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How *green-er* are international students becoming in the Netherlands?
Exploring recycling as pro-environmental behavior among university students

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List of Acronyms

EPI	Environmental Performance Index
GDP	Gross Domestic Product
HESD	Higher education for sustainable development
ISS	International Institute of Social Studies of Erasmus University Rotterdam
ISSP	International Social Survey Programme
MWM	Municipal Waste Management
NUFFIC	Dutch organization for internationalization in education
OECD	Organization for Economic Co-operation and Development
PEBs	Pro-environmental behavior
TPB	Theory of Planned Behavior
TRA	Theory of Reasoned Action
WPB	Waste Prevention Behavior
CE	Circular Economy
HMS	Haagse Milieu Service (Hague Environment Service)
HAP	Household waste plan

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Abstract

Current household consumption including the immense waste that it carries, accounts as one of the highest determinants of environmental impact and subsequently climate change due to methane generation of burned material. Recycling behavior then is one of the main solutions towards such consumption for which becomes essential to understand more and more the drivers of pro-environmental recycling behavior. Its understanding could predict barriers towards mitigation and resilience. Usually university students are not the subject of recycling empirical studies. Therefore, this paper analyses university students from the International Institute of Social Studies of Erasmus Rotterdam University and whether their recycling behavior has changed while residing in The Netherlands and specifically under the local environmental policies of The Hague.

Environmental behavior can be analyzed in a wide variety of forms. This paper focus on the interplay and synergy of internal and external factors that influence pro-environmental behavior. Through a mixed methodology research including an online survey, semi-structured interview to students, environmental policy advisors of the Municipality of THe Hague and student residence managers this research paper will then answer whether behavioral changes is proved through an amalgamation of internal and external factors and the influence of policy instruments.

A positive behavioral change was perceived among students, nonetheless, it was only under certain circumstances and conditions that this occurred. Hence, it is necessary that internal and external factors are deeper analyzed when policy making is being carried.

Relevance for Development Studies

This research contributes to the understanding of pro-environmental behaviour drawing from an empirical research among international students. A variety of forms, can explain what triggers pro-environmental behaviour nonetheless, this paper analyses recycling as the main pro-environmental behaviour. It also analyses whether internal and external factors and policy instruments determine pro-environmental behaviours in an international environment within a developed country. Thus, it delves into the form of development among waste management policies.

Key words

International university students, The Hague, recycling, pro-environmental behavior, waste management and waste generation, external and internal factors

Chapter I.   Introduction: waste?

In 2014, the *Living Planet Report* from the WWF claimed that "current consumption is the equivalent of the output that could be sustained by one and a half planets each year" (qtd. in Vira 2015: 768). It explains that if current high consumption continues at the rate it does exploiting natural resources, then humans will need soon extra planets to inhabit, unrealistically. Typically, reports on consumption are related to the pressure of population growth as an exponential increase in consumption patterns (Vira 2015: 767). Similarly, the OECD report (2011) assured that the current household consumption including the immense waste that it carries, accounts as one of the highest determinants of environmental impact and subsequently climate change due to methane generation of burned material (2011: 23, Solid Waste Management 2017). Waste generation at the household level has been praised as the third most devastating negative flow of resources. The most common waste management is carried by dumps, landfills and open spaces for burning waste (Sperl 2016: 7).

Waste generation is not only devastating for the environment but it is a major health and safety problem especially in the developing world (Solid Waste Management 2017). Then, the global environmental discourse within the last decade has been directed to sustainable development, consumption, waste management and production with high attention to policy making (OECD 2008: 6). Waste management is in many countries politically contested, specially when there is a poor management system which is then " reflected in citizen's votes" (qtd. In Sperl 2016: 20-21). Industrial countries , international cooperation and the World Bank among others are financing several projects to improve waste management in developing countries offering sustainable and clean environments (Solid Waste Management 2017). The norm is that urban poor populations are the most affected by poor waste management (Ibid.). Hence, sustainable growth includes clean environments where recycling and waste management is essential. But how is waste being managed in developed countries?

In this regard, The Netherlands has allocated its economy and policies towards a more sustainable path focusing on cleaner energies, less polluted cities and more sustainable life-styles. Here, different types of waste are being transformed into reusable products, an approached also known as the circular economy. There is a common green image of the country spreaded internationally. This is reflected by ranking between the eight less polluting countries in Europe in relation to household emissions being the forerunner in waste management among municipalities within the European Union (Sperl 2016: 20, Milios 2013: 6). Furthermore, Holland ranks among the highest percentages of household recycling in the world (Guerin, Crete and Mercier 2001: 208).

Despite of the positive trends, the country has curiously, only decreased the national total greenhouse emissions by 15% since 1990 (in Million tones) vis-à-vis ranking one the 30 largest market consumers in the world (Eurostat 2018). Such numbers reveal that measures partaken in the country to increase sustainability or decrease greenhouse emissions are not sufficient in contrast with other great European pollutant countries like Germany or France. Their greenhouse emissions have decreased to 26% and 14% respectively (Ibid.). The Netherlands, although pioneering in reusing food for biogas or compost is performing very

unhurried on the prevention of waste generation (Ibid.). Moreover, municipal waste collected in Holland has a 90% of successful energy recovered due to the special treatment given to it (Sperl 2016: 20). Nonetheless, recycling and composting rate goals set from the Government since 2006 at 60% have not been met so far (Ibid.)

Thus, it is seems to be an incongruence between the green image of the country, the environmental policies and the results in statistics. As mentioned by the Office head of the CE at the municipality of Den Haag " *We are conscious and proud of belonging to still a very green country but we are also conscious that there is a lot more to do, especially since we have just entered into the Circular Economy side"*.

Furthermore, the norm of waste management and recycling analysis has been focused at the national level dealing with issues among household behavior and consumption (OECD 2008: 6). Commonly, middle-income families and one-single family are the target groups inquiried because they represent the majority of countries' populations and household size has a significant effect on how much waste is generated (OECD 2014: 9). The common questions that analyst poses is how they are influenced by environmental policies and which instrument are necessary to influence on household behavior (OECD 2008: 8).

University students has been less targeted by empirical research on recycling and waste management. Yet if students are considered the future of environmental change, hence, universities as schools have the important duty to implement sustainability beyond conceptual boundaries and recreate sustainability in pragmatic forms (Zsóka, Szerényi, Széchy and Kocsis 2013: 126). The inquiry that triggered this research is the outcome of being myself an international student from Development Studies living in The Hague. The first impression that a foreign student like me gets, is that dutch cities are very clean and that recycling is part of their culture. After living here for the past five years has allowed me to comprehend how different recycling systems work and until certain extent how to organise myself in a more sustainable way. Nonetheless, I often wonder if the same process has been experienced by the majority of my fellow international students. I also ask myself whether the fact that my residence period here is very extended is the main component of my increased knowledge and awareness regarding the environment. For me, it was not an easy task to be integrated into the recycling system of the city. Often, my efforts were high in order to obtain more information about recycling or composting. Thus, I wonder how are then development discourses and policies integrating international students? Are they taken into account international students, migrants, expats when policy making? Do international students changed their behaviour while residing here? What kind of environmental development is being promoted? Who are the different actors involved in policy making?

If the Dutch government is aiming to pursue a higher sustainability approach and in a more successful outcome their goals of transforming its current economy into a circular economy; it is relevant that different actors are deeper engaged and environmental policies are more adequate implemented among a wider audiences like international students. At the same time, it is relevant to analyzed beyond these sustainable discourses motivations. As a Master student of Development Studies myself, I have understood that development works throughout discursive ways where sustainability should be deeper investigated and not taken for granted. Hence, in a world of limited resources but dependent on economic growth is important to ask political economic questions as Vira claims: "Who gets to decide which types of development pathways are acceptable in a resource-constrained world, and how are these decisions fought

over, negotiated and contested within an unequal global political economy?" (2015: 768). It becomes relevant then to understand what triggers or limit university students to behave more environmentally friend and recycle and whether there is an institutional influence embedded in this process.

Therefore, this empirical research aims to understand until what extent international students are akin to more pro-environmental behaviours while residing in the Netherlands. To answer this question, the scope of this paper has predetermined recycling as the specific behavior to be analyzed among university students. (Foot note: This selection will be further explained in chapter III and IV)

The norm when analyzing environmental behavior has been through the determination of external or internal factors while often less an intensified synergy between both. Knowledge and education have and remain the more important factors attributed to behavioral change. Knowledge not always means action hence the literature often reframes this as the *value-action gap*. To bridge this gap more "individual, social, and institutional constraints" as a synergy between internal and external factors should be entailed when analyzing behavior (Kollmuss and Agyeman 2010: 247). Thus, this research paper will also contribute to a wider analysis of the different models analyzing environmental behavior while analyzing a synergy between internal as external factors. A topic further explained in chapter II.

For a better analysis of institutional constraints, a brief analysis of dutch environmentalism reflected on policies has been constructed in chapter III. Such information will be helpful to contextualize how different environmental policies have emerged and whether certain policy instruments influence recycling behavior.

This research was the result of a variety of methodologies employed to understand the following research questions: whether behavioral changes can be proven through the influence of micro factors, policy instruments and time of residence. Until what extent environmental consciousness becomes ingrained on international students while living here? Do they adapt easily to local environmental activities or policies? Is it an institutional concern? Are students changing their environmental behavior?

Master students from the Institute of Social Studies from Erasmus Rotterdam University living in The Hague, have been selected to answer these inquiries. The cohort group selected was the batch group of 2016-2017 because of their multicultural background, easinnes on being reached and longer period of residence in The Hague. Nonetheless, the new batch group of students namely 2017-2018 has been selected to respond the survey as a point of reference to the answers of the main cohort group. The main methodology tool was an online survey among the students. As complement, semi-structured interviews on 12 Master students from the main cohort group were conducted as well as expert interviews about students residencies management and waste management of The Hague Municipality. The methodology will be mainly explained in chapter IV.

In this light, I will attempt to contribute to the debates on how internal and external factors influence behavior in different levels answering the question on the *value-action gap* and to start opening up spaces for new ways of thinking on recycling behavior and the integration and importance of international students in development and environmental policies. Aspects analyzed further in chapter V and chapter VI.

Limitations of the research

For a better scope of the research, the investigation will be limited for Master Students and not the rest of residents from the residence buildings analyzed. This is due to time availability for the research and the length of time that the other residents have spent in The Netherlands. For example, PHD students spend about 1 to 2 years in the country and other visiting researchers spend only a couple of months in the country. Hence, Master Students become a quantifiable unit of analysis as subject of this empirical research.

When designing the methodology, both cohort groups were asked the same questions. However, the expected participation of the new batch group within the survey was not met. For which the new batch group was not considered a control group but rather an essential point of reference for explaining factors that have not changed as students spend more time in The Netherlands. Further explanations is given in chapter IV.

The highest number of answers range between 26 and 35 years-old-participants whereas youngest and oldest participants were few answers yet this research focal point was not measuring age as a sole variable hence all the answers regardless of the age where merged within the findings and discussion.

At the same time, this paper scope has been limited to recycling as a solely dimension within waste management analyzed through the different methodologies used. For future research, an extended dimensional analysis can be implemented on the same cohort for example on consumption patterns.

Finally, this research was not focused on the environmental impact of the student's behaviors because loading reduction would have taken longer time for research and other methodologies. In regards to the methodology of analysis, Steg and Vlek mentioned "factor analyses revealed that individuals are fairly inconsistent in their environmental behaviour" (Steg and Vlek 2009: 310), nonetheless, this paper analyses whether the amalgamation of external and internal factors allow international students living in the Netherlands to become more environmentally conscious acting upon these factors.

Chapter II Pro-environmental and recycling behavior

This paper's objective is to test whether international students have changed their environmental behavior while residing in The Netherlands in regards to individual waste management. Thus, this thematic theoretical framework engages in the first section (2.1) with conceptualizing (pro) environmental behavior since its meaning is reflected on the way it has been measured. More and more, individuals seems to be alarmed about environmental issues however, their concern is very incongruent at time for actions. How to measure environmental behavior and such incongruence from traditional models are answers developed in section 2.2. It follows a review of recycling behavior models (2.3) and finally a policy instrument analysis (2.4) useful to interpret the Dutch policies in regards to waste management in Den Haag.

2.1 Conceptualizing environmental and pro-environmental behavior

Environmental behavior has been intensively studied becoming its own field of research (Best and Mayerl 2013: 691). In the past 40 years, different scholars especially socio-psychologist have defined environmental behaviour, however, there is a lacking conceptual and rather a "vague" definition for such behaviour (Best and Mayerl 2013: 692). It has being principally described as environmental changes suffered under human impact (Krajhanzl 2010: 251-252). Sawitri,

Hadiyanto and Hadi described those changes as conscious acts (2015: 28) while Stern defined them as actions indirectly altering the "structure and dynamics of ecosystems" (2000: 408). Such definitions denote a negative impact, however environmental behavior usually carries a green, friendly and positive baggage. To differentiate both connotations, most recent studies have labeled those as Pro Environmental Behaviors (PEBs)[1]. The suffix *pro* denotes a positive, responsible or protective attitude (Krajhanzl 2010: 252). However, different studies encountered mixed results depending on the author's criteria about defining and measuring PEBs. Both, intentional environmentally friendly or very destructive actions could be found under the same *pro environmental* umbrella (Krajhanzl 2010: 252-253). As next defined:

> "Pro-environmental behavior is conscious actions performed by an individual so as to lessen the negative impact of human activities on the environment or and to enhance the quality of the environment" (Sawitri, Hadiyanto and Hadi 2015: 28)

In their analysis, home recycling are examples of PEBs lessening the impact of human activities. Kurisu through his environmental psychologist expertise created a descriptive and conceptual guide of PEBs summarized from different studies coming from British and American environmental agencies. One of the main PEBs was *enhancement of composting and recycling* as the appropriate separation of material matching the behaviors analyzed within this research (2015: 19-20).

In the remainder of this paper, PEBs will be then referred to actions decreasing negative impact because the exact impacts are not part if this paper's goal and measurement. Hence, decreasing the use of landfills in The Netherlands through individual waste management is this paper focus**.** Then, what motivates individuals to engage in actions that impact less the environment? When do individuals change their behavior and how to measure it? The following sub-section answers this by delving into insights from different disciplines and models where people's motivation behind recycling behaviors have been captured.

2.2 Analyzing pro-environmental behavior

The last decade has seen a plethora of empirical research done on behavior mainly from a socio-psychological perspective. Disciplines like sociology, economy and geography have also attempted to study human behavior however, social psychology seems to be repeatedly correlated to most behavioral research (Ibid., Krajhanzl 2010: 252; Turaga, Howarth and Borsuk 2010: 211). In the 70s, Ajzen and Fishbein revolutionized research on behavior analysis by developing the TRA,[2] the first model that predicted behavior. It indicated that actions are carried by intentions depending on the attitude towards the behavior and under subjective norms (Kollmuss and Agyeman 2010:243). TRA has been widely criticized due to its narrowed implication that behavior is exclusively originated by a high correlation with intention (Hardgrave, Davis & Riemenschneider 2003: 34). The theory as well was limited since not every action can be explained through intentions (Kurisu 2015: 51). As well as it cannot measure the real impact of environmental loading therefore it is an incomplete predictor of behavior (Bortoleto, Kurisu, Hanaki 2012: 2197).

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[1]See Tucker and Speirs 2003, Best and Mayerl 2013, Bortoleto, Kurisu, and Hanaki 2012.

