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D4.3 Final Report on the Role of Individual Factors in Promoting or Hindering GHG Reduction Behaviours and Practices

**FOUR CASE STUDIES: UNIVERSITY OF
CORUNNA, THE MUNICIPALITY OF
GRONINGEN, AQUATIM & ENEL GREEN
POWER**

WP4. Individual Factors

Low Carbon at Work: Modelling Agents and Organizations to achieve
Transition to a Low Carbon Europe

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DELIVERABLE 4.3



**Report on the Results of analysis of questionnaires in
four Case Studies: University of Corunna, The municipality of Groningen, Aquatim and ENEL
Green Power**

Report Authors:

From University of Groningen, the Netherlands *Authors:* Angela Ruepert, Kees Keizer, Linda Steg

From University of Corunna, Spain *Authors:* Ricardo García Mira, Adina Dumitru, Pedro Vega Marcote & Miguel Muñoz

From West University of Timisoara, Romania *Authors:* Corina Ilin, Alexandra Docea, Daniela Moza

From CIRPA – Sapienza University of Rome *Authors:* Giuseppe Carrus, Fridanna Maricchiolo, Ferdinando Fornara, Marino Bonaiuto & Mirilia Bonnes

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INTRODUCTION

WP4 aims to provide an assessment of the barriers and drivers of everyday pro-environmental behaviours at work at a micro level, that is, the individual level.

In Deliverable 4.3 we aim to address the following main questions:

1. *Which factors affect pro-environmental behaviour at work?*
2. *Is there a spillover effect from pro-environmental behaviour at work to pro-environmental behaviour at home?*

This report consists of two parts. In the first part we discuss findings from a questionnaire study on which individual factors promote or hinder pro-environmental behaviour at work, and spillover from pro-environmental behaviour at work to pro-environmental behaviour at home. We present the results from a large-scale quantitative study (a questionnaire) among employees at different levels in the organizations in the four case study areas. The second part of the report presents results from a qualitative follow-up study. In this part we will discuss results of semi-structured interviews in which we investigate the main findings of the quantitative study in more depth.

In both parts of the report, we will discuss the results from studies in four case study areas: Enel Green Power (Italy), Aquatim (Romania), the University of Corunna (Spain) and the municipality of Groningen (the Netherlands).

CHAPTER Q-1: INTRODUCTION TO THE QUESTIONNAIRE

1.1 INTRODUCTION

In this part we present the results from the quantitative study among employees at different levels in the organizations in the four case study areas. We will discuss the results from studies in four case study areas: Enel Green Power (Italy), Aquatim (Romania), the University of Corunna (Spain) and the municipality of Groningen (the Netherlands).

Below, we discuss the specific research questions that will be addressed in this report.

Question 1. How often do people engage in pro-environmental behaviour at work? Is there a relationship between pro-environmental behaviour at work and at home?

In order to be able to give a full and substantiated answer to the main questions we will first investigate how often people engage in pro-environmental behaviour at work. Next, to test for possible positive spillover effects, we will examine how often people engage in pro-environmental behaviour at home and how much pro-environmental behaviour at work and at home are related. Positive spillover is said to occur when adoption of a particular behaviour increases the motivation for an individual to adopt other related behaviors (Thøgersen & Crompton, 2009). Negative spillover occurs when the opposite happens. However, thus far the results of research on spillover effects were inconsistent. Some studies reported positive spillover effects (e.g. Geller, 2001), while other studies clearly demonstrated negative spillover effects (e.g. Mazar & Zhong, 2010). The probability of positive spillover effects can be supported and explained by the process called response generalization. Response generalization means that acting in a particular way in one instance changes one's self-perception accordingly (Bem, 1972), and - through the motivation to be consistent - increases the likelihood that people will act consistently in future instances as well (Festinger, 1957). Negative spillover effects can be explained by ego-depletion: previous effortful or volitional sustainable behaviour can cause ego-depletion and impede people from engaging in future sustainable behaviour. Negative spill-over effects can also be explained by moral licensing: engaging in a particular pro-environmental action temporarily boosts one's self-concept, and thereby allows people to act amorally in subsequent actions (Sachdeva et al., 2009). There is no decisive answer to the question under which conditions and contingencies the spillover effect is positive or negative and the results are desirable or undesirable. For looking at spillover from one type of behaviour to another type of behaviour we will take various types of (pro-environmental) behaviour at home and at work into account. We will specifically focus at energy use and recycling. Besides we will also look at the possible spillover effect of behaviour from one location (work) to another location (home).



Question 2. Which individual factors influence pro-environmental behaviour at work?

In the LOCAW project at large, we consider three main factors influencing behaviour: *opportunities, motivations and ability*. Opportunities that influence the attractiveness of behavioural alternatives (e.g., different transport modes) have been investigated in WP3. In this report we focus on individual motivations and ability to act pro-environmentally. Specifically, we study the perceived individual abilities to engage in pro-environmental behaviours, which depends, among others, on self-efficacy and outcome efficacy. Furthermore, we focus on general motivational factors, that is, general antecedents such as values, worldviews, and social norms regarding pro-environmental actions at work that may affect a wide range of pro-environmental actions simultaneously,. These motivational factors are important for understanding (the relation between) the intention to act pro-environmental at work and at home.

Values. The first motivational factor we consider is values. A value is a trans-situational goal which serves as a guiding principle in the life of a person or social entity (Schwartz, 1994). We can distinguish 4 main values: biospheric, altruistic, egoistic and hedonic. The (relative) influence of the different values will differ from person to person. People who endorse values beyond their immediate own interests, that is, biospheric and (to a lesser extent) altruistic values are more likely to engage in pro-environmental behaviour (e.g. De Groot & Steg, 2007, 2008). People with strong biospheric values base their decisions to act pro-environmentally or not on the costs and benefits for the environment, while, people with strong altruistic values are more concerned about the welfare of other people, as reflected in, for example, equality, social justice and no conflicts or war (De Groot & Steg, 2007, 2008). On the other hand, pro-environmental behaviour appeared to be negatively related to egoistic and hedonic values. People with strong hedonic values find pleasure or sensuous satisfaction for oneself particularly important, whereas people with strong egoistic values focus on individual costs and benefits as reflected in, among others, social status and prestige, control or dominance over others and resources (Steg, Perlaviciute, Van der Werff, & Lurvink, in press). Hence, we expect that strong biospheric and altruistic values promote pro-environmental behaviour at work and at home, while strong hedonic and egoistic values are more likely to hinder such behaviour. We will also study which values are most strongly related to different types of pro-environmental behaviour at home and at work.

Worldviews. Earlier research in environmental psychology showed that pro-environmental worldviews are being shared by large portions of public in current societies. This shared worldview were initially defined as a “New Environmental Paradigm” (NEP) supporting the idea of humankind as a part of the nature, which gradually replaced the traditional “Dominant

Social Paradigm” supporting the idea of humankind dominating over the rest of the nature (e.g., Dunlap & Van Liere, 1978). The NEP Scale, a specific psychometric instrument measuring endorsement of this new worldview, became popular and was used by many researchers in different countries (see also Dunlap, Van Liere, Mertig & Jones, 2000). However, some authors argued that the NEP scale is too strictly focused on a marked dichotomy between human development needs as opposed to natural ecosystems balances. This opposition does not take enough into account the possibility of a synergy between social and economic development and natural resource use and conservation, as instead reflected in the principles of sustainable development put forward by the United Nations and other intergovernmental agencies since the ‘80s. In order to overcome this aspect, Corral-Verdugo, Carrus, Bonnes, Moser & Sinha (2008) have recently proposed a scale to measure pro-environmental worldviews, labelled as a “New Human Interdependence Paradigm” scale (NHIP). The idea at the basis of the NHIP is more close to the sustainable development principles, as it envisages an interdependence between human processes and ecosystems processes, in view of a dynamic and long term integration of reciprocal human and ecosystems needs.. The NHIP items assessed the belief that human needs are interdependent with natural ecosystems processes (functional interdependence), and that balanced human-nature relation in present times is interdependent with balanced human-nature relations in the future (temporal interdependence), and are a reliable predictor of pro-environmental attitudes and behaviours (see also Carrus, Bonnes, Corral-Verdugo, Moser & Sinha, 2010).

