as it also shows which photos were sent in. Please see annex, for the questions that were treated in the interviews.

1. Influence of intrinsic motivations on intentional behaviour

From all six interviewees, five interviewees have explained to separate bio-waste and four of them were willing to send in photos. Most interviewees have explained to perceive separating bio-waste dirty (some more than others) as bio-waste attracts insects. All interviewees explained to know how to separate bio-waste. Easy perceived tasks concerning separating bio-waste were throwing items into the bin or container, changing bin bags and cleaning bins and containers. Difficult perceived tasks concerning separating bio-waste were mainly to think which (food) items belong to bio-waste and to take out the garbage to throw it in the green container as it stinks. Perceived health risks were associated with polluted air, bad smell and the attraction of insects. Interviewees cannot really explain what kind of impact perceived health risks can have within their direct living environment. From the interviews, it seems that the most threatening perceived health risks are 'bad smells' and 'the attraction of insects'. No other explanation to perceived health risks were given. However, bad smells and insects were also strongly related to finding bio-waste dirty. Most used household tools were the green container, sometimes small bio-waste bins inside the residence and biodegradable bin bags. Other types of household tools were not used.

2. Influence of (information) resources on intentional behaviour

The waste calendar was the most remembered from all prior health communication initiatives. In one household green container stickers and folders were remembered as well. Most interviewees did not search for information concerning bio-waste. If they would have to search, most interviewees preferred search engines like Google or the website of the municipality of Wageningen. Half of the interviewees explained to read the information

but did not do anything with the information. The other half explained to have thrown received information immediately in the bin because there was no interest to read it. All interviewees have not acted upon the received information and prior health communication initiatives to separate bio-waste. As for the municipality resources, the most interviewees (in low- and high-rise blocks) used the green container the most. None of the interviewees received other municipal tools except the green container to separate bio-waste. Furthermore, some interviewees in low-rise blocks and the one from the high-rise block explained that they had to walk to the central spot of their neighbourhood to immediately throw their waste in the belonging containers. These containers would be emptied every two weeks. Others explained they had to place their green mini container to the side of the street so that municipal workers could pick-up their waste once a week.

3. Engagement for action

Most interviewees have explained to only remember the waste calendar because it gives practical information and tips about pick-up dates within the municipality of Wageningen. Factors which can be improved for the municipality of Wageningen focus on providing more household resources to avoid bio-waste to attract insects. Interviewees explain they want to receive more statistical information regarding bio-waste, meaning they want to know how much bio-waste is collected and how bio-waste travels to recycled materials. Interviewees explained it is interesting for them to know how the municipality treats their effort to separating bio-waste so that they can see that their intentions to separating waste is really rewarded.

Results of the questionnaire

The pilot interviews yielded information about the components of the IHM that proved worthwhile to research in a more into-depth manner. The results of the questionnaire are quite different from the results of the interviews. This might be because the group that completed the questionnaire is larger than the group that was interviewed (which only numbered six). However, the interviews do provide context and offer broad explanations that go beyond the information collected through the questionnaire. For that reason, both sets of results are analysed below. To see the questions and the corresponding results for each component of the IHM, please see the annex.

1. Demographic data

In total 40 participants have completed the questionnaire. Half of the participants (20) live in low-rise blocks and the other half of the participants (20) live in high-rise blocks. From all the participants, 21 were aged between 20-39 and 16 between 40-49 years old, only three participants were aged younger than 20 years.

From the total sample population, the 20 (of which 12 living in high-rise blocks) of the participants are MBO educated. The other 10 were either university or HBO educated and only one participants did not take an education after secondary school. From all participants, 28 participants were married, 11 lived together and only 1 participant was single.

In low-rise blocks, three households were composed by two persons, ten households by four persons and seven households by five persons. In high-rise blocks, two households were

composed by three persons, 16 households by four persons and one household by five persons and one household by six persons.

All participants live the neighbourhoods: the city centre, Benedenbuurt, Nude, Noord-Oost, Noord-West, Roghorst, Tarthorst, Wageningen-Oost, Wageningen-Zuid and Weides.

2. Influence of intrinsic motivations on intentional behaviour

From the sample population 27 participants separate bio-waste and 13 do not. In total, 27 participants use the green container and four participants use biodegradable bin bags. One participant feeds bio-waste to animals in a farm. In low-rise blocks, 13 participants find themselves knowledgeable enough to separate, 12 participants claim to have enough space available, 13 participants are willing to take effort to separate, 4 participants do not separate and one participant does not know. In high-rise blocks, 11 participants find themselves knowledgeable enough, 5 participants claim to have enough space available, 10 participants are willing to take effort to separate, 5 participants do not separate and one participant does not know.

As for the household resources, results show 19 participants from the total sample population separate daily, four weekly, five monthly and four just one season a year and seven do never separate. The frequency of separation behaviour of other members of family households from participant were in all cases less than the participant, please see annex (Q. 13 and 14 of graphs) for specification. In total, 24 participants estimate that other households separate as much as they do, five participants think other households separate more, three participants think other households separate a lot more and seven households think other households separate a lot less. In general, members of family households who do separate bio-waste are more satisfied than members of family households who do not separate bio-waste. On average members of family households who separate have graded themselves on a scale from 1 to 10 a 7.6 whereas members of family households who do not separate have graded themselves a 4.5. Please see annex (Q.18 of graphs) for specifications of explanations given to participants' grading on level of satisfaction.

Two questions were asked to assess knowledge levels of participants. From the results, it shows that all participants have given incorrect answers, however half of the participants have given incorrect answers to more than half of the questions. No large differences were found between knowledge levels of participants in low- and high-rise blocks. From the total sample population, 17 participants find throwing away bio-waste an easy household activity, 12 participants find thinking what waste belongs to bio-waste easy, five participants find cleaning the bins easy and four participants find other tasks easy. From the total sample population, 21 participants find cleaning the bin also a difficult household activity, 7 participants find changing bin bags a difficult household activity, three participants find thinking of what waste belongs to bio-waste a difficult household activity, three find throwing away bio-waste a difficult household activity and 9 participants find nothing a difficult household activity.

From all participants, 29 participants explain they do not feel socially pressured when separating bio-waste. The remaining 11 participants feel somewhat influenced when separating bio-waste. Three participants think separating bio-waste is good for nature, one participant think children should be taught to separate bio-waste, two participants believe individuals should give the right example to each other by separating bio-waste and two participants believe

individuals should not buy too many groceries and cook too much so that not too much bio-waste will be produced.

3. Influence of information resources on intentional behaviour

From the total sample population, results show that 28 members of family households have received the waste calendar, however, only 8 participants have also received the newsletter of the waste calendar. Four participants received annual information booklets and five participants received folders regarding bio-waste. One participant received another information resource, namely a newspaper which treats topics concerning the environment. No large differences were found between participants living in low- and high-rise blocks.

Out of 40 participants, 14 participants claimed to read the received information from the municipality but did not act upon the information. Twelve participants claimed to have read the information and were convinced to separate better and also tried to stimulate other people to separate better. Nine participants explain to have thrown the information immediately away when they received it. One participant did not receive any information. No large differences were found between participants living in low- and high-rise blocks.

In low-rise blocks, seven participants have searched for information concerning bio-waste, 12 participants did not. In high-rise blocks, four participants have searched for information concerning bio-waste and 15 did not. One participant did not know. From participants that did not search for information would have to look for information, the first potential information resources would be Internet search engines like Google (22 participants), the website of the municipality (12 participants), the newsletter of the waste calendar (5 participants), folders (2 participants) and in different types of information resources (5 participants) such as newspapers and bio-waste related magazines. No large differences were found between participants living in low- and high-rise blocks.

Health communication interventions which were still remembered by participants were mostly the waste calendar and the newsletter of waste calendar. Posters and stickers were slightly remembered as well. No large differences were found between members of households in low- and high-rise blocks. Please see annex (Q.27 of graphs) to see the specified differences between members of households in low- and high-rise blocks. No large differences were found between participants living in low- and high-rise blocks.

4. Engagement for action

From the total sample population, 25 participants would like to receive more information resources which inform them how bio-waste is processed to recycled materials and how much bio-waste has been collected per person per year. Participants would like to know whether their effort is rewarded and why it is important for *them* to separate and not why the municipality finds it important to separate bio-waste. The same 25 participants would also like to receive more innovated municipality resources, such as container bags to avoid bad smells and insects. The 25 participants wish the municipality to would increase the facilities to pick-up waste so that their mini container is more often empty and free from bad smells and insects. From the 25 participants, participants in low-rise blocks (17) more often explained that they would like the municipality to pick-up their bio-waste more often, *especially in summertime* as makes, insects

and bad smells can be avoided and participants in high-rise blocks (8) explained to receive more types of household resources to use for separating bio-waste. In total, four participants would like to receive more municipal resources and three participants do not know.

7. Analysis

This chapter focuses on analysing how the results from the interviews and questionnaires reflect on the IHM in general. It is important to understand that this model only describes the process of how engagement for action (such as separating bio-waste) comes to being. To give meaning to this process, the IHM uses several theoretical components (based on scientific theories) to explain how a household activity, such as bio-waste separation, is intended to realise by members of (family) households. Conducting interviews and questionnaires among these individuals allows us to grasp in what actually happens in family households in Wageningen. It gives us the opportunity to compare the results of what actually happens in the field to the theoretical explanation as suggested in the IHM.

Multiple categories have been distinguished from each other within the results. These categories reflect the theoretical components of the IHM, with each belonging to one of the three objectives explained in chapter two.

The analysis draws on the aforementioned components and objectives to identify possible differences and similarities between households in low- and high-rise blocks (including in relation to separating bio-waste). Certain theoretical components are obviously evident, while others are less (or not) evident within the (intended) separation behaviour of family households. For each objective, it was intended to distinguish the households from low- and high-rise blocks systematically, but in some parts no large differences were found between low- and high-rise blocks. For this reason, it was chosen to only make a distinction between households from low- and high-rise blocks when large differences were found. The households are not always distinguished in separating or not separating family households as the differences were not always large enough to treat.

The interviews are analysed in accordance with the research objectives, as doing so makes it possible to notice differences and similarities between components of the IHM and the actual results of the interviews. In total, four cases have been selected to include in this analysis. Six interviews have been selected to use in this thesis, but only four of them have sent in photos. The interviews include open questions that are based on the objectives and are designed to gather as much as information as possible regarding bio-waste. The interviews also include photos that interviewees have provided to illustrate the available household resources they use in separating bio-waste and the context in which the separation takes place. Since much information has been shared, only the cases that are accompanied by photos have been selected for analysis. A decision was taken to turn the interview analysis into a photo-study, so that all four cases can be zoomed in to discover meaningful findings. The interview questions do measure all components of the IHM (and thus the four objectives), but given the amount of information that was shared, each case in the photo-analysis only includes the most notable components that came forward. Finally, the analysis establishes links between the questionnaires and interviews. However, these links will be further discussed on in the discussion.

It is important to note that the interviews and questionnaires cannot be analysed in the same way. After the interview and photo-analysis, the questionnaires will be analysed in line with the objectives, since the objectives are based on the theoretical components of the IHM. In this

phase, the aim is to describe what happened in relation to each objective, as well as noting any remarkable findings. In the next chapter, the in-depth analysis begins. Plausible relationships between objectives (and thus model components) that may be linked are established within the in-depth analysis. The in-depth analysis draws on the analysis in because it is interesting to notice 'invisible' relations that may not directly be revealed in the first phase of the analysis (even when there is no scientific proof).

Interview analysis

The interviews have been taken to answer especially highlights in-depth motivations, which is mentioned in the first objective. In order to research in-depth motivations, all components from the IHM are covered in the interviews.

The six pilot interviews revealed that four out of six interviewees who live in family households with at least one child aged between 4 and 12 years do separate bio-waste on a daily base. Two interviewees claim to separate bio-waste only during one season of the year. Five interviewees claim to live in low-rise blocks. Only one interviewee lives in a high-rise block and is also a single parent. These results led to a decision to concentrate on analysing the following three categories:

- 1) Households that separate bio-waste in low-rise blocks (two cases are treated)
- 2) Households that separate bio-waste in high-rise blocks (one case is treated)
- 3) Households that only separate one season a year (one case is treated)

Among the four households that separate on a daily basis, it is clear that in one household, one member of the household is most responsible for separating bio-waste within each household. In the two other households the adult members of the household are equally responsible for separating bio-waste and in one household the female adult is more responsible than the male adult (who was being interviewee).

Two households that separate bio-waste in low-rise blocks

Influence of intrinsic motivations on intentional behaviour

One household member, most responsible for separating bio-waste, claims to be very satisfied with her separating behaviour, noting that the other members of her household also separate well following her directions. She claims that all members of her household find it normal to separate bio-waste every day. The drive for this household to separate this actively could be due to the fact that they live in a social neighbourhood where neighbours frequently make conversation with each other.

In another household, the household member explains that she experiences irritation towards her neighbours as they do not always separate as much as she and her family does. To this member, the question thus arises: 'What use does it make if *we (my family and I)* separate, but *no else among us* does?' In that sense, the interviewee feel socially pressured as she feels demotivated to separate bio-waste daily. Next to that, the member explains that she finds separating bio-waste a dirty task to do as she is afraid of insects and does not like insects to be in her collected bio-waste all the time. She also finds it unhealthy to breath the air round waste that contains insects. To this member, another question arises: '*Why should I separate bio-waste when it is such a dirty task to do?*'. The *perceived health risks* of bio-waste thus forms quite a restriction for this family to separate more actively.

Influence of information resources on intentional behaviour

It is interesting to see that the one household member who is the most responsible for separating bio-waste only has a green container; no other resources are available. The green container, however, is used on a daily basis. This household receives and reads information booklets on an annual basis, but the family does not actively search for information itself. If they do, they prefer a municipal website, since they believe the municipality is responsible for bio-waste separation. The only prior municipal initiative remembers is the waste-calendar. It seems that information and resources are well received and actually do facilitate bio-waste separation in this family. However, zooming in on their motivations (including their feelings of control, subjective norms and level of living), it appears that their feelings of control/level of satisfaction are somewhat influenced by the indolent separating behaviour of their neighbours.

In the households where the interviewees claim that both partners are equally responsible for separating bio-waste, both use the green container while only one uses an extra bucket to collect bio-waste inside the residence. All of these containers are actively used (i.e. on a daily base). It is interesting to see that both households claim to make independent decisions when it comes to separating bio-waste, meaning they are not influenced by their neighbours or society in general. One interviewee even states *I separate because I want to*. This perhaps reflects why in both cases the level of well-being/satisfaction is high as both households separate on a daily basis. In both cases, tools that could stimulate a higher motivation to separate bio-waste still seem to be missing in the resources members have available (level of living, although these resources could be seen as information needs).

Both interviewees claim they need information concerning *how* bio-waste travels so that their *misconceptions* can be invalidated. They also both claim (albeit in different ways) not to be convinced that bio-waste is really worthwhile to separate exclusively, based on the following question: *Does the municipality make the same effort to separate bio-waste when workers collect it as the households do?* This question thus means that the interviewees are not informed about the municipal facilities. The interviewees do explain not to know whether their doubt is based on misconceptions and therefore, the interviewees would like them to be clarified. On the other hand, neither of these interviewees actively searches for information by him-/herself. This can perhaps be explained by their high level of satisfaction. If they were to search, they would prefer search engines (such as Google) and would not necessarily consult a municipal website (in contrast to the previous interviewee). The waste-calendar is well received and remembered in these households. All in all, it seems that these households have the need to *receive* convincing information; however, it looks like the existing information resources cannot properly *access* them, since they neither search for nor read information (apart from the waste-calendar).

There is one household that separates bio-waste on a daily base where the interviewee is not most responsible for this activity within his household. The interviewee explained that the green container and a small bio-waste bucket are used to separate inside the residence. The bucket also contains a double refuse bag to contain the odour of the bio-waste. Nothing seems to be missing in the level of living, which could explain the interviewee's satisfaction. In this household it is normal to separate on a daily basis and the household feels no social pressure from outside the residence. It is interesting that the interviewee stated that he is not aware of any available information resources. This may be why he and his family do not actively search for information. If they were to search, they would prefer a municipal website. However, in this

case it does not appear that the interviewee and his family are unwilling to receive and read information about bio-waste; they are simply unaware. No municipal initiatives are remembered – not even the waste-calendar-, which was recalled in previous cases. The household is aware that information resources *exist*, yet they are unaware of *what kind*.

Engagement for action

In all cases, the interviewees separate bio-waste because they think it is better for the environment. However, they cannot exactly point out in which way it would be better for the environment. It was explained that their engagement for separating bio-waste would increase if household resources become innovated and if more visual information would explain what bio-waste means for the interviewees' personal life as this still remains unclear.

Households which separate bio-waste in high-rise blocks

Influence of intrinsic motivations on intentional behaviour

There is one household that separates in a high-rise block. This household is at the same time the only single-parent household. This interviewee also claims to separate on a daily base inside the residence. The interviewee also keeps a small barrel on the sink for vegetable and fruit peelings/remains. She explains that she has the knowledge necessary to separate bio-waste, but her effort is not sufficient. She also claims to have insufficient space for separating. A distinction can therefore be made in her manner of separating. She claims to separate on a daily basis *inside* the residence. However, it takes more effort to empty the barrel with bio-waste into the general container underneath the flat. Therefore, the interviewee explains that she empties her bio-waste into the general green container *outside* her residence *weekly*. The level of living of this family household is fine, since they do not have a lot of room and they do not want space-intensive separation resources. The interviewee is not satisfied with her separating behaviour, since she was raised to separate as efficiently as possible on a daily basis. She says she does not feel any form of social pressure from the municipal or her neighbours. However, she does feel some pressure to separate bio-waste correctly as that is how she was raised. Social pressure can thus be derived in this case from her parents.

Influence of information resources on intentional behaviour

The main difference with the households that separate in low-rise blocks is that instead of having a private green container, this household only has a container that is shared by all flat residents. The interviewee does not use any other municipal and/or household resources. This container, which is located at the bottom of the flats, is used for all domestic waste, including bio-waste (which can be thrown into a green container). The interviewee claims she neither receives information resources nor searches for information since she is not interested in doing so. If she wanted to know something, she would look on the Internet using a tool such as Google.

Engagement for action

The interviewee explains there is no interest in separating bio-waste. Perhaps this statement explains why none of the initiatives of the municipality were recalled. In this case, it is clear that this individual is not aware of the available information resources, although this could also be due to a low level of interest. Again, the interviewees' attention could be drawn if she could understand the benefits for her personal life when she separates bio-waste. It is suspected that

the interviewee perceives separating bio-waste just as a 'term'. The term separating bio-waste could give more *meaning* to her life if she would understand which health benefits bio-waste can have for her and her children's health.

Households which separate one season a year

Influence of intrinsic motivations on intentional behaviour

Although the households that separate one season annually do separate bio-waste, they separate to a far lesser extent than the households that separate on a daily basis. One interviewee reports that his family only separates during the summer, while another reports only separating during the winter. The household can thus avoid rotting food and bad smells. In the winter, a bucket for bio-waste is also used inside the residence. In this case, the interviewee wishes to receive more resources to avoid the process of rotting of bio-waste. The subjective norm is set on a seasonal time of the year and the family household feels content about it; they have no need to separate more at this moment, unless their level of living would improve. The interviewee does not experience any form of social pressure, although he did note that the neighbours advised his household to use a particular brand of refuse bags to keep their green container clean (which they now do).

Influence of information resources on intentional behaviour

The interviewee who claims to separate only during the summer explains that the green container is picked up more often in the summer than in the winter (when the green container is only picked up every two weeks). It could be that the interviewee *thinks* his household is not sensitive to social pressure, but that unconsciously they are. Furthermore, the interviewee does not search actively for information about bio-waste. If he did want it, he would prefer using an Internet tool such as Google. He cannot remember the information he has received. This could imply that he is unaware of the fact that his household actually receives information from the municipality. This also highlights the fact that all of the municipal initiatives to stimulate separating bio-waste among householders are forgotten.

The interviewee whose household only separates in the winter explains that the reason is mainly because the process of rotting is slower at this time of the year and hence the bio-waste does not smell as bad. Fewer insects are also attracted. Since the interviewee finds separating bio-waste clearly a dirty task to undertake, only the green container is used as a resource; no other additional household resources have been acquired to use. The interviewee also has no interest in reading or finding information about bio-waste. She is actually not very satisfied, as thinks that her household's norm of separating is by far less than that of the average family household. The household may do better if the municipal were to provide more resources that prevent the rotting process.

Engagement for action

In this case, engagement in separating bio-waste starts with the level of living. If the level of living could be improved by providing this household with resources to make the process of separating bio-waste a 'clean' task, the subjective norm could also change from 'seasonal' separation to, for example, monthly separation. If monthly separation would happen, it means that the level of control (subjective norm) increases as well because the interviewee is in control of the resources she can use. The interviewee does not experience social pressure from either

the municipal or her neighbours, although she does experience social pressure from her job (she works with weather predictions and is familiar with nature such as bio-waste activities). For this reason, she does care to a certain extent what happens with nature and understands that nature can help to create a healthy living environment. The interviews notes that her household receives information about bio-waste, but they often throw it away since her partner even has less interest than she does in separating bio-waste. There is no interest in searching for information, but if they were to search, the interviewee would try to find answers on the Internet using tools such as Google.

Photo-analysis

In this section, attention is paid to the photos that were provided by the interviewees (in response to the last question of the pilot interviews). An explanation is presented of what can be seen in the photos and how it relates to the four objectives that are interwoven into the IHM. As it is difficult to use only photos to clarify the bio-waste separation behaviour of households, an attempt is made to gain a deeper understanding by linking the photos to recognizable parts of the IHM.

In total, ten interviews have been conducted. Five interviewees promised to send digital photos through WhatsApp or e-mail, although only four did so. One interviewee said the only option was for the researcher to visit the residence and take the photos herself, but practical limitations meant this could not be done. Therefore, only the four pilot interviews that are supported by photos are analysed.

Household 1

Description



Description:
This photo reveals three containers in front of the fence. The left one is black, the middle one is green and the right one is green with a blue lid. In front of the green container with a blue lid there is a little grey box.

Figure 12: Household resources of household 1

Facts

This photo clearly shows that a black container is on the left, a green container is in the middle and a green container with a blue lid is on the right. This indicates that the family has the household tools available to at least separate residual waste, bio-waste and cartons and/or paper. All three containers look clean and useful, which means they are not damaged.

Household 2

Description



This photo shows how a bin (clearly within the residence) has leapt out from under the sink. It is clear that there are two bins next to each other. It seems that one is filled with a mix of potato peelings and a mandarin. It is unclear what exactly is within the other bin although it looks like plastic (bottles). To the left of the bins, several cleaning liquids are being stored. This is also a sign that these bins are photographed inside the residence as cleaning liquids are usually stored in and used to clean the inside of a residence.



The same photo, this time taken from a different angle and direction. It makes the context of the two bins seem much wider. This picture therefore clarifies the environment in which the bins are stored within the residence. What can be notified in this picture for example is that the bin is placed next to a dishwasher. It also becomes clear that the suspicion that the bins are placed underneath a sink is correct.



One can see six containers. All of them are placed outside next to a door. It seems like this is a place to collect the bins, perhaps for not only the owner, but also for other neighbours in the environment. This suspicion comes from the fact that two green containers, two green containers with blue lids and one black container are stored next to each other. We can also see that there are two doors in the picture (one white, one black).



Same area but now the photo illustrates the wider context of the previous photo. Now it becomes clear that there are multiple bikes next to each other, which could mean that this family consists of more members. It also seems like that the containers are stored together with those of the neighbours, since the houses with the black doors match.

Figure 13: Household resources of household 2

Facts

The first picture of household 2 reveals that this family has tools available to separate remaining waste using the black and green containers and paper and cartons using the green container with a blue lid. It is also clear that these containers belong to a low-rise block, since families in high-rise blocks do not have these kinds of containers. The grey box in front is interesting, as its purpose is mysterious.

In the second and third pictures of household 2, potato peelings and fruit are separated from remaining waste in their own place of collection. It is obvious that the collection is being made inside the residence, as the bins are clearly placed under a sink.

The fourth and fifth pictures of household 2 show additional containers that are available to help family members separate their remaining waste (using the black container), bio-waste (using the green container) and paper and cartons (with the green container with the blue lid). The fifth picture clearly shows that this family lives in a house that is meant for multiple people to live in and that these houses are placed in a way that neighbours are quite close. Thus, the container storage space may possibly be shared.

Household 3

Description



This photo clearly illustrates how three containers are placed against a wall on the street. It seems like they are placed next to the wall of the house as the containers are right next to the fence. It is also remarkable that there are two black containers and one green one with a blue lid.



This photo is taken inside the residence and shows three small white bins underneath each other. It may even look like as if these bins gradually follow each other. The upper and lower bin have labels with text, but it is difficult to read what the text says. From the surroundings it looks like they are placed inside the residence since a little cupboard stands right next to them. I can also see a blue bucket under the lower-most white bin.



In this photo one can see the wider context of the previous picture. It now becomes clear that the white bins are actually not as small as they seemed before (because the picture is taken from an angle) and that they were not placed next to a cupboard but next to a dining table with a chair in the front. I can also see that the bins are standing in the middle of the dining area and the cooking area. It also seems like this house is 'messier' than the third picture.

Figure 14: Household resources of household 3

Facts

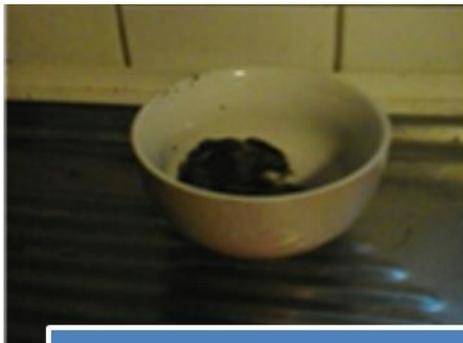
The first picture of household 3 shows that this family only has tools to help separate remaining waste (namely a black container) and bio-waste (namely a green container). As the green container with a blue lid is absent, it can be assumed that paper and cartons are either not collected or collected in a different way manner than a this type of container. Since there are two

black containers, it seems like more remaining waste is collected; however, there is insufficient evidence to state this as a fact.

The objects in the seventh and eighth picture of household 3 create a strong suspicion that these bins belong to a house with little available space. The bins are also labelled so there is no confusion as to what kind of dirt goes into which bin. This means that domestic dirt is separated inside the residence and later emptied into larger bins/containers.

Household 4

Description



This photo seems to be taken from a very close view. It looks like a white cup on a sink filled with dark green things, although it is not clear. It looks like a dark and thick gruel but it remains difficult to estimate what it exactly is. However, the suspicion is again that this picture is taken from the inside of a residence.



This photo shows the large communal containers where people can throw their cartons, paper and glass. The suspicion is that these containers are placed underneath or close to a high-rise block, such as a flat or building with apartments on different floors. This suspicion comes from the fact that containers like these are not often placed in gardens of low-rise blocks. However, it could also be a communal collection spot inside a neighbourhood with low-rise blocks. It is remarkable how a sticker is placed on one of the containers to urge people to keep their green waste clean.