[2] Theory of Reasonned Action

In 1991 Ajzen extended his previous model into the TPB[3] where values, beliefs, subjective norms and behavioral control (new component) is what shape our intentions resulting into behavior (Kurisu 2015: 50-51). In others words, the model emphasized on the actor's belief on the likelihood of performing and controlling its own actions. In Hardgrave, Davis & Riemenschneider's review of both models, TPB lacks an analysis of obstacles that could limit an individual's own control of actions as well as TPB's limited scope where other variables were not taken into account (2003: 37). Yet TPB has been praised as the most dominant and beneficial model in successful social-psychology research on consumption and smoking (Ajzen, Joyce Sheikh and Cote 2011, Kollmuss and Agyeman 2010, Sawitri, Hadiyanto and Hadi 2015, Taylor and Todd 1995). The theory has been specially applied to waste management and recycling behavior analysis (Hardgrave, Davis & Riemenschneider 2003: 30).

Both theories TRA and TPB became the milestone of social behavior research because researchers were able to develop mathematical equations and models predicting behavior, something has not been before developed which explains its popularity until today (Kollmuss and Agyeman 2010: 243). The main critic over both theories has been directed to their constricted justification of behaviors under psychological rational explanations. It meant that individuals strongly related to nature or possessing environmental education were supposed to protect the environment acting rationally according to their knowledge possession (Kollmuss and Agyeman 2010: 241, 246). Other fields of research like sociologist, in contrast to psychologist defended that rationality it is indeed a component that drives our actions, however, existing infrastructures, policies or institutional commands control as well our power of decision. Sociologist then affirmed that the issue lies in that "power to make a significant difference, ... to global or even local environmental change, is immensely unevenly distributed" (qtd. In Kollmuss and Agyeman 2010: 247). Hence, knowledge presupposes action for instance individuals with knowledge about recycling are expected to recycle. Such logic of knowledge is used by governments often when designing policies as well. Certainly, behavior is not only driven by knowledge as shown in various studies (Tucker and Speirs 2010: 290, Best and Mayerl: 2013). It is also driven by the extent of a person's knowledge (Ahmad, Bazmi, Bhutto, Shahzadi et al. 2016). The eternal scholarly challenge thus, has been to find an appropriate model that explains to the incongruity between knowledge and attitudes vs actions since often they differ (Kollmuss and Agyeman 2010: 242). To this incongruence, Blake theorized the value-action gap implying the existent gap between what people belief and their knowledge and the uncorrelated low levels of action (Blake 1999: 264). This has often been a debate between psychologist and geographers because the former places rationality, knowledge and "human agency as the key determinant of action" thus, geographers like Blake have expanded on understanding how knowledge is distributed and perceived (Kollmuss and Agyeman 2010: 247, Barr 2003: 228-229). Blake's analysis on the gap was concluded that behavior analysis usually dismiss "individual, social, and institutional constraints" (Kollmuss and Agyeman 2010: 247).

As a result of the linear rational models, various scholars have attempted to create non-linear models exploring more variables. Blake, emphasized the need to link social institutions and their influence on human behavior (1999: 265). Lynn extended that behavior cannot be

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[3] Theory of Planned Behavior

isolated and determined by a single dimension neither narrowed by only cognitive elements or attitudes, hence a multi-dimensionally analysis conducted by a variety of factors is necessary (2014: 2). Other sociologist sought to study behavior from a multi-dimensional form establishing that behaviors are no static but rather they are "negotiated, transitory and sometimes contradictory" for which they cannot be considered within a linear model (qtd. in Kollmuss and Agyeman 2002: 247). Kollmuss and Agyeman's work is the synthesis of a variety of linear and other analytical frameworks. As a result, they constructed an integrative internal-external[4] model where a synergy between a classification of both factors excel PEBs. In their model, they identified various factors either positive or negative. The factors consisted of knowledge, gender, motivation, values, attitudes, feeling of responsibility and political, social, economic and cultural situations. The wider arrows explain the direct influence of positive factors in exceling PEBs whereas the black boxes represent possible barriers as explained in Figure 1 (2002: 248, 256-257). In their model, external factors can either influence directly actions or they can influence internal factors that result into behavior change. They deduced that knowledge does not influence directly behavior since it is very likely that people acting environmentally friendly do not necessary possess environmental knowledge. In addition, they emphasized on "old behavior patterns" as an important and usually dismissed factor in behavioral analysis (Kollmuss and Agyeman 2002: 257). The internal-external factors division has been widely used. According to the OECD report an individual (internal) and contextual (external) factor-study is essential to the increase of human impact mitigation on the environment (2011: 23). Lynn agreed on the difficulty of placing when and how factors developed. Thus far, it is easier to analyze interactions among different factors known as "subject of empirical" inquiries like this paper (2014: 3). Notwithstanding, Kollmuss and Agyeman's model does not prescribe a definitive answer to the knowledge-behavior gap but, rather it is an important indicator of the complex and wide range of factors that interplay with behavior and a guide of analytical tools (2002: 240). This paper literature review is an amalgamation of Kollmuss and Agyeman model of PEBs in addition to specific recycling behavior described in the following subsection.

2.3. Models measuring recycling behavior

Recycling behavior studies are mostly based on empirical research and surveyed participants regardless of the cohort type chosen. This is an evident fact throughout most of the authors analyzed within this literature review. TPB represents a constant tool in recycling behavior research however; it is never an isolated constant. TPB can be applied as a "systematic framework to investigate causes and effects that various factors" cause among actions (Ahmad, Bazmi, Bhutto, Shahzadi et al. 2016: 255). The theory scope allows authors to insert other variables beyond attitudes as Ajzen already recognized when applying TRA and TPB (Ahmad, Bazmi, Bhutto, Shahzadi et al. 2016: 256). Thus, most of empirical research has demonstrated that elements from TPB influence behavior in connection with other internal or external factors as will be described in the following paragraph.

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[4] In combination with socio-demographic factors

Figure 1 Pro-environmental behavior model (Kollmuss and Agyeman 2002: 257)

Internal factors are related to personal decisions and situations. Gender and age are common internal factors researched empirically related to environmental behavior (Franzen and Vogl 2013, OECD 2008). These socio-demographic factors releases mixed and sometimes insignificant correlations and influence on PEBs. Yet, both are main demographic factors studied within behavior change (Kollmuss and Agyeman 2002: 248). On one hand, women are considered largely more environmentally conscious versus men due to more emotional engagement, nonetheless there are often cases where men perform increased PEBs (Kollmuss and Agyeman 2002, Kurisu 2015, Bortoleto, Kurisu and Hanaki 2012). Barr (2003) studied public recycling systems in Exeter a southwest English city. He analyzed the relationship between situational, knowledge and psychological factors affecting recycling behavior. Situational factors as gender and age did not augmented recycling behavior but it did among waste prevention although his report lacked explanations on the former results (Barr 2003: 235-237). On the other hand, aging supposedly transforms people's environmentally consciousness yet individuals could also change their behavior depending on the concerns of the society they are living in (qtd. in Kurisu 2015: 39). On the other hand, in Kurisu's book other studies showed that younger people were more conscious about environmental conservation than adults (2015: 40). For example, Zsóka, Szerényi, Széchy and Kocsis found that university students were more willing to engage in simple activities like recycling as long as it does not alter their daily habits (2013: 127). Another important demographic sector is situational conditions as place of living. Such element is until certain extent measured in socio-economic factors for example at the

OECD report where the difference between rural-urban contexts provides evidence of higher recycling trends among rural places (2008: 37). Thus, gender, age and situational conditions like do not strictly influence behavior according to common ideas about both factors still they are points of significance statistic to predict recycling behavior.

Knowledge, information and education are also incongruent factors in the literature since it is often assume that higher education and environmentally consciousness leads to positive behaviors especially in consumerism (Zsóka, Szerényi, Széchy and Kocsis 2013: 128). It is often assumed that knowledge make people reflect and consequently act (Barr 2003: 228). Barr also explained that general knowledge about environmental preservation is not enough hence it is important rather the way knowledge is understood and used which is what generated PEBs in Exeter (Barr 2003: 237). It has been argued as well that knowledge releases mixed results. For knowledge or a campaign to become a social norm policies then shall transmit the information clearly and concise for inhabitants to engage with it (Barr 2003: 237). Yet deeper knowledge about environmental problems does influence positively people's behavior (Barr 2003: 237-238, Vicente-Molina, Fernandez-Sainz and Izagirre-Olaizola 2013: 130). Relation towards the environment can be represented as the role of environmental concern and attitudes. According to some authors a very positive relation results in positive PEB (Steg and Vlek 2009: 311). On the other hand, other authors like Krajhanzl affirm that a positive relationship is not mutually exclusive to an automatically more protective behavior (2010: 260). Through Best and Mayerl analysis on German household recycling behavior it was concluded that environmental concern is a "poor" tool to influence actions (2013: 710). This is because even though intentions may be higher, if knowledge released in campaigns is not explicit about recycling hence it limits positive results (2013: 711). Education, knowledge and consciousness then seems to be neither enough nor insufficient to influence on environmental behavioral, nevertheless, it is an important element to be considered in addition to other factors and in the use of TPB.

Use of TPB positively on internal factors can be found in a plethora of research (Taylor and Todd 1995, Ahmad, Bazmi, Bhutto, Shahzadi et al. 2016, Sawitri, Hadiyanto and Hadi 2015, Best and Mayerl 2013). According to such studies it was argued that TPB shall not be evaluated through an individual factor where attitudes dominate behavior, rather it is necessary an extension of factors assessment. Ahmad, Bazmi, Bhutto, Shahzadi et al. concluded that prior recycling experience and habits are relevant to enhance PEBs in addition to TPB elements (2016: 259). Even though habits are part of a cognitive process and usually not a rational choice this element influence PEBs in higher percentages as also demonstrated in Steg and Vlek (2009: 312). For other authors, habits represent a barrier as well because they could be easily "forgotten" especially if facilities are not there (qtd. in Kurisu 2015: 28, Kollmuss and Agyeman 2002: 257). TPB and norms influence directly recycling behavior. Subjective or injunctive norm is what we think others will approve or not, usually, followed by sanctions when such norms are violated (Kurisu 2015: 30- 31). Norms represent what it is morally "ought to be done" (Cialdini, Reno and Kallgren 1990: 1015). Barr concluded that norms influence recycling behavior as long as the norm is acknowledged (2003: 235). On the contrary, Taylor and Todd argued that subjective norms do not influence recycling behavior directly since many recycling programs are part of peoples' routine and not a social norm (1995: 619-622). Finally, by internal factors cost and benefits are also studied. From different studies it was argued that less recycling engagement is not only about financial limitations. It is actually about cost of effort, which is not

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always dependent on the benefit of the environment but rather on the convenience like infrastructure or benefits (Kurisu 2015: 7). Hence, external factors influence behavior as long as certain conditions and contexts are interplaying.

External behavior factors have been as well widely analyzed referring to what surrounds individuals akin to culture, social (beliefs), infrastructure, economy among others (Krajhanzl 2010: 257). Policies are considered external factors that result into norms or incentives (Steg and Vlek 2009: 314). Ajzen, (1975) explained that these norms should be tested and included in questionnaires to understand further how norms are engrained in social behavior, part of this paper´s methodology (Kurisu 2015: 31). The OECD (2008) developed a meta-analysis across the US, Sweden and South Korea focusing mostly on household recycling matters. The most effective factors were mandatory recycling by using curbside systems and economic incentives in forms of pricing users when throwing away waste (2008:36). Whereas in certain American communities free recycling systems did not increase recycling behaviors than mandatory curbside pick-up (OECD 2008: 37). An Italian report showed that people were exceptionally engaged in recycling free activities as long as it was a cultural event (Crociata, Agovino and Sacco 2015: 42). Individuals copy other people's actions which make participation rates increase (Cialdini, Reno and Kallgren 1990: 1015). Thus, Italians participants claimed that culture has a higher impact on society's recycling decisions because people acquire more "open-mindedness" and higher consciousness while interacting in cultural events (2015: 42, 45). In Sweden, recycling is also a cultural habit, which combined with fixed pricing on disposal users; it is the most influential factor on recycling (OECD 2008: 38-39). Hence, recycling also partake in cultural norms as well as institutional factors arise in the form of incentives or subsidies (Kurisu 2015: 43). Social norms in addition to TPB also release interesting outcomes. In Ahmad, Bazmi, Bhutto, Shahzadi et al. social norms work as an "outstanding power" that influences directly attitudes more than environmental awareness (2016: 256). Thus, social standards like the cultural habits have a higher influence in recycling (Ahmad, Bazmi, Bhutto, Shahzadi et al 2016: 257). Nevertheless, for effective environmental policies results it is necessary to include incentives (Turaga, Howart and Borsuk argued 2010:221). Kurisu claimed that in Japan's biggest cities people have to pay higher fees for plastic bag while they obtain different subsidies on recycling actions (Kurisu 2015: 43).

TPB in addition to other factors has been also implemented in recycling behavior research. Different studies have pointed out that facilities are predominantly influencing recycling attitudes in addition with a TPB framework. In Barr's conclusion, value given to the environment and attitudes were not as relevant as house size, accessibility and knowledge within recycling (2003: 235). In Exeter situational factors like higher access to recycling programs conducted individuals attitudes to recycle especially when the effort was little and very convenient as in curbside recycling programs (2003: 219, 239). The same result was found in Tongle's research about household recycling behavior in Brixworth, England. He used TPB to determine different factors of recycling behavior and concluded that opportunities and facilities as well as caring about the community increase recycling behavior (2004: 43-46). It was the same outcome by Steg and Vlek where recycling facilities distance is a relevant factor (Steg and Vlek 2009: 311). Kurisu determined that accessibility to recycling bins or boxes motivates people's attitudes to recycling (2015: 43). Blake, one of the main researchers on behavior, affirmed that one of the main barriers for humans to excel PEBs is practicality including

infrastructure (Kollmuss and Agyeman 2002: 247). When infrastructure is very limited this has a higher negative effect to people whose concern in the environment are already little. Thus, this group of people will usually not make higher efforts in separating or recycling their waste (Ibid.) Accessibility is one of the main external factors that increase PEBs and for the sake of our research: facilities, access and services will be held under the category of infrastructure. Among other studies, infrastructure is integrated in institutional factors which is the same relation maintained within this paper (Kollmuss and Agyeman 2002: 248).

Education, as well as knowledge distribution is still a potential trigger of environmental concern among students yet in activities that do not require a lot of "effort and inconvenience" (Zsóka, Szerényi, Széchy and Kocsis 2013: 127). Knowledge is believed to influence behavior, which is the main dilemma of the value action gap. To exhort people to recycle more it is necessary that the recycling ideas are "convenient, visible and rewarding" because recycling at the end of the spectrum turns into a moral responsibility and hence, it is an individual decision that is certainly influenced under policies (Bortoleto, Kurisu, Hanaki 2012: 2196). Hence, sometimes, monetary incentives are not enough versus a moral responsibility because in the end they could cause a "motivational crowding out" if it is not a constant in daily activities (Crociata, Agovino and Sacco 2015: 41). Any, methodology that tries to change behavior is advised to focus mainly and carefully on the distribution of knowledge since knowledge alone does not warrant any behavioral change (Kollmuss and Agyeman 2002: 242). A good example of effective results on knowledge distribution is found in Kaiser und Fuher (2003) where knowledge provision was released in a *"declarative, procedural, effectiveness and social"* form (Kurisu 2015: 35) According to the authors, the amount of knowledge is not important as a strong concentration of different knowledges merging (Ibid.). (FOOT NOTE: See more details in Kaiser and Fuhrer (2003) on Ecological Behavior's Dependency on Different Forms of Knowledge) Declarative knowledge exposes the environmental problem whereas procedural is the explanation of how the process works both types are relevant within recycling behavior (Ibid.). Effectiveness on knowledge provision means releasing specific information about the benefits of the behavior expected. Social refers to social norms as above-mentioned (Ibd.).