Environmental self-identity. The third motivational factor we consider is environmental self-identity. Self-identity reflects the label used to describe yourself (Cook, Kerr & Moore, 2002). When we apply this to the environmental domain the environmental self-identity reflects the extent to which you see yourself as a type of person who acts pro-environmentally (Van der Werff, Steg, & Keizer, 2013). It prescribes a course of action that is compatible with a sense of who you are. We expect that a strong environmental identity promotes pro-environmental behaviour at work and at home.

Norms. Social norms represent what is commonly done (descriptive norms) or (dis)approved of by others (injunctive norms; Cialdini, Reno & Kallgren, 1990). Research has indicated that social norms towards acting pro-environmentally can have an important impact on pro-environmental behaviour including household energy use (e.g. Nolan, Schultz, Cialdini, Goldstein & Griskevicius, 2008). Besides social norms, personal norms proved to be a relevant predictor of pro-environmental behaviour. Personal norms refer to self-expectations regarding one’s own behaviour (Schwartz, 1992). They are experienced as feelings of moral obligation to engage in certain behaviour (Schwartz & Howard, 1981). Personal norms will particularly influence behaviour when they are activated. Activation of personal norms occurs when a person is aware of the negative consequences of one’s behaviour for the environment, and when this person ascribes responsibility for these consequences to oneself

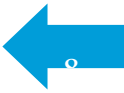


and acknowledges that he or she can effectively contribute to the solutions of these problems. Local norms were also proposed as relevant predictor of pro-environmental intentions and behaviours (see Fornara, Carrus, Passafaro & Bonnes, 2011). Local norms refer to normative influence deriving from social interactions that are localized in the specific places where the behaviours are actually performed. The anchoring to a particular place represents the main characteristic distinguishing “local” norms from generic social norms. The term “local” stresses how the normative source is tailored to a well-defined and limited setting, spatially proximal to the every-day individual’s experience (in terms of visual perception and behaviours). We expect that social norms indicating that pro-environmental behaviour is what is commonly done or approved of by others in general and by other people sharing the specific work setting considered, as well as personal norms representing feelings of moral obligation to engage in pro-environmental behaviour will strengthen pro-environmental behaviour.

Efficacy. Individual abilities to engage in pro-environmental behaviour are based on structural and organizational factors; we extensively discussed this in WP3. However, structural and organizational factors may be perceived and experienced differently by workers. Therefore, it is not only important to study structural and organizational factors objectively, as we did in WP3, but also study the individual perceptions of these factors. We did so in WP4. We focus on the role of efficacy, and make a distinction between self-efficacy and outcome efficacy. Self-efficacy is the confidence and perceived control that people experience to execute sustainable behaviour (Ajzen, 2006). Hence, self-efficacy reflects the extent to which people think they are capable to engage in pro-environmental actions. In this study we investigate the influence of self-efficacy. We expect that for example, people who do value acting pro-environmentally at work, but do not perceive themselves as capable of acting pro-environmentally might thus not act in such a manner. We thus expect a moderating effect of self-efficacy in the relation between the individual factors and pro-environmental behaviour at work, especially values and environmental self-identity. Outcome efficacy reflects to what extent people think they can do something about environmental problems by acting pro-environmentally (Schwartz, 1977). Outcome efficacy is very relevant in the environmental domain, as typically, environmental problems will only be solved when many people collaborate. Hence, it is likely that the strength of outcome efficacy depends on descriptive social norms: the more people think that others behave pro-environmentally at work, the more likely they think their own contribution might be worthwhile. In addition based on previous research, we expect that values influence the personal identity, which in its turn influences outcome-efficacy and personal norms ultimately influencing pro-environmental behaviour (Steg & De Groot, 2010).

- *Question 3. Do people in different job positions differ in their pro-environmental behaviour at work?*

People from different levels of the organisation might differ in their pro-environmental actions and might have different motives for acting pro-environmentally at work. One reason might be that people from certain levels of the organization do not only act pro-environmental for themselves but also because they fulfil an exemplary role for other people. To explore this possibility we will first investigate to what extent people from different levels of the organization differ in their pro-environmental behaviour. We will investigate if people at different levels in the organization vary in the extent to which they feel they have an exemplary role and to what extent this is related to pro-environmental behaviour at work.



1.2 ACKNOWLEDGEMENTS

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CHAPTER Q-2: METHOD

2.1 INTRODUCTION

We conducted a questionnaire study in the four organizations (the University of Corunna, the Municipality of Groningen, Aquatim, and ENEL Green Power) to examine relationships between individual factors and pro-environmental behaviour at work and possible spillover effects between pro-environmental behaviour at work and at home. The questionnaire was designed jointly by the case study teams and comprised of the same key set of questions, to ensure that the data from the different case study areas can be compared. In addition, each case study team added some specific questions related to the particular organisational setting when deemed appropriate.

At a meeting in Umea in February 2012, we decided upon the main topics for the quantitative study: values, norms, efficacy, environmental self-identity, different types of pro-environmental behaviour at work and pro-environmental behaviour at home. In a later stage we decided to add the topics worldviews and norm transmission.

The first version of the questionnaire (in English) was developed in May 2012. Each case study team translated the questionnaire into their own language. Next, a pilot study was conducted in each country in June 2012. Based on this pilot study the questionnaire was revised. The final version of the questionnaire was completed in June 2012.

2.2 PROCEDURE AND SAMPLE CHARACTERISTICS

The questionnaire was distributed and collected via the online program Qualtrics. Participants filled out the online questionnaire consisting of three parts. First we asked the participants some general questions about their personal situation (such as age and gender) and the extent they believe to have and exemplary role in their organization (see Appendix 1). This was followed by the second part comprising questions about motivational factors (i.e. values and environmental self-identity). We randomised all items from the worldviews, environmental self-identity, norms and efficacy scales to make sure that the order of the questions did not influence the responses. Third, participants completed a set of questions on pro-environmental behaviour at work and at home. The data were collected from June 2012 until December 2012.

Table 1 gives an overview of the number of questionnaires collected, and key socio demographics (gender, age, level of education) for each case study. What we mainly see is that a majority of the respondents comes from the Spanish case study. Furthermore, we see an almost equal distribution of gender, except in the Italian sample, in all case studies and the mean age is between 41 and 45. In the Spanish case study the educational level is the highest. This is an expected consequence of the fact that the Spanish case study area is an university.

The Spanish team, taking into account the nature of the organization, considered 2 categories for 2 different types of Staff: 1) Teaching and Research Staff in leading positions (Top manager); 2) Administrative staff in leading positions (Management); 3) Teaching and Research Staff with no leadership positions (i.e. just to teach or/and just to research, or other supervisory responsibilities) (Supervisory): and 4) Administrative staff with no leadership position: administration staff, technicians (Operation level).