Figure 15: Household resources of household 4

Facts

The first photo of household 4 clearly depicts containers that belong to or are placed in a neighbourhood with several high-rise blocks or buildings with apartments on different floors. This is based on the fact that many containers are placed next to each other.

It is difficult to discover facts from the last picture of household 4. The only fact that can be concluded is that greenish waste is collected in a white bowl inside the residence. Instead of facts, only suspicions can be established (for example, that waste collection may be done in this way because one lives in a high-rise block).

Continuation and link to photos in context of Integrated Household Model

In reference to the IHM, the photos from the pilot interviews reveal several concepts that can be compared and analysed.

Not all concepts can be directly found in the photos. However, the level and standard of living seem to be revealed in some photos. For example, the resources are constantly shown by the

tools one has (e.g., containers, double bins, small and gradual bins), which are important to determine the level of living within a household. The *norm* for households to separate seems to be present in a more complex way; it fits exactly in the third photo of household 2, where neighbours place their containers next to each other. This is a nice way to notice that the neighbours have the same containers (or tools) to separate their waste. The *level of satisfaction* is difficult to find in just pictures, as pictures often just illustrate a moment without showing the story that goes along with it. For that reason, it is also difficult to grasp where changes to improve the feeling of control (in the level of living) would be made.

The photos are also a good way to get a grip on the kind of household resources one has to separate bio-waste in low-and high-rise blocks. At the same time they also reveal the way in which family members engage in separating bio-waste. Since more factors are needed to determine how this engagement happens and these factors are not shown in the pictures, the analysis can only go so far.

The household activities also come forward in the photos. The photos only show how family members separate their bio-waste, since this was what they were asked to photograph; however, as many participants took pictures of the wider context of their tools/bins/containers to separate, it is clear that separating bio-waste can also be part of a daily or weekly routine in some households. By looking at the photos closely, emissions become visible as well. Some photos show which emissions are produced, for example peels or greenish gruel. However, it remains difficult to grasp if health risks occur to what is illustrated on the photos. As the photos do illustrate that actual waste is produced (and what kind). Based on these illustrations it can also be analysed what kind of material/energy can be produced when the type of bio-waste is clear.

Questionnaire analysis

Demographic data are not included in the IHM, but it is worthwhile to mention these details as they form interesting socio-economic factors that could contribute to intentional behaviour. The demographic data for households in low- and high-rise blocks is hence described below.

General demographic data for households in low-rise blocks

Representatives of twenty households in low-rise blocks completed the questionnaire; 16 of these households separate bio-waste, while four do not. The participants fall into the age category of 30 to 49 years (mainly 30-39), are married, are equally MBO/HBO educated and mainly live in the Noord-West, Tarthorst, Wageningen-Zuid, Roghorst, Nude and Weides neighbourhoods. Their families most often comprise two adults (parents) and two children aged 4 to 12 years. There are some outliers in relation to family composition (e.g. three children, one child), but two adults (parents) are always present.

General demographic data for households in high-rise blocks

Representatives of twenty households in high-rise blocks completed the questionnaire; 11 of these households separate and nine do not. The participants fall into the age category of 20 to 49 years (mainly 30-39 and 40-49), are married or living together, are predominantly MBO educated (with a few WO and VMBO educations) and mainly live in the City Centre, Nude, Tarthorst and Noord-Oost neighbourhoods. Their families often comprise two adults (parents) and two children aged 4 to 12 years. Unlike the families in low-rise blocks, more families with

three children are present. This group also includes the family composition of one adult (a single mother) and two children. Finally, the households in high-rise blocks separate slightly less than those in low-rise blocks.

Overall intrinsic motivations of participants to separate bio-waste

Intentional behaviour refers to action taken by family members of households with children in relation to separating bio-waste. Intentional behaviour is established by demographic data, housing characteristics, usage of resources for (bio-)waste matters, knowledge levels, the evaluative framework of reference, perceived health risks and social pressures that are of interest to analyse participants' intentional behaviour to separate bio-waste. As the aforementioned theoretical components which form intentional behaviour are quite a lot, the components will be analysed in clusters. Each cluster contains a set of theoretical components which are related to each other in the IHM. It is not of interest to make a distinction between low- and high-rise households in each theoretical component, since there are no differences. For that reason, some components are analysed in general. It was noted there are some differences among the group of participants that do separate and do not separate bio-waste regarding the motivations, a distinction between participants that separate and do not separate has been made.

Use of resources, available space and level of living

In *low-rise* blocks, participants explain they mainly use the green container as municipal resource as the green container is the only household resource they claim to have received from the municipality of Wageningen. Only one household reported also receiving biodegradable refuse bags. Just like in low-rise blocks, it is striking that the majority of households in *high-rise* blocks also use the green container most as municipal resource. Biodegradable bin bags are sometimes used as an extra municipal resource. Only biodegradable bin bags are used extra or as other household resource as well.

It seems that in *low-rise* blocks participants often explain to have sufficient space available. As the participants have a garden, it is especially preferred to store bio-waste outside in the green container. Only few participants want to store bio-waste inside their residence as they find it unhygienic. Therefore, it seems less unhygienic to participants to keep bio-waste outside in their garden. However, in *high-rise* blocks, participants often have no other choice to store their bio-waste inside the residence. Participants claim to find it a *dirty* task to keep bio-waste inside the residence and it seems that they therefore do it less. Some participants use their balcony to store bio-waste but it is not always used as some participants also do not have a balcony. The lack of available space seems to withhold participants in high-rise blocks to separate bio-waste at all. Participants in low-rise blocks also do not mind to walk the small distance from their residence to their garden to dump bio-waste in the mini container. However, in high-rise blocks participants do mind to walk the large distance from their residence to the mutually shared container at the bottom of the flat. However, finding bio-waste dirty, seems to be a bigger barrier than bridging distances to members of households to separate waste.

*Motivations (level of living) of participants that **do** and **do not** separate*

The majority of participants assumed that they have sufficient knowledge available, that they are willing to make an effort and that they have enough space available to separate bio-waste in low-rise blocks. Only a few explained not to have sufficient knowledge available or not wanting to

make an effort. It is striking that the participants believe they always have sufficient *space* available. The majority claimed to use the green container the most, although biodegradable bin bags, compost buckets and inside bio-waste bins are also popular household resources. All of these resources are delivered by the municipality. If I take a close look to the IHM, it seems like the *feeling of control* in this group of the participants is determined by availability of sufficient *space*, in the second place *knowledge levels* and in the third the willingness to make an *effort* to separate bio-waste. Making an effort seems thus least important. This is reflected in the way participants use their resources. For example, the green container is used in each case, possibly since *space* is a resource that households in low-rise blocks often have available. These characteristics may have a cause-effect relationship.

In *high-rise* blocks it works differently. In the first place, members of households find themselves *knowledgeable* enough to separate, in the second they explain to have sufficient *space* available but do often lack the *effort* to separate bio-waste. It is remarkable that lacking *effort* has been particularly mentioned a few times within this group. In high-rise blocks, it may be that lacking *effort* goes together with the fact that the majority of households only use the communal green container of the residence (which is located outside on the ground floor). Only a few use other municipal resources, such as a bio-waste bin within the residence or on the balcony or a compost bucket. In a special case, left-overs are collected in a bag and delivered weekly to farm animals. It may be that participants in *high-rise* households consider themselves knowledgeable enough to separate, but that they find themselves not in the right position to do so (because of not having the right resources and sufficient space available) which subsequently results in a lack of effort.

It is remarkable that from the participants who **do not** separate in low-rise blocks claim having neither bio-waste knowledge nor available space. However, in one particular case a participant reported only separating waste coming from the garden (and not food). Furthermore, those who do not separate *do* use the green container, but do *not* use other municipal resources. The question that arises is for what purposes or type of waste these participants use the green container, if they claim not to separate (apart from the family that separates garden waste).

This question also applies to households in *high-rise* blocks. Few participants claim to only have *knowledge* and/or available *space*, but none make an *effort* to separate. All of the participants make use of the communal green container, and one household also makes use of biodegradable refuse bags. The lack of effort does seem like a convincing factor contributing to why these households do not separate. In relation to both groups, it would be interesting to know if they think that separating only tiny bits does not count as separating bio-waste or if they use the green containers as an extra place to put general domestic waste.

Present knowledge levels, household activities, standard of living and perceived health risks of emissions

It is appealing that slightly half of the participants seem to know facts that are true concerning bio-waste. For example, half of the participants, beliefs that bio-waste has no influence on reducing the greenhouse effect, or that compost is made from bio-waste (and not from residual waste). For that reason, it is assumed that the participants also might not be aware of which health effects recycled bio-waste can have in their direct living environment if they also do not know how compost comes to being and which health benefits compost can deliver. Additionally,

it is remarkable that a little less than half of the participants generally make mistakes in placing the correct food items in the category of bio-waste. It seems like participants separate food items which look natural (such as banana peels, bones, vegetables but also hair) without thinking. However, hair does not belong to bio-waste. Some items seem to be a strong case of doubt, for example cat litter with an environment-friendly brand, egg shales and small wood chops (which all belong to the category of bio-waste). Participants have explained in interviews they know exactly what belongs to bio-waste, which is the main reason why it is assumed they do not read information as they believe they already know. However, it shows that participants might *think* they know, but *do* not always know. This assumption also applies to participants that already separate. Participants can still separate better if they understand which items belong to bio-waste and which not so that bio-waste remains clean and will not be polluted with other types of waste which cannot be recycled.

Participants in low- and high-rise blocks generally seem to find the same household activities easy and difficult. In low- and high-rise blocks it becomes quite clear that participants find it easy to throw bio-waste away in the green container. Additionally, to clean the green container and to change bin bags also seems to be easy considered tasks in households of participants. It might be that the aforementioned tasks are considered as 'easy' as the tasks do not involve a lot of thinking. It is notifying to find out that tasks considered as complicated, mainly focus on *thinking* which (food) items belong in the green container and which not. Some participants do not even want to bother thinking, it seems like they lack the *willingness* to think and throw all waste in the same grey mini container. This notification somewhat relates to what participants seem to *know* concerning bio-waste. Half of the participants do not seem to know which (food) items belong to the category of bio-waste and also not how recycled bio-waste can contribute to their living environment.

It seems clear that all participants *perceive health risks* when they separate bio-waste. It is thus interesting that none of the participants think there are no health risks related to separating bio-waste. It still remains unclear to understand how serious members of households estimate the perceived health risks. As explained in the results, perceived health risks are in all cases explained as 'bad smells', 'the attraction of insects' and 'rotting elements'. Participants could not indicate how the perceived health risks affect their health but it is assumed that participants might think they could get sick when they are involved with bad smells, insects and rotting elements. No other explanations were given to perceived health risks. Perceived health risks seem to form an important barrier to the participants that do not separate. Also for participants that do separate, perceived health-risks play a role as the participants explain they would separate better if bio-waste becomes a hygienic task to do. At this moment, it seems that all participants find collecting and separating bio-waste in some way dirty. More attention will be paid in the in-depth analysis to the unhygienic relation to bio-waste and its dirtiness of bio-waste.

*Motivations (standard of living) of participants that **do** and **do not** separate*

The standard of living reflects the *subjective norm* in the participants' perspective, meaning that the participant sets its own norm to separate bio-waste. It seems that the majority of the households finds it normal to separate daily. Only few separate monthly, weekly or even annually (one season a year). This also applies to the partners of participants. However, it is remarkable that children of separating parents separate significantly less. However, how elder

children get the more they separate if their parents separate as well. Furthermore, the participants largely believe that they separate equally to other households, although a small portion feels they separate less.

Among the members of households that **do** separate, it is remarkable that the participants (and their partners) tend but quite a few also separate weekly or monthly. Only a few separate during one season. The children's separation behaviour is similar to the behaviour of children in low-rise blocks. A great portion of the households in this group believe that they separate equally to other households. A difference to households in low-rise blocks is that some of them believe they separate more (or even significantly more) than other households.

The majority of households in low- and high-rise blocks that **do not** separate actually never separate. It is striking that some of these participants count annual/seasonal separation or even monthly separation at not separating at all. In low-rise blocks, the participants' partners do not separate any differently than the participants themselves. In high-rise blocks, however, there are more instances where the partner separates slightly more than the participant. The separation behaviour of children varies, but in general the children of not separating family households separate less than the children from family households that do separate.

It may be that the norm that members of households try to achieve to separate bio-waste, differs slightly between households in low- and high-rise blocks that do separate since participants from high-rise blocks may know they have less space available and that it takes more effort for them to separate. The members of households in high-rise blocks who do make the effort to separate might believe that not everyone in their residence makes the same effort. Members of family households in low-rise blocks explain to separate bio-waste more often and that they strive to achieve to separate daily. However, I strongly suspect that *perceived health risks* also have an influence on the *subjective norm* participants try to achieve. It often seems that perceived health risks decreased the norm for participants to separate bio-waste. In only few households, participants increased the norm to separate waste despite of their perceived health risks to bio-waste. As for the participants who do not separate, the subjective norm does not seem to be differ between households low- and high-rise blocks as they never separate. It is interesting to analyse the perceptions of participants who separate, as it comes down to what they think about the separating behaviour of other households. I did not find large or interesting differences between participants who do and do not separate related to the perceptions that participants have to the separating behaviour of other households. In low-rise blocks, participants generally believe that other households separate more. In high-rise blocks, participants generally feel they separate equally, although some do believe that they separate either more or less than others.

It is remarkable that the majority of participants from low- *and* high-rise blocks, separating and not separating, claim that an environmentally-friendly living is important because they were raised that way, yet the majority explains not to feel *socially pressured*. It was interesting to notice from the interviewees that the non-separating interviewee explained to talk with neighbours and colleagues at work about the unhygienic symptoms bio-waste can bring. For example, bad smells which she associates with polluted air, but also insects that she disgusts. The interviewee explained individuals in her social network also find separating bio-waste

unhygienic. The interviewee however, did explain not to feel socially pressured when she makes the choice not to separate bio-waste. The explanation of the interviewee could be an explanation which might be partly applicable to the participants in the questionnaire that do not feel socially pressured. Again, perceived health risks seem to play an important role. Members of family households seem to want to pass taught traditions on to the next generation and do not feel any social pressure from the outside world, but seem to be sensitive to statements, such as that bio-waste brings insects and bad smells, from individuals within their social network. There do not seem to be many differences between households in low- and high-rise blocks. In both blocks, a majority of participants say that they only separate by personal choice. Since the norms and values have been evident in the level of well-being, it might be that these participants *think* they are not socially pressured, but that they are to some extent indirectly *socially influenced*. These influences may include family relatives or neighbours, as both categories were sometimes mentioned in the interviews.

Motivations (level of well-being) of participants that do and do not separate

The *level of well-being* reflects on participants' level of satisfaction. In case a participant is unsatisfied, changes will be made to increase the level of satisfaction. In general, participants from low-rise blocks who separate are satisfied with their behaviour. On a scale from 0 to 10, the average grade they assign their total household's behaviour is 7.6 as participants explained that they could do better if they *want* to and if they *could*. This reflects both the level of well-being (satisfaction) and the level of living (possibilities). In the IHM, there is a feedback loop that starts at the level of well-being. When individuals are not satisfied, they can change an aspect that relates to the standard of living or the household activities that can be altered in such a way that it delivers an increased *feeling of control* within the level of living. In this group, it was noticed that participants that would like to improve their separating behaviour to become more satisfied; this refers directly to their *norms and values* (which can also be seen as *social pressure* as norms and values are taught by parents) since they were raised to be environmentally friendly. Part of the group also referred to the *resources* they receive from the municipality of Wageningen. If they have more access to municipal resources, they can improve their behaviour. Some participants also reflect to their willingness to separate, since they only separate when they are in the mood.

In *high-rise* blocks, participants grade their separating behaviour 6.4 on average. This grade is much lower than the satisfaction grade of low-rise blocks (which is 7.6). Main explanations for their behaviour are found in their lack of motivation to separate bio-waste at all (since in comparison to low-rise blocks, a smaller group separates daily). The participants also say they separate whenever they feel like making the effort. This can perhaps be linked to the fact that more effort is required (as they must bring bio-waste to the green container on the ground floor) or the fact that they find it 'dirty' to store bio-waste inside the residence (as explained in questions about household activities). It could also link to *health emissions* within the IHM. The aforementioned reasons may together explain why the separating behaviour of households in high- and low-rise blocks differs. In low-rise blocks, it seems that households more frequently separate daily and strictly (e.g. at set times of the day), whereas households in high-rise blocks that separate do so 'as it comes'. If participants want to change something in their household to separate more, it mainly starts by increasing their willingness to separate, which in turn seems to reflect available municipal and household resources in combination with health emissions.

*Motivations (level of well-being) of participants that **do not** separate*

From the participants that **do not** separate, I found a large difference was found in the level of satisfaction compared to participants who do separate. Participants from *low-rise* blocks have graded themselves 4.5 on average, which means that most households are aware of the fact that they do not separate in the best manner. However, one particular participant gave his household a 10. As far as what withholds participants in this group to start separating bio-waste is concerned, it seems that lacking *municipal resources* and *lacking effort* plays a big role. Especially in the case of the participant who grades his household as a 10, the participants explained that there are no municipal means received. In his opinion there is thus nothing he can do to change this. In another case, the green container has been stolen and it would cost money to get it replaced. These two case examples are good examples to highlight an *indirect* lack of effort to separate. Participants seem to think: *there are no municipal means so I cannot separate*. However, if the willingness to separate would be large enough, participants most probably would have taken action to receive municipal means for the present.

Participants in *high-rise* blocks have graded their satisfaction level as 4.9. Here it again seems like they are not completely satisfied with their separating behaviour. The reasons that explain their grades are similar to those of the participants in low-rise blocks. However, the *lack of effort* dominates in this group. Explanations for their lack of effort reflect multiple components of the IHM. Examples include risks of *health emissions* (since one participant finds separating bio-waste 'dirty'), *social pressure* (as many social relatives of participants do not separate, they are not stimulated to separate themselves) or *municipal resources* (existing resources, like green containers, are not resistant to insects that are attracted to bio-waste when it is stored).

Influence of information resources on intentional behaviour

In this part of the analysis, I will zoom in on a sub group of the total participants that have completed the questionnaire. In order to find out what participants do with their knowledge and how they act upon it based on municipal information resources (including prior health communication interventions), this part of the analysis draws on the information seeking-, processing- and action behaviour of participants.

Accessibility of participants to municipal information resources

I found a large difference in the type of information resources participants in low- and high-rise blocks have received. The waste-calendar if for example the *most well-received* information resource provided by the municipality participants have access to. In the second place, the news letters of the waste-calendar are also well-received (perhaps as they come along with the news calendar itself), yet the news letters of the waste calendars are considerably less read. Other information resources (such as, annual information booklets, folders and different types of information sources) are almost not received by the majority of the participants. As explained in the interviews, the reason behind this notification might be because the waste calendar gives practical, clear and visual information on waste in general (including bio-waste). For that reason, the waste calendar might be well-received among members of family households even when they do not separate.

Information seeking behaviour of participants to municipal information

Also, a large difference exist among participants who actively search for information and do not search for information at all concerning bio-waste. No large differences were found among the

information search behaviour of participants living in low- and high-rise blocks. I suspect that as well as participants in low-rise blocks and in high-rise blocks, clearly lack some kind of motivation to actively search for information. A large group does not search for information, however, if they would have to search for information, online search engine machines such as Google or Yahoo would have been consulted. In these search engines, key words (such as 'bio-waste', 'colour' or 'smell of bio-waste') would have been used to find textual information in all the hits that come up. It was an eye-opener to find that key-words were also used to Google pictures or illustrations to solve the participants' question. It might be plausible that participants are not motivated to read long informational text columns concerning bio-waste (as presented in the newsletter of the waste calendar, or newspapers, magazines and news sources/articles on the Internet). It might also clarify, why the waste calendar is popular as the calendar does not include many lengthy text blocks but more pictures that visualise what is meant and short sentences around the picture to explain the message. In the second place, a enormously smaller number of participants would have consulted the website of the municipality of Wageningen. Only a few participants would consult a specific newspaper (called 'Little World') or a magazine (called 'The Green Earth'). It is suspected that the participants that search in the specific information papers are most likely above averagely interested in bio-waste.

Information action and processing behaviour of participants to municipal information resources

Participants are in overall not motivated to read the received information as a large amount of participants threw the information away, as appears in low- and high-rise blocks. However, it is interesting that especially participants of households that do separate, do not throw the received information resources away (which is in most cases the (newsletter) waste calendar and sometimes information booklets). In few cases, some participants have actually aimed to separate better in the future and aim to convince others. However, the majority of the participants does not read the information and throws it away. It seems thus, that the majority of the participants does not process the information by simply not looking at it.

Engagement for action

In this part of the analysis, I will zoom in on a sub group of the total participants that have completed the questionnaire to find out what participants think of prior health initiatives performed by the municipality of Wageningen and how they engage to the topic of separating bio-waste based on those health initiatives. This part of the analysis also pays attention to the stimulating factors and which can still be improved.

Improving factors according participants to municipal resources and facilities

Stimulating factors mainly focus on receiving more municipal resources such as tools. However, the municipal resources are different for participants living in *low-rise* blocks and in *high-rise* blocks.

Participants in *low-rise* blocks clearly have the need to receive more municipal resources to slow down the rotting process of bio-waste so that insects can be avoid (as rotting bio-waste is often associated with insects), examples as thicker bin bags to avoid bad smell and extra green containers to store bio-waste. Or to receive more sprays or cleaning tools to avoid the bad smell of bio-waste. However, extra picking-up services for especially bio-waste were mentioned as well. In *high-rise* blocks it seems that participants would like to receive more innovative municipal facilities. A somewhat extreme example of such an innovative facility, is to establish

special elevators in the flat so that participants only had to walk to the elevator to dump the bio-waste so that the elevator would automatically drop the bio-waste in the green container. In this way the long distance barrier could be overcome and participants could become more motivated to dump their bio-waste on more occasions during the day or the week. Other more common advises were to receive multi-sized bio-waste buckets in light material so that bio-waste could be dumped more frequently in containers as the buckets would be lighter in weight to carry to the container.

Other improving factors focus on providing more access to municipal information resources. Advised information resources are the same for participants in low-rise blocks and in high-rise blocks. It was interesting that participants from both blocks, explained to want to have more access to *visual* information from where it becomes clear what the municipality expects from participants. On the other hand participants also would like to see what the municipality *does* with all collected bio-waste and how bio-waste travels from participants' green mini container to a recycled product. Information about the journey of bio-waste, links the explanation given in the interviews as it was sometimes explained that participants think that the municipality of Wageningen does not separate bio-waste but burns it together with residual waste. Participants would like to receive information tools which refute these delusions. As for the information seeking behaviour, one participant explained that primary schools should interact with children how to separate bio-waste. Children are young and are therefore, more likely to adopt new behaviour than adults, according to the beliefs of the participant, this could increase the information seeking behaviour of children as well. Whether it might not be proven that young children adopt new behaviour more easily than adults, it is interesting to take into account as children become the next generation. Another participant explained that present information is often delivered in Dutch. However, the family of the participant speaks English and so the information resources are not read by his family. The participant lacks motivation to explain Dutch information to his family but did explain to read the information and seek for more information if the information would be delivered in English.

Stimulating factors according participants to municipal resources and facilities

It does not seem that many stimulating factors were found on the prior health communication initiatives. It becomes clear that basically all prior health communication initiatives were forgotten. Only the waste-calendar has been well-remembered among participants in low- and high-rise households. Therefore, the waste-calendar and the newsletter of the waste-calendar can be seen as an effective and stimulating way of engaging participants to separate bio-waste. Biodegradable bin bags have also been appreciated among participants in low and high-rise blocks, as the bags keep bio-waste clean, avoid a bad smell, do not attract insects and can compost together with the bio-waste.

8. In-depth analysis

In the analysis, the intrinsic motivations have been analysed at first. First part of the intrinsic motivation covers the use of resources, availability of space and feeling of control (within the level of living) have been analysed at first. The second part of the intrinsic motivations covers the knowledge levels, easy versus difficult household activities, standard of living influenced by social pressure, perceived health risks related to bio-waste and the level of satisfaction (which determines the level of well-being) have been analysed. Subsequently the information accessibility, seeking, action- and processing behaviour of members of households have been analysed. Finally the engagement for action have been analysed. In the analysis, findings from the interview and photo analysis have been taken into account.

In this part of the analysis, it is analysed how findings from the interview, photo and questionnaire analysis intertwine with each other in accordance with the theoretical components of the IHM to grasp what really goes on within family households. In overall, it becomes clear from the interview, photo and questionnaire analysis that some daily activities regarding separating bio-waste within the average family household are more visible than other daily activities initially described in the IHM.

In this part of the analysis, I will zoom in on intertwining relations noticed from the interview, photo and questionnaire analysis to point out which components of the IHM seem to be more present in the daily activities of members of family households than others. As some parts of the analysis leaves leaps beyond what is reasonably supported by generated data from the field, IHM and literature, some findings remain questionable. Therefore, findings which are questionable will be treated in the discussion.

Possible relations between the motivations to separate, the level of well-being, engagement for action and perceived health risks of bio-waste

From the total group of participants, it is clear that there approximately one third is unwilling to separate bio-waste. The majority of non-separating participants live in high-rise blocks. A smaller number live in low-rise blocks. It is assumed that the evaluative frame of reference within the level of well-being partly works differently for participants in low-rise blocks than participants in high-rise blocks. However, comparing participants from low- and high-rise blocks to each other, it seems that the evaluative frame of reference largely works in the same way.

In order to grasp how the unwillingness of participants to separate comes to being, a close look has been taken to the evaluative frame. Participants think they have gained sufficient knowledge concerning bio-waste to know how to separate bio-waste correctly, how to use resources correctly to separate and to understand why it is important to separate bio-waste. However, it is often the case that non-separating participants have a low feeling of control, which means they are somehow not completely satisfied with their non-separating behaviour. Because of their low feeling of control, it seems that the only norm that seems to be achievable to separate waste is not to separate at all. In order to increase the norm to separate bio-waste, the feeling of control must increase. The feeling of control reflects back to the resources and knowledge levels in the IHM. However, it was found that the feeling of control in quite some households directly reflects back to the *household activities* and the produced *emissions*. Difficult perceived household

activities are explained to think of what belongs to bio-waste and what not when a participant wants to throw something in the bin. Then again, household activities are a result of household resources and knowledge in the IHM so it remains questionable whether household activities (such as thinking what belongs to bio-waste) can directly increase the feeling of control. Still, I assume that if household activities that have to do with separating bio-waste are less associated with the *perceived health risks* to it, it could have a direct influence on the feeling of control, so that the norm to separate increases as well. The perceived health risks reflect emissions as well. As emissions (such as compost made from bio-waste) are often seen as dirty and unhygienic, it could have a direct influence on the feeling of control.

I discovered from the interview and questionnaire analysis that perceived health risks, such as bad smells, insects, and rotting elements, are a serious threat to most participants. Participants associate bad smells with polluted air and insects and rotting elements to an unhygienic living environment in or outside their residence. As mentioned before, participants cannot really explain what health risks can occur when they breathe air which smells funny nor explain which harm insects exactly have on their health, but I strongly assume they are disgusted by it or think that they can get sick and for that reason simply do not want to separate. This explanation might reveal why participants also associate bio-waste with being *dirty*. As household activities are a result of resources and knowledge levels, it is assumed that knowledge resources could refute delusions concerning health risks of bio-waste so that household activities related to bio-waste are no longer highly associated with being dirty. However, it does look like the absence of resources are also used as an excuse of participants to not separate since they do not look for substitutional resources. It is also suspected that it still remains unclear for participants how bad smells and the attraction of insects can be avoided. For that reason, participants keep pointing to the municipality as they find it their duty to hand out more innovative household tools or create more facilities which make separating bio-waste a clean household activity.