2.4 Describing significant policy instruments for successful policies

Individuals' actions affect directly the environment as above mentioned, so does environmental policies but indirectly (Stern 2000:408). Blake argued that inclusion of institutional coercion like norms; policies or campaigns are utterly relevant for PEB change. However, information provision and its approach must be handle in particular ways or else it could hamper the desired results (Blake 199: 274, Kollmuss and Agyeman 2002: 257). Thus, this section expands briefly on particular policy instruments suitable for successful environmental policies.

Most of policies stimulating PEBs are based on educational campaigns. Nonetheless, they also limit behavioral change results when the information provided is not completely grasped making participation rates decrease. To this Blake named a "deficit of information" within "model of participation" when policy-makers assume that scientific information make people be more engaged in environmentalist practices and the desired results are very different (1999: 261, 273). His conclusion came from a revision of a supranational environmental initiative vs. a local one in the UK. He found that local initiatives were created by bottom-up

inputs like those coming from individuals and communal participation aligned with the needs of that community. Whereas the supranational activities offered simple information and long-term campaigns based principally on a "prescribed code of behaviour" from expertise on environmental topics (1999: 258, 259, 260). Certainly, the results were more favorable at the bottom-up participation because the other initiatives had deficit of important information. Thus, Blake emphasized that a higher contact and involvement with local and community organizations breaches the value-action gap[5] of knowledge-behavior and encourage more PEBs since their inputs will be aligned with bottom-up necessities and a more "equitable distribution of responsibility" (1999: 274).

In addition, Blake mentioned that a principle of campaigns and policies is that change occurs through a cognitive system and a learning process, where the level of comprehension must be considered when policies are delivered (1999: 261). Wolsink conducted a good example of analysis of cognitive process and policy implementation. He analyzed the learning process over three different environmental conflicts due to policy implementation in the Netherlands for which he claimed that the problem lies at the institutional capacity of adopting appropriate cognitive processes (2010: 308-310). His main findings informed that the policy design lacked diversity as "variables of local identities" something to be included in policy-making similar to Blake's findings (Ibid.). He concluded that sometimes community-based initiatives can lead to better results even though there is a high probability of conflict between "technocracy versus deliberation" (Ibid.). Moreover, policies of spatial planning as in waste disposal services should trigger environmental conflicts or prevent people from crowding out of such systems if the information is not well conveyed to the citizens (Wolsink 2010: 308). Finally, his analysis was based on historical components of common pool management paths as well as political and economic structures of the country (2010: 306- 310). A similar approach will be taken in our briefly review of environmental policies in The Hague.

Moreover, the learning process or policy implementation will succeed when individuals firstly accept its rules or norms (Wolsink 2010: 302). Barr concluded the same analysis in his analytical study between environmental policies and citizens participation in Exeter. If norms will be accepted, conjointly under certain conditions as Barr´s summarized (2003: 237 – 238):

- Convenience is maximized and effort minimized
- Well informed citizens of the urgency of environmental participation
- Well informed citizens of what, how and where to recycle
- "Efficient communication of local facilities"

Accordingly, if the rules of the game are fairly and clearly presented and various individuals start performing the expected behavior, hence such a phenomenon becomes a normative behavior or subjective norm (Barr 2003: 238). Subsequently, there are two special components that that transform rules into normative behavior. Firstly, Barr found that Exeter citizens were akin to more PEBs when they understood the sustainable development and agenda of the local authorities (2003: 237). Finally, Barr recommends that campaigns or policies should be based on scientific research (2003: 238). This contradicts Blake argument against scientific research

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[5] The same value-action gap explained in 2.2

as above mentioned, yet both studies concluded that information provision should be handled as cognitive processes and not as a linear knowledge-action reaction.

Furthermore, studies that assessed macro levels ponder upon and measure the effectiveness of environmental policies however; this paper reflects about the practicalities of Dutch and mainly The Hague environmental policies. In the last decade, legislative means have shaped the waste management schema among many European countries promoting the reuse, recycle and recover of materials (Pires, Martinho and Chang 2011: 1036). The schema has been attributed as policy instruments that serve as a regulatory and economic body for instance in landfill taxes (Costa, Massard and Agarwal 2010: 817). Such instruments contribute not only to the environment but also are seen as key for sustainable growth and development (Pires, Martinho and Chang 2011: 1043-1036). What is lacking in the behavior research field and policy design is preventing waste. The little research done on this matter has been focused more on the consumerist side rather than in the prevention and avoidance of waste generation (Bortoleto, Kurisu, Hanaki 2012: 2195-2196). The mixed results show important aspects for policy makers to develop more participation of people in recycling behaviors (Ibid.). Hence, this paper expands into an integration of Barr, Blake and Wolsink´s analysis of the 3 policy instruments that influence environmental behavior in both geographical spaces described in the following chapter (III).

In sum, the multidimensional analysis within this chapter expanded on the triggers of pro-environmental behavior, which lately will be implemented in the methodology. This paper's focus is not measuring the impact of human actions but rather behavior that lessens human impact as the level of participation in recycling due to different factors. Moreover, the challenging endeavors of this paper are the integration of the extensive yet practical mode of analyzing internal as external factors. By internal factors it will be measured: gender, age, knowledge, past habits and norms while within external factors[6]: policies, norms facilities and knowledge provision among the immense multicultural variety of Master Students at the ISS and the integration of Blake, Wolsink and Barr's policy analysis. All these efforts will serve to unfold variables among recycling pro-environmental behaviors and contribute as a non-equational answer to Blake´s (1999) value-action gap.

Chapter III. The Dutch environmentalism

Historically, the Dutch way of doing policy in the economic and environmental domains has been principally characterized by "accommodation" and innovation of new systems amidst economic and environmental crisis (Hajer 1999: 175-176). This section deals with a brief review of Dutch environmental policies and lastly a description of specific recycling policies in The Hague.

3.1 The starting point: ecological modernization
The accelerated industrial progress that resulted into high peaks of environmental air pollution, acidic rain, nuclear risk with smoggy cities in the 70s accelerated economic uneasiness within the Dutch State (Hajer 1999: 176, 178, Martinez-Alier 2003: 4). By the time,

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[6] This aspect will be inserted in chapter 5 under discussion

the Club of Rome doctrine alerted the world that before a global collapse appears, there must be a shift of a "steady state of economic and ecological equilibrium" otherwise economic problem will limit growth (Hajer 1995: 84). Thus, the Dutch environmental discourse hand in hand influenced by internal and external pressures has accommodated ever since its policy planning in favor of the environment yet for the sake of economic progress (Hajer 1999: 179-180). Historically, the Dutch State is characterized by an expanded welfare state system under liberal doctrines of "economic efficiency, responsiveness, and freedom of choice" in the hands of a neo-liberal wave of de-regulation and privatized and market oriented systems (Van der Veen and Trommel 1999: 296, 308). Ever since, a series of environmental frameworks took form were environmental protection was primordial along with economic growth because "clean environment was... a precondition for further economic growth" (Hajer 1995: 185). Then, the Dutch way of policy planning has permanently sought to strengthen its position as a world economy and environmental innovation leader while dismantling its fragile geographical position (Hajer 1995: 259). To the environmental innovative policies and framework, Martinez-Allier classified them, as a type of environmentalism called the *Gospel of eco-efficiency* where a smart and high-controlled use of the nature prevails in all the sectors from industries to agriculture (2003: 14). This is part of the ecological modernization that the Dutch environmental policy planning has promoted where clean technologies, industrial ecology and sustainability increases economic growth (Martinez-Alier 2003: 14, Wolsink 2010: 303). Thus, the *gospel of eco-efficiency* has been expanded into modern frameworks like the circular economy (CE) where an innovation is the main institutional domain explained in the following subsection.

3.2 The modern approach: *Circular economy, a paradigm shift?*

Even though the European Union and the Dutch Government established a transitioning agenda into a circular economy in 2008 and mostly implemented into policies since 2015; such concept is not entirely new. In the last decade, the CE has become a milestone for policy makers, business models as well as within the academia regarding development strategies. The circular economy was born against the traditional linear development that deals with resources as "take-make-dispose" (Gregson, Crang, Fuller and Holmes: 2015, 219). Within the CE, it follows a circular design of waste into raw materials, which reduces dependency on those materials and building prosperity in long terms by bringing interconnectedness and breaking the operating system we are living in.

The term circular was designated through Boulding´s account of the earth as a "circular system with limited assimilative capacity" (Geissdoerfer, Savaget, Bocken and Hultink 2017: 759). The MacArthur Foundation has popularized the concept of the circular economy as a model based on innovation that "aims to redefine products and services to design waste out while minimizing negative impacts" (Hansen n.d.). Other actors like Geissdoerfer, Savaget, Bocken and Hultink (2017) and Prins, Mommadi and Slob (2015) have define the CE as systems that potentially close the loop of overusing materials and energy seeking for alternatives whose results reduces environmental impact while giving the economy a positive effect. In sum, the CE stands for a closed looped of waste production for the sake of protecting the environment.

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Noticeably, the circular economy has sustainability embedded due to its principle of positive impact on the environment and the economy. There is a lack of compatibility, nonetheless, between both concepts that could affect the results longed by the circular economy (Geissdoerfer, Savaget, Bocken and Hultink 2017: 762). One of the most visible difference is that sustainability, foremost seeks to benefit the environment while the CE is focusing on economic actors that use business models which rather place the environment in a second position (Geissdoerfer, Savaget, Bocken and Hultink 2017: 764 -765). It is relevant to understand such lack of compatibility because it could reveal different purposes and objectives of the actors that reproduce a CE framework (Geissdoerfer, Savaget, Bocken and Hultink, 2017: 760). The above-mentioned difference does not imply a lack of concern on the environment within the CE framework. Even though it is stemming from a business perspective. On the other hand, the CE does share a global sense of a sustainable environment and "shared responsibilities" where a condensed participation of various actors is fundamental (Geissdoerfer, Savaget, Bocken and Hultink, 2017: 762).

Waste in the circular economy

The Dutch government adopted the CE approach tackling the most urgent aspects that could lead the economy into a circular system. The Government has been working with a waste disposal hierarchy under prevention, product reuse, waste recovery, incineration and landfill, such hierarchy is known as the Lansink´s Ladder as shown in Figure 2 The prevailing aspect of the ladder is to prevent generation of waste in first place. The hierarchical waste ladder was already implemented in the late 80s in the country because of mainly limited space for waste disposal overall (Wolsink 2010: 305, Recycling.com 2016: n.d.). The rapid population growing resulted into vast populated areas where consumption in general and especially of plastic increased (Ibid.). Therefore, major solutions towards waste disposal had to be implemented. Next to the Lansink´s ladder the Dutch agenda prioritized biomass and food, plastics, manufacturing, construction and consumer goods as main sectors. Yet the focus of the Dutch environmental policy has invested greatly in reducing landfills and incineration, while to a smaller extent in prevention and disposal stages from the ladder (Wolsink 2010: 306).

Figure 2. Waste Hierarchy – Lansink's Ladder (Recycling.com 2016)

Ever since the system has been implemented, the Dutch Government has tried to develop series of programs were recycling and re-use, needs to be enhanced. Dutch politics as well as reports and public opinion do believe that the current recycling system in the country is prosperous (Milios and Reichel 2013: 7-8, ADD SOURCE OF ARTICLE). For instance, by 2010-greenhouse gas, emissions were not exclusively reduced yet they had a less impact because of its transformation into heat and energy (Milios and Reichel 2013: 13-14). In addition, while there has been a decrease in waste production and use of landfills per household since 2008 in the country, these results also show the slow change in contrast with other European countries (Milios and Reichel 2013: 7, Eurostat 2018: n.d.). In the comparison made by the Eurostat, within the European Union countries like Bulgaria ranked among the largest reducers of waste. Whereas The Netherlands ranks among the least countries in reducing significantly waste generation between 1996 and 2016 in kilograms per capita as seen in Table... (Eurostat 2018: n.d.). This is an important difference especially when acknowledging that both countries have exorbitant differences in their economic situations and that their waste management is based on the circular economy framework as well.   These numbers expressed results from the management and collection of waste from each country. Despite the recent implementation of the CE there is an evident discrepancy between the positive image of the country and the final results with other countries. Hence, it becomes relevant to understand the value of waste within these policies.

	1995	2000	2005	2011	2016	change (%) 1995-2016
EU-28	473	521	515	498	480	:
Belgium	455	471	482	456	420	-7.7
Bulgaria	694	612	588	508	404	-41.8
Czech Republic	302	335	289	320	339	12.2
Denmark	521	664	736	781	777	49.2
Germany	623	642	565	626	626	0.5
Estonia	371	453	433	301	376	1.3
Ireland	512	599	731	617	:	:
Greece	303	412	442	503	497	64.0
Spain	505	653	588	485	443	-12.3
France	475	514	530	534	510	7.3
Croatia	:	262	336	384	403	:
Italy	454	509	546	529	495	9.1
Cyprus	595	628	688	672	640	7.6
Latvia	264	271	320	350	410	55.1
Lithuania	426	365	387	442	444	4.2
Luxembourg	587	654	672	666	614	4.5
Hungary	460	446	461	382	379	-17.6
Malta	387	533	623	589	647	67.0
Netherlands	539	598	599	568	520	-3.6
Austria	437	580	575	573	564	29.0
Poland	285	320	319	319	307	7.9
Portugal	352	457	452	490	:	:
Romania	342	355	383	259	261	-23.7
Slovenia	596	513	494	415	466	-21.8
Slovakia	295	254	273	311	348	18.1
Finland	413	502	478	505	504	22.1
Sweden	386	428	477	449	443	14.8
United Kingdom	498	577	581	491	:	:
Iceland	426	462	516	495	656	36.9
Norway	624	613	426	485	754	-32.5
Switzerland	600	656	661	689	720	20.9
Montenegro	:	:	:	544	:	:
Former Yugoslav Republic of Macedonia	:	:	:	357	385	:
Serbia	:	:	:	375	268	:
Turkey	441	465	458	416	426	-9.3
Bosnia and Herzegovina	:	:	:	340	:	:
Kosovo*	:	:	:	:	220	:

(:) data not available
(*) This designation is without prejudice to positions on status, and is in line with UNSCR 1244 and the ICJ Opinion on the Kosovo Declaration of Independence.

Table 1. Municipal waste generated by country in selected years (kg per capita), 1995-2016 (Eurostat 2018)

Nature is a perfect working cycle according to the most prominent literature on the circular economy namely the Ellen MacArthur Foundation. Through the principle of Cradle to Cradle waste is not negative but "waste equals food" (Hansen n.d.). It means that the life cycle of industrial products is expanded when their technical or biological material are separated and reused, recycled or recovered (ibid.). Waste hence is a desirable food. Such principle shows how prevention is focused as a campaign "ascribed" at the disposal level while not focusing on the systemic change of life cycle products (Sperl 2016: 6). Currently, academic literature and policies have favored the term circular economy yet it has been less critically analyzed. As stated before, the Netherlands ranks among the less polluters within the European Union at the household level. Yet waste prevention is yet a huge issue among their development lines. To this, *" The CE has to outgrow the common linear development within our projected 20 years plan, however, we just started"* answered one of the Policy Makers of CE programs in The Hague during the interview as will be best connected in Chapter IV and Chapter V. This paper's goal is not a critical revision of the CE but rather it emphasizes on a

basic context for an easier comprehension and connection between the current environmental policies and the interviews obtained in the methodology section.

3.4 Localizing waste and recycling: environmental policies in The Hague
According to the Eurostat, in 2014 Rotterdam and The Hague belonged to the highest percentage of municipal waste generation among all the Dutch regions (Milios 2013: 10). At the same time, the region had the lowest recycling rates in materials between household level and composting biodegradable material (Ibid.). Interestingly, the region with highest composting rates was Drenthe, which correlates to the highest percentage of rural areas in the country (Ibid.).