Table 1 Sample Characteristics

	The Netherlands	Spain	Romania	Italy	Total
N	117	255	122	124	618
% Male / Female	49% / 51%	44% / 56%	48% / 52%	70% / 30%	51% / 49%
Mean age (SD)	43.5 (11.13)	44.0 (9.13)	41.5 (10.21)	44.48 (10.47)	43.5 (10.05)
Level of education (SD)	3.63 (.83)	4.21 (1.00)	2.43 (.62)	2.98 (1.11)	3.49 (1.16)

Note: Scores on level of education could vary from 1= no education/preschool to 5=doctorate-level degree

Table 2 provides an overview of the level in the organization at which participants work. Not surprisingly, in all case study areas except the Italian, the majority of participants worked at the operational level.

Table 2 Sample characteristics: Level in the organization

	The Netherlands	Spain	Romania	Italy	Total
Top manager	-	19 (8%)	1 (1%)	9 (7%)	29 (5%)
Management	6 (5%)	4 (2%)	10 (8%)	14 (11%)	34 (6%)
Supervisory	4 (3%)	162 (64%)	22 (18%)	69 (56%)	257 (42%)
Operation level	107 (92%)	70 (28%)	89 (73%)	31 (25%)	297 (48%)

2.3 MEASURES

2.3.1 VALUES

We measured the strength of values by a 16-item scale (Steg, Perlaviciute, Van der Werff & Lurvink, in press). Participants rated the importance of each value as a guiding principle in their life on a scale from -1 (opposed to my values) up to 7 (of supreme importance). Biospheric values were represented by 4 items (Respecting the earth: harmony with other species; Unity with nature: fitting into nature; Protecting the environment: preserving nature; Preventing pollution: protecting natural resources). Altruistic values were also measured with 4 items (Equality: equal opportunities for all; A world at peace: free of war and conflict; Social justice: correcting injustice, care for the weak; Helpful: working for the welfare of others). We measured egoistic values with five items (Social power: control over others, dominance;

Wealth: material possessions, money; Authority: the right to lead or command; Influential: having an impact on people and events; Ambitious: hard-working, aspiring). Finally, hedonic values were measured with 3 items (Pleasure: joy, gratification of desires; Enjoying: enjoying food, sex, leisure etc.; Self-indulgent: doing pleasant things). The value scales showed high internal consistency, overall, as well as in each case study area (see Table 3). Therefore we computed mean scores of the items included in the relevant scales.



Table 3 Internal reliability of the value scales

		Cronbach's alpha					N of items
		The Netherlands	Spain	Romania	Italy	Total	
Values	Biospheric	.90	.90	.82	.86	.92	4
	Altruistic	.88	.75	.66	.77	.87	4
	Egoistic	.80	.69	.75	.81	.84	5
	Hedonic	.92	.82	.77	.78	.85	3

2.3.2 ENVIRONMENTAL SELF-IDENTITY

We measured environmental self-identity with three items: 'Acting pro-environmentally in an important part of who I am', 'I am the type of person who acts pro-environmentally' and 'I see myself as an pro-environmental person'. These items were adapted from Van der Werff et al. (2013). Scores on these items could range from 1 (totally disagree) to 7 (totally agree). The environmental self-identity scale showed high internal consistency, overall, as well as in each case study area (see Table 4), therefore we computed the mean score on these items.

Table 4 Internal reliability of the environmental self-identity scales

	Cronbach's alpha					N of items
	The Netherlands	Spain	Romania	Italy	Total	
Environmental Self-identity	.83	.91	.93	.81	.91	3

2.3.3 WORLDVIEWS

Worldview was measured with six items from the New Human Interdependence Paradigm scale (NHIP; Corral-Verdugo et al., 2008): 'Human beings can progress only by conserving nature's resources', 'Human beings can enjoy nature only if they make wise use of its resources', 'Human progress can be achieved only by maintaining ecological balance', 'Preserving nature now means ensuring the future of human beings', 'We must reduce our consumption levels to ensure the well-being of present and future generations', 'If we pollute natural resources today, people in the future will suffer the consequences'. Scores could range from 1 (totally disagree) to 7 (totally agree). The worldviews scale showed high internal

consistency, overall, as well as in each case study area (see Table 5). We computed the mean scores on the worldviews scale.



Table 5 Internal reliability of the worldviews scale

	Cronbach's alpha					N of items
	The Netherlands	Spain	Romania	Italy	Total	
Worldviews	.85	.90	.92	.87	.90	6

2.3.4 NORMS

General descriptive norms were measured with four items reflecting to what extent respondents' believed that a certain reference group acts pro-environmentally at work (cf. Ajzen, 2006): 'Most people who are important to me act pro-environmentally at work', 'Most of the people from my city act pro-environmentally at work', 'Most <Dutch/Italians/Romanians/Spaniards> act pro-environmentally at work', and 'Most people in general act pro-environmentally at work'. The four items for local descriptive norms were similar but referred to people at their workplace: 'Most of my subordinates act pro-environmentally at work', 'Most of my co-workers act pro-environmentally at work', 'Most of my supervisors act pro-environmentally at work', and 'Most members of my management team act pro-environmentally at work'.

We measured general injunctive norms with four items (cf. Ajzen, 2006): 'Most people who are important to me think I should act pro-environmentally at work', 'Most of the people from my city think I should act pro-environmentally at work', 'Most <Dutch/Italians/Romanians/Spaniards> think I should act pro-environmentally at work', and 'Most people in general think I should act pro-environmentally at work'. The four items for local injunctive norms were again similar, but focused on people at work: 'Most of my subordinates think I should act pro-environmentally at work', 'Most of my co-workers think I should act pro-environmentally at work', 'Most of my supervisors think I should act pro-environmentally at work', and 'Most members of my management team think I should act pro-environmentally at work'.

Personal norms were measured with 4 items based on Steg and de Groot (2010): 'I feel guilty if I do not act pro-environmentally at work', 'I feel morally obliged to act pro-environmentally at work', 'I feel proud when I act pro-environmentally at work', and 'I would violate my principles if I would not act pro-environmentally at work'.

All items related to norms were scored on a scale ranging from 1 (totally disagree) to 7 (totally agree). All norm scales showed high internal consistency, overall, as well as in each case study area (see Table 6). Therefore, we computed mean scores of items included in the relevant scales.



Table 6 Internal reliability of the norms scales

		Cronbach's alpha					N of items
		The Netherlands	Spain	Romania	Italy	Total	
General norms	Descriptive	.82	.70	.80	.63	.75	4
	Injunctive	.76	.69	.85	.77	.79	4
Local norms	Descriptive	.96	.86	.89	.89	.90	4
	Injunctive	.95	.82	.92	.85	.88	4
Personal norms		.84	.84	.81	.85	.84	4

2.3.5 EFFICACY

The self-efficacy scale consists of three items: 'For me acting pro-environmentally at work is not costly', 'For me acting pro-environmentally at work is easy', and 'For me acting pro-environmentally at work is feasible' (cf. Ajzen, 2006), on a scale ranging from 1 (totally disagree) to 7 (totally agree). The reliability of this scale was good (see Table 8).

Outcome efficacy was measured by three items: 'I can make a positive contribution to the quality of the environment by acting pro-environmentally at work', 'Environmental quality will enhance when I act pro-environmentally at work', and 'I can contribute to reducing environmental problems by acting pro-environmentally at work' (cf. Steg & De Groot, 2012). All items were scored on a scale ranging from 1 (totally disagree) to 7 (totally agree). The outcome efficacy scales showed high overall internal consistency, overall as well as in most case study area. Only in the Dutch case study the reliability of outcome efficacy is somewhat lower (see Table 8). We created mean scores of the items for self-efficacy and outcome-efficacy.