However, it seems that participants are still sensitive to stories (perhaps delusions) which are told by individuals from their social network. Even though the majority of participants have shared not to feel socially pressured whether they should or how often they should separate bio-waste, it still seems especially from the interviews that participants are unconsciously influenced by others from their social network. Also from the interviews, it became clear that participants find separating bio-waste quite unhygienic even from the interviewees that did separate. It seems like the story of bio-waste being dirty has been often retold in social networks. Therefore, social pressure forms quite an influence on the level of well-being, standard of living and the feeling of control as well. It remains questionable to what extent the negative influence of social pressure can be tackled.

Possible relations between accessibility of information resources, information seeking, processing and action behaviour, knowledge, the evaluative frame of reference and perceived health risks

Participants from low-rise blocks claim to have sufficient space available to separate bio-waste but also find themselves knowledgeable enough to separate. In high-rise blocks it is the other way around. The majority of the participants find themselves knowledgeable enough and but moreover claim not to have sufficient space available to separate.

However, the reason why participants in low- and high-rise blocks claim to have gained sufficient knowledge to know why separating bio-waste is important and which items belong to

bio-waste. A set of knowledge questions were given in the interviews and questionnaires, but as explained in the results, half of the participants answered more than half of the knowledge questions incorrectly. From the interviews, I strongly suspected that participants do not consider bio-waste as a complex topic to talk about but rather as an easy topic. However, when interviewees were asked to answer small knowledge questions, a lot of incorrect answers were given as well. When participants understood they gave the wrong answer, their attention was raised as they discovered in the moment that their knowledge level was not as up-to-date as they believed themselves. For that reason, it might explain why the majority of the participants in the questionnaire analysis does not take the *effort* to access nor read received information tools such as information booklets or folders from the municipality of Wageningen. It might also explain why participants do not seek for information received from the municipality or the Internet because participants already think they know enough about bio-waste.

Still, the question arises for family households in low- and high-rise blocks, why present general knowledge levels of all participants concerning the correct way of separating bio-waste (or statements about bio-waste) are not up-to-date. In my opinion, the main explanation to what I have found in the questionnaire- and interview analysis is two-sided. From participants' information seeking, processing and action behaviour it becomes quite clear that textual information is generally not well-appreciated as the waste-calendar is the only informational resource which is well-remembered and well-appreciated. Additionally, participants explain to search for visual information on the Internet if they have to. Visual information (such as pictures and short movies which explain recycle processes) might be the reason why 'printed information resources' like news booklets and folders are immediately thrown away. As participants have the feeling to already obtained sufficient knowledge regarding bio-waste and do not wish to spend a lot of time on reading about bio-waste, printed news sources might even be considered as 'spam'.

It seems that Internet plays an important role the information seeking and processing behaviour. It is suspected that the focus of participants could have shifted to more interactive media so that participants can learn from quick, easy and visual information. As participants also explained to be curious how bio-waste travels and *how* recycled bio-waste eventually adds up to their personal life, it is suspected that interactive media (such as short YouTube movies, mobile applications, pictures on Internet websites or social media pages) easily anticipates on the participants needs in only a few minutes of time. Participants might not be interested anymore in printed information resources, but that does not necessarily mean they have lost interest to learn from information concerning bio-waste. Participants seem to prefer heuristic learning more than the present type of learning. Heuristic learning can be done through problem solving, inductive reasoning or trial and error and is especially applicable in situations where individuals are not optimal motivated to learn (Nooteboom B., 2011).

The *type* of information resource thus seems to matter for participants, which also reflects their level of satisfaction. As participants think they have obtained sufficient knowledge and present information resources do not seem to focus on the insignificant health risks of bio-waste, it might influence participants' feeling of control and the norm for them to separate. Next to that, information should also stay repeated as health communication interventions are often organised once and information is therefore quickly forgotten.

Main findings of the interview, photo and questionnaire analysis in overall

In sum, it becomes clear that participants find separating bio-waste unhygienic and dirty as they relate health risks to separating waste. However, participants cannot explain which health risks (except for polluted air) and how harmful health risks of bio-waste exactly are.

In order to make household activities related to bio-waste more hygienic, participants would like to receive more and better resources from the municipality so that they can separate more often and more efficiently. The type of desired household resources somewhat differ between low- and high-rise blocks. In high-rise blocks participants prefer small and light tools to separate. In low-rise blocks, participants expect an extra green container. However, all in all, most participants in low- and high-rise blocks wish to receive more municipal resources they can use to keep bio-waste separation hygienic so that insects and bad smells can be avoided.

Participants would also like to receive more updated information resources, which feedback participants about what is being done with bio-waste, how bio-waste travels, how participants can benefit from recycled bio-waste and especially how to keep bio-waste free from insects and bad smells. However, participants would not like to receive this information through printed sources such as information booklets and news articles as they are immediately thrown away and quickly forgotten. Participants would like to learn heuristically and therefore, access quick, simple and visual information through the Internet so that they do not have to take a lot of effort to learn. Some participants already seek for digital information online. From the analysis it also became clear that repetitive information is important, as information seems to be quickly forgotten.

Finally, participants from low-rise blocks would like their bio-waste to become picked up more often by municipal workers. Especially in summertime.

9. Discussion

Referring to the sub questions, it was intended to research the influence of intrinsic motivations and the influence of information resources and other municipal services and resources? on intentional behaviour of members of family households regarding separating bio-waste. Finally, it was also intended to research which factors are stimulating and which are improving to motivate members of family households for action.

As the in-depth analysis has revealed, quite some relations from the IHM seem to be important in households of family members when it comes to separating bio-waste. However, there are still some findings which remain questionable.

For example, looking at the influence of intrinsic motivations on the intentional behaviour of participants, it seems that members of family households that do not separate, mainly blame the municipality to not have received the right household resources (such as light bio-waste buckets for in high-rise blocks) or municipal resources (such as an extra green container in low-rise blocks). The need for municipal resources differs for members of family households in low- and high-rise blocks. Members in high-rise blocks have explained to want resources like bio-waste buckets light in material to carry up and down the stairs so that they can empty bio-waste more often in the large container. On the other hand, members of households in high-rise blocks also explain they do not want walk the stairs so much to empty bio-waste. There is thus a *contradiction*. Members of households in high-rise blocks want to empty their waste more often with the right tools but are unwilling to separate bio-waste when it takes too much effort. One of the participants even explained that the municipality of Wageningen could establish an elevator especially made for bio-waste so that all households per gallery were able to dump their bio-waste in the elevator. The same contradiction seems to be present for members of households in low-rise blocks. Members in low-rise blocks explain that the municipality should provide them more resources like an extra green container or biodegradable container bags to keep bio-waste clean and pick up the green container more often in summertime but at the same time, if members of households need to bring the container more often to the communal pick it may require a lot more effort.

It remains questionable to what extent the municipality should give in to the need for resources to motivate members of households for action. I suspect members of households find it easier to point to the municipality so that they do not have to take responsibility for own behaviour and make adjustments.

It is remarkable that the majority of the sample population explains not to feel any social pressure when it comes to separating bio-waste. Again, it might be because participants *think* they do not feel any social pressure. However, in interviews it becomes clear that participants also take family traditions and norms and values (taught by peers from social network, which could also include neighbours) into account. It remains questionable, but it might be an explanation of why participants in low-rise blocks believe their norm to separate is equal to the norm of other family households whereas participants in high-rise blocks believe they separate less than other family households. Participants might take over beliefs and ideas concerning bio-waste and the use of household resources unconsciously. Members of households in high-rise blocks may interact more with each other (as flat tenants live closer to each other) than

participants in low-rise blocks. It could be assumed that participants in high-rise blocks communicate more intense with each other and therefore also socially influence each other more. To which extent the aforementioned assumption is true remains questionable.

In the analysis it became clear that members of households are nowadays are less interested in learning from long printed information sources. Members of households seem to browse for short movies, social media and explanation to answers found on Google. As explained before, heuristic learning occurs when individuals are not optimal motivated or interested to learn. It seems from participants' information search behaviour that they rather learn heuristically (learning from information resources which are not too time consuming and do not take a lot of effort to consult).

It is interesting that the municipality of Wageningen has not completely anticipated yet to raise awareness and inform members of households in such a way that they can learn heuristically. It remains questionable to what extent the municipality of Wageningen actually should make news sources more visual to reach family households. However, it would be a nice way to provide more info to members of households and also stimulate seeking, processing and perhaps action behaviour as information will not so quickly be considered as spam when it is offered or found on the web. Good examples to stimulate heuristic learning are explanation about health communication campaigns presented in social media, interactive websites of the municipality which present more movies of explanations instead of written text blocks and electronic devices such as the 'Recyclemanager' which can be downloaded on electronic devices such as a laptop, smartphone, tablet etc.

There are still factors which members of family households in low- and high-rise blocks find stimulating and improving when it comes to the prior health communication interventions that have been performed in the past. Especially, feedback loops and repetition are important to members of family households. It has been explained that health communication interventions should be repeated more often as the information from interventions are quickly forgotten. It is questioned to what extent interventions should be repeated as the municipality also does not want to overload households with too much information. The risk of too much repetition would be that also health communication interventions can become considered as 'spam'. For that reason, it is questionable how often communication interventions should be repeated and whether it is needed to repeat the entire intervention again or just the results.

Feedback loops are explained to be needed to feedback members of households. Members of households want receive statistical information on how much bio-waste has been collected by the municipality of Wageningen, where they can deliver bio-waste and how waste travels from bio-waste to recycled products. It should be questioned however, how much feedback the municipality of Wageningen is obliged to give. It can also work the other way around; if members of households have access to and seek for information on the web, they can also consult information sources themselves to find the feedback they are looking for. However, it remains the task of the municipality to explain that feedback is to be found through which (electronic) information resources.

Critical reflection

In this thesis it was chosen to make use of interviews, photos and questionnaires which have assessed the theoretical components in accordance with the IHM. Some critical remarks to what could have been done better to execute this study more effectively are explained below.

Sample recruitment for households in high-rise blocks

It was difficult to determine how to make a correct distinction between 20 households in low-rise blocks and 20 households in high-rise blocks for the questionnaire. It was easier to find households in low-rise blocks in swimming pool De Bongerd and the gym Enjoy Health Club. For that reason, it was chosen to select high-rise blocks in different neighbourhoods of Wageningen to achieve collaboration from members of households in high-rise blocks. However, it would have been better to select the neighbourhoods with high- and low-rise blocks preliminary to before entering the field. It would have been a good idea to involve the municipality of Wageningen in selecting the right neighbourhoods. In that way, more interesting neighbourhoods could have been selected according to prior researches of Wageningen.

Pilot interviews

In total 15 pilot interviews have been taken and recorded. It was a very time demanding process to transcribing the results. Even though all pilot interviews have been useful and only six of them have been selected to use (four of them for the photo-analysis), it was still too time demanding for the time that was given to write this thesis. For that reason, it would probably have been better to only take six pilot interviews from the start. However, more qualitative interviews than the 15 pilot interviews which have been taken in this thesis, did deliver a more complete view on the found relations within the IHM. More interviews could give more insight to why individuals do not seek for printed information sources and which information sources on the web are exactly interesting. It also gives more insight to why individuals find bio-waste unhygienic, especially when more questions would have been asked to individuals to find out which health risks they fear of. More specific interview questions could also generate more information concerning what makes bio-waste exactly dirty to members of households.

Photo-analysis

The photo-analysis did not yield as much as information as was expected. The photos were meant to get insight to how members of family households interpret their way or separating bio-waste and what emissions look like in their way of thinking. Perhaps the last interview question which asked interviewees to send in photos should have been clarified by explaining in which context the photos had to be taken. However, the photo-analysis could have been executed less intensive. It was an effective way to understand the context of what participants' mean when they speak about the types of household resources and municipal resources interviewees have used. The photos also gave insight to the surroundings of where interviewees would store their bio-waste. However, photos remain photos and it is difficult to grasp why interviewees have chosen for the used (household) resources and surrounding presented on that photo. Perhaps a photo-analysis would only be interesting as a second phase of the analysis, after the interviews have been taken. Interesting cases from the interviews that have actually yielded important information could add extra information through certain photos. On the other hand, first executing a photo-study so that in-depth interviews can be taken so that the interviewees can explain what happens on the photos could also add credible information.

The Integrated Household Model

It was a difficult process to merge different theories and frameworks into one theoretical framework. To save time, it is recommended to not describe four theoretical models, evaluate them and finally use three models. To save time, it could have been better to select components from only two effective models to cover all research intentions. Or to just stick to one model, like the Consumer-Interaction Model. On the other hand, it was important to merge different theoretical frameworks as it describes the process of an individual from having access to information until engaging for action. The components of these theoretical frameworks suited the CTI models very well as the CTI model studies human behaviour in relation to household activities and health consequences. As this thesis is written in the field of applied communication, multiple theoretical frameworks regarding information access, processing, seeking and action behaviour were interesting to research combined with theoretical frameworks regarding making behavioural change. However, as the IHM is merged by multiple models that are widely discussed in this thesis, it also makes the IHM a trustworthy model and ready to be used in future research for other municipalities. The IHM describes theoretical components that can easily be placed in the context of how other municipalities would like to use the IHM.

Societal contribution of the study

The municipality of Wageningen is quite small. Also a small sample population has been selected to research in-depth motivations of members of family households. This research has been small-scaled. Some interesting findings were noted and has contributed to understand what motivates and demotivates members of family households to separate bio-waste. However, to make these findings more applicable to other municipalities it could have been interesting to combine multiple small municipalities from different regions in the Netherlands to see whether findings from the municipality of Wageningen are the same or different than other small municipalities.

Future research

Throughout the years, many studies have been done to understand which stimuli drives individuals in making behavioural choices in health science. In this research, literature, theories, the Integrated Household Model, interviews, photos and questionnaires have been used to study how awareness can be raised to engage members of family households to separate bio-waste as literature revealed less bio-waste was separated from 2008 onwards in the Netherlands.

In the case study of Wageningen, some important findings have been noted which can be drawn upon in future research.

Members of family households clearly to explain that the municipality of Wageningen withholds them from separating bio-waste. It is assumed that only a *small* part of this explanation is true as it comes to present household-, municipal- and information resources do not completely fulfil to the wishes of members of households. However, it is for a larger part assumed that members of family households 'blame' the municipality for not providing them the right resources as they are just not interested in separating bio-waste. By blaming the municipality it looks like members of family households makes themselves a victim instead of initiator, however this remains an assumption as there is no statistical evidence available. Therefore, it is interesting for future researchers to study to what extent blaming the municipality is an excuse for in not

seeking, reading, processing and/or acting on information resources. The same explanation applies to the use of municipal facilities or household tools.

It might also be interesting for future research to what extent social pressure and perceived health risks play a role in the separation behaviour of members in family households. In this thesis, multiple components have been researched but as it was found that perceived health risks and social pressure are two important intrinsic motivations that influence intentional behaviour, it would be interesting to dedicate specific research to the role of perceived health risks of bio-waste and social pressure on separating bio-waste in the future.

In future research on stimulating recycling behaviour with regard to bio-waste by means of information and household resources, it might also be desired to research to what extent a municipality still *should* make concessions to members of family households. Looking back to all experiments and health initiatives which have been performed in the past ten years, the question arises whether there has not been sufficient information shared already. Innovating household- and changing information resources to the present call of members of family households are needed as households keep changing and innovating as time passes by as well, but it is worthwhile to research what happens when the tables are turned and members of households are no longer *rewarded* (by providing all resources members in households wish to receive) but are *fined* if they do *not* separate bio-waste (in the correct way). However, it must be taken into account that the municipality could also lose a lot of the goodwill that they have built up so far among members in households. It is still worthwhile to in future science to overthink which approach works best to motivate members of households for action.

On the other hand, perhaps the municipality of Wageningen has already shared too much information in the past, which makes it confusing for members of family households to remember the most important messages that were aimed to communicate. Reflecting back to the last ten years, many experiments have been attempted in the past which have all been forgotten (except for the waste calendar). Perhaps members of family households suffer from an *information overload* and are tired of all prior experiments which included reading and processing textual information as well. It might explain why members of households feel more comfortable with pictures, illustrations and short videos and why they have a feeling they already know sufficient about bio-waste. It is worthwhile to research the role of possible information overload in future research as well.

On another note, a confusion which might contribute to why knowledge levels of members in households are not up-to-date, may be because the Netherlands does not have an unanimous policy concerning which colour is assigned to a mini container to collect waste. According to the statutory requirements under the law of environmental management, every municipality in the Netherlands has to take care to collect and process all types of waste flows. Each municipality has the freedom to assign own colours to the mini containers they distribute to members of households (Wetten Milieubeheer, 2010). As explained in interviews, the fact that there is no unanimous policy in the Netherlands regarding which colours belong to which waste flow, it can cause confusion under members of family households from different regions.

10. Conclusions

In this thesis it was the aim to answer the main research question: *“How can awareness be raised to engage members of family households with children (aged 4-12 years) in the municipality of Wageningen in the separation of bio-waste in order to contribute to a healthier living environment?”*

In order to do so, a series of sub questions have been developed to support the main question. These sub question focused on the influence of intrinsic motivations and the influence of information resources on intentional behaviour. The motivations for action have also been researched to find out which are the stimulating and improving factors of prior health communication interventions provided by the municipality of Wageningen.

The influence of intrinsic motivations on intentional behaviour

Having all intrinsic motivations researched in the literature, IHM, field and multiple theories it can be concluded that the factors mostly influencing intrinsic motivations are perceived health risks and the usage of municipal and household resources. Members of family households find bad smells, polluted air and insects unhygienic and relate them to health risks. Hence, the call of households for more municipal and household resources, which in turn has a direct effect on their evaluative frame of reference, yet the lack of effort remains a problem. It can be concluded that there is a certain correlation between perceived health risks and the call for more municipal and household resources. The lack of knowledge among members of households and social pressure are not acknowledged by members to be determining factors concerning their separation behaviour. However, it can be concluded from the questionnaires and IHM, the lack of knowledge and social pressure indirectly do influence intentional behaviour. The aforementioned conclusions apply to members in low- and high-rise blocks as found differences were minimal.

The influence of information resources on intentional behaviour

It can be concluded that members of family households have only access to printed information resources provided by the municipality. However, members of households do not remember any of the present printed resources anymore, except for the waste-calendar. Members of households do not seek, read or act upon printed information resources but prefer heuristic learning through interactive media on Internet. Members of households prefer more visual and short information.

Engagement for action

In conclusion, the most stimulating factors from prior health communication interventions were the fact that they were interactive by nature. The waste-calendar has been well-remembered. The practical, short and visual information which the waste calendar provides are perceived as motivating factors for action. Factors which can still be improved in health communication interventions are the lack of feedback loops. Members of households want to receive statistical information concerning bio-waste and how bio-waste travels from bio-waste to recycled materials. Finally, the repetitive nature of health communication interventions are determining to motivate for action as information will be more remembered.

Overall conclusion

To answer the main research question, it can be concluded that raising awareness for attention to engage members of family households for action can be achieved by providing innovated resources that reduce the amount of insects and bad smells of the storage of bio-waste. In addition, present information resources are not necessarily outdated but will have to pay more attention to perceived health risks of bio-waste and in information resources it has to be treated that perceived health risks are harmless to health. In order to reach members of family households, present information resources have to be offered more on the Internet in a visual and simple way so that heuristic learning can be stimulated. In this way, members of households might seek, process and act more on information. Finally, information resources and health communication interventions must be repeated and provide feedback regarding bio-waste to motivate members of households for action.

11. Recommendations

In line with the findings discussed in the previous chapter, five recommendations to help the municipality of Wageningen to think in the right direction. In the next paragraphs, a brief explanation of the following recommendations are given to the most important findings:

- The social network approach
- Feedback loops
- Heuristic learning
- Language
- Innovative municipal resources

Social network approach

As it was found in this thesis, the topic bio-waste does not seem to move members of households to access, seek, process or act upon information concerning. On the other hand, it is assumed that members of households are socially influenced by others within their social network. In addition, members of households also want the municipality to take action. Also knowledge levels are not as up-to-date as members of households think their knowledge levels are. For that reason, it seems more than just printed information resources are needed to engage members of households for action.

As it seems likely that members of family households will not change their passive behaviour in seeking or reading information, because they already think they know a lot about bio-waste it will be quite a challenge for the municipality of Wageningen to move members of households to learn from present information tools. For that reason, it might be an idea to bridge the aforementioned knowledge gaps through social learning. The municipality of Dordrecht and four municipalities in Zeeuwen have launched the social network approach in 2014. From results of post-surveys it became clear that members of family households enthusiastically retold the story to other peers in their social network (Vereniging Afvalbedrijven, 2014). Social learning can be applicable to members of households in Wageningen as members of households seem to be sensitive of what happens in their social network. They seem to be unconsciously influenced and therefore, the social network approach allows members to learn from examples (such as the church, hobbyclub, etc.) within their social network.

The social network approach focuses on stimulating members of family households unintentionally so that knowledge can be shared. Popular spots in the neighbourhood are selected, such as the central market square, church, soccer club, etc. and transformed into 'example corners'. The 'example corner' represents information regarding separating bio-waste and how bio-waste contributes to our living environment. In the case of Wageningen, more visual information can become emphasized, such as pictures or short movies which explain how bio-waste travels and which statements are true and false about bio-waste. Example corners can even take tests to make members of family households aware that they do not know everything about bio-waste yet and that it is important to read information handed out by the municipality.

Feedback loops

Feedback loops are needed to convince members of households that they really count in the process of separating bio-waste. By embedding feedback in information resources, members of households stay part of the dialogue. They can read how bio-waste travels from their (or the neighbours') bin to recycled materials which in turn contribute to the society. Another important remark is that when feedback loops provide clear information concerning how waste travels, delusions can be refuted and make members of households see that it is actually worthwhile for the municipality for them to separate bio-waste. Members of households want to stay updated about the statistics concerning bio-waste. How much bio-waste has been picked up per person per year? How do members of households matter? Is their effort appreciated by the municipality and does their effort really has an effect on society? Feedback loops are also a good way to make members of households understand that separating bio-waste is not only good for the environment but also for their direct health.

Heuristic learning

As it became clear from the analysis that the majority of the sample population does not read, seek, process or act upon printed information resources. Members of households rather browsed on the Internet to learn heuristically. An effective example is 'the Recyclemanager'. The Recyclemanager is an application which can be downloaded on an electronic device and includes advises members of family households where to throw their waste, the most nearby spots of containers, information and facts upon fermentation halls etc. (Recyclemanager, 2014). Municipalities have to subscribe to the application to release municipal information which the app can communicate to users. Some of the municipalities have joined the application, however, the municipality of Wageningen has not joined yet (Recyclemanager, 2014). A lot of information can be shared through the Recyclemanager. It might be an idea to upload statistics from time to time in the application to feedback members of family households on how they contribute to separating bio-waste and improving their own living environment. The municipality of Wageningen has not subscribed yet.

The power of repetitive information

The most important is to keep repeating effective information resources, like feedback loops and social network approaches. The analysis made clear that the only information resource which was remembered is the waste calendar. It is strongly assumed that members of family households remind the waste calendar because they have to use the calendar multiple times per year. As all the other health initiatives, which are mentioned in the base-line study, have been forgotten, it is therefore important to take the waste calendar as an example. It might be an idea to draw on the waste calendar and launch more effective information resources which look like the waste calendar.

Language

Even though I did not come across many members of family households who explained to experience a language problem, it was an eye-opener to hear that most information resources are written in Dutch, which cannot be read by foreign members in households. Prior research has shown that in total 1.6 million foreigners live in the Netherlands (Compendium, 2014). As the municipality of Wageningen established universities which attract foreign students from all over the world, it can be assumed that a percentage of those (graduated) foreigners settle and perhaps start a family in Wageningen. It remains questionable whether it is wise to hand out

information in English as we live in the Netherlands and Dutch is official language, but for foreign households, it might be stimulating to also receive information in English.

Innovative municipal resources

Finally, household resources should also become innovated according to members of family households in low- and high-rise blocks as became clear from the analysis. As explained before, household resources for high-rise blocks will have to be innovated differently than household resources in low-rise blocks. Because it might be difficult for a small municipality like Wageningen to decide whether household resources really need to become innovated, it might be an idea to cooperate together with small neighbour municipalities such as Ede, Nijkerk, etc. to see whether these municipalities also have to deal with the same separating behaviour in low- and high-rise blocks. Other small municipalities have joined together as well to compare results of studies they have performed to measure separating behaviour among members of (family) households to see whether there were differences and/or similarities. Based on the result, decisions were made to adjust household resources. The municipalities of Ede, Amersfoort, Veenendaal and Utrecht have compared results of members of family households to each other and it was for example chosen to hand out multiple-sized bins which were made from light plastic, to collect bio-waste for households in low- and high-rise blocks.

Results showed that by working together more insight can be gained in the which household tools of members of households actually need to stimulate separating behaviour (AVU, 2013).

Together, a cost-efficiency analysis can be made to measure which household tools need to be adjusted to equip members of family households well enough to efficiently separate bio-waste. Cost-efficiency analysis concerning which household tools need to be introduced, innovated or eliminated are needed as municipalities cannot just fulfil each advise which members of households give as it becomes too expensive.

It became clear from the analysis, that the most important for the municipality of Wageningen is to keep in mind when working together with other small municipalities, that the main challenge is to innovate household tools that allow members of households to experience separating bio-waste as a clean household activity.