The Ministry for Housing, Spatial Planning and the Environment exercises waste management in The Netherlands along with a federal management of each municipality known as the Municipal Waste Management (MWM). The classification of waste into categories is being detailed in Table 1 The Municipality of The Hague (*Gemeente Den Haag)* is then the principal institutional body implementing environmental policies. According to the municipal waste report in 2016, the 500,000 inhabitants in The Hague generate 600 tons of waste daily a number that equals to 1 kilo per person approximately ('Afval scheiden, gewoon apart! Huishoudelijk Afvalplan Den Haag 2016 – 2020' 2015:6). Such results are not only polluting the environment but also aggravating people's health. In this light, the Municipality has created since 2012 a household waste plan named HAP, focusing mainly on sustainable waste management whose latest version runs for the period between 2016 and 2020 (ibid.).

As stated by one of the policy makers of waste management in The Hague "*Our milieu strategy is to stimulate people to separate more waste so we can prevent more waste incineration*" (Foot note: Milieu is translated into English as sustainability). The main goal of the plan is, among other points, summarized as:

- Increase household waste separation as much as possible

- Introduction of new ways of collecting waste and expansion of already existing facilities
- Optimization of waste separation by distributing mini containers individualized

- Separation of waste in high-rise buildings

- Inclusion of all inhabitants of the city in an integrated waste management system

- Inclusion of other actors in the waste management chain

Gemeente Den Haag owns and manages the principal collector of waste (HMS) (FOOT NOTE: Hague Environment Service translation) however, the municipality rent out the underground containers to other private enterprises that handle the post- separation and recycling processes ('Afval scheiden, gewoon apart! Huishoudelijk Afvalplan Den Haag 2016 – 2020' 2015: 11). Since effective waste management contributes to resource, saving thus recycling turns into the major player in the reduction of urban waste stream. The same

categorization of waste within the country is followed at the municipal level as detailed in Table 2 Hence, the waste separation system as well as containers distributed in the city contain this classification.

In The Hague, different activities as pilot-projects have been implemented since 2016 as part of the Circular Economy and the MWM to optimize waste separation however, The Hague continues performing at lower rates. To this one of the policy makers answered "*for the moment, our priority is to reduce the waste burned by encouraging households to separate more but no other main priority like prevention, there are no alternatives until we have results on what is best prevention or reduction*". As a result, The Hague local management is prioritizing the value of valuable resources burned rather than any other point on the ladder. In the city, there is also a differentiated neighborhood and house type system limiting the raise in waste separation. Normally separated waste like paper, glass, textile, and packaging are collected from containers placed in almost every principle neighborhood. There is also the service of picking door-to-door recycling material including compost and chemical material however, it is an extra costly option given preferences to first-floor houses where HMS collector can easily entered into the neighborhood where high-rise buildings are not overall included ('Afval scheiden, gewoon apart! Huishoudelijk Afvalplan Den Haag 2016 – 2020' 2015: 9). (Foot note: The Hague contains the highest amount of high-rise buildings, which makes it complex to organize appropriate waste separation due to inaccessibility of municipal waste collector).

Waste component		Composition %	
Groente, Fruit, Tuin (GFT)	vegetable, fruit, garden = household biowaste	41	
Papier/karton	paper/cardboard	17	7.5
Kunststoffen Kunststof Verpakking Afval	hard and soft plastic plastic packaging waste	13	8.3
Glas	mixed glass, all colours	5	4.7
Ferro & non-ferro metalen	ferrous & non-ferrous metals	4	3.5
Textiel	textile	4	
overig	other (wood/stone/WEEE/diapers)	16	
Verpakking Afval	**packaging waste**	100	**24**

Table 2 Waste classification and composition in 2012 in The Netherlands, Sperl's illustration based on MIE 2013 (Source: Sperl 2016: 10)

Finally, the waste management plan is keen on developing education campaigns within primary school where children attend a waste management course where they are very much encouraged to separate plastic ('Afval scheiden, gewoon apart! Huishoudelijk Afvalplan Den

Haag 2016 – 2020' 2015: 9). Among university students very few pilot project funded by the municipality exist yet this target group is not a priority in the agenda. In the following chapter, these and other limitations will be further explained because of the questionnaires and the expert interviews that elucidate on this.

Chapter IV Collecting the data

Since the explanations of behavior are "negotiated, transitory and sometimes contradictory" then behavior should be analyzed through an intertwined factors influencing them as explained in chapter II (qtd. in Kollmuss and Agyeman 2002: 247). This paper thus was developed to understand two main objectives (a) whether international students are akin to more pro-environmental behaviors in individual waste management and recycling behavior especifically in two-time lapses namely before-and-after their residence in the Netherlands and (b) if these behavioral changes exist, hence until what extent can they be proven through the influence of external-internal factors and policy instruments. The methodologies described in the next sub-section will introduce the two qualitative mixed methodologies employed to fulfil this paper objectives, that is (4.1) online questionnaire development, (4.2) semi-structured interviews among students as well as expert interviews (4.3).

4.1 Phase a) what and who was questioned?

Sampling questionnaire and key characteristics

Within the realm of recycling behavior, household and families attitudes are often the focus of empirical research, as has been also shown within the literature reviewed. Empirical research about waste executed in The Netherlands is often focused in households where there are no major analysis of migrant families, expats and international students (Sperl 2016: 4, Appendix C, Milios 2013: 6-7). If students are the future of environmental change, hence, universities as schools have the important duty to promote sustainability beyond conceptual boundaries and recreate sustainability in pragmatic forms (Zsóka, Szerényi, Széchy and Kocsis 2013: 126). In this light, international master students from the International Institute of Social Studies living in The Hague became the focus of this research.

An online questionnaire of 35 questions with the same content in the month of October 2017 was distributed between two groups: master students from (*a*) the old batch (2016-2017) and from the new (*b*) batch (2017-2018) promotion. The selection of the cohort was based upon easiness to be contacted and faster rate on responses than other former generations. At the same time, the majority of the cohort was living in The Hague whose experiences among recycling were still present and fresh by the time the survey was sent. The former group started classes within the Program of Development Studies in September 2016 with a total number of 171 students. The new batch started the program in September 2017 adding up to 153 students in total.

Empirical studies on behavior are often designed to include a control group that resembles closely the characteristics of the experiment or treatment group helpful to carry systematic comparisons (Tucker and Speirs 2003, Bortoleto, Kurisu and Hanaki 2012). The

control group then has similar characteristics as the treatment group but the conditions and variables in which it is studied differ from the main targeted group. The new batch group fits into such criteria of control group. Nonetheless, for the sake of this paper the results from the new batch are used only as a point of reference for certain factors and not as a control group because of two reasons. Firstly, the number of answers collected from the new batch did not add up to the 50% of students in this group. Secondly, we recognize that the new batch may have not experienced underlying changes due to the short residence time of two months by the time the survey was sent, nonetheless, their insights were valuable as a point of reference. For this reason, the new batch answers will be merged into the discussion specifically when factors have influenced in the students behavior due to time difference (Foot note: The insights as well as the comparison with certain factors will be further explained in Chapter V in findings).

In addition, in NUFFIC´s annual report (2016- 2017) Erasmus University Rotterdam was acquainted as the third most diverse Dutch university with the highest increasing number of international students coming especially from non-European and developing countries (Huberts: 11). In the same report, humanities and social sciences were the third university diploma with the highest number of international students (Ibid.). Both facts show the relevance of studying such a diverse place like the ISS since it is an important place of diversity and a rich case of behavioral change in relation to international students and environmental policies.

To differentiate each group from the cohort, students were asked about their residing period in the Netherlands, from which 35 students are residing less than two months. Since, the survey was sent in October 2017 it is assumed that all of these respondents belong to group *b* representing the total number of respondents of the new batch group. The other respondents answered to the question more than one year of residence. Students were then observed within household dynamics and rates. The total number of students from both groups accounts for 324 students , nevertheless, the survey was meant only for students residing in The Hague since our policy analysis focus was on the local policies.

The questionnaire did not include students living outside the city neither students that are away from the country like *Mundus Map* **(FOOT NOTE>** This major was not taken into account in the questionnaire since the students have two years of formal studies whose last year is in another country**)** students. The survey was 101 times answered under voluntary and anonymous conditions which corresponds to 31% of the intended participant's target belonging to 31 countries from almost all the continents in the world -except from Oceania- answered the survey confirming the great diversity of the cohort. In addition, university students between 15 to 44 years old are considered a motor of change in less developed countries (Ahmad, Bazmi, Bhutto,Shahzadi, et al 2016: 254). Most of the respondents (45%) ranged between 26- 30 and 31-35 (21%) belonging to the motor of change above described. Finally, specific demographic aspects as age, gender and urban and rural earlier residences, were taken into account to explain further particular results. When specified in the chapter V, certain results from the questionnaire were disaggregated into gender or age for statistical significance. For a better scope of the results and findings, a systematic arrangements into positive, neutral and negative answers was implemented. This is the case of question twelve, among others, where extremely and very important became the positive answer, while slightly and not important at all became the negative answers and the last answer was considered neutral.

What was questioned?

Within the category of waste management, a variety of behaviors can be analyzed. This paper focused on recycling behavior and the interplay of different factors to understand the extent of behavioral change. In principle the methodology developed within this research body intents to evidence on positive results that arose from a synergy between different factors resembling Kollmuss and Agyeman's (2002) model. Nonetheless, in cases where a synergy was not positive it will also be analyzed. In the first part of the surveyed, it was considered questions on main socio-demographic factors regarding place of living before arriving in the Netherlands as in rural, urban or countryside as well as gender and age. Gender and in some cases age, will be disaggregated in certain questions to analyze deeper statistical significance and more causal-relations. For internal factors, attitudes over and in relation to the environment as a main element of the TPB was measured within three different conditions.

Specifically for recycling, there was a module created within the surveys where internal as well as external factors were emphasized. Within internal factors, attitudes and intention were also measured in the form of willingness in question 17. As Barr's (2003) claimed value given to the environment is not always as important as willingness, house size, accessibility and knowledge, which are the most determinant factors for recycling (235). Such willingness to engage in recycling was measured through economic incentives and in this paper, they are considered as attitudes similarly to the OECD report (2008) where economic incentives determine behaviour.

For external factors in recycling, it was considered knowledge and it was measured in three different ways. Distribution of knowledge was also taken into account as Kollmuss and Agyeman argued this represents a more relevant factor to behavioral change than merely offering knowledge (Questions 17, 19 and 20) (2002: 242). To test whether knowledge influence behavior two scenarios were created since it is always assume that knowledge presupposes action.

Bernstad claim that incentives in the form of taxes which are not suitable because it gives the opportunity for people to engage in "illegal dumping" (2014: 1317). Therefore, this section tested whether municipality incentives would increase recycling participation among students as well as it gave the space for respondents to specify the different motivations that will increase their participation (Question 21). Hence, the synergy between willingness and incentives is expected to create positive or negative results later explained in chapter V. Finally, general recycling behavior back home and currently residence was asked (Questions 9, 14, 15) as well as attitudes showing convenience in relation to cost and effort from the literature review.

Foo waste was a small component of the survey. Since food waste is a complex field of research, this questionnaire did not aim to delve further into consumption habits and reasons of food waste due to the limits of scope. Rather, it delved into composting and specified-food waste frequency habits. Composting is significant because it encourages people to reduce food waste which is associated to recycling behavior as argued in other studies (e.g. Secondi, Principato and Laureti 2015, Schneider and Obersteiner 2007). Then food waste elements were posed on questions 14 and from 22 until 26. For more detailed

information in relation to food waste, this dimension will be expanded among the answers from cohort group an in chapter V findings.

4.2 Phase b) Semi-structured interviews

Sampling on students

Semi-structured interviews have the main characteristic of being flexible giving the interviewer as well as the interviewee space for conversations leading for more information provision (O'leary 2004: 164). The complete cohort of students from the ISS living in residences are distributed in 5 student residencies; 3 are managed under DUWO (Bazarlaan, Dorus Rijkersplein and Stamkartplein). The rest Buitenom and Gondelstraat belong to ISS management and administration. From 324 students from both generations; 61,1% (198) of students are currently living in the five residencies (Dorus 137 rooms, Bazarlaan 21 rooms Gondelstraat 29 rooms and Buitenom 11 rooms) respectively. The semi-structured interviews were only conducted to the group (a) of the cohort. This group of students have resided in The Netherlands for over a year, for which their behavior and attitudes towards the dimensions of this paper are supposed to be clearly defined. It was also assumed that the cohort (b) was not subject to underlying changes for which they were not included in this phase. Thirteen students were interviewed in Dorus, Buitenom and Gondelstraat residencies representing both management directions.

In total the interviewees were: three students from Indonesia, two students from Ghana, two students from India and one student from Kenya, Colombia, Philippines, Japan and Pakistan one of each country respectively. Most of these students represent among the highest numbers of nationalities that belong to the ISS Master Student Community. This part of the cohort was chosen because they represent statistically the majority of the nationalities of students that assist at the ISS, which undoubtedly gave richer inputs to the results. This fact was important when comparing their past habits and the place of residence they used to lived at. (Foot note: The results will be explained in chapter IV)

The interviews were based on open-ended questions as summarized in Figure 3. The main topics were divided into socio-economic and contextual factors experienced in the resident country before The Netherlands, consumer behavior in The Hague and individual waste management in their student residencies. Especial attention was given to past recycling habits, calculation, and quantification of waste. Moreover, recycling and waste management was questioned in addition of knowledge about waste separation policies in The Hague. Lazell argued that observing "practices routines and habits" of consumers allow researchers to grasp deeper understanding of their behavior and subsequently of their waste production, a feature usually not embedded in policy creation (2016: 430-431). Hence, the interviewers were asked about their groceries shopping routines, food waste practices and self-report similar to the consumer behavior tested in the OECD (2011).
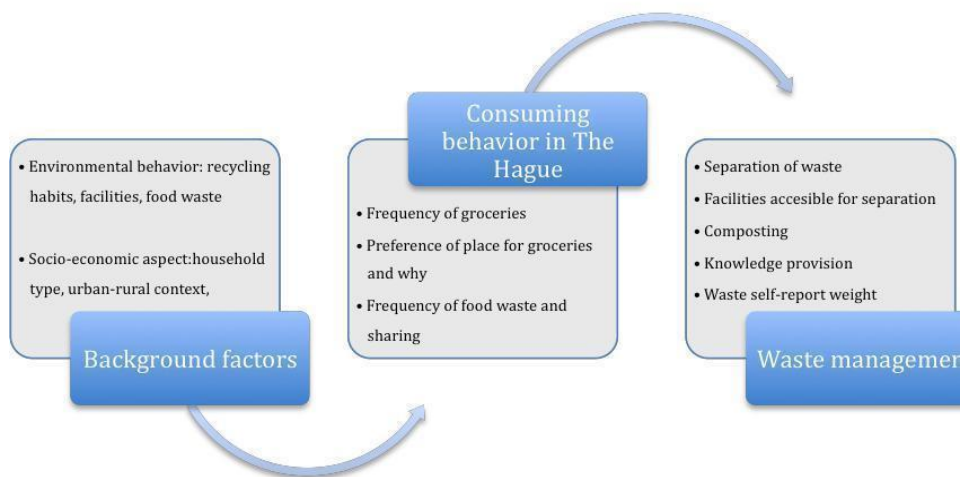
Figure 3 Summary of open-ended used among the semi-structured interviews on students (Source: Author's findings)

Phase c) Sampling Experts through semi-structured interviews

Within this phase of data collection, there were two expert groups interviewed (a) policy makers of waste management in The Hague and (b) waste management heads of the master student residencies at ISS and DUWO.