Table 8 Internal reliability for the efficacy scales

	Cronbach's alpha					N of items
	The Netherlands	Spain	Romania	Italy	Total	
Self-Efficacy	.73	.85	.91	.71	.84	3
Outcome Efficacy	.66	.84	.93	.78	.84	3

2.3.6 PRO-ENVIRONMENTAL BEHAVIOUR AT WORK

We used two measures for pro-environmental behaviour at work. First, we assessed total energy use of relevant behaviours by asking participants about their transport related behaviour (commuting and business trips), and energy use at the workplace (i.e., their use of lighting, the computer, heating and air-conditioning). The following transport-related items were included: ‘How many kilometres per week do you on average commute by car?’, ‘How many kilometres per week do you in average travel for work?’, ‘When you travel for work purposes, how often do you drive in an energy efficient way (looking ahead and anticipating on traffic and brake and accelerate quietly and change to a higher gear as soon as possible)?’, ‘When you drive for work, how often do you carpool rather than drive alone?’. To measure the energy use at the workplace we used for example the following items: ‘How many hours a day are the lights on at your workspace?’, ‘How often do you switch the computer off at work when you go home?’, ‘What is the average temperature setting at your workspace when you are working?’ and ‘During the year when you are at work, how often do you turn on the air-conditioning at your workspace?’. We did ask for personal control over lighting, heating and air-conditioning. For the full energy use at work scale see Appendix section 1c. In collaboration with an expert in energy and sustainable research from the faculty of mathematics and natural sciences at the University of Groningen, we created a calculator to compute energy use on the basis of the answers provided on the behavioural items. We did this by assigning Mega joules used to each energy behaviour score (see Gatersleben et al., 2002). By summing up all these energy content scores we created a score for individual energy use at work which reflects the amount of energy used in MJ per week per person.

Second we measured self-reported recycling at work with three items: ‘How often do you use recycled paper at work?’, ‘How often do you separate your paper from the regular garbage at work?’, and ‘How often do you use your own cup instead of disposable cups at work?’. Scores on these items ranged from 1 (never) to 7 (always). For some countries we also asked about separating plastic from the regular garbage. However, this item was not included in the recycling scale, because this question was not relevant for the Dutch sample as in the Netherlands plastic is separated at the waste disposal station, so workers do not need to do this themselves. We found weak correlations between the different types of recycling at work, as reflected in the very low reliability scores (see Table 9). This suggests that engaging in one type of recycling behaviour is only weakly related to engaging in other types of recycling behaviour. This may be due to the fact that different recycling regimes are in place for different types of recyclables in each of the case study areas. Therefore, we decided to run the analysis with the different types of recycling separately as well as with an overall score for recycling in general. As the pattern of results was very similar for the different indicators of recycling behaviour, we only report the analyses with overall recycling behaviour as the dependent variable.



Table 9 Internal reliability for the recycling at work scale

	Cronbach's alpha					N of items
	The Netherlands	Spain	Romania	Italy	Total	
Recycling at Work	.27	.42	.38	.19	.22	3

2.3.7 PRO-ENVIRONMENTAL BEHAVIOUR AT HOME

We measured pro-environmental behaviour at home in a similar way as pro-environmental behaviour at work. For the measure of total energy use we adjusted the items in such a way that they targeted the situation at home. We included items concerning transport, lighting, electrical devices, heating , air-conditioning, washing and bathing. For the full energy use at home scale see Appendix section 1d .

Self-reported recycling at home was measured with six items: ‘How often do you use recycled paper at home?’, ‘How often do you separate your batteries from the regular garbage at home?’, ‘How often do you separate your glass from the regular garbage at home?’, ‘How often do you buy goods with minimum packaging?’, and ‘How often do you refuse plastic bags in stores?’. Again, we included an item on separating plastic form the regular garbage in some countries only, and therefore this item was not included in the recycling scale, for the same reason as in recycling at work. The recycling at home scales showed high internal consistency (see Table 10), therefore we computed a mean score of the items.

Table 10 Internal reliability for the recycling at home scale

	Cronbach's alpha					N of items
	The Netherlands	Spain	Romania	Italy	Total	
Recycling at Home	.70	.69	.81	.73	.73	6

CHAPTER Q-3: RESULTS

3.1 PRO-ENVIRONMENTAL BEHAVIOUR

3.1.1 PRO-ENVIRONMENTAL BEHAVIOUR AT WORK

Figure 1 shows the mean scores on total energy use at work in MJ for the different case study areas, while Figure 2 shows the mean scores on recycling at work per case study area. When we compare the different case studies we see significant differences in total energy use at work ($F(3,473) = 31.35, p < .001$), participants in the Italian case study used the most energy at work, while participants from the Dutch case study used the least energy. We did also see significant differences in the level of recycling at work ($F(3,486) = 23.078, p < .001$). In the Romanian case study area, participants recycled more, while participants from the Dutch case study were least likely to recycle their waste. There were no differences in recycling at work between the Spanish and Italian case study.

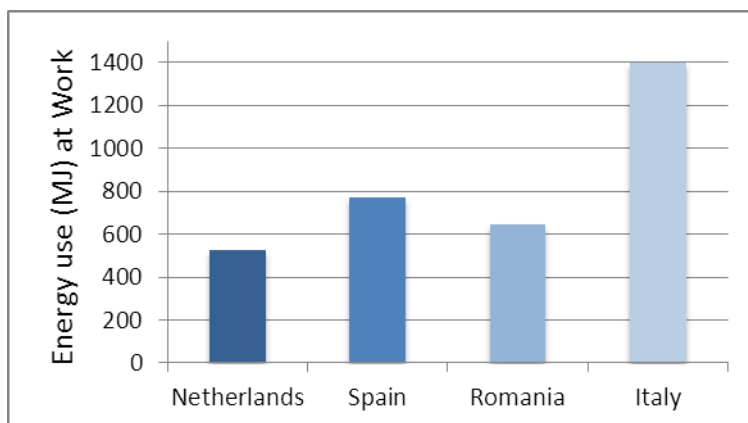


Figure 1 Mean scores for energy use at work per case study area

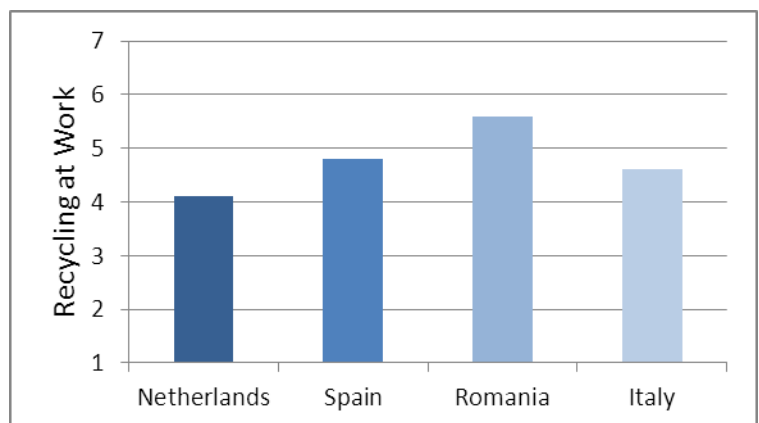



Figure 2 Mean scores for recycling at work (on a scale from 1 = never to 7 = always) per case study area

3.1.2 PRO-ENVIRONMENTAL BEHAVIOUR AT HOME

Pro-environmental behaviour at home. Figure 3 shows the mean scores on energy use at home per case study area and Figure 4 presents the mean scores on recycling at home in the four case study areas. We found significant differences in total energy use at home between the case study areas ($F(2,468) = 25.38, p < .001$). Participants from the Romanian case study indicated to use more than twice the amount of energy at home as compared to participants from the Dutch and Spanish case studies (see Figure 3). Also in the Italian case study area participants used significantly more energy at home compared to the Dutch and Spanish case studies. Based on the items we used there are also significant differences in recycling at home ($F(2,363) = 9.25, p < .001$) (see Figure 4). Participants in the Romanian case study area were less likely to recycle their waste than participants in the other case studies. There were no

differences in energy use or recycling at home between the Spanish and Dutch case study areas. Participants from the Italian case study area recycled the most. 