12. References

Journals:

- Allers, A. (2007). Belastingoverzicht. *Belastingoverzicht grote gemeenten 2007* (pp. 14-16). Groningen: A.M. Allers, A.S. Zeilstra, C. Hoeben, J.T. van der Veer.
- Ajzen, Icek. "The Theory Of Planned Behavior." *Organizational Behavior and Human Decision Processes* 50.2 (1991): 179-211. Print.
- Bandura, Albert. "Social Cognitive Theory: An Agentic Perspective." *Asian Journal of Social Psychology* 2.1 (1999): 21-41. Print.
- Berends, B. (2003). Een onderzoek naar intentie en gedrag van mensen bij het scheiden van afval. *De race tegen het afval, 0*, 15-33.
- Brug, J.. "The Transtheoretical Model And Stages Of Change: A Critique: Observations By Five Commentators On The Paper By Adams, J. And White, M. (2004) Why Don't Stage-based Activity Promotion Interventions Work?." *Health Education Research* 20.2 (2004): 244-258. Print.
- BV, M. (2012). In opdracht van de gemeente Amersfoort. Bewonersonderzoek Afval (vijfde meting), 0-2, 36-39
- CBS, R. (2012). Samenstelling huishoudelijk restafval. *Samenstelling van huishoudelijk restafval, 1940-2011,0-1*, 1-6.
- Domingo, J., & Nadal, M. (2009). Domestic Waste Composting Facilities: A Review Of Human Health Risks. *Environment International*, 35(2), 382-389.
- Hill, Richard J., Martin Fishbein, and Icek Ajzen. "Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research.." *Contemporary Sociology* 6.2 (1977): 244. Print.
- Kraft, Pål, Stephen R. Sutton, and Heather McCreath Reynolds. "The transtheoretical model of behaviour change: Are the stages qualitatively different?." *Psychology & Health* 14.3 (1999): 433-450. Print.
- Lesschen, J. (2009). <http://www2.alterra.wur.nl/Webdocs/PDFFiles/Alterraraapporten/AlterraRapport1891.pdf>. *Nulmeting emissie broeikasgassen land- en tuinbouw, 1*, 11.
- Nederland, R. V. (2012). Betalen voor inzameling en verwerking. *Huishoudelijk afval, 0-1*, 4.
- Nooteboom, B. (2001). A Heuristic of Discovery. *Learning and Innovation in Organizations and Economies*, 170-189.
- Nordhaus, W. D. (1991). The greenhouse effect. *To slow or not to slow: the economics of the greenhouse effect, 0-1*, 920-937.
- Organization, W. H. (2003). Definition of Health/Wellness. *Parcific Northwest Foundation*, 1, 24.
- Poulsen, O. M., Stenbaek, E. I., Hansen, M., Ebbenhøj, N., Breum, N. O., Wilkins, C., et al. (1995). Collection Of Domestic Waste. Review Of Occupational Health Problems And Their Possible Causes. *Science of The Total Environment*, 170(1-2), 1-19.
- Prochaska, James O., and Wayne F. Velicer. "The Transtheoretical Model of Health Behavior Change." *American Journal of Health Promotion* 12.1 (1997): 38-48. Print.
- Rieke, A., Ockene, K., & Pbert, L. (2014). *The handbook of health behaviour change*. New York: Springer Publishing Company.

- Sheppard, Blair H., Jon Hartwick, and Paul R. Warshaw. "The Theory Of Reasoned Action: A Meta-Analysis Of Past Research With Recommendations For Modifications And Future Research." *Journal of Consumer Research* 15.3 (1988): 325. Print.
- Statistiek, C. B. (2013). Gemeentelijke afvalstoffen; hoeveelheden. *CBS StatLine,0-1, 1*.
- Yang, Z. Janet, Ariel M. Aloe, and Thomas Hugh Feeley. "Risk Information Seeking and Processing Model: A Meta-Analysis." *Journal of Communication* 1 (2013): n/a-n/a. Print.

Books:

- Groot-Marcus, J. (2006). Household and technology activities. Wageningen: Springer Netherlands.
- Leeuwis, C. (2003). Evaluative framework of reference. In *Wheelbarrows full of frogs: Social learning in rural resource management : International research and reflections*. Assen, Netherlands: Koninklijke Van Gorcum.
- Ormrod, Jeanne Ellis. Educational psychology: developing learners. 3rd ed. Upper Saddle River, N.J.: Merrill, 2000. Print.
- Thaler, R. (2010). Nudge improving decisions about health, wealth, and happiness. Concordville, Pa.: Soundview Executive Book Summaries.
- Vaus, D. A. (2001). *Research design in social research*. London: SAGE.

Folders:

- Vereniging afvalbedrijven. (oktober 2012). Retrieved June 10, 2015, from http://www.verenigingafvalbedrijven.nl/fileadmin/user_upload/Documenten/Overig/WAR_Afvalverwerking_in_Nederland_gegevens_2012_okt_2013.pdf
- Recyclemanager. (december 2014). Retrieved June 10, 2015, from <http://recyclemanager.nl/nieuws/16-12-2014/welke-gemeenten-staan-nu-in-de-recyclemanager>

Websites:

- Algemeen. (n.d.). Retrieved June 10, 2015, from <http://www.dalfsen.nl/Inwoners/themas/natuurenmilieu/afvalkoket/afvalalgemeen.htm>
- Biodegradable Waste. (n.d.). - Environment. Retrieved January 9, 2014, from, <http://ec.europa.eu/environment/waste/co>
- Cijfers over afvalscheiding. (2009, January 15). Retrieved June 8, 2015, from http://www.milieucentraal.nl/afval/afval-scheiden-en-recyclen/cijfers-over-afvalscheiding/Cyclusmanagement/Gemeente_Wageningen.
- Informatie, W. (n.d.). Decentrale regelgeving overheid. afvalbeleidsplan 2011. Retrieved January 7, 2013, from <http://decentrale.regelgeving.overheid.nl/>
- Huis-aan-huisophaling - Minder hinder van uw GFT-container - Interza. (n.d.). Huis-aan-huisophaling - Minder hinder van uw GFT-container - Interza. Retrieved May 11, 2014, from <http://www.interza.be/NL/Afvalpreventietips-1-37.php>
- Impuls gescheiden inzameling gft afval. (2014, May 8). Waarom? Daarom! Gft-campagne van start. Retrieved May 8, 2014, from <http://www.vng.nl/files/vng/vng/Documenten>

- Milieubewust gedrag, 1995-2011. (n.d.). Milieubewust gedrag. Retrieved January 8, 2014, from <http://www.compendiumvoordeleefomgeving.nl/indicatoren/nl0033-Milieubewust-gedrag.html?i=15-12>
- Milieuloket, 2007. (n.d.). Afval en stoffen. Retrieved January 14, 2014, from <http://www.milieuloket.nl/9353217/v/>
- Nudge. (2014, November 7). Retrieved June 19, 2015, from <http://designincubationcentre.com/nudge/>
- CD Glossary of Statistical Terms - Carbon dioxide (CO2) Definition. (n.d.). OECD Glossary of Statistical Terms - Carbon dioxide (CO2) Definition. Retrieved January 9, 2014, from <http://stats.oecd.org/glossary/detail.asp?ID=284>
- Over ROVA. (n.d.). ROVA. Retrieved January 8, 2014, from <http://www.rova.nl/rova/duurzaam-ondernemen/afval-eeen-bron-van-energie>
- Rijksoverheid – Duurzame energie – Meer duurzame energie in de toekomst – Rijksoverheid. – Nadelen duurzame energie – Rijksoverheid. Retrieved May 11, 2014, from <http://www.rijksoverheid.nl/onderwerpen/duurzame-energie/meer-duurzame-energie-in-de-toekomst>
- ROVA. (2013, September 9). Retrieved July 5, 2015.
- Samenstelling van huishoudelijk restafval, 1940-2011. (n.d.). Samenstelling restafval huishoudens. Retrieved January 8, 2014, from <http://www.compendiumvoordeleefomgeving.nl/indicatoren/nl10141-Samenstelling-restafval-huishoudens.html?i=1-4>
- Volksonderzoek allochtonen. (januari 2014). Retrieved June 10, 2015, from <http://www.compendiumvoordeleefomgeving.nl/indicatoren/nl2109-Allochtonen.html?i=15-12>
- Waste categorisation and identification. (n.d.). European Waste Catalogue Categories and Codes. Retrieved January 8, 2014, from <http://www.abdn.ac.uk/environment/waste>
- Overheid. (2010, October 2). Retrieved June 19, 2015, from http://wetten.overheid.nl/BWBR0003245/volledig/geldigheidsdatum_19-06-2015#Hoofdstuk10

Annex

In this part, an overview is given from:

- Annex I: Results pilot interviews
- Annex II: Demo questionnaire
- Annex III: Results questionnaire

ANNEX I: Results pilot interviews

Uitwerking interview Pilot 1

Ter afsluiting van mijn scriptie aan de Universiteit van Wageningen zou ik graag meer informatie willen verzamelen omtrent het scheiden van afval binnen huishoudens in de gemeente Wageningen. Tijdens dit interview zou ik graag van opnameapparatuur gebruik willen maken om uw antwoorden efficiënt te kunnen verwerken. Graag attendeer ik u erop dat de door u verstrekte informatie strikt vertrouwelijk zal worden behandeld en dat het interview geheel anoniem wordt afgenomen. Het interview bevat enkel open vragen. Er zijn geen goede of foute antwoorden mogelijk. In het belang van dit interview verzoek ik u daarom vriendelijk om zo eerlijk mogelijk te antwoorden en alle informatie te delen die in u opkomt. Het interview duurt ongeveer 10 minuten.

Demografische gegevens

- Ik begin met het verzamelen van wat algemene gegevens:
 - Bent u een man of een vrouw?
'Man'
 - Wat is uw nationaliteit?
'Nederlands'
 - Wat is uw hoogst genoten opleiding?
'Mijn eigen opleiding? Middelbare.'
 - Wat is uw leeftijd?
'40'
 - In wat voor soort woning woont u?
'Rijtjeswoning'
 - In welke wijk van Wageningen woont u?
'Tarthorst'
 - Hoeveel leden maken deel uit van uw huishouden?
'4'
 - Hoeveel van het totaal aantal leden in uw huishouden zijn volwassenen en hoeveel kinderen?
'2 volwassen en 2 kindjes'
 - Hoe oud zijn de kinderen?
'11 en 12. Twee meiden.'
- Doet u aan afval scheiden in het dagelijkse leven? (**Intentioneel gedrag**)
'Ja zeker.'
 - 2.A Indien (gedeeltelijk) ja:

- Doet u ook aan het scheiden van groente fruit en tuin afval (GFT-afval)? Waarom wel/niet?
'Ja wij hebben drie klike's. Een voor papier en een voor van alles en een andere voor tuinafval.'
 - Welke handelingen omtrent het scheiden van GFT afval onderneemt u? (Hierna verder met de vragen onder 2B.)
'GFT afval.. Is dat Groente, Fruit en Tuinafval? In dat geval scheid ik het wel van de rest van het eten. Ik kijk niet echt naar wat er in de groene klike moet, alles wat ik overhoud aan eten gooi ik erin. Zoals aardappelschillen enz.'
 - Bent u het meest verantwoordelijk voor het scheiden van afval in uw huishouden?
'Ik vind van wel.'
2.B Indien nee, ook vragen:
 - Om GFT-afval te kunnen scheiden zijn er een aantal middelen nodig zoals kennis, de arbeid die gedaan moet worden om te scheiden en de beschikbare ruimte. Welke van deze middelen voldoen om GFT-afval te scheiden wel of niet in uw geval? (**Household resources**)
'Kennis weet ik niet.. Hmm misschien niet, ik denk dat ik wel een beetje kennis heb. Ruimte heb ik wel en arbeid kan ik ook wel verrichten.'
 - Welke middelen heeft u van de gemeente gekregen om GFT te scheiden? (**Resources**)
'Ehm, volgens mij, een x of twee x per jaar krijgen we van die zakjes ofzo. Volgens mij krijgen we ook huisafval kalenders.'
3. A) Wat vindt u makkelijk aan GFT-afval scheiden? (**Attitude**)
'Wat vind ik makkelijk. Hmm, het is allemaal makkelijk. Ik gooi het gewoon in de klike en ja je moet het ergens weggooien dus al het overgebleven eten gooi ik gewoon daar.'
- B) Wat vindt u moeilijk aan GFT-afval scheiden? (**Attitude**)
'Ja je kunt niet alles zomaar in de klike gooien. Maar ik heb dan meer moeite met het scheiden van papier en plastic dan Groente, Fruit en Tuinafval omdat je dat gewoon in de groene bak kunt gooien.'
4. A) Wat kunt u in het algemeen vertellen over GFT-afval? (**Kennisniveau**)
'Ja ik heb mezelf niet echt verdiept eigenlijk. Ik weet wel, restafval gooi je in de grijze bak. Maar wat betreft eten, ja ik gooi wel eens kip in de groene bak maar van sommige mensen hoor je dan dat dit niet mag. Dus ja ik weet verder niet zo goed.'
- B) Vindt u GFT-afval scheiden nuttig voor het milieu? Waarom? (**Kennisniveau**)
'Ja zeker, 100%. Als je afval scheidt, dan ja, heeft het veel effect op het milieu he. Als je plastic en karton apart gooit en chemisch afval ook dan kost het ook minder werk voor de gemeente. Dat weet ik wel. Verder niet. Ik ben zelf bouwvakker dus ik zie dat wel.'
5. A) Heeft u wel eens informatie over GFT-afval ontvangen? Zo ja, van wie of welke instanties? (**Informatie toedracht**)
'Volgens mij wel. Zon jaarlijks boekje van de gemeente.'
- B) Heeft u wel eens informatie over GFT-afval opgezocht? Zo ja, waar? Zo niet: Als meer zou willen weten over GFT-afval, waar zou u denkt u informatie over GFT-afval zoeken? (**Informatie zoekgedrag**)

- 'Nee. Als ik zelf zou moeten zoeken dan op Internet, op de website van de gemeente.'*
- C) **Indien ja bij B:** hoe heeft u deze informatie verwerkt? (**Informatie verwerking**)
6. Welke huishoudelijke middelen heeft u om GFT-afval te scheiden? (**Level of living**)
'Ehm alleen de klike.'
7. Hoe vaak vindt u het gebruikelijk om GFT-afval te scheiden? Wat is voor u de norm? (**Subjective norm**)
'Hoe vaak? Ja dagelijks!'
8. Hoe tevreden bent u over uw scheidingsgedrag? (**Level of well-being**)
'Ja goed. Ik zou mezelf en de rest een 6 of 7 geven.'
9. Voelt u een sociale druk om GFT-afval te scheiden vanuit de overheid en/of uw naasten? (**Norms & values in society**)
'Ja bij ons gaat het makkelijker maar ik hoor van andere die in de flat wonen dat die niet zo nauwkeurig zijn. Maar over die sociale druk, ja een beetje wel. Als ik zie dat ik en mijn gezin ons best doet en andere niet, dan ja wat voor zin heeft het?'
10. De gemeente Wageningen heeft een aantal campagnes ondernomen en communicatie middelen ingezet in het verleden om het scheiden van GFT-afval onder de aandacht te brengen. Heeft u hier iets van gemerkt? Zo ja, wat dan precies? (**Informatie toedracht/Bewustwording**)
'Nee weinig.'
11. Vanaf 2007 wordt er aanzienlijk minder GFT-afval gescheiden. Dit houdt in dat er concreet gezien in deze buurt minder wordt gescheiden. Wat kan er volgens u beter waardoor u en uw buurtgenoten in de toekomst meer GFT-afval gaan scheiden? (**Actie**)
'Oh oke. Ja ik denk dat de meeste aandacht uit moet gaan naar flatbewoners. Mensen die in rijtjeswoningen wonen hebben een eigen klike en flatbewoners niet dus.'
12. Wat vindt u van de huidige initiatieven van de gemeente Wageningen en wat kan de gemeente verbeteren aan deze initiatieven om het scheiden van GFT-afval te stimuleren? (**Actie**)
'Van de gemeente? Oeh geen idee. Naja alleen die afvalkalender dan die vind ik wel goed. We hangen het op de muur naast de normale kalender.'
13. Waar staan de grote verzamelcontainers bij u? (**Faciliteit**)
'Weet ik niet. Wij hebben alleen de klike.'
14. Bent u eventueel bereidt om de bak of emmer waarmee u GFT-afval binnenshuis scheidt in de eigen omgeving te fotograferen en op te sturen? (**Perceptie**)
'Dat wil ik wel voor je doen. Dat is niet zo moeilijk.'

Dit waren alle vragen die ik u wilde stellen. Heeft u zelf nog op of aanmerkingen waarvan u denkt dat die relevant zijn voor dit onderwerp?

Hartelijk dank voor uw medewerking.

Uitwerking interview Pilot 2

Ter afsluiting van mijn scriptie aan de Universiteit van Wageningen zou ik graag meer informatie willen verzamelen omtrent het scheiden van afval binnen huishoudens in de gemeente Wageningen. Tijdens dit interview zou ik graag van opnameapparatuur gebruik willen maken om uw antwoorden efficiënt te kunnen verwerken. Graag attendeer ik u erop dat de door u verstrekte informatie strikt vertrouwelijk zal worden behandeld en dat het interview geheel anoniem wordt afgenomen. Het interview bevat enkel open vragen. Er zijn geen goede of foute antwoorden mogelijk. In het belang van dit interview verzoek ik u daarom vriendelijk om zo eerlijk mogelijk te antwoorden en alle informatie te delen die in u opkomt. Het interview duurt ongeveer 10 minuten.

Demografische gegevens

15. Ik begin met het verzamelen van wat algemene gegevens:

- Bent u een man of een vrouw?
'Man'
- Wat is uw nationaliteit?
'Nederlands'
- Wat is uw hoogst genoten opleiding?
'Ik heb universiteit gedaan. Doctorandus en daarna ben ik gepromoveerd.'
- Wat is uw leeftijd?
'52'
- In wat voor soort woning woont u?
'Ik denk dat je het een rijtjeswoning moet noemen.'
- In welke wijk van Wageningen woont u?
'Roghorst'
- Hoeveel leden maken deel uit van uw huishouden?
'In de zin die ook echt thuis wonen bij mij? Drie kinderen en twee volwassenen. De vierde woont bij mijn ex-vrouw.'
- Hoeveel van het totaal aantal leden in uw huishouden zijn volwassenen en hoeveel kinderen?
'Twee volwassen en drie kinderen.'
- Hoe oud zijn de kinderen?
'7, 9 en 13'

16. Doet u aan afval scheiden in het dagelijkse leven? (**Intentioneel gedrag**)

'In zekere zin. We scheiden altijd, plastic, papier, karton en GFT. Alleen GFT doen we alleen winters want zomers brengt dat meer ongedierte met zich mee en dat vinden we niet fijn. Dus in de zomer gaat het GFT ook met de rest mee.'

2.A Indien (gedeeltelijk) ja:

- Doet u ook aan het scheiden van groente fruit en tuin afval (GFT-afval)? Waarom wel/niet?
'Ja.'
- Welke handelingen omtrent het scheiden van GFT afval onderneemt u? (Hierna verder met de vragen onder 2B.)
'Ik weet het niet helemaal. We hebben wel een dubbele afvalbak binnenshuis. De eerste is voor gewoon afval en de andere voor GFT. Buiten staat ook een klike voor GFT.'
- Bent u het meest verantwoordelijk voor het scheiden van afval in uw huishouden?
'Nee. Mijn vrouw staat 5x in de keuken en ik 2x.'
2.B Indien nee, ook vragen:
- Om GFT-afval te kunnen scheiden zijn er een aantal middelen nodig zoals kennis, de arbeid die gedaan moet worden om te scheiden en de beschikbare ruimte. Welke van deze middelen voldoen om GFT-afval te scheiden wel of niet in uw geval? (**Household resources**)
'Ja alle drie de factoren natuurlijk.'
- Welke middelen heeft u van de gemeente gekregen om GFT te scheiden? (**Resources**)
'Volgens mij alleen de groencontainer. Hoe heet het ook alweer.. De klike oh ja inderdaad. Verder niet.'

17. A) Wat vindt u makkelijk aan GFT-afval scheiden? (**Attitude**)

'Wat vind ik zelf makkelijk? In wezen is het niet echt makkelijk. Het is verder ook geen grote inspanning maar je kunt niet alles bij elkaar sodemieteren. Je moet er altijd wel even aan denken. Als ik bijvoorbeeld in de keuken sta, dat is twee x per week, dan gebruik ik de gootsteen als afvalbak en daaruit ga ik scheiden.'

B) Wat vindt u moeilijk aan GFT-afval scheiden? (**Attitude**)

'Het is de inspanning eigenlijk maar als je het eenmaal gewend bent, is het niet meer echt moeilijk.'

18. A) Wat kunt u in het algemeen vertellen over GFT-afval? (**Kennisniveau**)

'Haha oei, wat weet ik van GFT-afval. Het doel is composteren neem ik aan. Het gaat om composteerbare materialen. Uhm ik weet niet of het nog zo is maar toen een paar jaar geleden het scheiden van GFT-afval ingevoerd werd, hoorde ik dat GFT-afvalstroom helemaal niet apart behandeld werd maar gewoon de achterkant de oven in ging. Dat vond ik niet zo handige kennis om te hebben. En verder zal ik er wel redelijk veel over weten maar ik heb er geen persoonlijke deskundigheid op.'

B) Vindt u GFT-afval scheiden nuttig voor het milieu? Waarom? (**Kennisniveau**)

'Als dat wat ik een aantal jaren begreep, dat gescheiden afval uiteindelijk weer wordt gecombineerd en verbrand dan zie ik het nut er niet van. Dat heeft bij mij de motivatie wel wat laten afnemen. Ik denk dat het nuttig zou zijn als producenten van regulier afval veel meer naar composteerbakken zouden verwijzen. Dan wordt de hergebruikstroom veel groter. Ik weet dat er al inspanningen voor zijn maar die zijn zo weinig. Ik weet niet hoe je dat verder in gang kan zetten maar het lijkt me slim.'

19. A) Heeft u wel eens informatie over GFT-afval ontvangen? Zo ja, van wie of welke instanties? **(Informatie toedracht)**
'Vast wel. Volgens mij van de gemeente. Sowieso staat in de afvalkalender altijd wat geschreven over het belang van GFT en ik vermoed dat het werd ingevoerd 15 jaar geleden. Toen zal het ook wel een soort folder zijn geweest maar daar heb ik verder geen bijzondere herinneringen aan.'
- B) Heeft u wel eens informatie over GFT-afval opgezocht? Zo ja, waar? Zo niet: Als meer zou willen weten over GFT-afval, waar zou u denkt u informatie over GFT-afval zoeken? **(Informatie zoekgedrag)**
'Nee niet als burger. In mijn werk heb ik wel gekeken naar composteerbaarheid en verpakkingen. Als ik zou moeten zoeken.. Het eerste wat mij te binnen schiet is eigenlijk Wikipedia haha. Maar als ik echt iets specifiek zou willen weten dan zou ik naar de gemeentelijke website gaan.'
- C) **Indien ja bij B:** hoe heeft u deze informatie verwerkt? **(Informatie verwerking)**
20. Welke huishoudelijke middelen heeft u om GFT-afval te scheiden? **(Level of living)**
'Alleen de kliko en de dubbele afvalbak binnenshuis. Ik weet niet of het verder meetelt maar we hebben ook composteerbare vuilniszakken. Zodat het niet heel smerig wordt. Was overigens het idee van mijn vrouw.'
21. Hoe vaak vindt u het gebruikelijk om GFT-afval te scheiden? Wat is voor u de norm? **(Subjective norm)**
'Er is niet een moment op de dag dat ik mijn afval scheid. Maar het gebeurt wel elke dag.'
22. Hoe tevreden bent u over uw scheidingsgedrag? **(Level of well-being)**
'Uhm. Ja ik heb er niet een goed beeld ervan. Wij scheiden dus niet in de zomer. Dat zouden we nog beter kunnen doen, maar ik vind dat we het al redelijk doen.'
23. Voelt u een sociale druk om GFT-afval te scheiden vanuit de overheid en/of uw naasten? **(Norms & values in society)**
'Nee. Wij scheiden omdat wij dit willen.'
24. De gemeente Wageningen heeft een aantal campagnes ondernomen en communicatie middelen ingezet in het verleden om het scheiden van GFT-afval onder de aandacht te brengen. Heeft u hier iets van gemerkt? Zo ja, wat dan precies? **(Informatie toedracht/Bewustwording)**
'Iets anders dan de afvalkalender niet. Misschien dat er meer is geweest, maar dat heeft op mij geen verpletterende indruk gemaakt.'
25. Vanaf 2007 wordt er aanzienlijk minder GFT-afval gescheiden. Dit houdt in dat er concreet gezien in deze buurt minder wordt gescheiden. Wat kan er volgens u beter waardoor u en uw buurtgenoten in de toekomst meer GFT-afval gaan scheiden? **(Actie)**
'Nou ja wat ik al zei: dat bericht dat GFT-afval met restafval gecombineerd zou worden en uiteindelijk vooralsnog verbrand zou worden, dat leverde toen wel de vraag op wat voor zin het scheiden nog heeft. Dus helder inzicht geven, hoe weet ik niet, maar inzicht in het belang van scheiden zou kunnen helpen. En ehm, het gemakkelijker maken maar ik weet niet hoe dat zou moeten. En regulier afval op gewicht afrekenen en GFT niet lijkt me ook een hele slimme. Dan wordt het interessanter om GFT te scheiden, moeten we alleen zeker weten dat er geen plastic tussenkomt.'
26. Wat vindt u van de huidige initiatieven van de gemeente Wageningen en wat kan de gemeente verbeteren aan deze initiatieven om het scheiden van GFT-afval te stimuleren?

(Actie)

'Wel goed maar weinig van gemerkt.'

27. Waar staan de grote verzamelcontainers bij u? **(Faciliteit)**

'Die hebben wij niet. Wij hebben gewoon klike's en die worden opgehaald.'

28. Bent u eventueel bereid om de bak of emmer waarmee u GFT-afval binnenshuis scheidt in de eigen omgeving te fotograferen en op te sturen? **(Perceptie)**

'Als je mij een e-mailadres geeft dan wil ik dat best doen.'

Dit waren alle vragen die ik u wilde stellen. Heeft u zelf nog op of aanmerkingen waarvan u denkt dat die relevant zijn voor dit onderwerp?

Hartelijk dank voor uw medewerking.

Uitwerking interview Pilot 3

Ter afsluiting van mijn scriptie aan de Universiteit van Wageningen zou ik graag meer informatie willen verzamelen omtrent het scheiden van afval binnen huishoudens in de gemeente Wageningen. Tijdens dit interview zou ik graag van opnameapparatuur gebruik willen maken om uw antwoorden efficiënt te kunnen verwerken. Graag attendeer ik u erop dat de door u verstrekte informatie strikt vertrouwelijk zal worden behandeld en dat het interview geheel anoniem wordt afgenomen. Het interview bevat enkel open vragen. Er zijn geen goede of foute antwoorden mogelijk. In het belang van dit interview verzoek ik u daarom vriendelijk om zo eerlijk mogelijk te antwoorden en alle informatie te delen die in u opkomt. Het interview duurt ongeveer 10 minuten.

Demografische gegevens

29. Ik begin met het verzamelen van wat algemene gegevens:

- Bent u een man of een vrouw?
'Man'
- Wat is uw nationaliteit?
'Nederlands'
- Wat is uw hoogst genoten opleiding?
'Ik heb universiteit gedaan. Bachelor.'
- Wat is uw leeftijd?
'45'
- In wat voor soort woning woont u?
'Ik woon vrijstaand. Wij hebben twee aan elkaar geschakelde huizen.'
- In welke wijk van Wageningen woont u?
'Noordwest.'
- Hoeveel leden maken deel uit van uw huishouden?
'5 personen.'
- Hoeveel van het totaal aantal leden in uw huishouden zijn volwassenen en hoeveel kinderen?
'Twee volwassen en drie kinderen. Twee zijn boven de 16 en de jongste is 12.'
- Hoe oud zijn de kinderen?
'12, 17 en 18.'

30. Doet u aan afval scheiden in het dagelijkse leven? (**Intentioneel gedrag**)

'Ja.'

2.A Indien (gedeeltelijk) ja:

- Doet u ook aan het scheiden van groente fruit en tuin afval (GFT-afval)? Waarom wel/niet?
'Ja omdat er een kliko voor is. Ja, dat is gewoon zo. Volledig gezien, sinds dat wij de kliko's hebben, scheiden we past echt. Maar voordat de groene kliko kwam, heb ik al

het groenvoer wel in de grijze klike gegooid omdat het anders zo vies wordt en de groene bak wordt ook maar 1x in de twee weken opgehaald.'