Among group (a), four experts from *Gemeente Den Haag were* contacted to explain topics about waste management, HAP (Foot note: What accounts for this) and the circular economy. Both, student residencies managers from DUWO and the ISS, were also contacted for the same topic. These interviews were conducted in The Hague in English and verbatim. Furthermore, this methodology adds detailed information of the different policy objectives among waste separation and institutional perspectives about waste management resembling Wolsink's comparison of environmental policy infrastructure in the Netherlands (2010: 306).

The semi-structured interviews conducted the same questions for all the expert groups, namely (1) what is the major challenge with waste management within your area of expertise. (2) Reasons for the poor performance of recycling, waste separation and food waste among international students (3) potential solutions (4) Existence of any pilot projects already implemented that included international students along the process?. The questions have been clustered into

- Policy objectives as in measured to reduce waste generation among international university students
- Major challenges on waste management and policy beliefs
- Institutional perspective as in framework or infrastructure
- Potential solutions

These topics resemble Wolsink's systemic model of objectives, perspectives and core beliefs of an analysis of Dutch environmental perspectives (2010: 306-307). Overall, most of the actors do not consider university students as a main target for more information provision on waste management. The form of interviews resemble the idea of "holistic pictures of factors" in Aschemann-Witzel, de Hooge, Amani, Bech-Larsen, et al., where the expert interviews were asked to identify factors influencing behaviors and factors for potential behavioral change summarized in Annex 3 (2015: 6460). This section thence is an extension of the policy instrument analysis from Wolsink in connection to the findings that will be developed chapter V.

In sum, this methodology and the integrated modelling of factors are supported by secondary data in the form of policy documents, governmental reports, online and not online published materials for the proposed policy instrument analysis and a variety of database for information provision of the participants. Within empirical studies, transportation, consumer behavior and food waste are often dimensions measured among pro-environmental behavior. Transportation and consumer behavior have been omitted in this paper because we assume that international students will make use of a bicycle or public transportation excluding the use of a vehicle for which transportation impact is more complex to capture (Foot note: Comparison to the pilot project of recycling executed at the installations of the ISS) (Steg and Vlek 2009: 310, 313). An analysis of consumer behavior entails an extended research process which is usually guided by different actors outside of academia. Waste is considered the third biggest flow of resources within urban planning for which it becomes essential to analyze this sector (Sperl 2016: 7). Since university students and their recycling behavior is less common yet very important, therefore this paper focus has not been directed to consumer behavior.

Chapter V Is greening a fact? Discussing the findings

The following report contained in this chapter is related to relevant data obtained from the methodologies employed to answer the main incognita whether students have changed their environmental behavior while residing in The Netherlands.

According to our literature, a wider effective scope of environmental behavior involves to "uncover the system of factors", or in other words designing a "complex map" by integrating possible interactions between the system of factors (Krajhanzl 2010: 255). The following description and analysis hence represents such complex map. Likewise, then the goal of the

sub-sections is to guide the two main proposed variables of internal and internal factors and whether they helped to increase or limit pro-environmental recycling behavior among the cohort. The initial part of each subsection exhibits critical data from the questionnaires following an engaged interpretation of the results that discuss the potential causal-relations analysis of certain behaviors, including main aspects of the interviews.

As a clarification note, the findings within this section does not report the answers of the complete cohort (both master student groups) as explained in the methodology description of the sample profile. Their answers nonetheless were valuable as a point of reference and comparison to the other master group. Thus, only when specified, the following raw data contains certain results of the new group of students.

5.1 Uncovering relevant internal factors.
Sample Profile and demographic factors

Generally, in the literature gender and age have mixed results, still they are main demographic factors for statistical significance. Within our survey, more than half of the students taking part were women (60%). Regarding age, the majority of the respondents ranged between 26 and 30 years old (47%) following students between 31 and 35 years old (25%). Very few answers were obtained from students older than 41 years old. In addition, most of students described their previous residence as coming from (80%) urban (16%) suburban and (3%) rural or countryside places. Finally, almost half of the students from the old batch answered that are considering staying in The Netherlands after the Master Program is finished.

Within our literature review, women are supposed to perform more PEBs than men and in other cases so do men. For a deeper understanding of such assumption, we disaggregated question thirteen about concern into both variables of age and gender in Figure..... Following the thoughtful consideration of weighting answers, as explained in the methodology chapter, we considered and added extremely important and very important as one positive result while slightly and not important at all was the negative side. The results showed that more women (79%) than men (72%) consider sustainability more important. There seems to be no major difference, between the answers of different genders. Yet for every male respondent it was found at least certain degree of concern over the environment which is not the case by female respondent where few pointed to their carelessness (see Figure 4)

Aging and becoming more adult was argued to be a fact of higher environmental behavior within the literature. Age was analyzed under the same logic of gender and the weighting system versus the question on concern (13.). It was found that students between 26 and 35 years have the highest percentage of concern on the environment among all the respondents. Those few students who were not concerned at all were ranked among the youngest and the oldest of participants respectively as explained in Figure 5 However, they do not represent a contradiction to the literature because of the small percentage that they represent from the entire cohort. These results do not represent the integration of other factors neither they explain by any means strong causal-relations for which one may argued that gender nor age do not influence substantially and directly PEBs within our research. For this reason, the following subsections will integrate different internal and external factors in addition to the variables of gender and age resonating on the complex map of factors where research ought explore beyond individual factors as causal-relations.
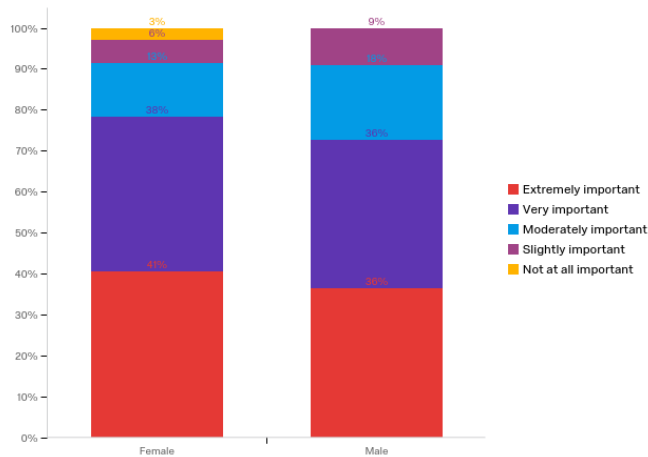
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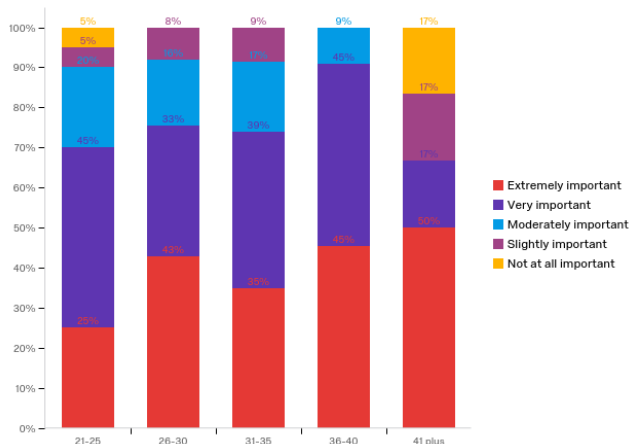Figure 4 Sustainability concern disaggregated into gender (Source: Author's findings)

Figure 5   Sustainability concern disaggregated into age (Source: Author's findings)

Attitudes

Attitudes is considered an important internal factor as part of TPB models that have successfully measure PEBs and specially recycling behavior. Thus at the micro level, this paper measured attitudes in the following three different scenarios and conditions whose answers were represented in the described weighting answers system of the previous subsection.

Condition a) Students were asked about their concern on the environment in question thirteen. Overall, as shown in Figure 6 almost all students considered sustainability between

extremely and very important adding up to 70% of the cohort while just a very few students do not consider sustainability important. From these positive results it is expected that students would be more willing to participate within recycling programs as stated from our literature review in Steg and Vlek (2009). Nonetheless, other components were aggregated to these answers to have a better comprehension of the results by which surprisingly the results changed such expectation.

Firstly, students were asked in question fourteen whether helping the environment has to fit with existing lifestyle patterns. Overall, an outstanding number (55%) of students believe that it should. Considering that from question thirteen answers, most of students are pro-sustainability, these results are contradictory showing that many students would not give up their daily activities for more environmental friendly activities. As Best and Mayerl (2013) and Krajhanzl (2010) observed, positive attitudes do not correlate necessarily to a higher performance on PEBs. Perhaps, it is necessary that recycling and sustainability programs are then created in such forms that does not alter or that are easily implemented in daily routines, as explain in our literature review in Zsóka, Szerényi, Széchy and Kocsis (2013: 127). Secondly, by disaggregating this inquiry into gender, as shown in Figure 7 the majority of male respondents (70%) affirmed that environmental activities should fit into their lifestyle. By ranking higher than women, it can be observed that men, although with not outstanding statistical difference, have less predisposition of changing their lifestyle for more environmental friendly activities than women.
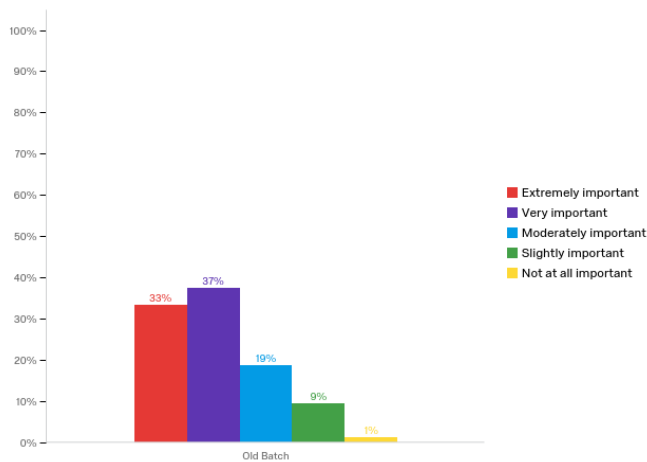

Figure 6 General concern on the environment among the old batch of students without disaggregation (Source: Author's findings)
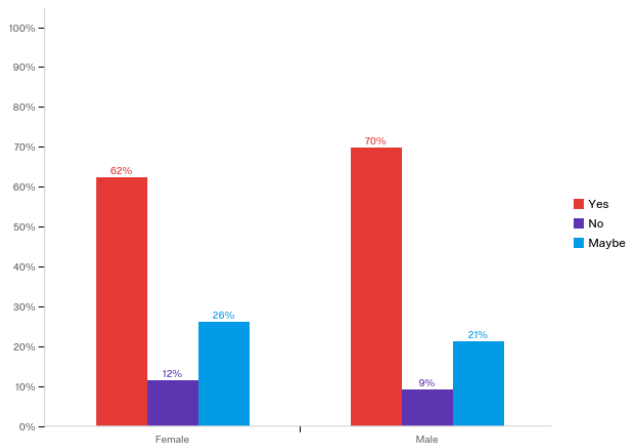
Figure 7 Gender versus lifestyle change comparison (Source: Author's findings)

For condition b) perceptions are considered attitudes within the purpose of this research. Students' perception about a sustainable lifestyle in The Netherlands before arriving was question number eight. Overall, through the weighting answer system, among the old batch of students most of them agree and strongly agree adding up to (76%) while very few thought the contrary (5%) as shown in Figure 8. The general perception among the interviewees backed up this perception while pointing out that one of their main reasons for moving to Holland was their image of a greener country. Observing the new batch, as shown in Figure 8 there is no significant difference with the other group. While 77% of students agree on their positive image of the country only 7% do not. Thus, given a year of difference between both batches the image of the country before arriving remains positive. For the sake of comparison and further comprehension, answers from the old and new batch were taken into account and disaggregated into age. Before arriving in the country, both groups had the same image about sustainability in The Netherlands and there was no major difference between ages as observed in Figure 9. One may argue that age and time are not specific determinant of the image of the country for which there is a strong export of a green country image found in local as well as in international reviews about the Dutch sustainability way as exposed in the introduction.
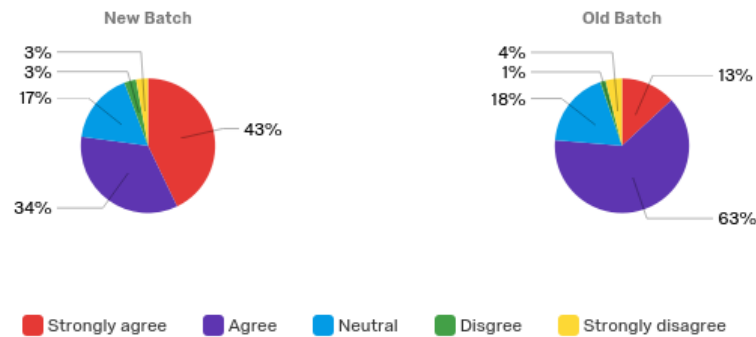
Figure 8 Perception about the Netherlands before arriving in the country (Source Author's findings)
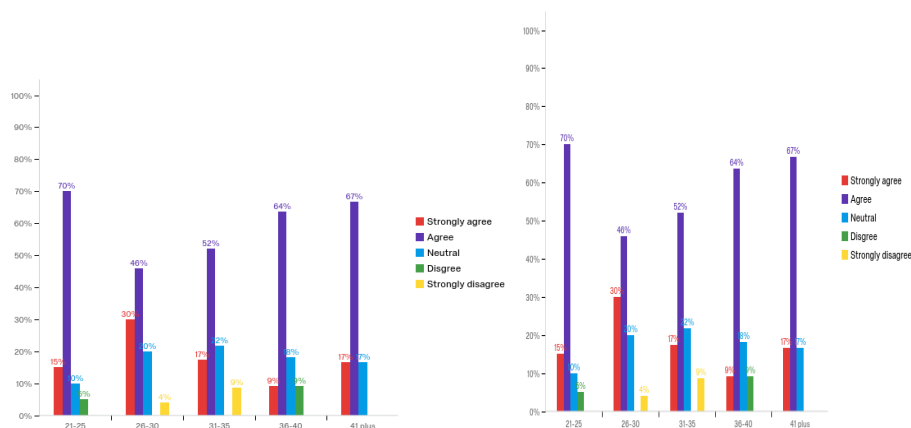

Figure 9 Old and New Batch image of sustainability in The Netherlands disaggregated into age (Source Author's findings)

As part of this condition, we measured the perception of behavioral change of students while residing in the country to verify whether time spent in the country is a valid variable. Following the weighting answer system, from question thirty-three overall, half of students from the new batch (51%) belief that their behavior has changed versus a 35% who do not believe so as expressed in Figure 10. Among students from the old batch, 65% of students believe that their behavior has changed showing a positive increased after a year versus answers from the new batch. Similar was the reaction among the negative perception where after more than a year of residence decreases the perception of no change (23%) versus the new batch's opinion.