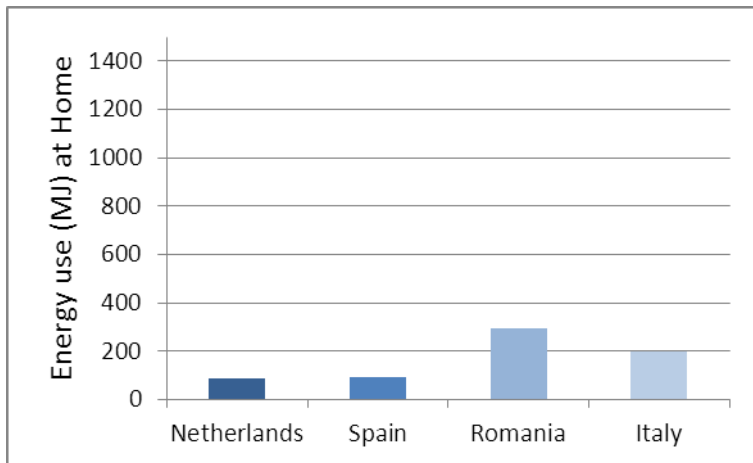


Figure 3 Means scores for energy use at home per case study area

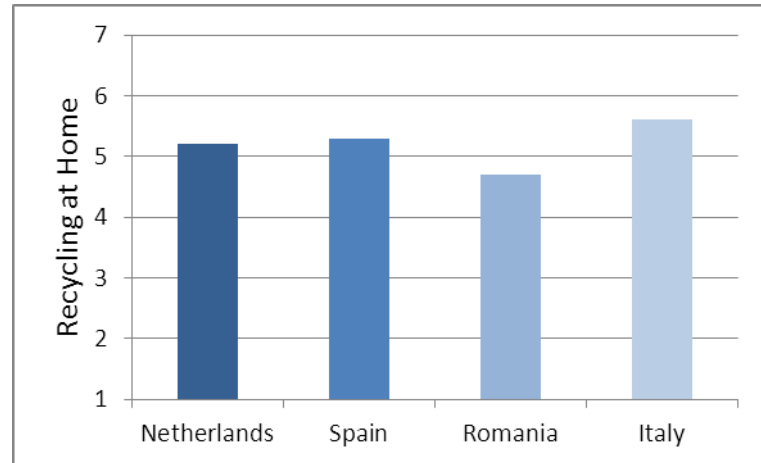


Figure 4 Mean scores for recycling at home (on a scale from 1 to 7) per case study area

3.1.3 SPILLOVER

To examine possible spillover from different behaviours at work, we examined correlations between total energy use at work and recycling at work. Interestingly, correlations between these two types of behaviour were very weak and only in the Italian and in the total sample statistically significant (see Table 11). This indicates that there is hardly any spillover between types of behaviour at work. Furthermore we found that energy use at home is weakly negatively correlated with recycling at home in the Italian case study and in the total sample. This negative correlation means that people who use less energy at home also tend to recycle more at home. We thus see to some extent a spillover effect between the different domains of pro-environmental behaviour at home. However, the correlation was not strong and only statistically significant when the full sample was considered.

Table 11 Correlation between domains of pro-environmental behaviour at work and at home

	Total	The Netherlands	Spain	Romania	Italy
Energy Use (MJ) at Work					
Recycling at Work	-.10*	-.09	-.06	-.04	-.20*
Energy Use (MJ) at Home					
Recycling at Home	-.15**	-.09	-.08	-.08	-.20*

Note: * $p < .05$, ** $p < .01$, *** $p < .001$



We also examined spillover between locations (work and home). We found that energy use at work is positively related to energy use at home (see Table 12). This suggests that people who use less energy at work also use less energy at home. Also, we found that recycling at work is positively related to recycling at home, suggesting that participants who recycled more at work also recycled more at home. We did not find any significant correlation between energy use at work and recycling at home or recycling at work and energy use at home. This suggests that there is a positive spillover effect between locations (a specific type of pro-environmental behaviour at work and the same behaviour at home), and no significant spillover effect between domains of pro-environmental behaviour at home.

Table 12 Correlation between pro-environmental behaviour at work and at home

		Total	The Netherlands	Spain	Romania	Italy
Energy Use (MJ) at work						
Behaviour at Home	Energy use (MJ)	.25***	.37**	.39***	.20*	.21*
	Recycling	.05	-.02	-.06	-.02	-.01
Recycling at work						
Behaviour at home	Energy use (MJ)	.01	.03	-.07	-.12	-.19
	Recycling	.33***	.28**	.55***	.41***	.42***

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

3.2 INDIVIDUAL FACTORS INFLUENCING PRO-ENVIRONMENTAL BEHAVIOUR AT WORK



3.2.1 VALUES

Overall people strongly endorsed biospheric, altruistic and hedonic values, while egoistic values seemed to be less important as a guiding principle in participants’ life (see Figure 5). This pattern is the same in all case study areas, but there are also some interesting differences. The Dutch participants evaluated biospheric values as less important than the other participants. Participants from the Spanish case study had stronger altruistic values than Dutch and Romanian participants, while participants from the Romanian case study area more strongly endorsed egoistic values than participants from the other case study areas. Hedonic values are least endorsed by the Italian participants.

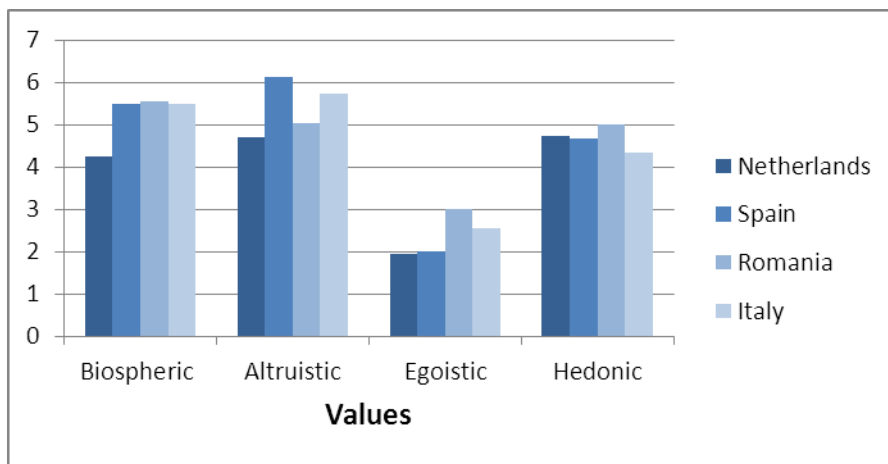


Figure 5 Mean scores on values per case study area (scale from -1 = opposed to my values to 7 = of supreme importance)

Next, we examined to what extent values are related to different types of behaviour at work. Correlation analysis between values and pro-environmental behaviour at work (see Table 13) shows that overall energy use at work is positive related to egoistic values, suggesting that the more strongly participants endorsed egoistic values, the more energy they used at work. In the Dutch case study we find slightly different results; again a significant positive correlation with egoistic values, but also a positive correlation between hedonic values and energy use at work. In the Italian case study we see a negative correlation between altruistic values and energy use at work, suggesting the more people endorse altruistic values the less energy they use. There are no significant correlations between energy use at work and values in the Spanish and Romanian case study.