- Welke handelingen omtrent het scheiden van GFT afval onderneemt u? (Hierna verder met de vragen onder 2B.)

'Wij hebben gewoon in huis een bak voor GFT en die wordt regelmatig in de groene klike gedumpt.'

- Bent u het meest verantwoordelijk voor het scheiden van afval in uw huishouden?

'Mijn vrouw en ik staan evenveel in de keuken.'

2.B Indien nee, ook vragen:

- Om GFT-afval te kunnen scheiden zijn er een aantal middelen nodig zoals kennis, de arbeid die gedaan moet worden om te scheiden en de beschikbare ruimte. Welke van deze middelen voldoen om GFT-afval te scheiden wel of niet in uw geval? (**Household resources**)

'Ik denk dat de kennis bij mij het minste is want ik kieper gewoon alles dat over is de klike bak in. Vlees en botjes mogen volgens mij niet. Maar die gooi ik er wel in soms. De arbeid boeit me verder niet, je moet alleen ff nadenken. De ruimte heb ik er wel voor.'

- Welke middelen heeft u van de gemeente gekregen om GFT te scheiden?

(Resources)

'Alleen de klike verder niet. De afvalbak binnenshuis is niet echt een GFT bak maar die hebben we zelf gekocht. Daar doen we een plastic zak in en dan verzamelen we klein GFT en dat dumpen we in de klike.'

31. A) Wat vindt u makkelijk aan GFT-afval scheiden? (**Attitude**)

'Het is een gewoonte. Ik vind er niks makkelijk of moeilijk aan. Het is gewoon bedenken in welke bak ik het gooi.'

- B) Wat vindt u moeilijk aan GFT-afval scheiden? (**Attitude**)

'Hetzelfde als bij de vorige vraag.'

32. A) Wat kunt u in het algemeen vertellen over GFT-afval? (**Kennisniveau**)

'Ja dat er compost van wordt gemaakt en dat het weer teruggaat in de natuur eigenlijk. En dat uhm.. Ja dat is het wel.'

- B) Vindt u GFT-afval scheiden nuttig voor het milieu? Waarom? (**Kennisniveau**)

'Ja vind ik wel ja. Ik denk dat er anders veel verloren gaat. Ik weet wel dat het anders verbrand wordt en het veel energie kost. Ik twijfel soms wel als ik zie hoeveel kosten er ook weer vrijkomen bij het apart behandelen van GFT. Maar compost is een natuurlijke bron van mineralen en dan krijg je weer nieuwe bronnen zoals fosfaat enzo. Verder gaat er veel verloren. Ik weet het verder niet, het is ook gewoon het idee.'

33. A) Heeft u wel eens informatie over GFT-afval ontvangen? Zo ja, van wie of welke instanties? (**Informatie toedracht**)

'Misschien, vast wel. Niet op gelet.'

- B) Heeft u wel eens informatie over GFT-afval opgezocht? Zo ja, waar? Zo niet: Als meer zou willen weten over GFT-afval, waar zou u denkt u informatie over GFT-afval zoeken? (**Informatie zoekgedrag**)

'Nee niet dat ik me kan herinneren. Heel misschien dat ik soms twijfel van mag dit er wel'

of niet in. Dan zou ik het eerder gaan zoeken bij Google eerst en dan op de website van de gemeente.'

C) **Indien ja bij B:** hoe heeft u deze informatie verwerkt? (**Informatie verwerking**)

34. Welke huishoudelijke middelen heeft u om GFT-afval te scheiden? (**Level of living**)
'De GFT bak binnenshuis en de klike en tegenwoordig hebben we van die afbreekbare zakken in. Dan is het nog niet ideaal maar door die afbreekbare zakken blijft het een beetje schoon. We hebben het van de buurman gehoord.'
35. Hoe vaak vindt u het gebruikelijk om GFT-afval te scheiden? Wat is voor u de norm? (**Subjective norm**)
'Tja gewoon, elke dag 3x wel bij wijze van spreken. Ontbijt, lunch, diner.'
36. Hoe tevreden bent u over uw scheidingsgedrag? (**Level of well-being**)
'Ik denk dat ik bovengemiddeld scheid. Ik geef ons gezin een 7. Plastic kan wel beter.'
37. Voelt u een sociale druk om GFT-afval te scheiden vanuit de overheid en/of uw naasten? (**Norms & values in society**)
'Nee totaal niet. Het is gewoon een gewoonte.'
38. De gemeente Wageningen heeft een aantal campagnes ondernomen en communicatie middelen ingezet in het verleden om het scheiden van GFT-afval onder de aandacht te brengen. Heeft u hier iets van gemerkt? Zo ja, wat dan precies? (**Informatie toedracht/Bewustwording**)
'Nee eigenlijk niet nee. Ook nooit wat van gehoord eigenlijk. Maar misschien omdat ik vind dat het voor mij ook niet nodig is.'
39. Vanaf 2007 wordt er aanzienlijk minder GFT-afval gescheiden. Dit houdt in dat er concreet gezien in deze buurt minder wordt gescheiden. Wat kan er volgens u beter waardoor u en uw buurtgenoten in de toekomst meer GFT-afval gaan scheiden? (**Actie**)
'O ja? Oké. Ik denk twee dingen: ten eerste gaan er allemaal verhalen rond dat het uiteindelijk niks uitmaakt. Dat het allemaal op de grote hoop gaat en het niet uitmaakt. Dus met voorlichtingen zou je mensen hiervan op de hoogte kunnen stellen. Want ik hoorde dit laatst nog bij mensen. En ten tweede is het belangrijk dat GFT-scheiden niet vies wordt. GFT moet vaker opgehaald worden zodat het niet gaat stinken en rotten. En er moeten betere bewaarmethoden gemaakt worden om GFT te bewaren tot het ophaalmoment.'
40. Wat vindt u van de huidige initiatieven van de gemeente Wageningen en wat kan de gemeente verbeteren aan deze initiatieven om het scheiden van GFT-afval te stimuleren? (**Actie**)
'De stickeracties vind ik niet zo goed. Dat is plastic. De gemeente wil afval scheiden maar zelf komen ze dan wel met die vieze stickers van plastic op de containers. De afvalkalenders lijken me leuk maar wij kijken er bijna niet op. Voor de rest ken ik geen andere initiatieven. De koe die een tijd geleden op de markt heeft gestaan is wel leuk. Omdat mensen dan toch even gaan kijken en ook zien wat er gebeurt.'
41. Waar staan de grote verzamelcontainers bij u? (**Faciliteit**)
'20 meter voor de deur. In onze straat zelfs. Dat is wel luxe voor ons.'
42. Bent u eventueel bereid om de bak of emmer waarmee u GFT-afval binnenshuis scheidt in de eigen omgeving te fotograferen en op te sturen? (**Perceptie**)
'Oke dat is goed.'

Dit waren alle vragen die ik u wilde stellen. Heeft u zelf nog op of aanmerkingen waarvan u denkt dat die relevant zijn voor dit onderwerp?

Hartelijk dank voor uw medewerking.

Uitwerking interview

Pilot 4

Ter afsluiting van mijn scriptie aan de Universiteit van Wageningen zou ik graag meer informatie willen verzamelen omtrent het scheiden van afval binnen huishoudens in de gemeente Wageningen. Tijdens dit interview zou ik graag van opnameapparatuur gebruik willen maken om uw antwoorden efficiënt te kunnen verwerken. Graag attendeer ik u erop dat de door u verstrekte informatie strikt vertrouwelijk zal worden behandeld en dat het interview geheel anoniem wordt afgenomen. Het interview bevat enkel open vragen. Er zijn geen goede of foute antwoorden mogelijk. In het belang van dit interview verzoek ik u daarom vriendelijk om zo eerlijk mogelijk te antwoorden en alle informatie te delen die in u opkomt. Het interview duurt ongeveer 10 minuten.

Demografische gegevens

43. Ik begin met het verzamelen van wat algemene gegevens:

- Bent u een man of een vrouw?
'Vrouw'
- Wat is uw nationaliteit?
'Nederlands'
- Wat is uw hoogst genoten opleiding?
'Ik heb universiteit gedaan. Master.'
- Wat is uw leeftijd?
'39'
- In wat voor soort woning woont u?
'Twee onder een kap.'
- In welke wijk van Wageningen woont u?
'Rustenburg. In het centrum van Wageningen.'
- Hoeveel leden maken deel uit van uw huishouden?
'4'
- Hoeveel van het totaal aantal leden in uw huishouden zijn volwassenen en hoeveel kinderen?
'2 kinderen en 2 volwassenen.'
- Hoe oud zijn de kinderen?
'10 en 12.'

44. Doet u aan afval scheiden in het dagelijkse leven? (**Intentioneel gedrag**)

'Ja.'

2.A Indien (gedeeltelijk) ja:

- Doet u ook aan het scheiden van groente fruit en tuin afval (GFT-afval)? Waarom wel/niet?
'Ja, omdat ik het milieuvriendelijker vind.'
- Welke handelingen omtrent het scheiden van GFT afval onderneemt u? (*Hierna verder met de vragen onder 2B.*)

'Ik haal de groente en fruit apart. In de keuken verzamel ik die in een klein bakje, dat breng ik naar buiten en gooi het in de grote groene afvalbak en 1x per week zet ik die buiten.'

- Bent u het meest verantwoordelijk voor het scheiden van afval in uw huishouden?

'Ja evenveel met mijn man.'

2.B Indien nee, ook vragen:

- Om GFT-afval te kunnen scheiden zijn er een aantal middelen nodig zoals kennis, de arbeid die gedaan moet worden om te scheiden en de beschikbare ruimte. Welke van deze middelen voldoen om GFT-afval te scheiden wel of niet in uw geval? **(Household resources)**

'Ja alle drie zijn van toepassing bij mij. Het is weinig werk ook.'

- Welke middelen heeft u van de gemeente gekregen om GFT te scheiden? **(Resources)**

'Alleen de klikeo denk ik niet. De kleine bak is mijn eigen aanschaf.'

45. A) Wat vindt u makkelijk aan GFT-afval scheiden? **(Attitude)**

'Vind het prettig dat het niet in de prullenbak terecht komt en dat gaat zo stinken anders. Dan trekt het ook allemaal vliegjes aan.'

- B) Wat vindt u moeilijk aan GFT-afval scheiden? **(Attitude)**

'Nou toch ook weer dat het vliegen aantrekt. In de zomer moet je opletten dat het dan snel naar buiten gaat.'

46. A) Wat kunt u in het algemeen vertellen over GFT-afval? **(Kennisniveau)**

'Ja alle afval van al het eten en koffiefilters kan dan in principe gewoon verteerd worden en gecomposteerd worden.'

- B) Vindt u GFT-afval scheiden nuttig voor het milieu? Waarom? **(Kennisniveau)**

'Het gewone afval moet verbrand worden en GFT is volgens een natuurlijk proces.'

47. A) Heeft u wel eens informatie over GFT-afval ontvangen? Zo ja, van wie of welke instanties? **(Informatie toedracht)**

'Nee nooit. Misschien wel eens in een folder ofzo, maar dat lees ik niet. Ik heb er wel over geleerd op de middelbare school.'

- B) Heeft u wel eens informatie over GFT-afval opgezocht? Zo ja, waar? Zo niet: Als meer zou willen weten over GFT-afval, waar zou u denkt u informatie over GFT-afval zoeken? **(Informatie zoekgedrag)**

'Nee ook niet. Ik zou zelf breed zoeken op Internet. Niet perse bij de gemeente ofzo.'

- C) **Indien ja bij B:** hoe heeft u deze informatie verwerkt? **(Informatie verwerking)**

48. Welke huishoudelijke middelen heeft u om GFT-afval te scheiden? **(Level of living)**

'De GFT bak binnenshuis en de klikeo buiten. Dat was het.'

49. Hoe vaak vindt u het gebruikelijk om GFT-afval te scheiden? Wat is voor u de norm? **(Subjective norm)**

'Oh wel een paar x per dag. Altijd als ik aan het koken of schillen ben leg ik het afval apart.'

50. Hoe tevreden bent u over uw scheidingsgedrag? **(Level of well-being)**

'Ik ben tevreden. Ik vind het prima zo. Mijn kinderen leren het ook en mijn man doet het ook.'

51. Voelt u een sociale druk om GFT-afval te scheiden vanuit de overheid en/of uw naasten? **(Norms & values in society)**
'Nee.'
52. De gemeente Wageningen heeft een aantal campagnes ondernomen en communicatie middelen ingezet in het verleden om het scheiden van GFT-afval onder de aandacht te brengen. Heeft u hier iets van gemerkt? Zo ja, wat dan precies? **(Informatie toedracht/Bewustwording)**
'Oh daar ben ik me totaal niet van bewust. Maar ik lees ook niet bewust. Op straat kan ik me niet herinneren om iets gezien te hebben. Maar ja ik doe het ook gewoon al.'
53. Vanaf 2007 wordt er aanzienlijk minder GFT-afval gescheiden. Dit houdt in dat er concreet gezien in deze buurt minder wordt gescheiden. Wat kan er volgens u beter waardoor u en uw buurtgenoten in de toekomst meer GFT-afval gaan scheiden? **(Actie)**
'Ik heb wel eens tekort aan ruimte voor Tuinafval in de groene klike. Dan doe ik het gewoon in de grijze bak. Kijk ik kan de gemeente wel opbellen dat ze het tuinafval ophalen maar dat gaat me een stap te ver. Dat is eigenlijk het grootste probleem. Er zijn ook nog wel flats in de buurt met grote GFT bakken maar die zitten op slot. Kan ik dan ook niks in doen.'
54. Wat vindt u van de huidige initiatieven van de gemeente Wageningen en wat kan de gemeente verbeteren aan deze initiatieven om het scheiden van GFT-afval te stimuleren? **(Actie)**
'Zou ik echt niet weten.'
55. Waar staan de grote verzamelcontainers bij u? **(Faciliteit)**
'Ik denk bij het afvalstation van Wageningen. Weet ik eigenlijk niet.'
56. Bent u eventueel bereid om de bak of emmer waarmee u GFT-afval binnenshuis scheidt in de eigen omgeving te fotograferen en op te sturen? **(Perceptie)**
'Is goed.'

Dit waren alle vragen die ik u wilde stellen. Heeft u zelf nog op of aanmerkingen waarvan u denkt dat die relevant zijn voor dit onderwerp?

Hartelijk dank voor uw medewerking.

Uitwerking interview Pilot 5

Ter afsluiting van mijn scriptie aan de Universiteit van Wageningen zou ik graag meer informatie willen verzamelen omtrent het scheiden van afval binnen huishoudens in de gemeente Wageningen. Tijdens dit interview zou ik graag van opnameapparatuur gebruik willen maken om uw antwoorden efficiënt te kunnen verwerken. Graag attendeer ik u erop dat de door u verstrekte informatie strikt vertrouwelijk zal worden behandeld en dat het interview geheel anoniem wordt afgenomen. Het interview bevat enkel open vragen. Er zijn geen goede of foute antwoorden mogelijk. In het belang van dit interview verzoek ik u daarom vriendelijk om zo eerlijk mogelijk te antwoorden en alle informatie te delen die in u opkomt. Het interview duurt ongeveer 10 minuten.

Demografische gegevens

57. Ik begin met het verzamelen van wat algemene gegevens:

- Bent u een man of een vrouw?
'Vrouw'
- Wat is uw nationaliteit?
'Nederlands'
- Wat is uw hoogst genoten opleiding?
'HBO maar niet afgemaakt. Hoogst behaalde zou dan MBO zijn.'
- Wat is uw leeftijd?
'36'
- In wat voor soort woning woont u?
'In een appartementencomplex.'
- In welke wijk van Wageningen woont u?
'Wageningen Hoog'
- Hoeveel leden maken deel uit van uw huishouden?
'3'
- Hoeveel van het totaal aantal leden in uw huishouden zijn volwassenen en hoeveel kinderen?
'2 kinderen en 1 volwassenen.'
- Hoe oud zijn de kinderen?
'4 en 5.'

58. Doet u aan afval scheiden in het dagelijkse leven? (**Intentioneel gedrag**)

'Ja.'

2.A Indien (gedeeltelijk) ja:

- Doet u ook aan het scheiden van groente fruit en tuin afval (GFT-afval)? Waarom wel/niet?
'Ja echt wel. Dat is mij zo aangeleerd door mijn ouders. Die doen het te veel.'
- Welke handelingen omtrent het scheiden van GFT afval onderneemt u? (Hierna verder met de vragen onder 2B.)

'Ja groente en fruit afval in de groene bak. Papier apart en glas ook apart. Maar dat hoort niet bij GFT toch? Nee ok.'

- Bent u het meest verantwoordelijk voor het scheiden van afval in uw huishouden?

'Ja. Meer dan mijn kinderen.'

2.B Indien nee, ook vragen:

- Om GFT-afval te kunnen scheiden zijn er een aantal middelen nodig zoals kennis, de arbeid die gedaan moet worden om te scheiden en de beschikbare ruimte. Welke van deze middelen voldoen om GFT-afval te scheiden wel of niet in uw geval? **(Household resources)**

'Kennis gaat wel. Arbeid ook wel denk ik. Het slechtst is wel echt de ruimte. Omdat het heel erg klein is, is het zo moeilijk om al het afval te kunnen scheiden. Kleine spulletjes vind ik vaak de moeite niet waard.'

- Welke middelen heeft u van de gemeente gekregen om GFT te scheiden? **(Resources)**

'Ik heb drie verschillende bakken overgenomen van de vorige bewoner. Allemaal voor binnenshuis maar ik gebruik er maar 1.'

3. A) Wat vindt u makkelijk aan GFT-afval scheiden? **(Attitude)**

'Alles. Gewoon doen.'

3. B) Wat vindt u moeilijk aan GFT-afval scheiden? **(Attitude)**

'Kleine dingetjes weggooien. Bijvoorbeeld koffiefilters. Daar ga ik dan niet helemaal naar beneden voor lopen om het in de GFT bak te gooien dat is echt te veel moeite hahaha. En vaak al die verpakkingen waarvan én bio afbreekbare materialen inzitten én plastic en karton.. Ik weet het dan ook niet meer. Dat gooi ik ook gewoon bij de rest weg.'

4. A) Wat kunt u in het algemeen vertellen over GFT-afval? **(Kennisniveau)**

'Ja wat weet ik ervan... Naja het scheiden van tuinafval lijkt me wel nuttig. Ik weet het niet.'

B) Vindt u GFT-afval scheiden nuttig voor het milieu? Waarom? **(Kennisniveau)**

'Ja zeker als dingen nog gebruikt kunnen worden, vind ik dat echt zonde. Dan denk ik van ja recycle het maar liever.'

5. A) Heeft u wel eens informatie over GFT-afval ontvangen? Zo ja, van wie of welke instanties? **(Informatie toedracht)**

'Niet thuis. Op school op de basisschool vroeger leerde ik er wel over.'

B) Heeft u wel eens informatie over GFT-afval opgezocht? Zo ja, waar? Zo niet: Als meer zou willen weten over GFT-afval, waar zou u denkt u informatie over GFT-afval zoeken? **(Informatie zoekgedrag)**

'Nee nooit. Maar zonder meer Google als ik ernaar zou moeten zoeken.'

C) **Indien ja bij B:** hoe heeft u deze informatie verwerkt? **(Informatie verwerking)**

6. Welke huishoudelijke middelen heeft u om GFT-afval te scheiden? **(Level of living)**

'Klein GFT bakje of eigenlijk schaalpje in mijn huis in de keuken. En dan de verzamelbakken beneden.'

7. Hoe vaak vindt u het gebruikelijk om GFT-afval te scheiden? Wat is voor u de norm? **(Subjective norm)**
'Ik vind het normaal. Ik doe het bij iedere handeling automatisch. Elke dag wel.'
8. Hoe tevreden bent u over uw scheidingsgedrag? **(Level of well-being)**
'Het wegbrengen van mij is een beetje slecht. Ik heb ook een hele aardige buurman die soms aanbelt en mijn GFT schaalte ook meeneemt. Ik ben zelf erg slecht in het wegbrengen. Te lui voor haha.'
9. Voelt u een sociale druk om GFT-afval te scheiden vanuit de overheid en/of uw naasten? **(Norms & values in society)**
'Nee juist andersom. Eerder dat ik zoiets heb van, oh wat maakt het nou uit wanneer ik het doe.'
10. De gemeente Wageningen heeft een aantal campagnes ondernomen en communicatie middelen ingezet in het verleden om het scheiden van GFT-afval onder de aandacht te brengen. Heeft u hier iets van gemerkt? Zo ja, wat dan precies? **(Informatie toedracht/Bewustwording)**
'Nee joh eigenlijk niets. Sorry. Oh ja die tijd van het plastic met die plastic poppetjes. Maar GFT.. Nee. Ik let er ook helemaal niet op.'
11. Vanaf 2007 wordt er aanzienlijk minder GFT-afval gescheiden. Dit houdt in dat er concreet gezien in deze buurt minder wordt gescheiden. Wat kan er volgens u beter waardoor u en uw buurtgenoten in de toekomst meer GFT-afval gaan scheiden? **(Actie)**
'Niet echt iets? Nee maakt niet uit. Wat echt fijn is, zijn die bio afbreekbare zakken, die gebruiken mijn ouders. Daardoor stinkt het niet meer. Maar misschien fijn dat er iets bedacht kan worden om fruitvliegen tegen te gaan. Die heb ik vaak in de keuken.'
12. Wat vindt u van de huidige initiatieven van de gemeente Wageningen en wat kan de gemeente verbeteren aan deze initiatieven om het scheiden van GFT-afval te stimuleren? **(Actie)**
'Ik ken ze niet dus kan er ook niks over zeggen.'
13. Waar staan de grote verzamelcontainers bij u? **(Faciliteit)**
'Ja onderaan gewoon.'
14. Bent u eventueel bereidt om de bak of emmer waarmee u GFT-afval binnenshuis scheidt in de eigen omgeving te fotograferen en op te sturen? **(Perceptie)**
'Hahaha! Wil ik wel doen, let niet op mijn slordige huis maar wil het wel doen.'

Dit waren alle vragen die ik u wilde stellen. Heeft u zelf nog op of aanmerkingen waarvan u denkt dat die relevant zijn voor dit onderwerp?

Hartelijk dank voor uw medewerking.

Uitwerking interview Pilot 6

Ter afsluiting van mijn scriptie aan de Universiteit van Wageningen zou ik graag meer informatie willen verzamelen omtrent het scheiden van afval binnen huishoudens in de gemeente Wageningen. Tijdens dit interview zou ik graag van opnameapparatuur gebruik willen maken om uw antwoorden efficiënt te kunnen verwerken. Graag attendeer ik u erop dat de door u verstrekte informatie strikt vertrouwelijk zal worden behandeld en dat het interview geheel anoniem wordt afgenomen. Het interview bevat enkel open vragen. Er zijn geen goede of foute antwoorden mogelijk. In het belang van dit interview verzoek ik u daarom vriendelijk om zo eerlijk mogelijk te antwoorden en alle informatie te delen die in u opkomt. Het interview duurt ongeveer 10 minuten.

Demografische gegevens

59. Ik begin met het verzamelen van wat algemene gegevens:

- Bent u een man of een vrouw?
'Vrouw'
- Wat is uw nationaliteit?
'Ik kom uit Suriname. Maar ben Nederlands'
- Wat is uw hoogst genoten opleiding?
'HBO'
- Wat is uw leeftijd?
'39'
- In wat voor soort woning woont u?
'In een eengezinswoning op de eerste verdieping.'
- In welke wijk van Wageningen woont u?
'Tathorst'
- Hoeveel leden maken deel uit van uw huishouden?
'4'
- Hoeveel van het totaal aantal leden in uw huishouden zijn volwassenen en hoeveel kinderen?
'2 kinderen en 2 volwassenen.'
- Hoe oud zijn de kinderen?
'3 en 5.'

60. Doet u aan afval scheiden in het dagelijkse leven? (**Intentioneel gedrag**)

'Nou... Heel soms.'

2.A Indien (gedeeltelijk) ja:

- Doet u ook aan het scheiden van groente fruit en tuin afval (GFT-afval)? Waarom wel/niet?
'Ja ook soms. Tuinafval wel. Maar groente en fruit afval niet. Vind ik te ranzig. Gaat rotten. In de zomer dus echt niet. In de winter wel eens af en toe.'