For understanding deeper such answers from the old batch, this question was disaggregated into gender. We clustered strongly, agree and somewhat agree as one positive

answer while somewhat disagree, disagree and strongly disagree by one negative answer and neither agree nor disagree as one neutral answer. The largest positive change while living in Holland it is observed among men 79% while only 56% of women endured a change as shown in Figure 11 Considering prior questions on concern about sustainability disaggregated by gender where women expressed higher concern thus, one may argue that women perceived lesser behavioral change after residing longer than a year due to prior higher environmentally concern for which living in The Netherlands has not significantly change their behavior.
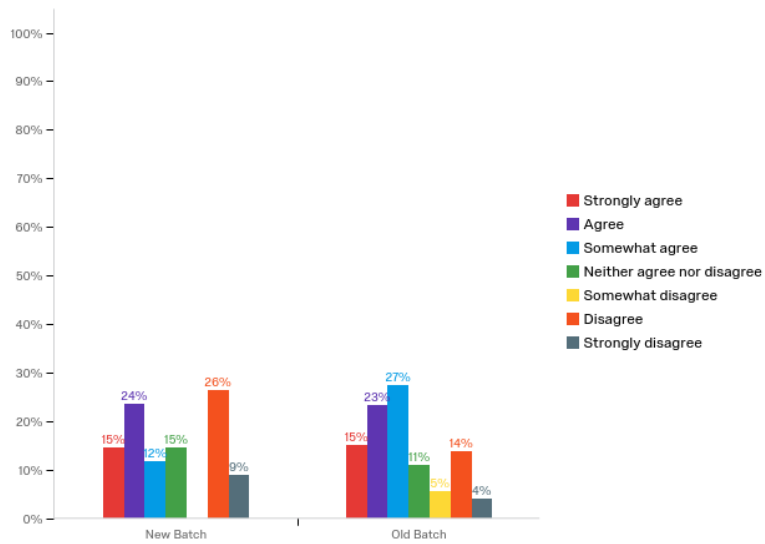

Figure 10 Both batch and their perception of behavioral change while residing in The Netherlands (Source: Author's findings)
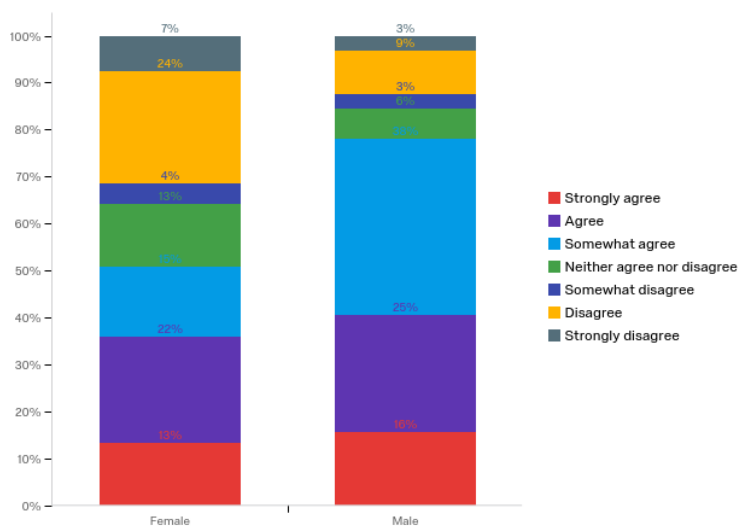
Figure 11 Gender perspective among behavior change while living in The Netherlands (Author's source)

The last condition (c) was measured by intentions and willingness. Both are an important element of TPB models yet since it is an incomplete factor to determine behavior by its own the following condition as explained in the methodology was created to understand more. Firstly, when asking about the use of the ISS waste separation bins in question number twenty it was observed than more than half of students have not used the recycling bins at the ISS (61%) while the rest have (39%).

The following question (21.) measured directly their intentions on using the same bins for recycling waste produced at home. To this, 40% of students answered that they will be willing to use them and 60% would not consider it. One may argue, that less students are willing to use the bins than the number of students which are not using them. Furthermore, in question number twenty three their intention of recycling was asked under the condition of having waste containers closer than 200mts. As a result, 95% of students, representing the majority answered that they would. As such, this is a contradiction to the 40% of students that answered their willing to use the ISS bins since they are 200mts closer at least to two student residencies. Thus, apparently the highest number of students are willing to recycle more; however, in the reality actions are less performed. Most likely, when people is asked about their willingness to recycle the majority answers positively, one may argue that people's intention work through a moral responsibility from which their willingness are higher yet in reality differ as detailed in our literature review (Bortoleto, Kurisu, Hanaki 2012: 2196). Although this is a small sample of intention behavior it does shows that people does not act under logical parameters which was the main critic towards the TRA rational models.

Subsequently, as shown within these internal factors, age does not play a significant role due to the small representation of answers between the extremist spectrum of ages as within the youngest and oldest participants. Therefore, gender will be the only sociodemographic element used within the following subsections since it does display important differences among the cohort. Gender will be then the intersectionality of different factors in addition to the synergy between factors for a better understanding of behavioral change.

5.2 What about environmental policies and external factors?
Knowledge

As exposed in the literature review, the value-action gap is due because knowledge seems to be the cornerstone of PEBs and behavior in general. Knowledge is still believed to be a strong tool for influencing behavior however, this direct correlation does not always appears. Knowledge and information was measured in two different scenarios. To complement those scenarios, in question twenty-two general information was asked regarding recycling containers in The Hague, which is one of the main recycling projects of the 2012 municipality Household Waste Plan explained in chapter III. As illustrated in Figure...within the old batch cohort, the majority of students (65%) seems to acknowledge the existence of waste separation carried through containers in the city versus a 35% of no acknowledgement. In the new batch is the contrary. While 66% of students do not acknowledge this information, the rest (34%) does. Thus, time alone plays a big role on distribution of knowledge among students according to our research.
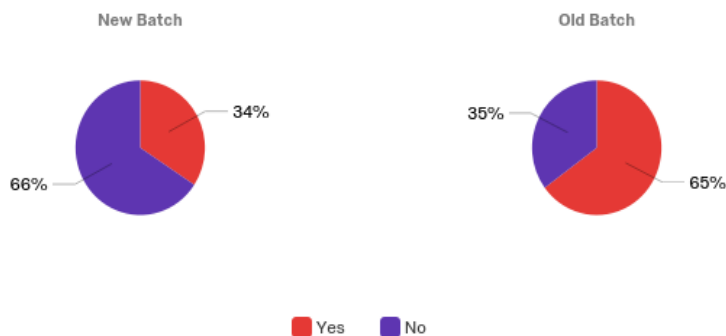

Figure 12 Acknowledging recycling systems in The Hague (Findings: Author's source)

Within the first scenario, it was measured students' knowledge on the post-treatment process when they do not separate the waste they produced in question twenty-four. This classification was created according to the waste categorization of the government as detailed in Table 2 For a better understanding of the results, we have clustered from the question choices into separated by people and machines as one category, dumped into

landfills and biogas as specialized knowledge and a hesitant answer as party recycled and partly burned in addition to *I do not know* answer. We compare both batch group of students as visualized in Figure 13. From this comparison, it is observed that their answers do not entail a significant statistical difference for which knowledge regarding recycling systems in The Hague is not dependent on time.

The same question was disaggregated by major of specialization. Yet this question results were only taken into account from the old batch (Foot note: As explained in the methodology, students from the new batch were not exposed to their specialization subjects for which is not expected that by the time of the survey they would acknowledge special information as in the old batch). Theoretically, if people are in an environment where there is a higher exposition of more education and information about recycling like within AFES, one might suppose that awareness is higher. By observing Figure 14, the highest percentage of absence and hesitant knowledge ranks among the percentage of students coming from AFES. Similarities are given among the specialized knowledge where students from other majors have larger knowledge of such process. Hence, knowledge does not always determines behavior as usually reflected in the value action gap. From our findings, one may argue that internal factors, such as previous experience among others, play a bigger role than external factors as seen in the case of being exposed to more environmental knowledge.
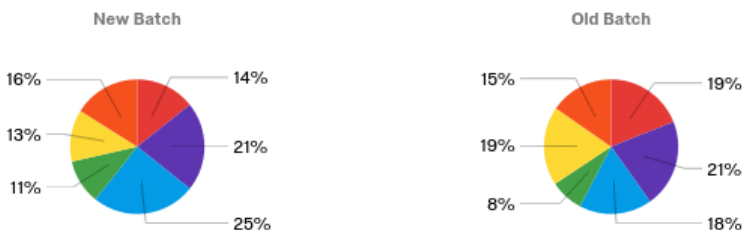

Figure 13 Distribution of knowledge of unseparated waste post-treatment between old and new batch (Findings: Author's source)
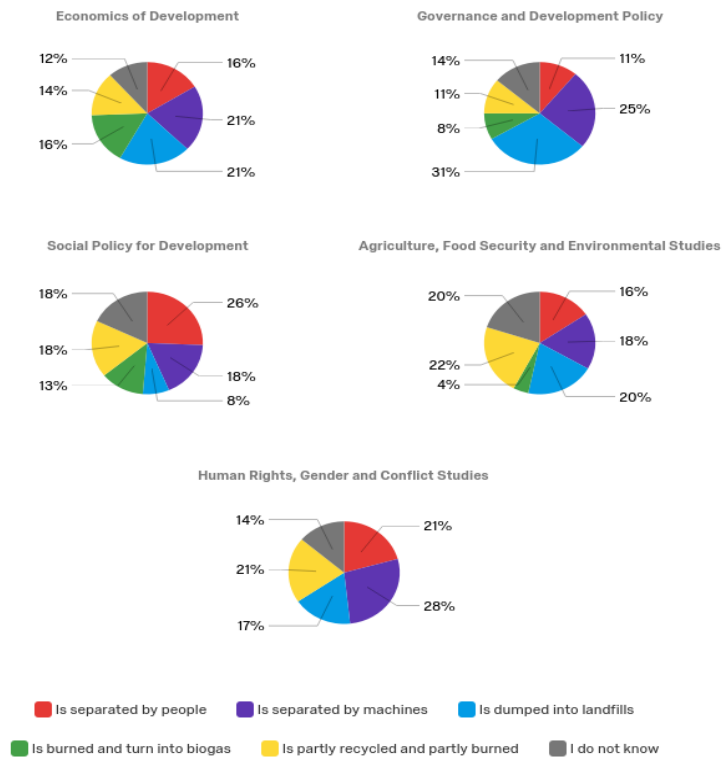
Figure 14 Distribution of knowledge of unseparated waste post-treatment by major (Findings: Author's source)

In scenario two, students were asked about the post-process of separated waste when it is collected from the containers. Both question on the collection process were based on the Dutch Municipal Waste Management Plan to convert organic material into energy (Sperl 2016: 8). The same procedure as in scenario one was followed. Overall, the majority of students (35%) belief that separated waste becomes recycled or partly burned. In addition, students believe that machines are separating waste (19%) while very few believe that waste is dumped into landfills or mixed together with other waste. An important number of students (15%) does not acknowledge about this procedure. As knowledge itself does not represent an important factor for the sake of our findings this question was disaggregated into both cohort groups and by majors.

When waste is separated most of students from the old and new batch seems to have the same information about the processes as answers from question twenty five exhibited in figure 15. Hence, one may argue that time is again not a determinant of more knowledge and experience on recycling programs. When analyzing the answers by majors among the old

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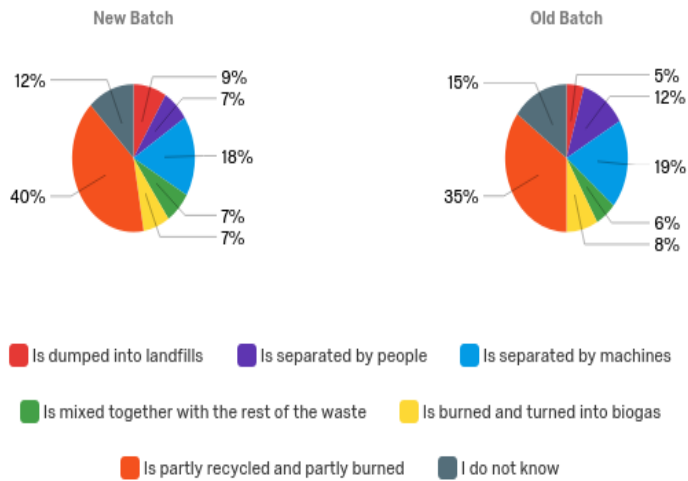batch cohort in figure 16, the most specialized knowledge is not acknowledged through the students from AFES.

Figure 15 Distribution of knowledge of separated waste post-treatment between old and new batch (Findings: Author's source)
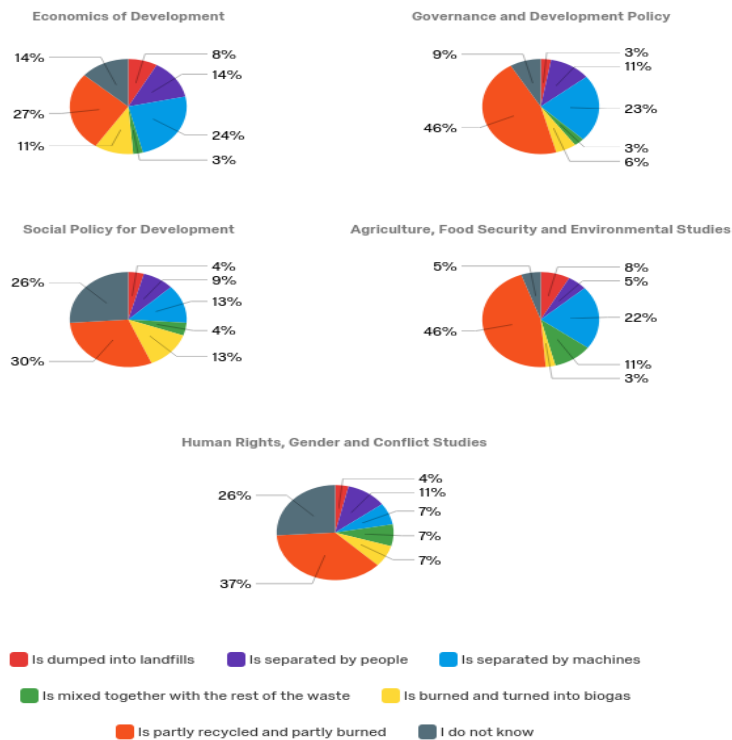
Figure 16 Distribution of knowledge of separated waste post-treatment by major (Findings: Author's source)

All in all, for a better understanding of these outcomes, some conclusions could be put forward drawing from the literature in Kaiser und Fuher (2003) about knowledge distribution. Due to the very diverse number of answers, it is visible that students doubt about the procedures of waste collection and post-treatment. As Barr (2003) and other authors from the literature exposed, the amount of knowledge and knowledge itself does not influence behavior. "*When visiting the municipality the first time, there is no information on recycling, or signs that explain it*" mentioned a student from Indonesia within the interviews, echoing the rest of the interviewees answers who claimed for more and clearer information. Moreover, it is important to analyze the difference between absence of knowledge since through respondents is where policies should be directed. Thus, the same students, are less potential for behavior change because they do not acknowledge the real process or simple they think someone else separate them. Hence, policies should be directed to these knowledge lack by reinforcing campaigns, etc. Similar answers were given in question thirty two when students were asked about easiness on recycling in The Hague as visualized in Figure 19. Answers from both batch groups were collected. Whereas 31% of the

respondents from the old batch agree on the easiness, another 41% disagree and 27% are neutral. On the other group, 27% agree while 44% disagree and another 29% are neutral. From these answers it is again observed that time of residence plays a big role on knowledge distribution. Due to the high neutral responses, one may argue as well that there is a high uncertainty about recycling systems in The Hague.
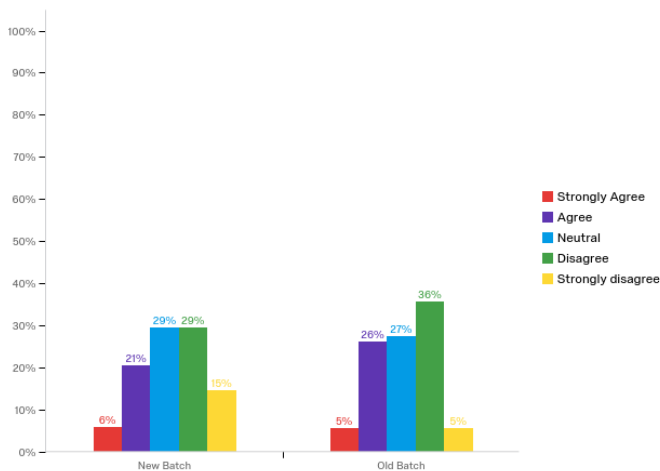

Figure 17 Perception of recycling facilities in THe Hague (Source: Author's findings)

Norms

Finally, knowledge and policies cannot directly affect student's behavior although it is an important external factor. A student from Ghana during the interview commented *"I have never recycled before coming to this country (the Netherlands) until I found the bins at ISS"*. In this scenario, the student compared past habits to current habits. The outcome was finding himself more environmentally conscious yet he was influenced by descriptive norms because his fellow students recycle at the University campus of ISS. During the interview to the ISS service management for housing it was mention that the pilot project was very successful at the beginning because month-by-month waste was being more separated. Yet, after months of its implementation, it has been observed that waste is usually not correctly separated even though there are signs next to each bin. The project is planning to be extended into all campus in Rotterdam University. In this light, changes are situated within an atmosphere that is pro-environmental when the cost is not high and benefit and convenience is low as argued in Kurisu (2015: 7). Therefore, among the overall positive perception of recycling and being more environmentally conscious while residing in The Netherlands is a risky self-perception. If social norms influence people's behavior, thus this could entail that when students are outside of the ISS recycling facilities they do not recycle regardless of the reasons. If this correlation is correct, hence, perception of students about perceiving more PEBs is in reality less. In the following subsection, policies are used as another factor to analyze further limitations on student's perceptions about recycling.