Interestingly, values were differently related with recycling at work. In the overall analysis, those who strongly endorsed biospheric values and to a lesser extent those who strongly altruistic values were more likely to recycle, while egoistic and hedonic values were not significantly related to recycling at work. We found the same pattern of results in the case study area separately, with the exception of the Netherlands, where we did not find any significant correlations between recycling at work and values. In the Spanish case study we also found a negative correlation between recycling at work and hedonic values, suggesting that Spanish participants with strong hedonic values were less likely to recycle. Additionally, in the Italian case study we found a negative relation between egoistic values and recycling at work, indicating that people with strong egoistic values are less likely to recycle.



Table 13 Correlation between values and pro-environmental behaviour at work

			Total	The Netherlands	Spain	Romania	Italy
Energy Use (MJ) at work							
Values	Biospheric		-.03	.01	-.08	.07	-.03
	Altruistic		.04	.09	.04	-.00	-.20*
	Egoistic		.12*	.32**	.11	-.06	.15
	Hedonic		.02	.26*	.06	.06	.06
Recycling at work							
Values	Biospheric		.29***	.12	.26***	.20*	.36***
	Altruistic		.12**	.04	.15*	.22*	.13
	Egoistic		-.01	-.20	-.14	.13	-.19*
	Hedonic		-.02	-.06	-.15*	.07	.01

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Next, we conducted regression analyses (see Table 14) to examine to what extent the four values predict pro-environmental behaviour at work. We found that values explained 2% of the variance in energy use. Egoistic values were significantly and positively related to energy use at work. This indicates that people with strong egoistic values use more energy at work. However, analysis per country revealed that only in the Dutch case study area, where values predicted 14% of the variance in energy use at work, a positive relation with egoistic values exists. In the Italian sample we found a negative correlation between altruistic values and energy use at work. In Spain and Romania, the four values were not significantly related to energy use at work.

Values explained 11% of the variance in recycling at work in the full sample. Stronger biospheric values and weaker hedonic values were associated with higher recycling levels. Surprisingly we found a negative correlation between altruistic values and recycling at work. When running the regression analyses per country, we found biospheric values to be positively correlated with recycling at work in the Spanish and Italian case studies. Egoistic values were negatively associated with recycling in the Dutch and Italian case studies, suggesting that those with strong egoistic values recycled less. In the Spanish sample we also found a negative correlation between hedonic values and recycling at work. Values did not significantly predict recycling in Romania.



Table 14 Relationship between values and pro-environmental behaviour at work

		R ²	F	β (Standardized Beta)			
Energy use (MJ) at Work				Biospheric	Altruistic	Egoistic	Hedonic
	Total	2%	1.95	.01	.03	.13**	-.05
	The Netherlands	14%	3.44*	-.21	.20	.25*	.22
	Spain	3%	1.31	-.16	.13	.09	.03
	Romania	2%	.61	.12	-.09	-.13	.12
	Italy	8%	2.01	.16	-.30*	.15	-.03
Recycling at Work							
	Total	11%	15.0***	.42***	-.12*	-.02	-.12*
	The Netherlands	9%	2.23	.29	-.03	-.26*	-.06
	Spain	12%	5.81***	.27**	.04	-.06	-.20*
	Romania	7%	1.76	.11	.18	.08	-.10
	Italy	19%	6.04***	.50***	-.20	-.22*	-.00

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

3.2.2 WORLDVIEWS

In general people score high on worldviews (see Figure 6). We see that in all the case study areas the mean score on pro-environmental worldviews and beliefs is above 5 on a scale from 1 to 7, but there are some differences. Participants from the Dutch case had weaker worldview than participants in Spain, Romania and Italy. These generalized high scores are in line with many studies in the environmental psychological field, that show that pro-environmental worldviews are shared by the majority of the population in industrialized countries. Interestingly, these findings also show that participants to our study express an endorsement of the UN's sustainable development principles, and the belief about the possibility of conciliating human needs with natural resource conservation, as reflected in the items of the NHIP scale.

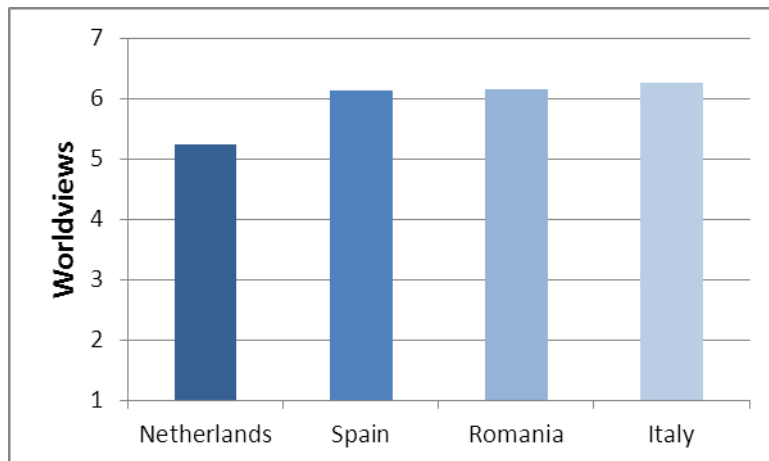


Figure 6 Mean scores on worldviews per case study area (scale from 1 = totally disagree to 7 = totally agree)

Table 15 shows that worldviews were not significantly related to energy use at work. Stronger endorsement of worldviews was related to higher recycling rates, both in the full sample and in Spain, Romania and Italy. However, worldviews were not significantly related to recycling in the Dutch case study area.

Table 15 Correlation between worldviews and pro-environmental behaviour at work

	Total	The Netherlands	Spain	Romania	Italy
Energy Use (MJ) at work	.08	-.12	.09	.06	-.05
Recycling at work	.31***	.16	.29***	.30**	.25*

Note: * p < .05, ** p < .01, *** p < .001

3.2.3 ENVIRONMENTAL SELF-IDENTITY

Generally people had a medium to strong environmental self-identity (see Figure 7). The environmental self-identity was lowest in the Netherlands, and highest in the Italian case study area. This does indicate that people from the Italian case study see themselves more as the type of person who acts environmentally friendly, particularly compared to the Dutch

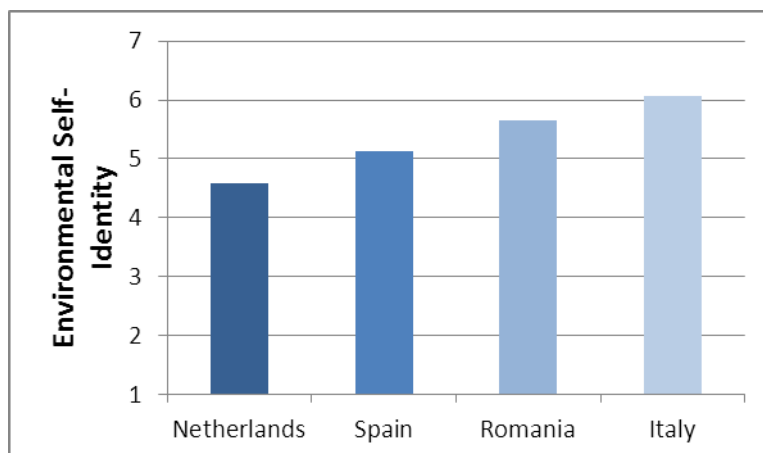


Figure 7 Mean scores on environmental self-identity per case study area (scale from 1 = totally disagree to 7 = totally agree)

participants.