- Welke handelingen omtrent het scheiden van GFT afval onderneemt u? (*Hierna verder met de vragen onder 2B.*)
'Ja groente en fruit afval in de groene bak daar doe ik het in. Verder niet.'
- Bent u het meest verantwoordelijk voor het scheiden van afval in uw huishouden?
'Ik leef bewuster dan mijn vriend.'
2.B Indien nee, ook vragen:
- Om GFT-afval te kunnen scheiden zijn er een aantal middelen nodig zoals kennis, de arbeid die gedaan moet worden om te scheiden en de beschikbare ruimte. Welke van deze middelen voldoen om GFT-afval te scheiden wel of niet in uw geval? (**Household resources**)
'De ruimte heb ik enigzinswel. Maar binnen scheiden doe ik echt niet. Maar ik weet niet wat erin hoort. Kennis heb ik wel.. maar hoort een bananenschil erin? Weet ik eigenlijk niet. Nee weet niet of ik genoeg kennis heb. De arbeid, tja zoals ik al zei, doe ik wel in de winter soms.'
- Welke middelen heeft u van de gemeente gekregen om GFT te scheiden?
(Resources)
'Geen. Er staat wel een grote container bij de C1000 maar die is van ons allemaal. En binnen scheiden doe ik niet. Ranzigheid ten top.'
 3. A) Wat vindt u makkelijk aan GFT-afval scheiden? (**Attitude**)
'Uhm wat is er makkelijk aan? Niks, gewoon doen.'
 3. B) Wat vindt u moeilijk aan GFT-afval scheiden? (**Attitude**)
'Ik moet ervoor naar buiten lopen om het erin te gooien!'
- 4. A) Wat kunt u in het algemeen vertellen over GFT-afval? (**Kennisniveau**)
'Niks.'
 - B) Vindt u GFT-afval scheiden nuttig voor het milieu? Waarom? (**Kennisniveau**)
'Nou ja als GFT goed gescheiden wordt, zou het opnieuw gebruikt kunnen worden. Ik denk niet dat je er ziek van kunt worden door het te doen ofzo.'
- 5. A) Heeft u wel eens informatie over GFT-afval ontvangen? Zo ja, van wie of welke instanties? (**Informatie toedracht**)
'Vast wel haha. Niks over gelezen.'
 - B) Heeft u wel eens informatie over GFT-afval opgezocht? Zo ja, waar? Zo niet: Als meer zou willen weten over GFT-afval, waar zou u denkt u informatie over GFT-afval zoeken? (**Informatie zoekgedrag**)
'Nee. En als ik zou moeten zoeken... Ja waarschijnlijk de gemeente Wageningen omdat zij mijn verantwoordelijke gemeente zijn.'
 - C) **Indien ja bij B:** hoe heeft u deze informatie verwerkt? (**Informatie verwerking**)
- 6. Welke huishoudelijke middelen heeft u om GFT-afval te scheiden? (**Level of living**)
'De container beneden. That's it.'
- 7. Hoe vaak vindt u het gebruikelijk om GFT-afval te scheiden? Wat is voor u de norm? (**Subjective norm**)

- 'Zodra je iets hebt wat erin kan. Dat zou dan elke winter zijn. Een seizoen per jaar dus. Op onregelmatige basis.'*
8. Hoe tevreden bent u over uw scheidingsgedrag? **(Level of well-being)**
'Het zou veel beter kunnen omdat ik veel meer kunnen scheiden. Als ik mezelf een cijfer zou moeten geven, geef ik mezelf een 4. En mijn vriend een 3.'
9. Voelt u een sociale druk om GFT-afval te scheiden vanuit de overheid en/of uw naasten? **(Norms & values in society)**
'Neuh. Naja niet van mijn familie en vrienden. Maar ik zou het wel moeten doen. Ik ben van beroep weervrouw. Mijn baan dwingt me wel een beetje goed naar de natuur te kijken. Ik ben wel bewust van wat ik fout doe. Ik heb een voorbeeldfunctie. We rijden al wel elektrisch en ik doe veel op de fiets. GFT scheiden is een kleinigheid dus ik zou het wel moeten doen eigenlijk.'
10. De gemeente Wageningen heeft een aantal campagnes ondernomen en communicatie middelen ingezet in het verleden om het scheiden van GFT-afval onder de aandacht te brengen. Heeft u hier iets van gemerkt? Zo ja, wat dan precies? **(Informatie toedracht/Bewustwording)**
'Nee ik zou het niet weten. Afval scheiden, ja misschien iets met afval scheiden bladiebla. Weet je ik vind eigenlijk dat de gemeente er iets op zouden moeten verzinnen om het minder ranzig te maken. Misschien dat ze een goedje kunnen aanleveren waardoor het minder gaat stinken. Wij mensen moeten dan met een ranzige inhoud zitten. De moeite vind ik niet erg, maar die beestjes wel. Ik vind het ook zelf vies om het dan te moeten schoonmaken.'
11. Vanaf 2007 wordt er aanzienlijk minder GFT-afval gescheiden. Dit houdt in dat er concreet gezien in deze buurt minder wordt gescheiden. Wat kan er volgens u beter waardoor u en uw buurtgenoten in de toekomst meer GFT-afval gaan scheiden? **(Actie)**
'Nou misschien dat ze iets kunnen maken dat het rottingsproces tegengaat. Dat is mijn grootste tip. Ik denk echt dat op het moment dat GFT scheiden minder vies wordt, mensen meer gaan scheiden. En ook dat de containers vaker worden geledigd in de zomer en ook gereinigd worden zodat het ook niet loopt te stinken als je er langs loopt.'
12. Wat vindt u van de huidige initiatieven van de gemeente Wageningen en wat kan de gemeente verbeteren aan deze initiatieven om het scheiden van GFT-afval te stimuleren? **(Actie)**
'Pfff hebben ze initiatieven dan... haha! En als ze die hebben dan zijn ze mislukt.'
13. Waar staan de grote verzamelcontainers bij u? **(Faciliteit)**
'Bij de C1000 meen ik.'
14. Bent u eventueel bereidt om de bak of emmer waarmee u GFT-afval binnenshuis scheidt in de eigen omgeving te fotograferen en op te sturen? **(Perceptie)**
'Sorry ik vond het leuk om deze info met je te delen maar ik heb het komende week erg druk. Helaas geen tijd om foto's te maken en te sturen.'

Dit waren alle vragen die ik u wilde stellen. Heeft u zelf nog op of aanmerkingen waarvan u denkt dat die relevant zijn voor dit onderwerp?

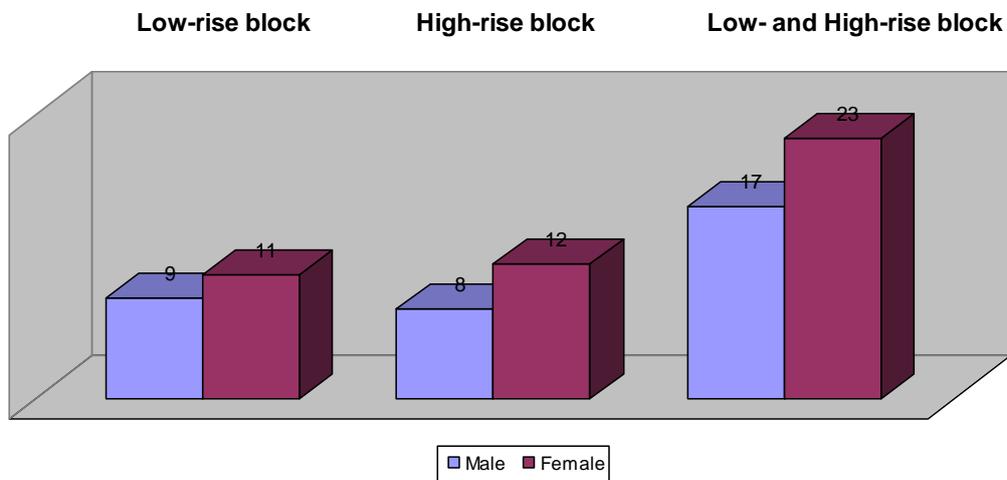
Hartelijk dank voor uw medewerking.

ANNEX II: Demo questionnaire

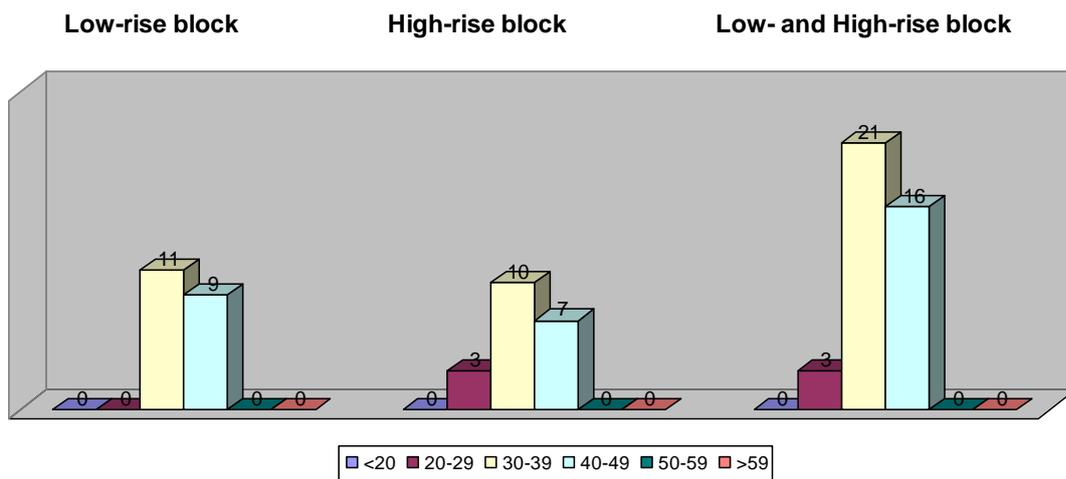
From page 101 - 107

ANNEX III: Results questionnaire

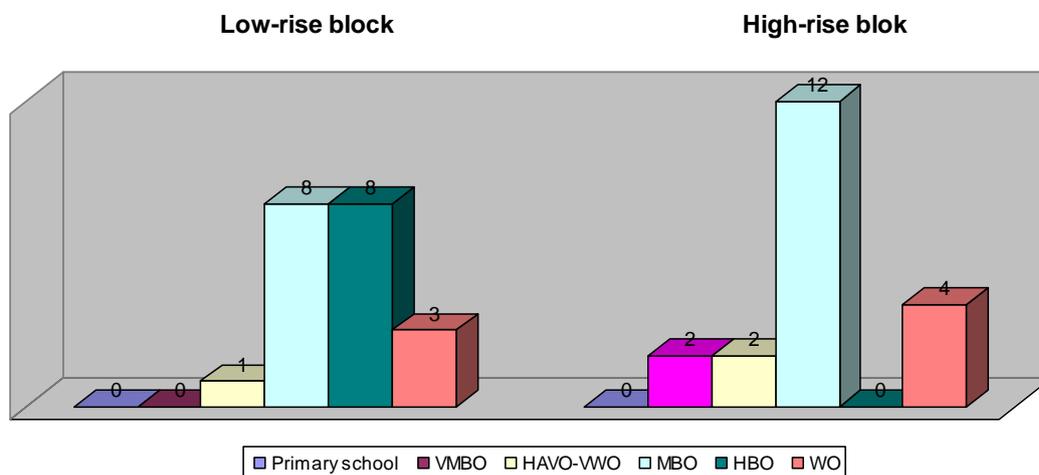
Q1. Demographic: Male/female division by household block



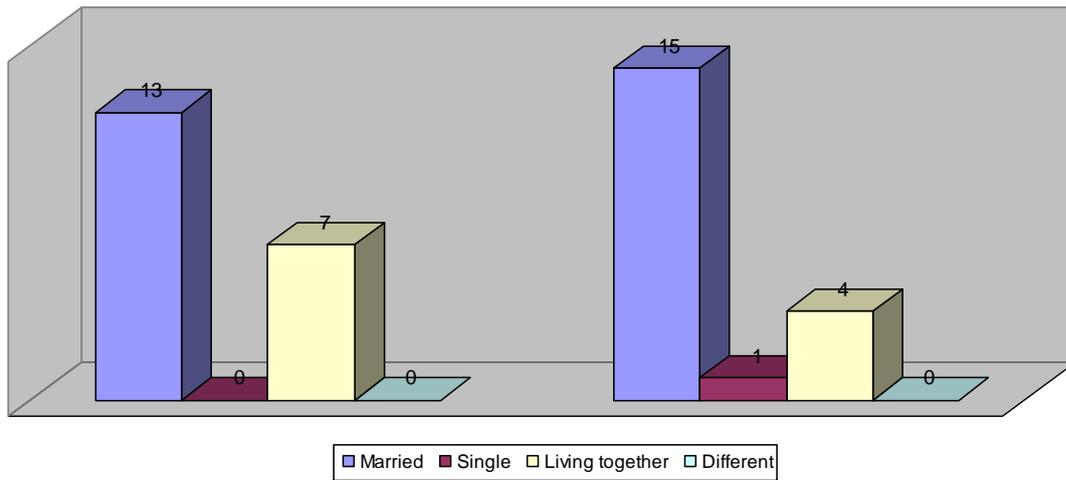
Q2. Demographic: Age division by household block



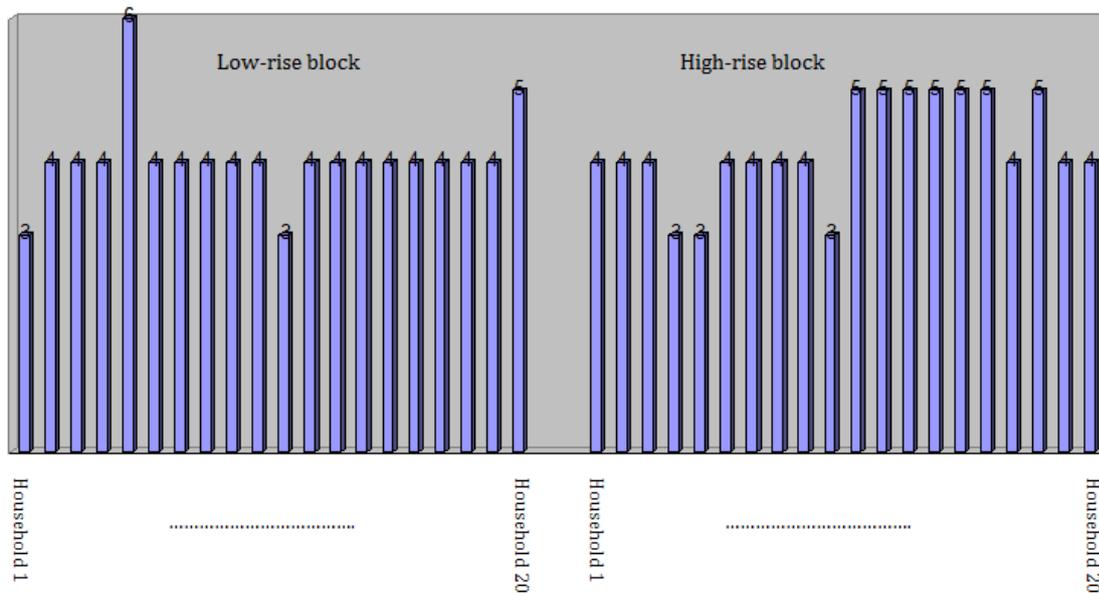
Q3. Demographic: Level of education by household block



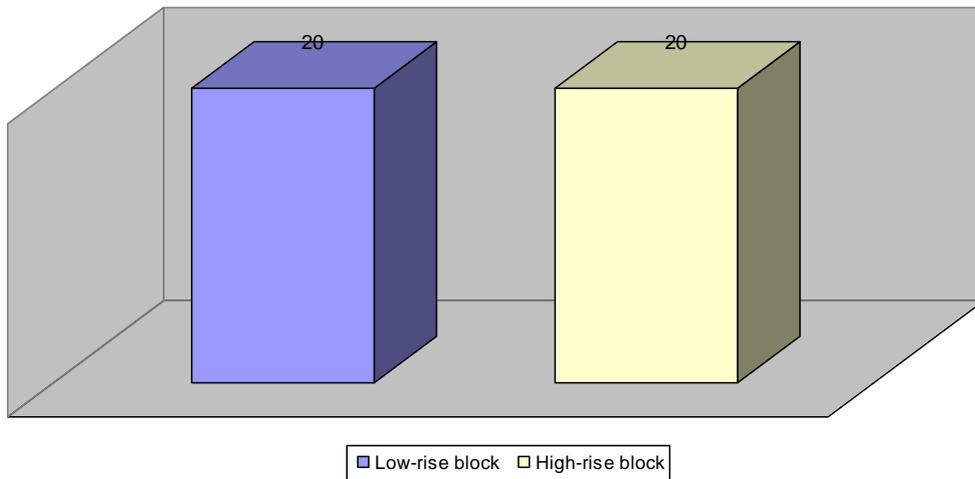
Q4. Demographic: Marital status by household block



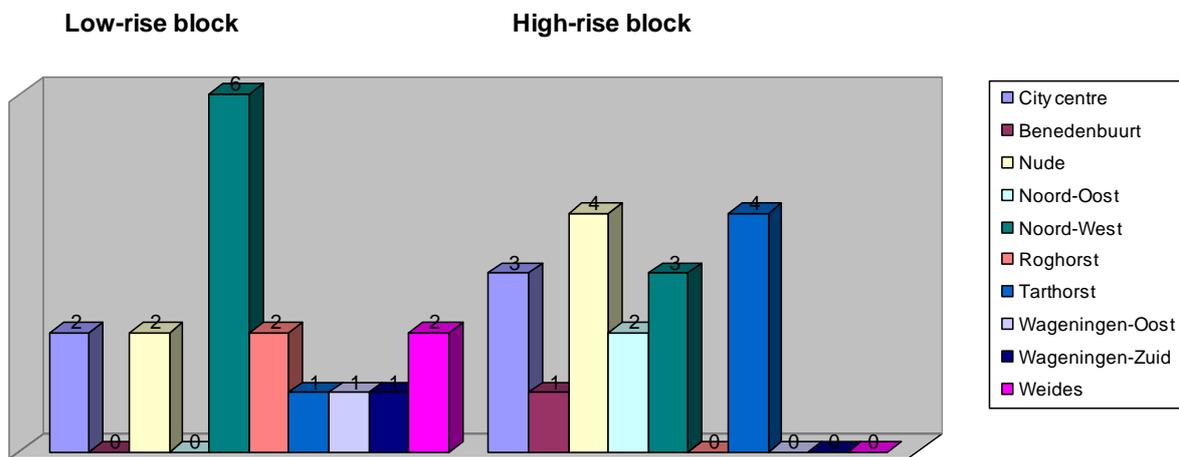
Q5. Demographic: Family composition by household block



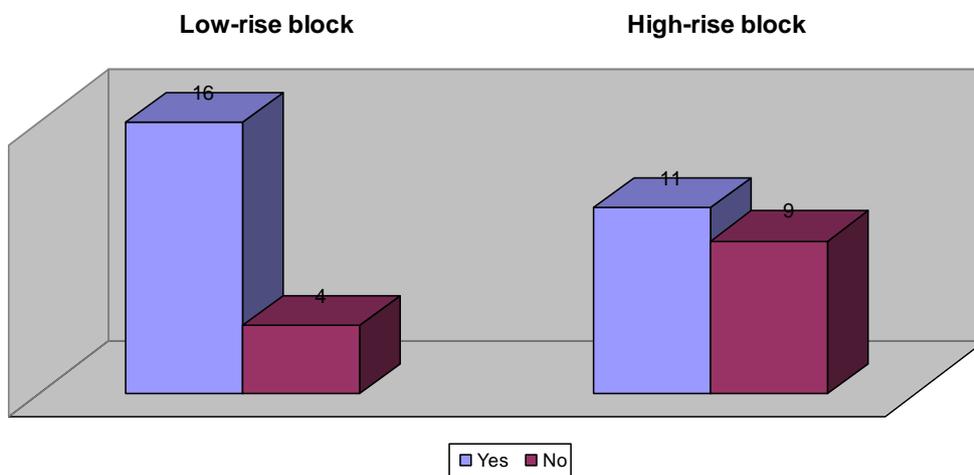
Q6. Demographic: Type of housing



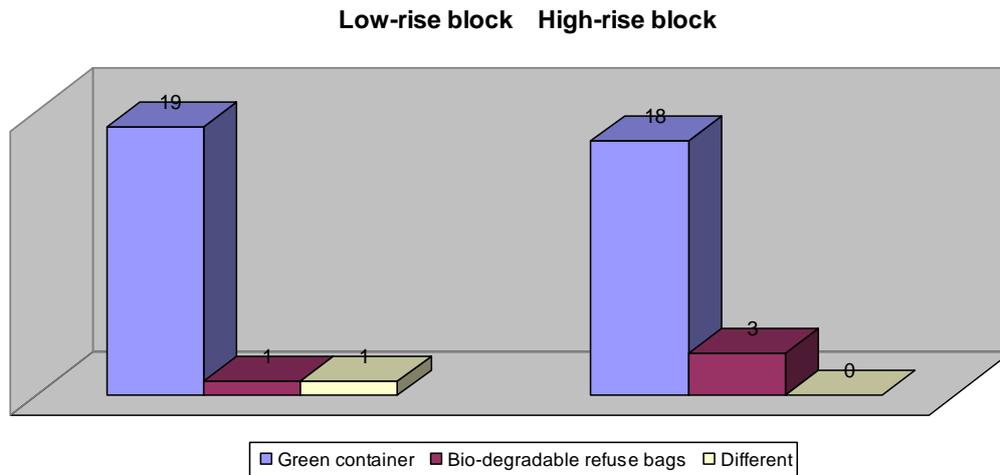
Q7. Demographic: Neighbourhood



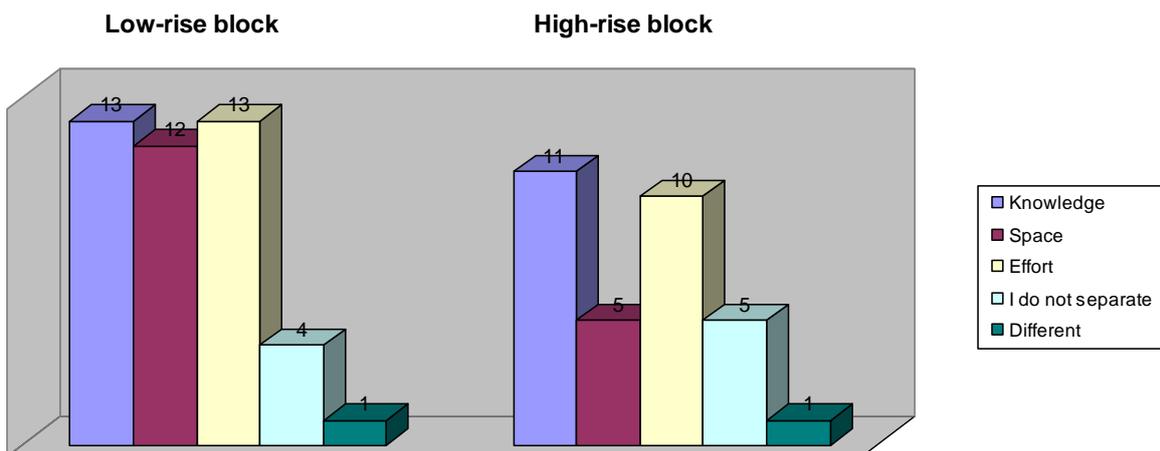
Q8. Household activities: Bio-waste separation by household block



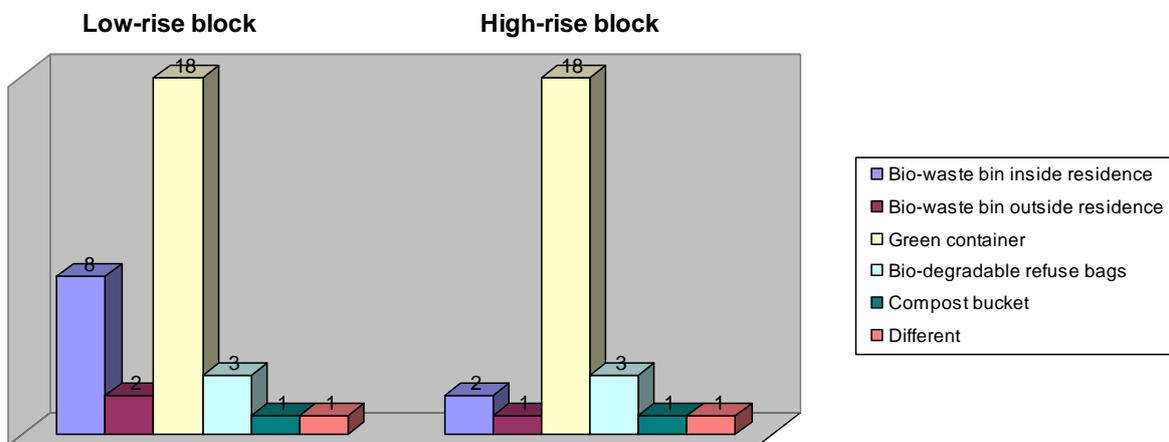
Q9. Household resources from the municipality of Wageningen



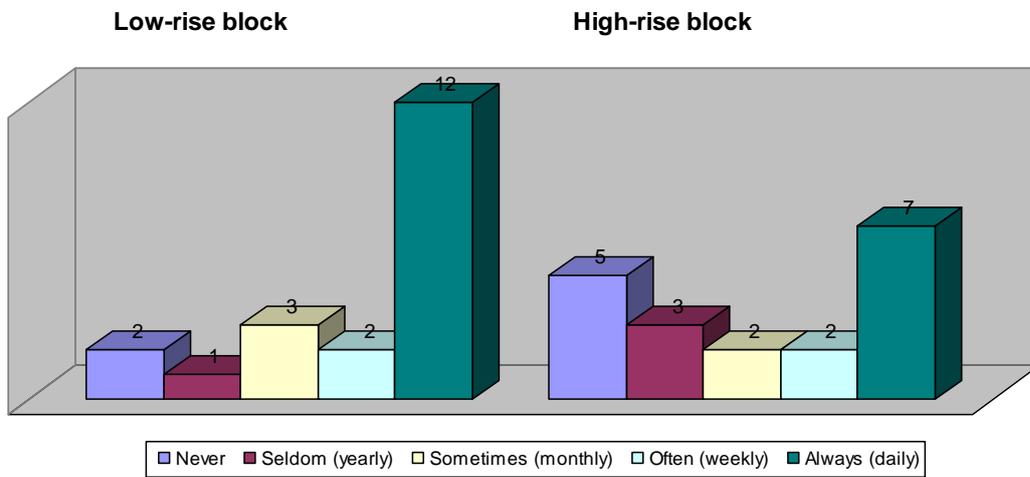
Q10. Level of living: Household resources available per household block



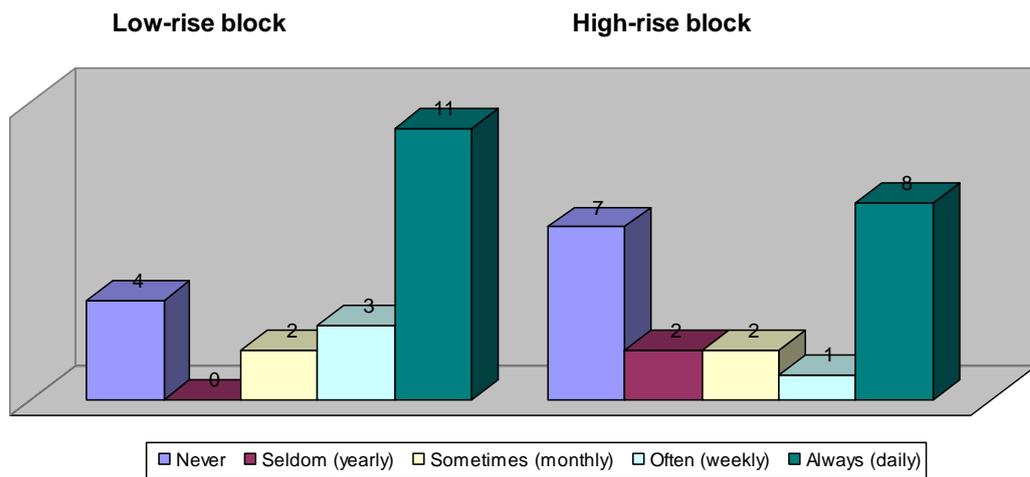
Q11. Level of living: Household resources used per household block



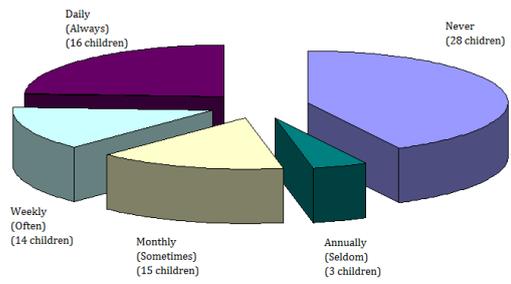
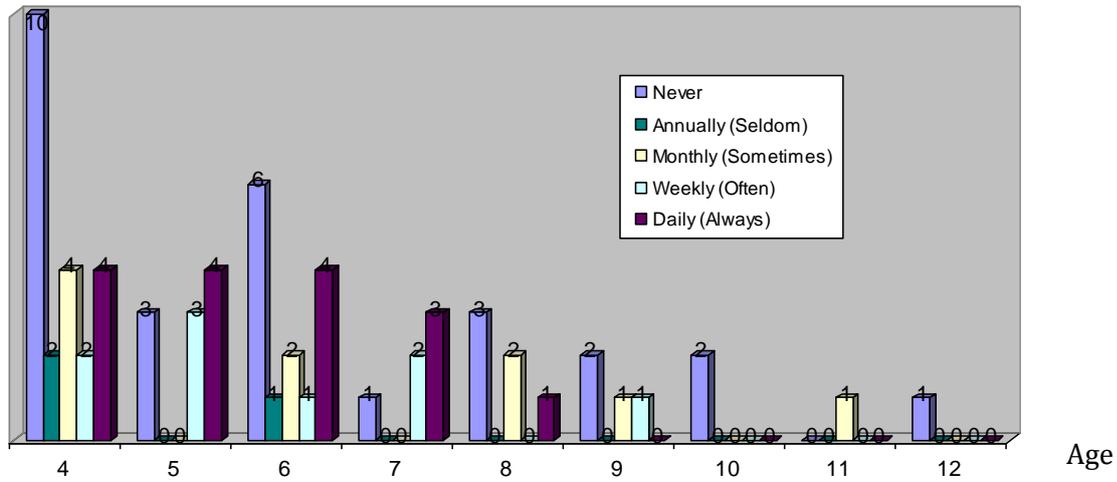
Q12. Standard of living (subjective norm): Frequency of separating bio-waste per household block