What about environmental policies?

When a student from India was interviewed about her knowledge in waste management in The Hague she mentioned:

> *"I have no great understanding about waste here, is just invisible".*

There are several reasons that have limited this student acknowledging about waste management in the city. Thus, it is ambitious to attribute it to a single factor. However, most of the responses in the interviews related to the same limitation in the sense of knowledge or enough information. On the other hand, when I interviewed policy makers at the *Gemeente* and DUWO management, both answered surprised that international students care about the environment. How waste management in The Hague works seems to be a scarce information as shown in the sub section of knowledge. This shows that there is a communication gap between the students and the institutional goals. As argued by Wolsink, implementation of policies needs to be accepted (2010: 302) at best using mechanisms of appealing to the urgency need on "environmental participation" and clear communication (Barr 2003: 237 – 238). From the interviews and the questionnaires, it has been perceived that students do really need a clearer message regarding environmental rules in The Hague. As such, information provision does not automatically results in action however, it is still a powerful tool to influence behavior in university students as long as is not demands high cost and effort (Zsóka, Szerényi, Széchy and Kocsis 2013: 127). This communication gap hinders the municipality policy goals on reducing waste generation and integrating people into their HAP plan. The same problem appears between ISS residence and DUWO management where student's intentions do not seem to be recognized.

   Furthermore, during the interviews only one student out of 13 acknowledged about the municipal containers spread among the city. As Paul, the Police officer from *Gemeente* expressed "*Our main policy objective is still in a try-out phase of testing how to reduce the amount of waste burned in benefit to the economy and future CE models. We want to promote waste reduction by stimulation but we are still trying out different methods. We cannot impose people to consume and reduce waste in a certain way because we live in a democracy where freedom of opinions is basic, thus we just advice".* In other words, local environmental policies are not focusing on reducing consumption and waste generation but it is rather the reduction and cost of incineration for which they are striving now. Thus, I reflect whether it is relevant that international students recycle more if the objectives of "shared responsibilities" and prevention within the CE approach does not apply in this context (Geissdoerfer, Savaget, Bocken and Hultink, 2017: 762).

Incentives
As part of environmental policies and external factors, from our literature review, according to the OECD report the most effective factors for recycling was economic incentives in forms of pricing users when throwing away waste (2008:36). Students were also asked about incentives for a higher participation among recycling programs, in question twenty-six and twenty-seven. As indication of incentives, the common answer was monetary incentives in

the form of discount coupons or vouchers for food or pfand system of getting money back from glass or plastic recycled. The other majority of answers were related to tax reductions, including the opposite reaction of implementing taxes for annual waste collected. The third most common answer was about more facilities for recycling systems and clear information on how to access to the existing programs. Similar answers were found in the question regarding limitation on recycling. The lack of facilities for separating waste in the student residencies analyzed is visible since 20% of student's answer that this is the major reason why they are limited for recycling.

5.3 Actual Recycling Behavior
Recycling

Two sections within the questionnaires were directed towards recycling. Firstly, their past recycling habits were questioned in terms of frequency. Hinting on our literature, it was concluded that prior recycling experience and habits are relevant to enhance PEBs even though they are not the outcome of a rational choice (Ahmad, Bazmi, Bhutto, Shahzadi et al. 2016: 259, Steg and Vlek 2009: 312). In question fifthteen, it was considered very often and often as one category of positive answers. By disaggregating the answer into gender it was observed that 36% of women used to recycled more versus men were 27% used to recycled as demonstrated in figure 19 . By comparing past habits with actual behavior the results change as exhibited in figure 20 . Although women expressed to have recycled more before, women actual behavior regarding recycling did not increase by significant percentage numbers for which it is argued that changed is less perceived by women. On other hand, men increased their recycling performance to 36%. Men used to recycle less before arriving in The Netherland than women but there is a significant change between men living here. It might be the case that policies and knowledge distribution have had a major impact on men rather than women.
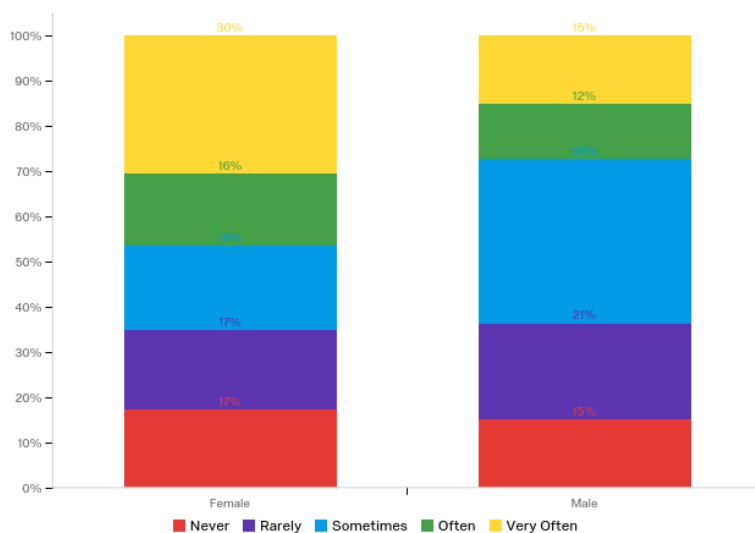
Figure 19 Past habits about recycling between gender difference (Source: Author's findings)
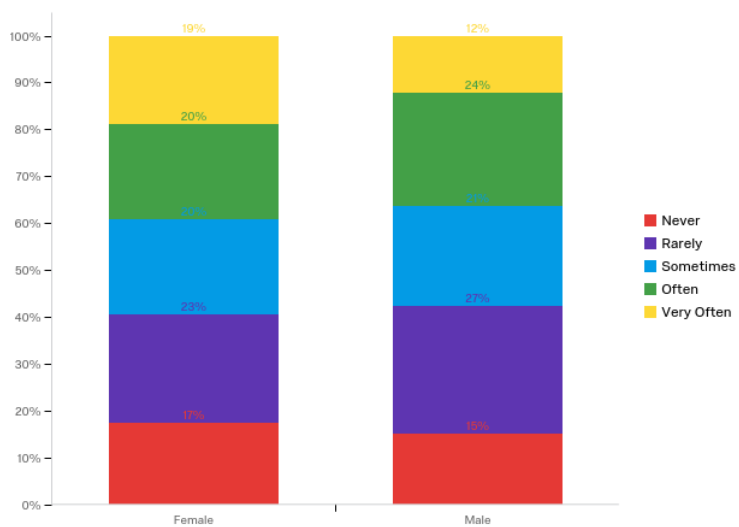

Figure 20 Actual recycling behavior by gender difference (Source: Author's findings)

Within recycling behavior, external factors like situational conditions merged with place in this research when respondents were asked to describe the urban or rural context they

belonged to before arriving to the Netherlands. Such element is measured in socio - demographic factors for example at the OECD report where the difference between rural-urban contexts provides evidence of higher recycling trends among rural places (2008: 37). On this respect, a student from India shared that back in her little rural town most of plastic, glass or paper was reused or recycled and food was always composted. Her case was very similar to the other respondents coming from a rural context showing that there is a situational factor resulting in higher trends on recycling. She added *"back home in my rural town there was less waste generated because there were less consumption"*. For further research, it will be interesting to compare forms of consumption from a rural background into an urban context since due to limitation of scope, such demographic factor was not used within this papers.

For a better understanding the extent of socio-demographic conditions on behavior, recycling as past habits and current actions were disaggregated into urban and rural variables. As visualized in figure 20 people with a rural background used to recycle much more than people coming urban parts. Even though people living in cities are supposed to be more exposed to local policies and campaigns is not the case within our cohort. By current recycling, the percentage of rural areas is much more bigger than urban areas, they still are recycling in higher percentages than the urban citizens. Even though it is a smaller percentage because they represent very few numbers from the total cohort, it is just an indicator that socio-demographic factors and past habits do influence behavior.
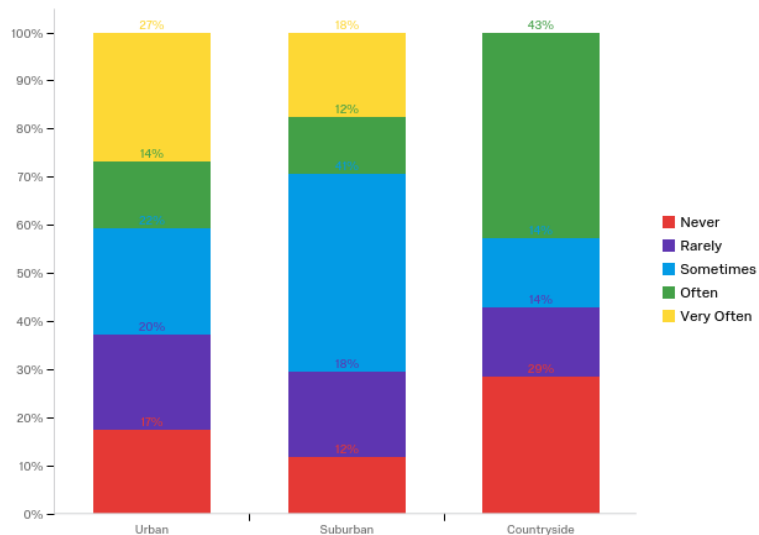

Figure 21 Recycling past habits among rural and urban context (Source: Author's findings)
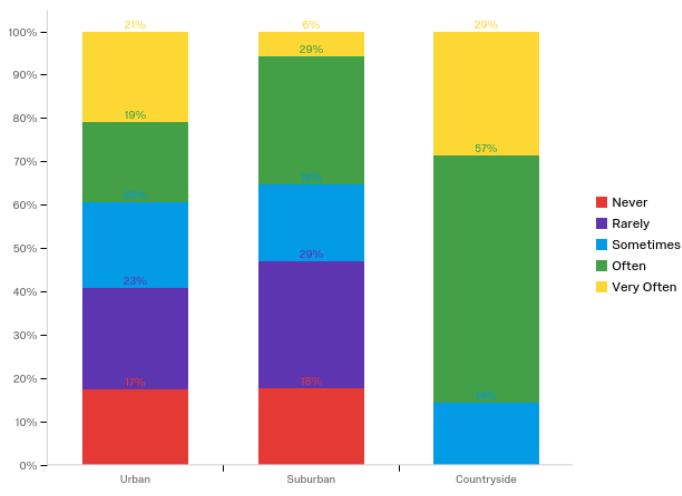
rur

Figure 22 Current recycling behavior rural- urban context (Source: Author's findings)

Finally, a comparison between both groups was juxtaposed. According to the illustration in Figure 23 There are mixed results whose answers were also considered as the weighting answer system. Among the new batch, students who are currently recycling, adding very often afund often as a positive result, surpasses by more than 10% the students who admitted to have recycled as their past habits Thus, their residence in The Hague have increased their recycling habits. The same logic is not given within the old batch group where coincidentally the same number of students who used to recycle before arriving in the country did not increased their behavior nor it decreased (41% in past habits as well as 41% in current activities). On the other hand, more students currently recycle less (from 30% to 345) than within their past habits. The same correlation appears within the old batch of students where more students are not recycling in The Hague as they used to do (from 38% to 42%). Although, the differences between both groups is not extremely significant, it shows that time within this factor does not directly affect students pro-recycling behavior while residing here. More than one year ago there was not a significant increase in recycling among students from the old batch as well as students from the new.
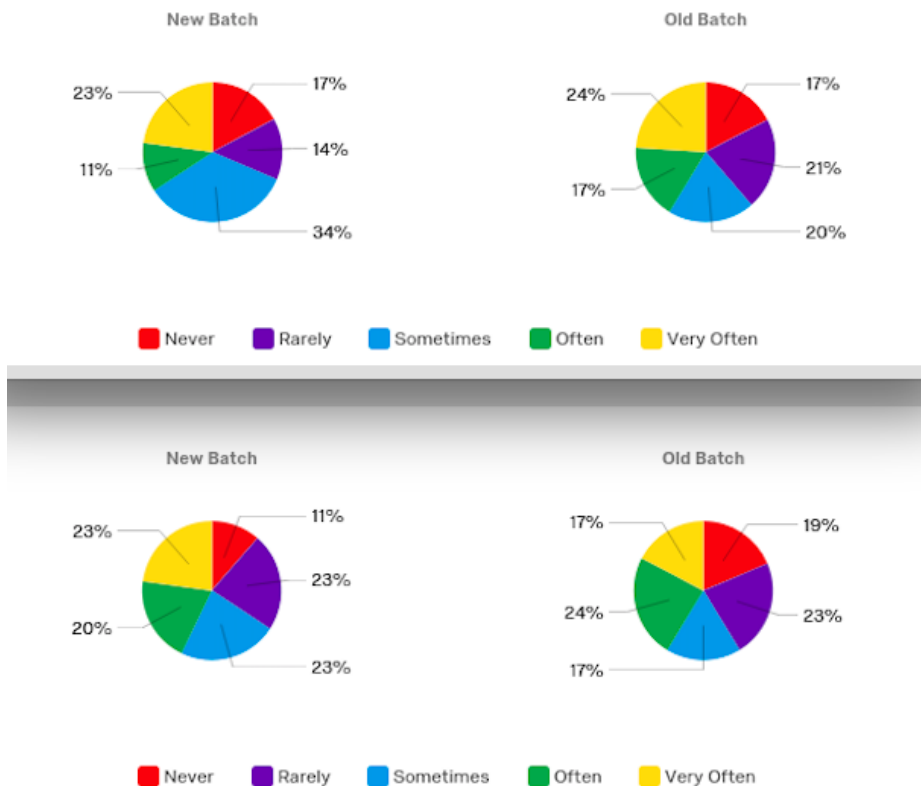
New Batch

17%
14%
34%
11%
23%

Old Batch

17%
24%
21%
17%
20%

■ Never ■ Rarely ■ Sometimes ■ Often ■ Very Often

New Batch

11%
23%
23%
20%
23%

Old Batch

19%
17%
23%
24%
17%

■ Never ■ Rarely ■ Sometimes ■ Often ■ Very Often

Figure 23 Past habits and current recycling behaviors among both batch groups (Source: Author's findings)

Infrastructure

Infrastructure merges as well with institutional factors in the extent of local policies implementation and accessibility to recycling facilities. As expressed before, within this research accessibility and services are clustered within infrastructure. From our literature review, infrastructure is one of the main external factors. According to the questionnaire, most of students have opted to live in student residencies. Then, infrastructure impact as an external factor is merging with the type of residence that students acquire in The Hague. When analyzing the policies within the HAP Plan and as a result of the expert interviews it was found that all of the student residencies taking part of this research are considered high buildings to the municipality criteria on buildings categorization. For which the Municipality does not consider those buildings as part of the general planning on waste separation. Those buildings are rather part of the general plan of all-into one waste collection meaning that residents can either separate their waste by containers provided by the municipality or make use of the normal containers with no separation or leave their waste to be collected as it is

currently happening within the residencies ('Afval scheiden, gewoon apart! Huishoudelijk Afvalplan Den Haag 2016 – 2020' 2015: 7).