We did find a significant relationship between environmental self-identity and energy use at work in the overall sample (see Table 16). When running the regression analyses per country, we found no significant relations. Yet, we did find a positive correlations between environmental self-identity and recycling at work in the overall analysis as well as in the different case study areas. This indicates that people with a strong environmental self-identity recycle significantly more at work than people with a low environmental self-identity.

Table 16 Correlation between environmental self-identity and pro-environmental behaviour at work

	Total	The Netherlands	Spain	Romania	Italy
Energy Use (MJ) at work	.12*	-.03	-.04	.05	-.02
Recycling at work	.37***	.24*	.39***	.41***	.27**

Note: * p < .05, ** p < .01, *** p < .001

3.2.4 NORMS

Overall, people do not strongly believe that pro-environmental behaviour at work is commonly practiced (descriptive norms) or approved (injunctive norms) by others (see Figure 8); scores were generally below the midpoint of the scale. Descriptive and injunctive norms were weakest in Spain, and strongest in Romania and Italy. The strength of general and local norms were similar for the Dutch and Spanish case study areas, while in the Romanian and Italian case studies, local norms were stronger than general norms. In fact, scores on local norms were above the midpoint of the scale in Romania and Italy, suggesting that participants in the Romanian and Italian case studies believed that others in their organization act pro-environmentally at work and would expect them to act pro-environmentally at work. Interestingly, scores on personal norms towards acting pro-environmental at work were above the midpoint of the scale in all countries, and particularly in Italy, suggesting that in general participants felt morally obliged to engage in pro-environmental behaviour.

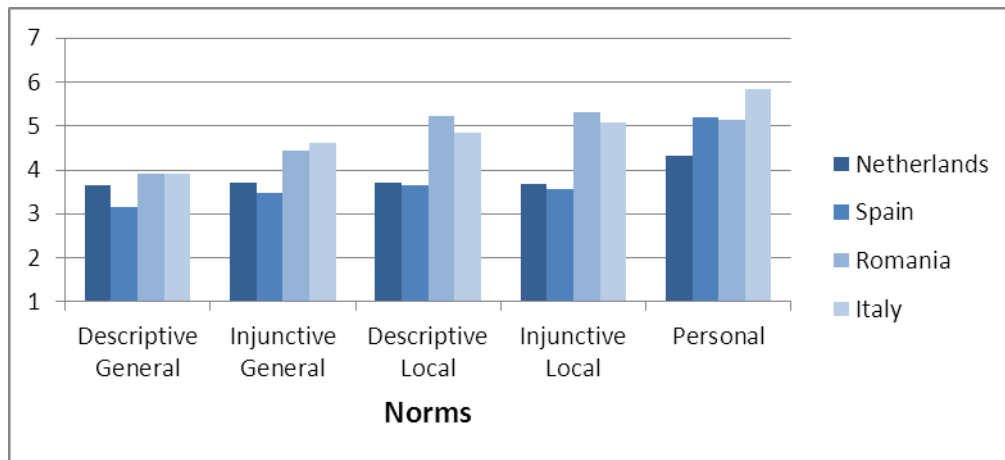


Figure 8 Mean scores on norms per case study area (scale from 1 = totally disagree to 7 = totally agree)

We found strong positive correlations between all types of norms, especially between the different types of social norms (see Table 17). This suggests that the more people think others engage in pro-environmental actions, the more they believe that others expect them to act pro-environmentally as well. Also, stronger local norms are associated with stronger general norms. Moreover, those who experience stronger social norms feel more morally obliged to act pro-environmentally themselves.

Table 17 Correlation between different types of norms

		Injunctive General	Descriptive Local	Injunctive Local	Personal
Norms	Descriptive General	.64***	.71***	.59***	.40***
	Injunctive General		.63***	.75***	.44***
	Descriptive Local			.81***	.49***
	Injunctive Local				.44***

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Norms were not significantly related to energy use at work (see Table 18). However, social norms were positively related with recycling at work, although correlations were weaker and mostly not significant in the Netherlands and Italy. The more strongly people believed that others (and particularly their colleagues) act pro-environmentally at work, and the more they think others expect them to act pro-environmentally, the more often recycle at work. Also, we found a positive relationship between personal norms and recycling at work in all case study

areas, except in the Italian sample, indicating that the more people feel morally obliged to act pro-environmentally at work, the more often they recycle at work.



Regarding the specific role of local norms, it is interesting to note that as all the other variables described so far, there are not significant relations with Energy use at work. However, concerning recycling, it is interesting to note how local norms (both descriptive and injunctive) show higher correlation values compared to general norms. This emerges in particular among Romanian participants.

Table 18 Correlation between norms and pro-environmental behaviour at work

		Total	The Netherlands	Spain	Romania	Italy
Energy Use (MJ) at work						
Norms	Descriptive General	.09	.04	-.00	.11	.10
	Injunctive General	.11*	-.18	.05	.06	.02
	Descriptive Local	.11*	-.06	.06	.09	.07
	Injunctive Local	.14**	.01	.09	.05	.09
	Personal	.14**	-.12	-.01	.08	.05
Recycling at work						
Norms	Descriptive General	.19***	.11	.24**	.23*	.10
	Injunctive General	.19***	.03	.21**	.32**	.08
	Descriptive Local	.30***	.16	.24**	.41***	.11
	Injunctive Local	.24***	.02	.20**	.40***	.01
	Personal	.32***	.29**	.35***	.37***	.16

Note: * p < .05, ** p < .01, *** p < .001

3.2.5 EFFICACY

In general people are medium to highly confident that they can execute pro-environmental behaviour at work (self-efficacy) and that they can do something about environmental problems by acting pro-environmentally at work (outcome-efficacy, see Figure 9). Self-efficacy and outcome-efficacy were lowest in the Dutch case study. Highest scores were found in the Romanian and Italian case study areas, which means that people from the Romanian and Italian case studies are the most confident that they can execute pro-environmental behaviour at work and that they think the most that they can do something about environmental problem by acting pro-environmentally at work.

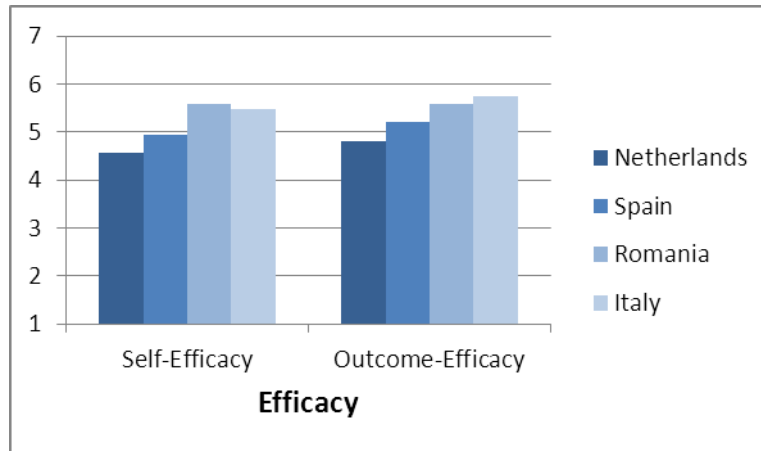


Figure 9 Mean scores on efficacy per case study area (scale from 1 = totally disagree to 7 = totally agree)

Self-efficacy was not significantly related to energy use at work. Surprisingly, we found a significant positive correlation between outcome-efficacy and energy use at work (see Table 19). Examining the correlation between efficacy and recycling at work indicates that self-efficacy is strongly and positively related to recycling at work, in the overall analysis as well as in the different case study areas. Thus, people who believe to have the control to execute pro-environmental behaviour at work do recycle more at work.