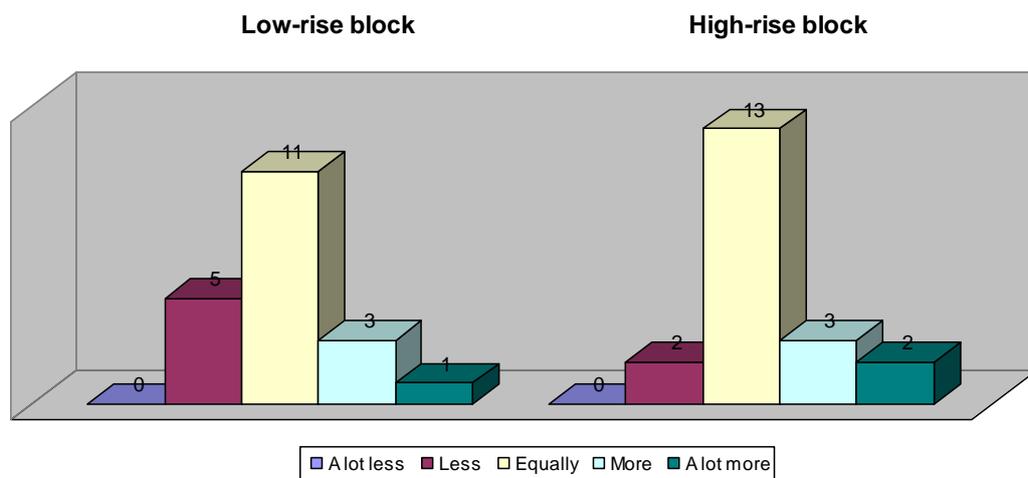
Q13. Standard of living (subjective norm): Frequency of separating bio-waste by partner



Q14. Separation of bio-waste among children in 40 households (total children: 66)

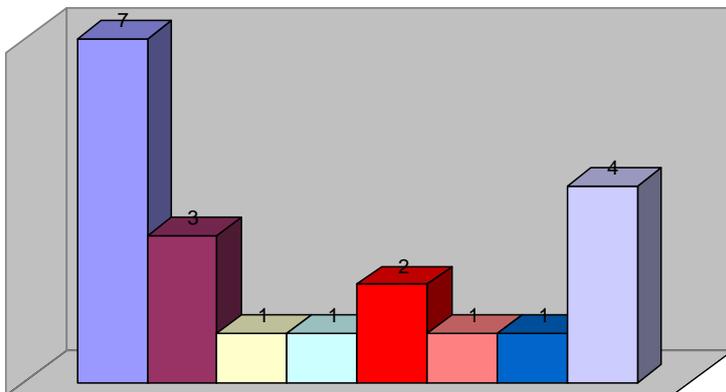


Q15. Standard of living (subjective norm): Estimation of frequency to separate bio-waste of other households



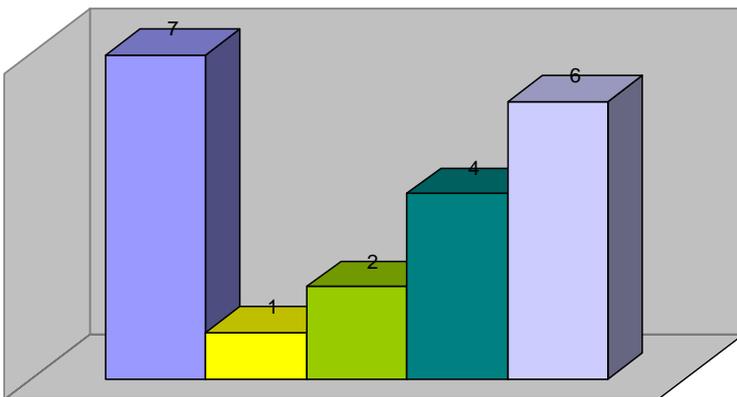
Q16. Members of family households' views on how to ideally handle separating bio-waste

Low-rise block



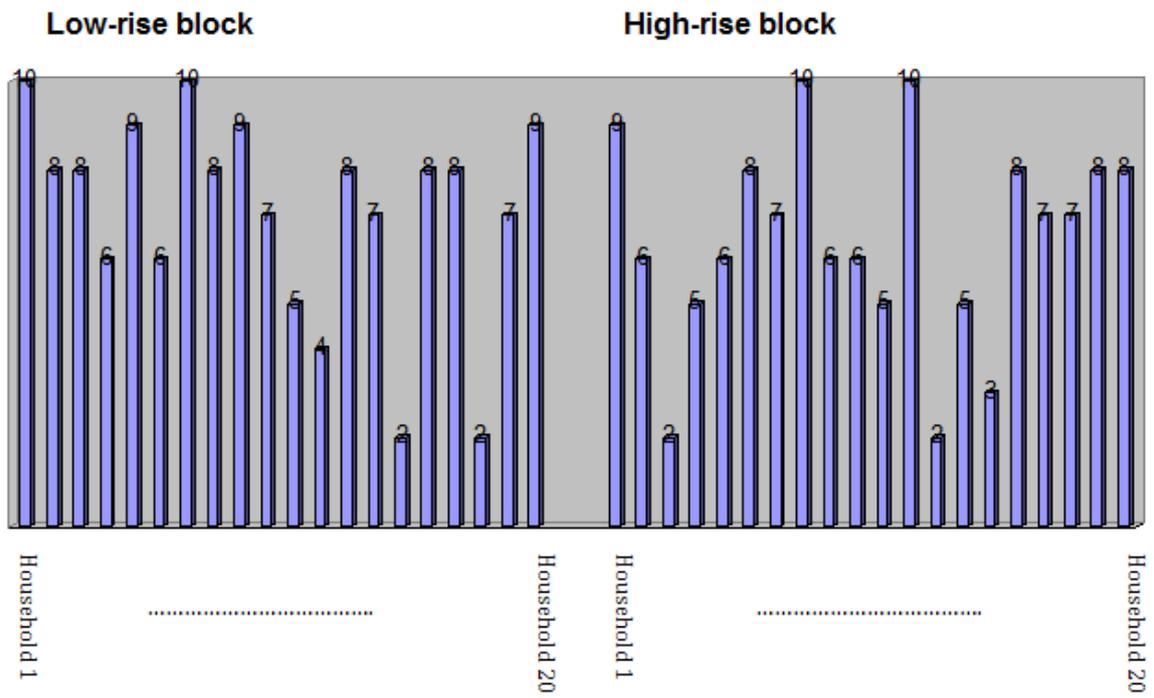
- Separating bio-waste is normal to do
- To make compost of bio-waste
- It saves space in the gray container
- To make it as easy as possible
- Separating bio-waste is dirty
- To keep bio-waste green and clean
- To separate more bio-waste with help of the municipality
- I don't know

High-rise block



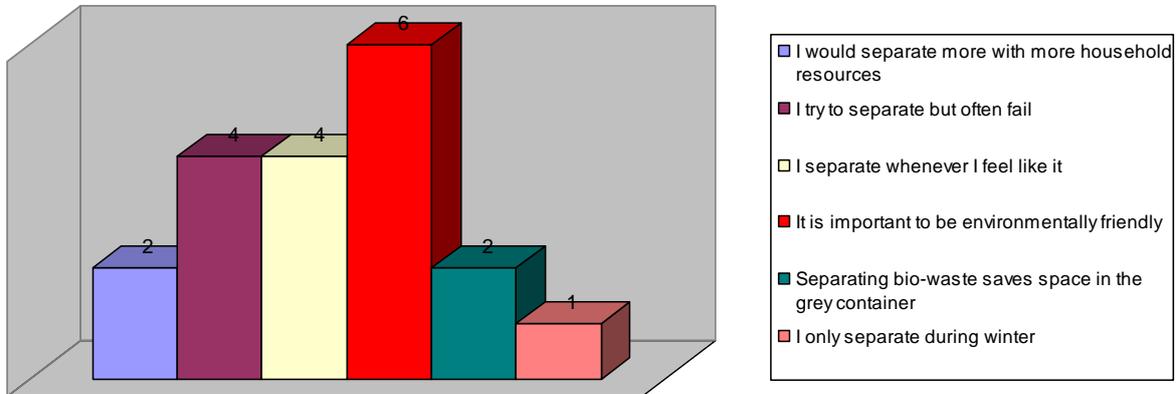
- Separating bio-waste is normal to do
- Feeding bio-waste to animals
- To use household resources
- Unmotivated to separate
- I don't know

Q17. Level of well-being (feeling of control): levels of satisfaction regarding separating bio-waste behaviour

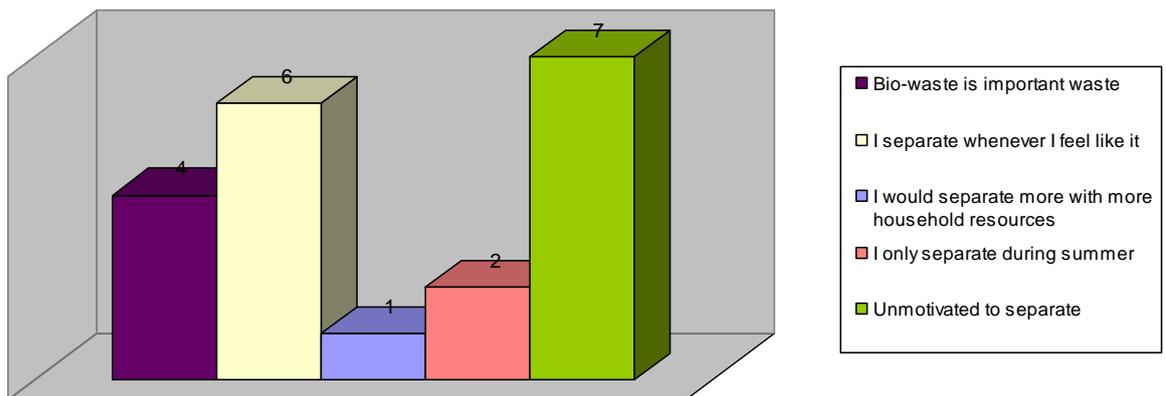


Q18. Level of well-being (feeling of control): explanation of level of satisfaction by members of family households

Low-rise block

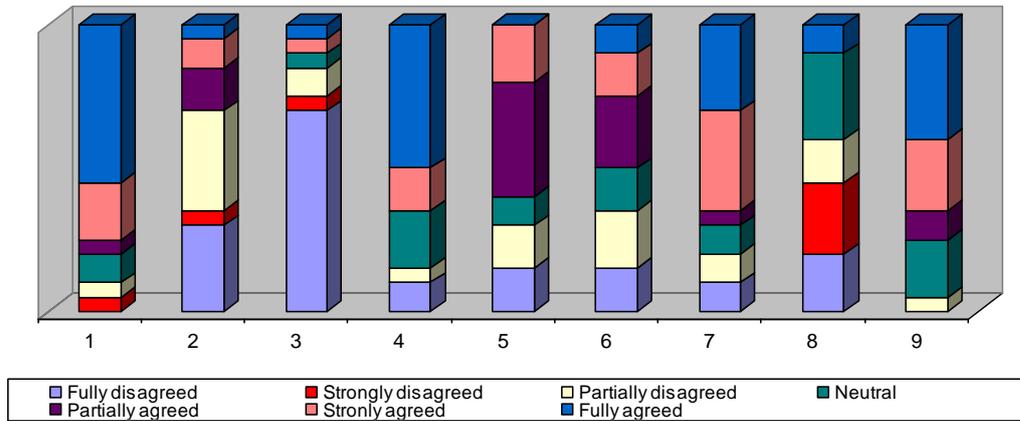


High-rise block

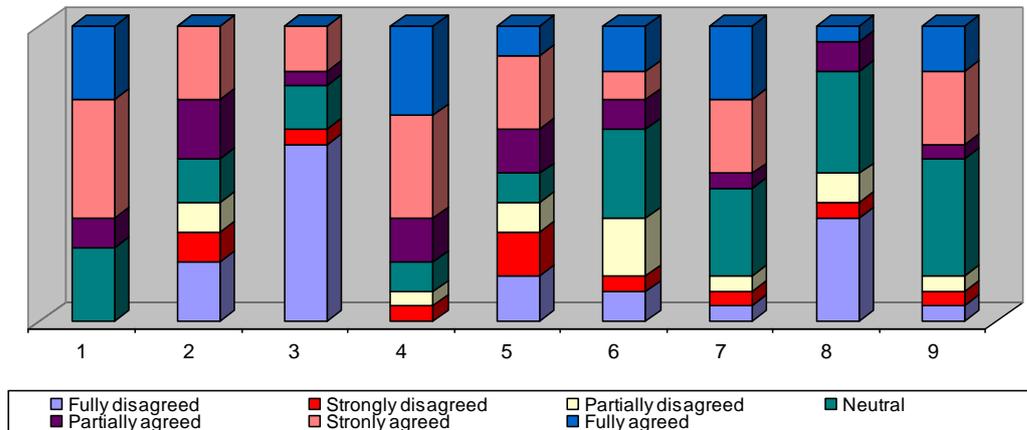


Q19. Household activities: to what extent do householders agree and disagree on bio-waste as part of household activities?

Low-rise block

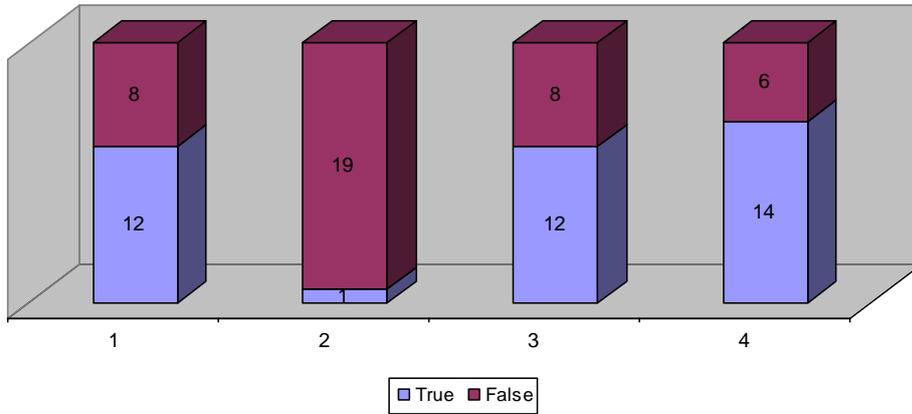


High-rise block

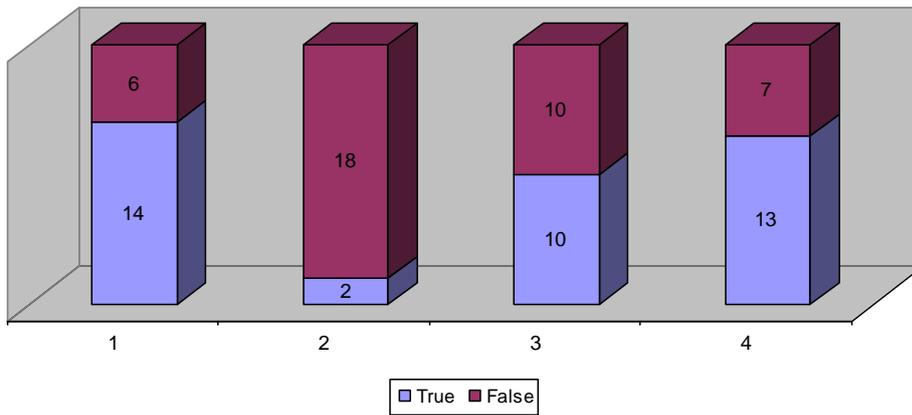


Q20. Knowledge: Level of members of family households' on information regarding bio-waste

Low-rise block

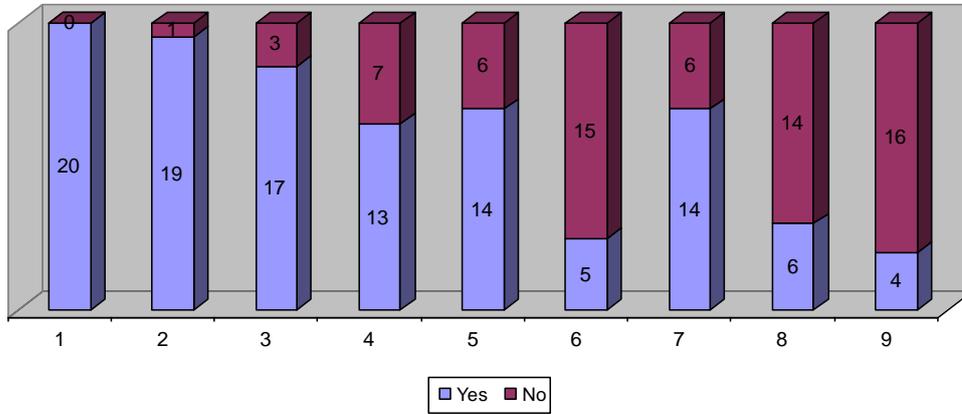


High-rise block

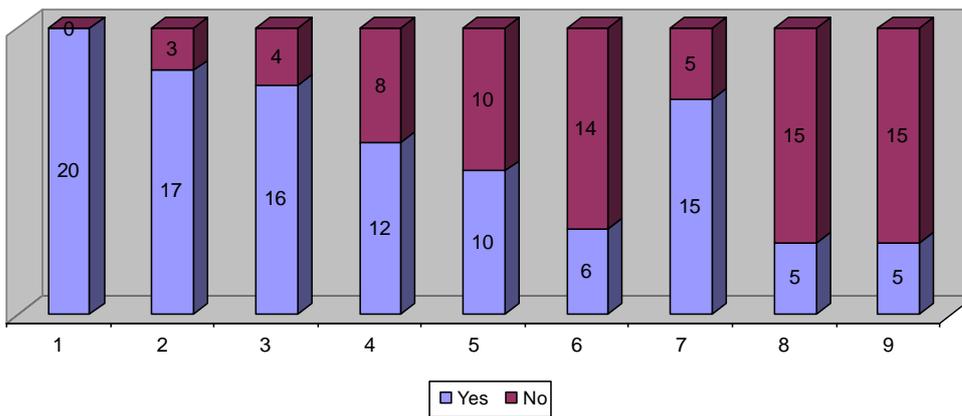


Q21. Knowledge: Level of members of family households' to assess whether they know which food items should be thrown into the green container and which should not

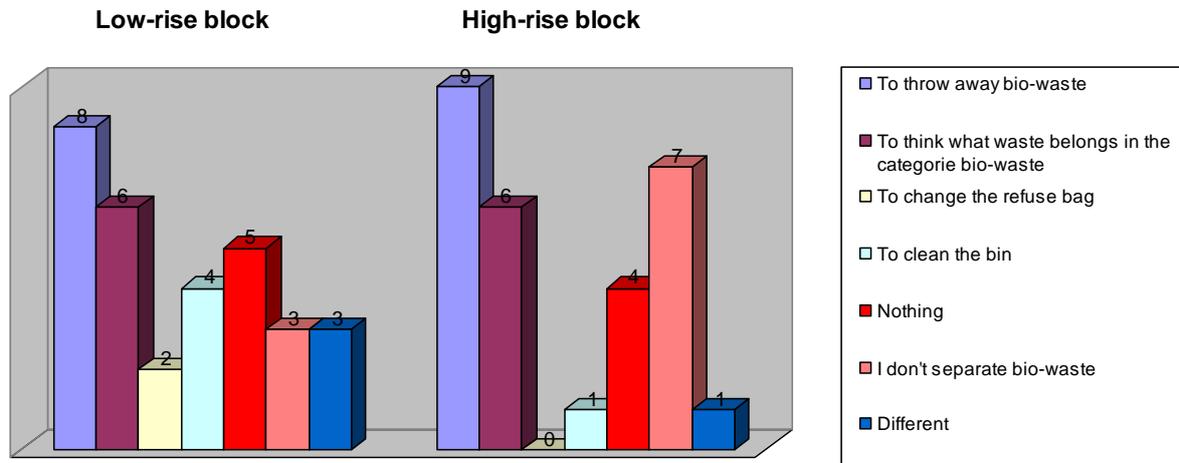
Low-rise block



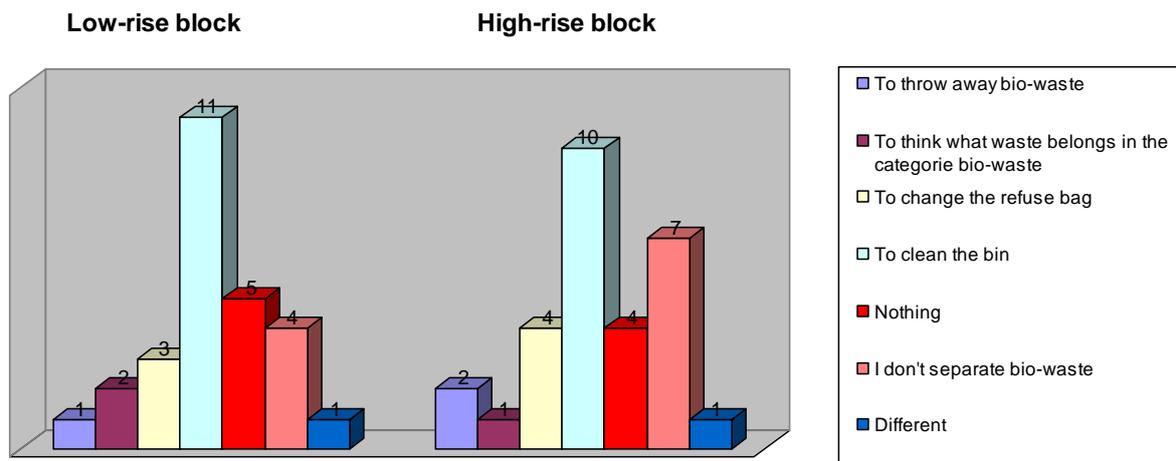
High-rise block



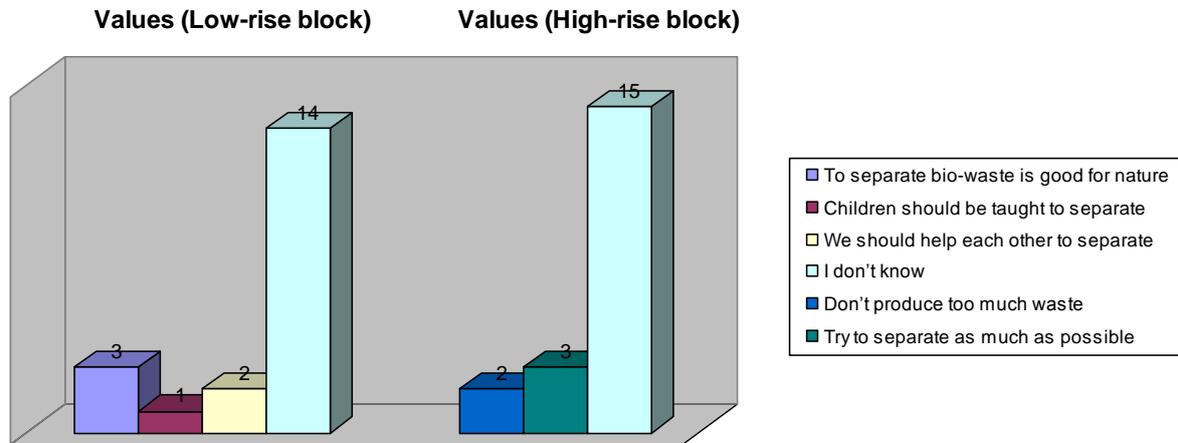
Q22. Attitude: Easy household activities according to members of family households



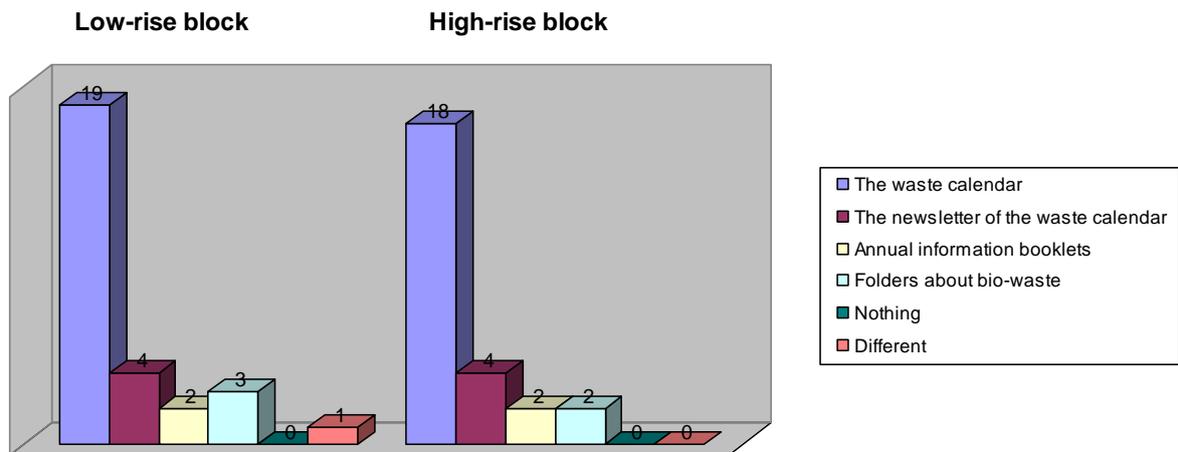
Q23. Attitude: Difficult household activities according to members of family households