Infrastructure plays a big role on composting as well, since most of high buildings do not have access to the green GTF containers a service provided by the municipality to separate organic and compost in accessible houses which are not located in the city centre ('Afval scheiden, gewoon apart! Huishoudelijk Afvalplan Den Haag 2016 – 2020' 2015: 6). Inhabitants from urban places like The Hague then are subject of the divisions of environmental policies depending on the building infrastructure like higher buildings hence; they are limited to recycle more. This correlates to the majority of students interviewed coming from rural places where food used to be not wasted and in the occasion, it happened it was very little. As a result, from the interviews, two students from South Asia (India and Indonesia respectively) affirmed that their actual food waste habits have increased greatly in their time of residence in The Netherlands due to the individualization of plastic that items have in the chain supermarkets. Regarding current compost activities, as visualized in Figure 24 there is no major change within students from the old and new batch. The answers were classified from the weighting answer system were never and rarely are amounted as one negative answer. Almost half of students within the new batch as well as half of the students within the new batch do not separate organic waste at all.

Interviewees correlated to these answers. Within waste management, interviewees weighted together with this paper's author the waste generated from their rooms in order to calculate the amount of waste and items most wasted. At the waste management level, any of the students interviewed actually recycles. The majority of students indicated the placement of organic waste in the kitchens of their residencies to avoid accumulation of organic odor yet not for the sake of composting. Thus, organic waste was very difficult to measure. Paper and plastic where the items most generated. When students were asked whether they recycle and their perception of behavioral change, most of them referred their behavior to the use of the ISS bins and or the separation of organic waste in their kitchen as recycling yet not as composting. *" I looked for composting bins in the city and I thought there is no composting system here so I dumped the organic in the kitchen hall of my residence which is shocking for me"* commented a student from Japan within the interviews. As mentioned within the expert interview of the residencies management, organic waste is not collected from the residencies hence all the waste generated by students ends up within the same channel of general waste. Thus, students believe that by separating organic waste in their kitchen and using the ISS bins they are inferring a more environmental friendly behavior however, their intention and deed does not escalate into a positive impact on the environment.
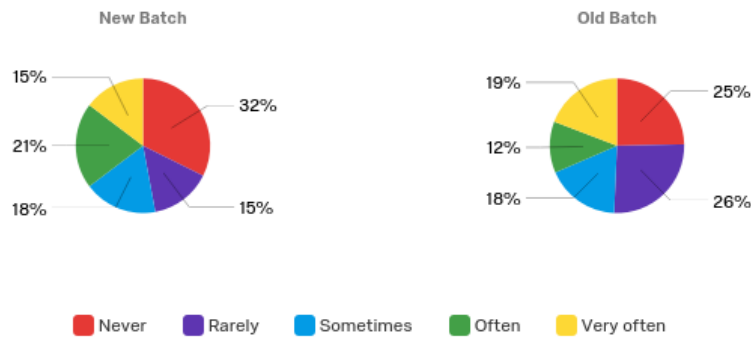
Figure 24 Compost behavior between both batch groups (Source: Author's findings)

Chapter VI. Conclusion

Recycling is at the end of the spectrum the result of an individual's decision. Yet adequate infrastructure and information distribution, institutional policies, social norms, in synergy with past habits becomes the main driver and influence on such decision. Such reflection is the outcome of the different methodologies used within this research paper. The longer students are spending in The Netherlands the more positive influence is given among pro-environmental behavior. Thus, university students do become more akin to pro-environmental behaviors. Yet, the positive changes resulted from our research do not express a significant percentage among the entire cohort and especially in our main behavior for which is it necessary to explain the changes given, the limitations and further implications for relevant research.

Knowledge not always means action, pointed in the literature as the *value-action gap*. To bridge this gap this research expanded into more individual, social, and institutional constraints and their effect on behavior whose evidence has shown the importance of understanding the determinants of behavior among university students because these are the same which drive or limit change.

Our main behavior measured was current recycling behavior where a positive change among each batch group was given. However, when comparing their past habits towards current recycling there was no significant change in any of the batch groups showing that through time students do not increment exponentially their recycling behavior in the country.

Environmental change was also perceived through the pilot project of the ISS recycling bins. In our case, social norms was related to the environment that influence students. The recycling bins increased encouraged people to recycle more. Additionally, these types of campaigns where less effort and cost are involved implied higher participation on recycling as mentioned on our literature review. All in all residing in an environment like The Netherlands

and the special infrastructure of the ISS proved to influence attitudes and perceptions over change.

When measuring direct change in behavior, most of students agreed to have undergone a change. Nonetheless, this result becomes risky. The majority of students answered positively, however, as perceived from the interviews their answers are correlated to the use of the ISS bins and a supposedly composting activity when separating organic waste from their rooms at their residencies. Therefore, the real change could not be proved. The research presented in this paper showed further evidence on how external factors influence directly internal factors but they do not influence directly pro-environmental behaviors. Therefore, a measurement on the real reducement of negative impact shall be further implied.

Definitely, knowledge as well as infrastructure interplays in PEBS. The same correlation, I can infer from the interviews I had with students, while most of them complained about the lack of facilities and knowledge on how to perform waste separation. Similar relation to knowledge was visible when students doubted about the procedures of waste collection and post-treatment. In addition, lack of infrastructure was shown to be a higher limitant too. Overall, students do not compost here due to lack of facilities and infrastructure. The ISS facilities also resulted negatively, with the time they were not correctly used and finally the number of students using them was not very high. Thus, for students to internalize a change in their behavior it is important that stronger factors interplay since usually internal factors play a bigger role as shown in our results. As indicated by Kollmuss und Agyeman model on PEBs external factors influence internal factors and only by a synergy between both there is a bigger influence on an individual in performing more PEBs even though there are existing barriers (Figure 1).

In addition, willingness and attitudes as well did not influence behavior within our comparison. Most likely, when people is asked about their willingness to recycle the majority answers positively as if people's intention work through moral responsibility as mentioned in the literature. Yet in reality intention and willingness does not equals action as resulted in our research. Men as well as women are not willing to give up their daily activities for more environmental friendly activities although women concerns were higher. Ours, is a small sample of intention and willingness behavior yet it does shows that people does not act under logical parameters as in earlier TRA rational models.

Through the analysis of policy implementation and the brief historical account of the Dutch environmental policies, it becomes clear the ecological modernization embedded in their circular economy policies. Nature captured as a key determinant of economic growth is the main impulse within the CE approach. If it becomes easier and more effective to recycle

and transform waste into raw materials, there are fewer incentives within a consumer society to avoid buying more. In the country there are several private companies managing the recycling sector, hence, it is prone to affirm that recycling becomes a business model in the country. If the country is seeking to become the pioneer of a circular economy further research should be done about legislation on placing prevention as the main policy. Then for a higher environmental change among international students it is necessary that different actors are more engage with the determinants of behavioral change.

Even though both management levels as policy makers and residential managers perceive international students as less concerned in the environment they were receptive to integrate more analysis like this paper into their policies. On the other hand, the same channel of communication is broken among students since they do not acknowledge what kind of measures are being taken among environmental solutions, although sometimes invisibles like claimed by the students of India. Hence, it is important to have a clear a way of knowledge provision and especially appealing to more engagement in environmental.

Undoubtedly, consumption behavior and the waste generated it carries is one of the major impacts to the environment and therefore, such behaviors needs to be constantly monitored and analyzed. Yet in democratic countries like The Netherlands, it becomes very complex to enforce people towards certain behavior as mentioned within the expert interviews. Because consumption seems to be more difficult to reach, more research should be done on pro-environmental behavior.

Due to the increasing demand that exists in our world regarding sustainable lifestyles, universities should be the hubs where students are encouraged to pursue a greater sustainable lifestyle (Zsóka, Szerényi, Széchy and Kocsis 2013: 128). Universities are important hubs of construction and transmission of knowledge internationally. On one hand, that high percentage of students seeking for a future in The Netherlands after their Master Program is finished should be considered on environmental policy implementation. On the other hand, those who will return to their countries, which are mainly in the developing world, are carrying also an important message potentially driving a change there as well (Zhang, Williams, Kemp and Smith 2011: 1607). In this regard, we conclude that higher institutions play a big role in sustainability reflected on the ISS pilot project yet more actors need to be engaged within waste management if bigger impact is pursued. This research delved into Master Students nonetheless, it will be worth to expand this type of research among larger groups of university students.

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Annex

Annex A. Questionnaire

Pro-environmental behavior among International Students in The Hague

----

1.What is your country of origin?

_____

—

2.What gender do you identify with?
- Other (1)
- Female (2)
- Male (3)
- I rather not answer (4)

3.What is your marital status?
- Single, never married (1)
- Married (2)
- Widowed (3)
- Divorced/Separated (4)

4.What is your range of age?
- 21-25 (1)
- 26-30 (2)
- 31-35 (3)
- 36-40 (4)
- 41 plus (5)

5.What is your field of study at ISS?
- Economics of Development (1)
- Governance and Development Policy (2)
- Social Policy for Development (3)
- Agriculture, Food Security and Environmental Studies (4)
- Human Rights, Gender and Conflict Studies (5)

6.What attracted you to the Netherlands?
- Business (1)
- Sustainability (2)
- Level of education (3)
- Technology (4)
- Other (5)

7.How long have you been living in The Netherlands?

- Less than two months (1)
- Less than one year (2)
- More than one year (3)

8.Before arriving, did you consider the Dutch lifestyle very sustainable and pro-environmental?
- Strongly agree (1)
- Agree (2)
- Neutral (3)
- Disagree (4)
- Strongly disagree (5)

9.Do you currently live in private housing or a student residence?
- Private (1)
- Student Residence (2)

Display This Question:

   If Do you currently live in private housing or a student residence? != Private

10. Which residence you live at?
- Gondelstraat (1)
- Buitenom (2)
- Dorus Rijkersplein (3)
- Bazarlaan (4)
- Stamkartplein (5)
- Torenstraat (6)
- Other (7) _____

11.Do you share your room with someone else?
- Yes (1)
- No (2)

12.Which of the following best describes the area you used to live in before coming to The Netherlands?
- Urban (1)
- Suburban (2)
- Countryside (3)

13.How important is environmental sustainability to you?
- Extremely important (1)
- Very important (2)
- Moderately important (3)
- Slightly important (4)
- Not at all important (5)

14.Do you agree: Any changes I make to help the environment need to fit in with my lifestyle?
- Yes (1)
- No (2)
- Maybe (3)

---

15. Lets talk about recycling,
Did you recycle or separate your waste before coming to The Netherlands, how often?
- Never (1)
- Rarely (2)
- Sometimes (3)
- Often (4)
- Very Often (5)

Display This Question:

If Recycling != Never

16. What items did you use to recycle the most?
- Glass (1)
- Paper (2)
- Organic/ Compost (3)
- Plastic (4)
- Textile (5)

17.At home in The Hague, how often do you recycle or separate your waste, currently?
- Never (1)
- Rarely (2)
- Sometimes (3)
- Often (4)
- Very Often (5)

---

18. What items did you recycle the most?
- Paper (1)
- Compost/Organic (2)
- Plastic (3)
- Textile (4)
- Glass (5)

19.If your are not often recycling at your home in The Hague, is because of ...
- Lack access to recycling bins/containers (1)
- Lack of information (2)
- No motivation (3)
- it will not make a difference (4)
- Other (5) _____

20.Have you used the ISS recycling bins to separate the waste you produce at home?
- Yes (1)
- No (2)

21.Would you consider using the ISS recycling bins for the waste you produce at home?
- Yes (1)
- No (2)

---

22. Did you know that in almost every neighborhood there is an underground waste container (as indicated below) for the collection of plastic, tin cans, drink cartons, paper and glass in The Hague?

- Yes (1)
- No (2)

---

23. If the containers for waste separation will be closer than 200 mts. to my current residence, will I separate my waste?
- Yes (1)
- No (2)

---

24. If the waste we produced IS NOT SEPARATED and dumped into the general bins, what do you think happens after it has been collected? (Multiple answers)
- Is separated by people (1)
- Is separated by machines (2)
- Is dumped into landfills (3)
- Is burned and turn into biogas (4)
- Is partly recycled and partly burned (5)
- I do not know (6)

---

25. If the waste we produced IS SEPARATED into recycling bins, what do you think happens after it has been collected? (Multiple answers)
- Is dumped into landfills (1)
- Is separated by people (2)
- Is separated by machines (3)
- Is mixed together with the rest of the waste (4)
- Is burned and turned into biogas (5)
- Is partly recycled and partly burned (6)
- I do not know (7)

---

26. Would you recycle more, if the municipality would offer you incentives for your waste?
- Yes (1)
- No (2)

Display This Question:

27. If yes, can you give some examples...
● Click to write Choice 1 (1)

_____

28. When doing groceries, I take my own bags to reduce plastic consumption?
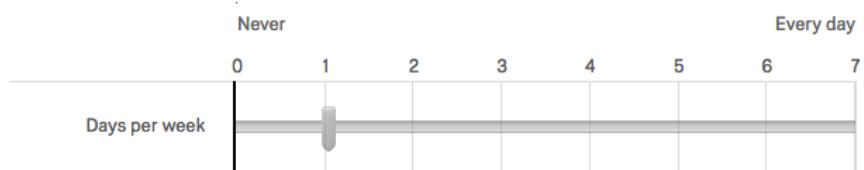● Yes (1)
● No (2)

29. How often do you separate organic waste?
● Never (1)
● Rarely (2)
● Sometimes (3)
● Often (4)
● Very often (5)

30. At your current home, what products do you think you throw away the most ? (Multiple Answers)
● Bread (1)
● Vegetables and fruits (2)
● Meat (3)
● Dairy products (4)
● Liquids (juice, beverages, etc) (5)
● Pasta / Rice (6)
● Others (7)

31. How many days do you throw away food in one week?

	Never							Every day
	0	1	2	3	4	5	6	7
Days per week								

32. Would you agree with the following statement? I find recycling or separating waste is difficult in The Hague
- Strongly Agree (1)
- Agree (2)
- Neutral (3)
- Disagree (4)
- Strongly disagree (5)

33. I have become more environmentally conscious by living in The Netherlands
- Strongly agree (1)
- Agree (2)
- Somewhat agree (3)
- Neither agree nor disagree (4)
- Somewhat disagree (5)
- Disagree (6)
- Strongly disagree (7)

34. Would you agree that people need to be more educated on the subject of recycling and waste management?
- Strongly agree (1)
- Agree (2)
- Somewhat agree (3)
- Neither agree nor disagree (4)
- Somewhat disagree (5)
- Disagree (6)
- Strongly disagree (7)

35. Are you planning to stay in The Netherlands after you pursue your Master's degree?
- Definitely yes (1)
- Probably yes (2)
- Might or might not (3)
- Probably not (4)
- Definitely not (5)