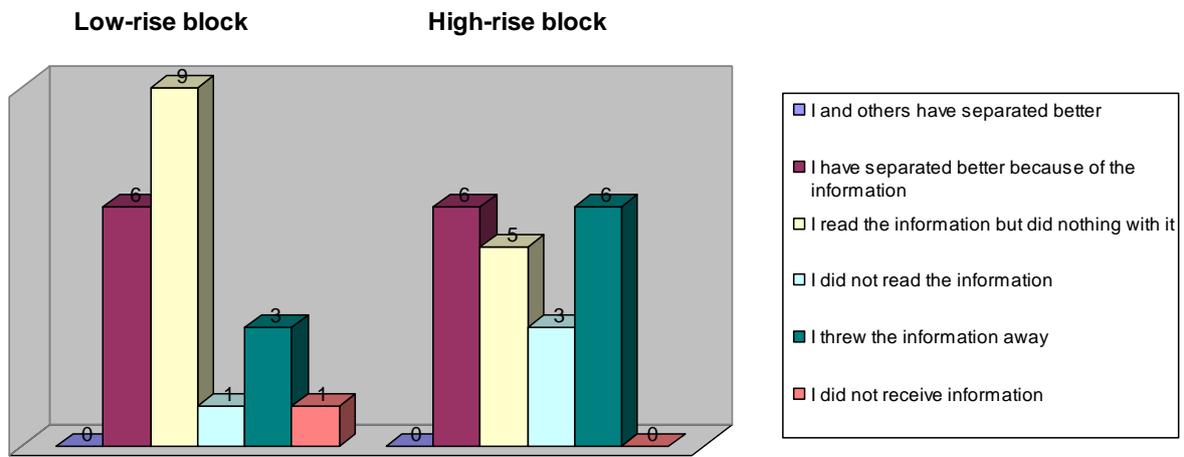
Q24. Social pressure



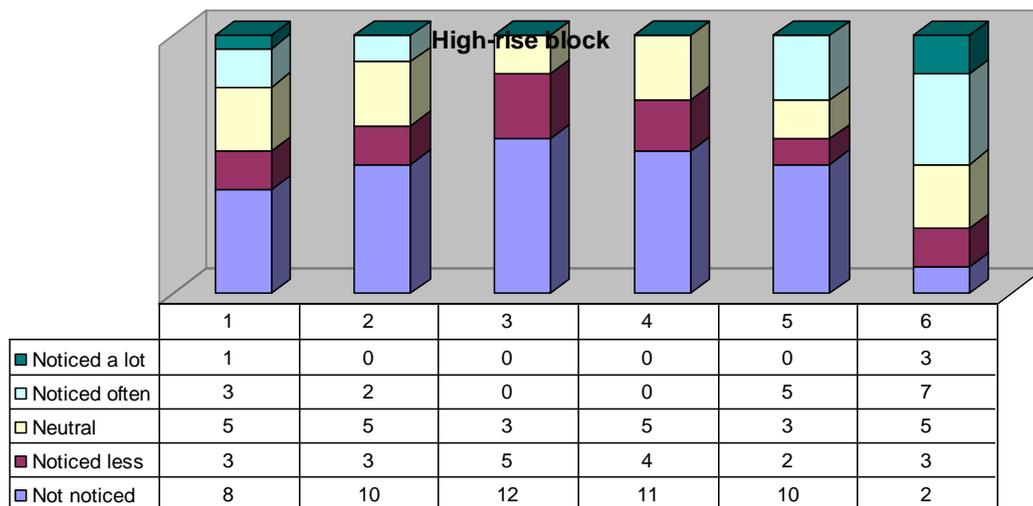
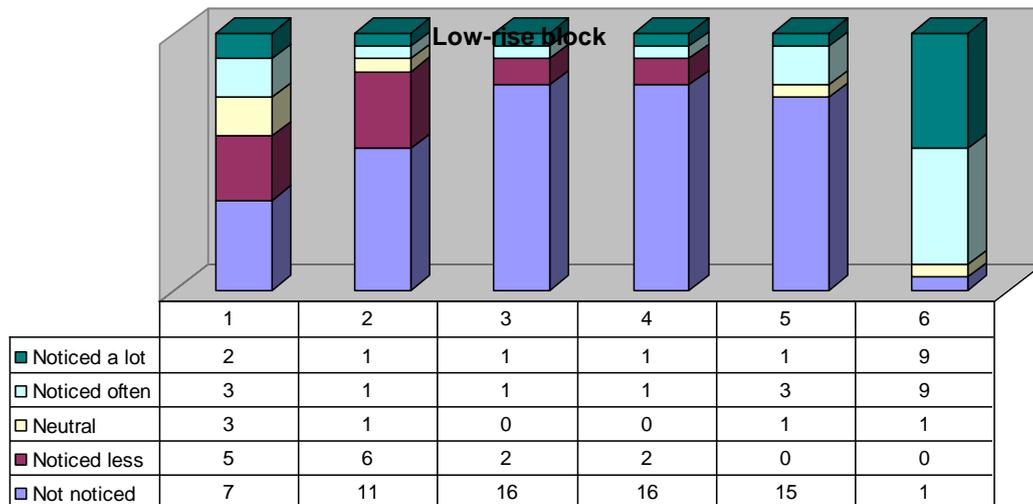
Q25. Information processing: Which information resources did members of family households receive from the municipality?



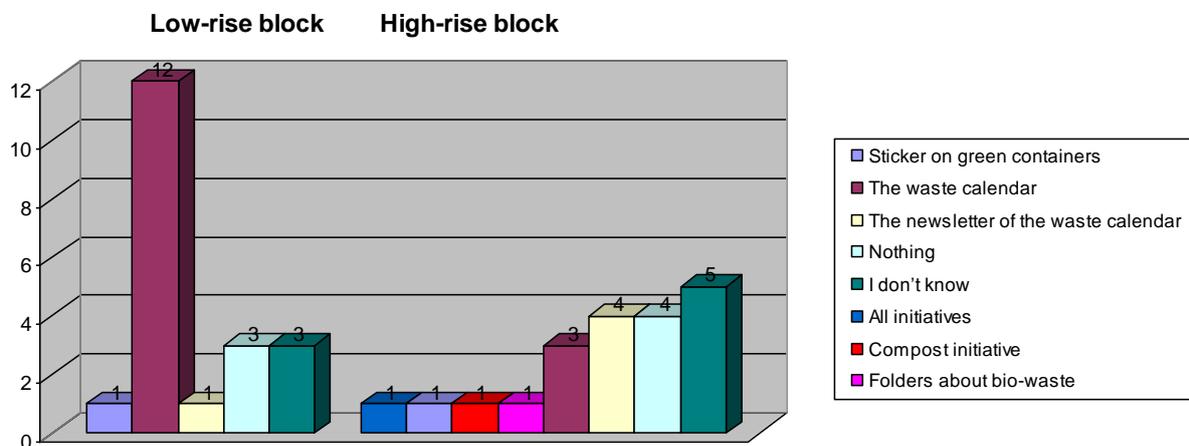
Q26. Action behaviour on information: How did members of family households act upon the information provided by the municipality?



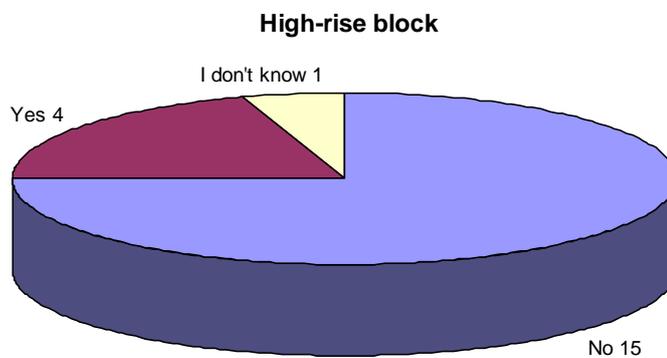
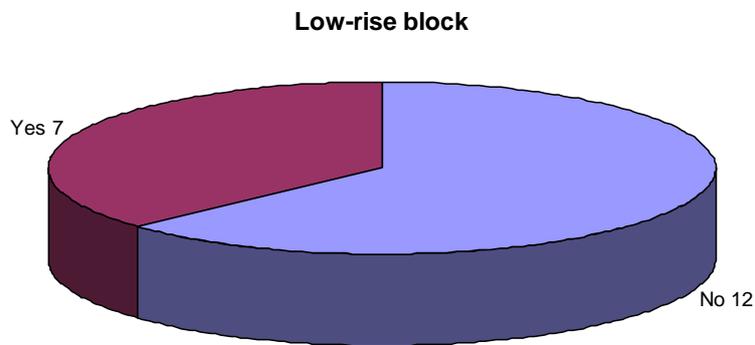
Q27. Information processing: Which prior health initiatives initiated by the municipality are still noticed by members of family households?



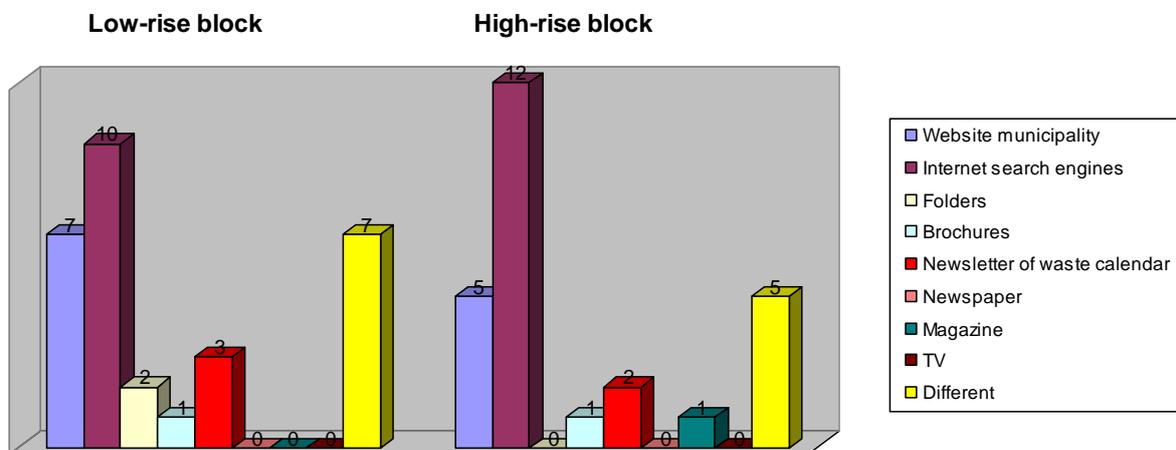
Q28. Engagement for action: Which initiatives by the municipality are well and less appreciated?



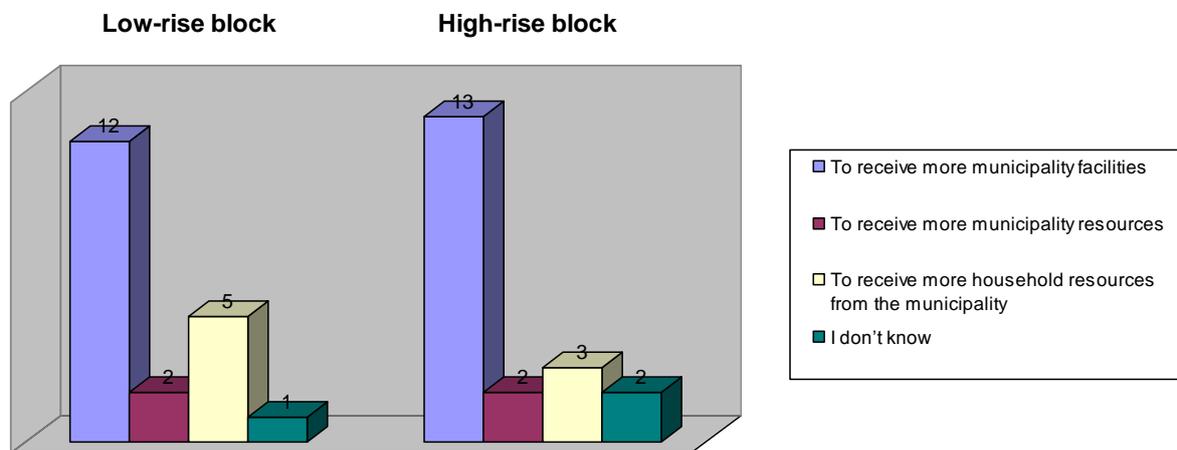
Q29. Information seeking: Do members of family households search for information regarding bio-waste?



Q30. Information seeking: What are the potential information sources for members of family households?



Q31. Engagement for action: What is recommended by members of family households in order to separate more bio-waste?



Huishoudelijk afval

Start

www.thesistools.com

Huishoudelijk afval

1.

Bent u een man of een vrouw?

- Man
- Vrouw

2.

Wat is uw leeftijd?

- Jonger dan 20
- 20-29
- 30-39
- 40-49
- 50-59
- Ouder dan 59

3.

Wat is uw hoogst genoten opleiding?

- Basisschool
- VMBO
- HAVO-VWO
- MBO
- HBO
- WO

4.

Hoe is uw thuissituatie?

- Getrouwd
- Alleenstaand
- Samenwonend
- Anders:.....

5.

Kunt u opschrijven hoeveel personen er deel uit maken van uw huishouden en hoeveel van dit aantal er volwassenen en kinderen zijn? In deze enquête wordt er met volwassenen mensen die 18+ zijn bedoeld. De kinderen vallen in de categorie 0-18 jaar.

6.

Woont u in een hoog of laagbouw woning?

Met laagbouw wordt ieder type woning waar er geen meerlaagse woningen van andere huishoudens op elkaar zijn gebouwd (voorbeelden: rijtjeswoning, vrijstaande woning, zelfstandige container etc.). Met hoogbouw wordt ieder type woning bedoeld waar er meerlaagse woningen op elkaar zijn gebouwd waar andere huishoudens in wonen (voorbeelden: flat, opgestapeld appartementencomplex etc.). Mocht u twijfelen of uw type woning tot een laag of hoogbouw behoort dan kunt u uw type woning ook bij 'anders' invullen.

- Hoogbouw
- Laagbouw
- Anders:

7.

In welke wijk van Wageningen woont u?

8.

Scheidt u Groente, Fruit en Tuin afval (GFT-afval) van het overige afval?

- Ja
- Nee

9.

Welke middelen heeft u van de gemeente Wageningen gekregen om Groente, Fruit en Tuinafval (GFT) te kunnen scheiden? Meerdere antwoorden mogelijk!

- Groene klike
- De Groente, Fruit en Tuinafval (GFT) container onderaan de flat (of andere woning in de hoogbouw)
- Bio afbreekbare huisvuilnieszakken
- Anders:

.....

10.

Om Groente, Fruit en Tuinafval (GFT) te kunnen scheiden zijn er een aantal factoren nodig. Vink de factoren aan die op u van toepassing zijn om Groente, Fruit en Tuinafval te scheiden. Meerdere antwoorden mogelijk!

- Ik heb voldoende kennis over Groente, Fruit en Tuinafval
- Ik neem de moeite om Groente, Fruit en Tuinafval te scheiden
- Ik heb voldoende ruimte beschikbaar om Groente, Fruit en Tuinafval te scheiden
- Ik scheid geen Groente, Fruit en Tuinafval.
- Er gelden nog meer/anderen factoren,
namelijk:.....

11.

Welke huishoudelijke middelen heeft u ter beschikking om Groente, Fruit en Tuinafval (GFT-afval) te scheiden? Meerdere antwoorden mogelijk!

- Groente, Fruit en Tuinafval afvalbak binnenshuis
- Groente, Fruit en Tuinafvalbak buitenshuis
- Groene klike
- Groente, Fruit en Tuinafval Container onderaan de flat (of andere woning in de hoogbouw)
- Bio afbreekbare huisvuilniszakken
- Compostbak
- Anders:
.....

12.

Hoe vaak scheidt u Groente, Fruit en Tuin afval (GFT-afval) van het overige afval binnenshuis?

- Nooit
- Zelden: jaarlijks
- Soms: maandelijks
- Vaak: wekelijks
- Altijd: dagelijks

13.

Hoe vaak scheidt uw partner in uw huishouden het Groente, Fruit en Tuinafval (GFT) binnenshuis?

- Nooit
- Zelden: jaarlijks
- Soms: maandelijks
- Vaak: wekelijks
- Altijd: dagelijks
- Ik heb geen partner

14.

Hieronder ziet u een tabel. Kunt u per kind aangeven hoe vaak uw kind/kinderen binnen uw huishouden het afval scheiden? Het is de bedoeling dat u de tabel van links naar rechts invult. Links zoekt u de leeftijd van uw kind. In deze regel vult u in of uw kind nooit, zelden, soms, vaak of altijd afval scheidt. Hier zijn meerdere antwoorden mogelijk indien u meerdere kinderen van dezelfde leeftijd heeft. Vervolgens vult u rechts, aan het einde van de regel, het aantal kinderen in die u heeft in deze leeftijd. Mocht u kinderen hebben buiten deze leeftijd dan mag u dit ernaast schrijven.

	Nooit	Zelden	Soms	Vaak	Altijd	Aantal kinderen:
Mijn kind is 4 jaar	<input type="checkbox"/>	<input type="text"/>				
Mijn kind is 6 jaar	<input type="checkbox"/>	<input type="text"/>				
Mijn kind is 7 jaar	<input type="checkbox"/>	<input type="text"/>				
Mijn kind is 8 jaar	<input type="checkbox"/>	<input type="text"/>				
Mijn kind is 9 jaar	<input type="checkbox"/>	<input type="text"/>				
Mijn kind is 10 jaar	<input type="checkbox"/>	<input type="text"/>				
Mijn kind is 11 jaar	<input type="checkbox"/>	<input type="text"/>				
Mijn kind is 12 jaar	<input type="checkbox"/>	<input type="text"/>				

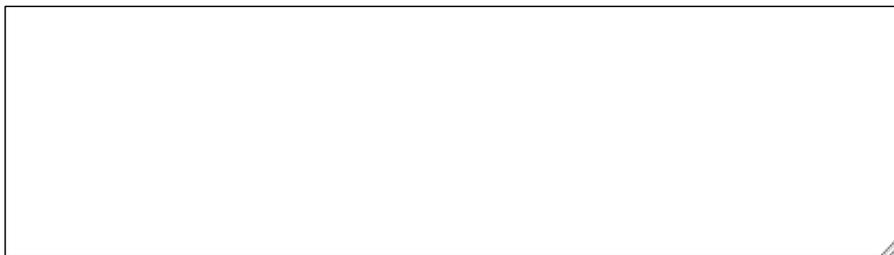
15.

Als u kijkt naar andere huishoudens, wat is dan volgens u voor andere huishoudens algemeen gangbaar om Groente, Fruit en Tuin (GFT) afval te scheiden? Wat doen de meeste huishoudens denkt u?

- Andere huishoudens scheiden heel weinig
- Andere huishoudens scheiden weinig
- Andere huishoudens scheiden evenveel
- Andere huishoudens scheiden meer
- Andere huishoudens scheiden veel meer

16.

Wat is volgens u de beste manier om met Groente, Fruit en Tuinafvalscheiding om te gaan?



17.

Hoe tevreden bent u over uw eigen scheidingsgedrag als het gaat om het scheiden van Groente, Fruit en Tuinafval? Wat voor rapportcijfer zou u uw gezin geven?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7

- 8
- 9
- 10

18.

Waarom heeft u zichzelf en uw gezin dit rapportcijfer gegeven en niet hoger of lager? Waarom bent u zo tevreden/ontevreden met het Groente, Fruit en Tuinafval scheidingsgedrag van u en uw gezin?

19.

In hoeverre bent u het met de volgende stellingen eens?

	Helemaal oneens	Behoorlijk oneens	Beetje oneens	Neutraal	Beetje eens	Behoorlijk eens	Helemaal mee eens
Groente, Fruit en Tuinafval (GFT) scheiden is nuttig voor de samenleving	<input type="radio"/>						
Groente, Fruit en Tuinafval (GFT) scheiden is te veel moeite	<input type="radio"/>						
'GFT-afval' zegt me niets	<input type="radio"/>						
Groente, Fruit en Tuinafval (GFT)scheiden is goed voor het milieu	<input type="radio"/>						
Groente, Fruit en Tuinafval (GFT) scheiden is een smerig klusje	<input type="radio"/>						
Groente, Fruit en Tuinafval (GFT) scheiden is onhygienisch om te bewaren	<input type="radio"/>						

Groente, Fruit en Tuinafval (GFT) scheiden is heel gewoon

Groente, Fruit en Tuinafval (GFT) scheiden is aan gezondheidsrisico's verbonden.

Groente, Fruit en Tuinafval (GFT) is waardevol omdat het een gezonder leefmilieu oplevert.

20.

Hieronder staan 4 stellingen. Kunt u van ieder van deze 4 stellingen inschatten of ze waar of niet waar zijn? Ook als u het niet weet gelieve een inschatting maken.

	Waarheid	Onwaarheid
Door Groente, Fruit en Tuinafval (GFT) te scheiden kan het broeikaseffect worden tegengegaan.	<input type="radio"/>	<input type="radio"/>
Groente, Fruit en Tuinafval hoort in de grijze container.	<input type="radio"/>	<input type="radio"/>
Compost kan worden gemaakt van restafval.	<input type="radio"/>	<input type="radio"/>
Het is voor de gemeente goedkoper om Groente, Fruit en Tuinafval gescheiden te verzamelen omdat het dan niet verbrand hoeft te worden.	<input type="radio"/>	<input type="radio"/>

21.

Stelt u zich voor dat u Groente, Fruit en Tuin afval gaat scheiden van het overige afval binnenshuis en deze verzamelt in een Groente, Fruit en Tuin (GFT) afvalbak. Welk van de volgende items zouden volgens u in de Groente, Fruit en Tuin (GFT) afvalbak behoren?

Wel

Niet

Fruitschillen	<input type="radio"/>	<input type="radio"/>
Etensresten	<input type="radio"/>	<input type="radio"/>
Eierschalen	<input type="radio"/>	<input type="radio"/>
Botjes	<input type="radio"/>	<input type="radio"/>
Klein snoeihout	<input type="radio"/>	<input type="radio"/>
Asbak inhoud	<input type="radio"/>	<input type="radio"/>
Plantenmateriaal	<input type="radio"/>	<input type="radio"/>
Kattenkorrels met een milieukeur	<input type="radio"/>	<input type="radio"/>
Haar van mensen en dieren	<input type="radio"/>	<input type="radio"/>

22.

Wat vindt u gemakkelijk aan het scheiden Groente, Fruit en Tuinafvalafval (GFT)? Meerdere antwoorden mogelijk!

- Het weggooien ervan
- Het bedenken wat er wel en niet tot de categorie Groente, Fruit en Tuinafval hoort
- Het verwisselen van de vuilniszak
- Het schoonmaken van de afvalbak
- Niks
- Ik scheid geen Groente, Fruit en Tuinafval
- Anders:

.....

23.

Wat vindt u moeilijk aan het scheiden van Groente, Fruit en Tuinafval (GFT)? Meerdere antwoorden mogelijk!

- Het weggooien ervan
- Het bedenken wat er wel en niet tot de categorie Groente, Fruit en Tuinafval hoort

- Het verwisselen van de vuilniszak
 - Het schoonmaken van de afvalbak
 - Niks
 - Ik scheid geen Groente, Fruit en Tuinafval
 - Anders:
-

24.

Met 'norm' wordt vaak bedoeld hoe men zich dient te gedragen tijdens een bepaalde handeling. Met 'waarde' wordt vaak bedoeld hoe men zich wenst te gedragen tijdens een bepaalde handeling. Kunt u in ieder geval twee normen en twee waarden opnoemen die u heeft m.b.t. de handeling van het scheiden van Groente, Fruit en Tuinafval (GFT)?

25.

Vink hieronder aan welke informatie u heeft ontvangen in het verleden van de gemeente Wageningen. Meerdere antwoorden mogelijk!

- De afvalkalender
 - Jaarlijkse informatieboekjes over afval scheiden
 - Folders over Groente, Fruit en Tuinafval (GFT)
 - Afvalnieuwsbrief
 - Niks
 - Anders:
-

26.

Hoe heeft u de ontvangen informatie van de gemeente van Wageningen verwerkt? Vink het antwoord aan dat

voor u van toepassing is.

Ik heb mij door de verstrekte informatie ingezet om beter Groente, Fruit en Tuinafval en anderen aangespoord tot het (beter) scheiden van Groente, Fruit en Tuinafval.

Ik heb mij door de verstrekte informatie ingezet om beter Groente, Fruit en Tuinafval te scheiden.

Ik heb de verstrekte informatie gelezen maar er verder niets mee gedaan.

Ik heb de verstrekte informatie niet gelezen.

Ik heb de verstrekte informatie weggegooid.

Ik heb geen informatie ontvangen.

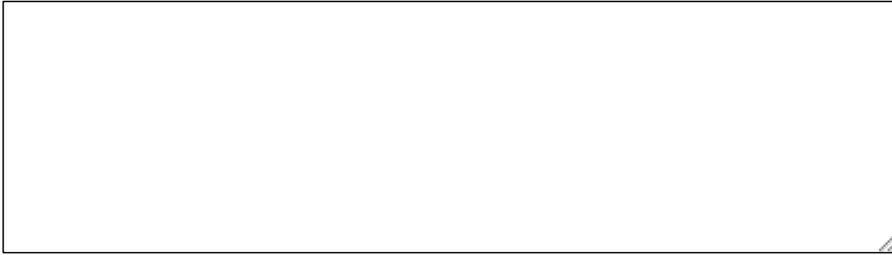
27.

De gemeente van Wageningen heeft eerdere initiatieven genomen om het scheiden van Groente, Fruit en Tuinafval (GFT-afval) onder de aandacht te brengen. Geef bij de onderstaande initiatieven aan in hoeverre u hier iets van gemerkt heeft.

	Heel weinig van gemerkt	Weinig van gemerkt	Neutraal	Veel van gemerkt	Heel veel van gemerkt
De afvalnieuwsbrief met o.a. tips over afval scheiden	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Posters over het scheiden van Groente, Fruit en Tuinafval in openbare ruimten	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Het compost initiatief, georganiseerd in 2007, op het marktplein van Wageningen waarin de koe als 'compostmachine' centraal stond	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De nationale compostdag waarin prijzen konden worden gewonnen d.m.v. kleurplaten	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Container stickers met de slogan 'houd groen afval schoon'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De afvalkalender	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

28.

Welk van de hierboven genoemde initiatieven vanuit de gemeente Wageningen vond u goed en waarom?



29.

Heeft u zelf wel eens informatie gezocht omtrent het onderwerp Groente, Fruit en Tuinafval scheiden? Zo ja, waar? Meerdere antwoorden mogelijk!

- Ja op de website van de gemeente en/of gezondheidscentra.
- Ja op Internet zoekmachines zoals Google, Altavista, Yahoo etc.
- Ja in folders van de gemeente en/of gezondheidscentra.
- Ja in brochure(s) van de gemeente en/of gezondheidscentra.
- Ja in de brief van de afval kalender of de afval kalender zelf van de gemeente.
- Ja in de krant(en). Namelijk de krant(en):.....
- Ja in tijdschriften. Namelijk het/de tijdschrift(en):.....
- Ja op TV programma's. Namelijk het TV programma:.....
- Nee want
- Anders:.....

30.

Indien u bij de vorige vraag 'nee' heeft aangekruist, waar denkt u dat u informatie zou zoeken als u iets zou willen weten omtrent Groente, Fruit en Tuinafval (GFT)?

- De website van de gemeente en/of gezondheidscentra.
- Internet zoekmachines zoals Google, Altavista, Yahoo etc.
- Folders van de gemeente.
- Brochures van de gemeente.
- De brief van de afval kalender of de afval kalender zelf van de gemeente.

- De kranten. Namelijk de krant:.....
- Tijdschriften. Namelijk het/de tijdschriften):.....
- TV programma's. Namelijk het/de TV programma('s):.....
- Anders:.....

31.

Wat kan de gemeente in de toekomst aan haar initiatieven verbeteren om te zorgen dat u daadwerkelijk (meer) Groente, Fruit en Tuin afval gaat scheiden? Deze vraag gelieve niet open laten.