Outcome-efficacy is also strongly positive related to recycling at work. We see this relation in the overall analysis and in the Spanish and Romanian case studies. This does indicate that people who think they can do something about environmental problems by acting pro-environmentally at work do recycle more at work. However, the correlation was weaker and not significant in the Dutch and Italian case studies.

Table 19 Correlation between efficacy and pro-environmental behaviour at work

		Total	The Netherlands	Spain	Romania	Italy
Energy Use (MJ) at work						
Efficacy	Self-efficacy	.07	.02	.12	.04	-.13
	Outcome-efficacy	.12**	-.07	.06	.08	.09
Recycling at work						
Efficacy	Self-efficacy	.30***	.21*	.24**	.39***	.13
	Outcome-efficacy	.28***	.16	.29***	.37***	.14

Note: * p < .05, ** p < .01, *** p < .001

Next, we examined whether the effect of self-identity on pro-environmental behaviour depends on self-efficacy strength (see Figure 10). While we did not find any interaction effect of self-efficacy and environmental self-identity on recycling at work, we did find a significant

moderator effect of environmental self-identity in the relationship between recycling at work and self-efficacy ($F(3, 379) = 33.01, p < .00$). Contrast analysis showed that for people with a low self-efficacy, recycling at work was higher the stronger one's environmental self-identity ($t(379) = 4.26, p < .00$). However, the effect of environmental self-identity on recycling at work was stronger for people with high self-efficacy. People with high self-efficacy recycled relatively more when their environmental self-identity was strong and they recycled relatively less when their environmental self-identity was weak ($t(379) = 6.53, p < .00$).

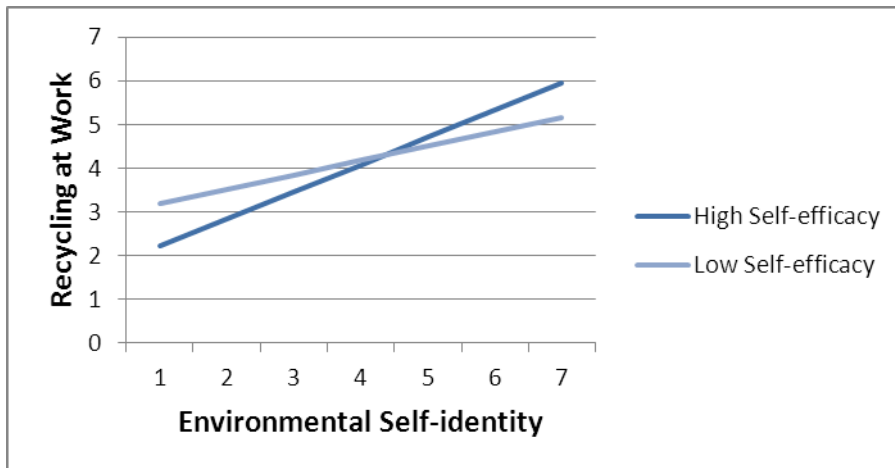


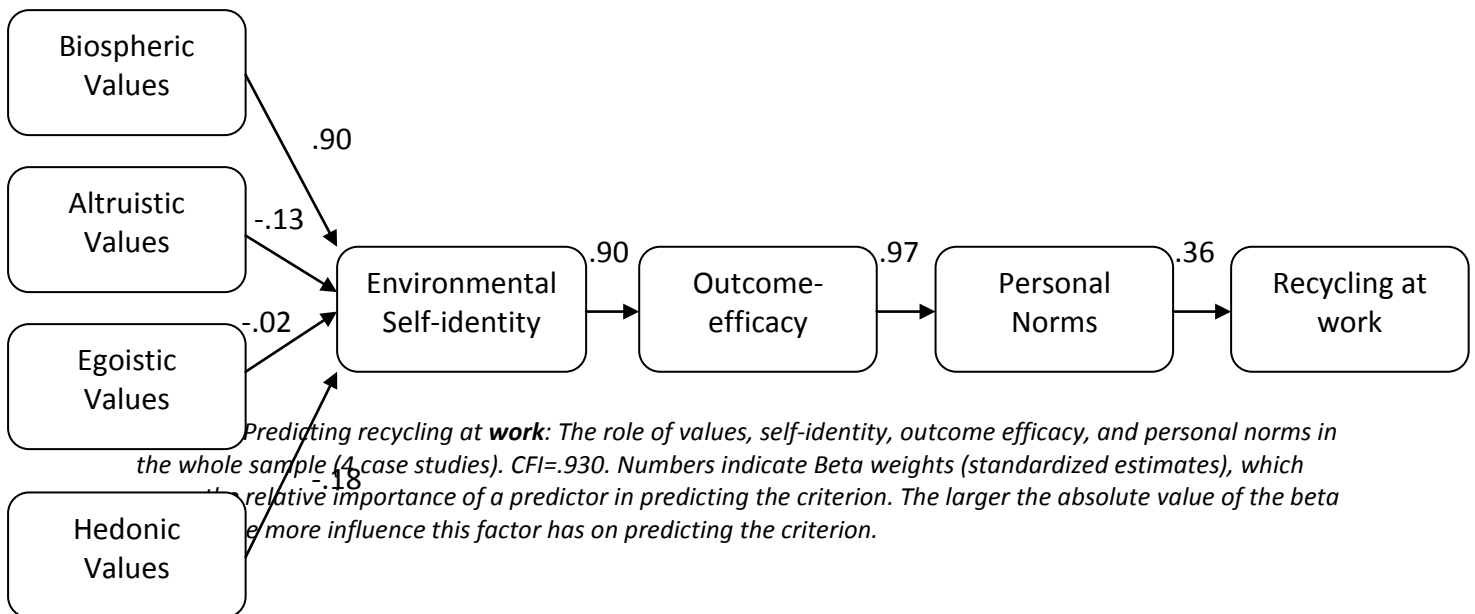
Figure 10 Relation between environmental self-identity and recycling at work for high and low scores on self-efficacy

3.2.6 TESTING OVERALL THEORETICAL MODELS TO EXPLAIN ENVIRONMENTAL BEHAVIOUR AT WORK AND AT HOME

In the previous part we explored the relationships between a range of individual factors and pro-environmental behaviour separately to understand which factors best predict different types of behaviour at work. However, the individual factors discussed are not independent, but related to each other. In fact, we selected the factors included in the questionnaire based on different prominent theories to explain environmental behaviour. Therefore, in this section, we will test the relevant theoretical models. This will provide us a better understanding of the processes through which individual factors promote pro-environmental actions at work. We will test two theoretical models. The first model focuses on a value-driven route, while the second model focuses on a norm-driven route.

More specifically, the model predicts that values affect behaviour indirectly, via a process of norm activation. It is assumed that values, and particularly biospheric values, affect strength of the environmental self-identity: environmental self-identity will be stronger when one strongly endorses biospheric values (Van der Werff et al, 2013; in press). Environmental self-identity in turn influences the perceived outcome-efficacy: those who think acting pro-

environmentally is an important part of who they are are more likely to perceived their own individual contributions to reducing environmental problems as worthwhile. This process will then activate personal norms, which are feelings of moral obligation to act pro-environmentally. Those with strong personal norms are more likely to act pro-environmental (e.g. Steg & De Groot, 2010). The full model is depicted in Figures 11. We conducted a Structural Equation Model Analysis via AMOS to test this model for the different behavioural indicators. Since personal norms is not significantly related to energy use at work, we only looked at recycling at work. The model proved to be effective both in explaining recycling at work (as shown by the index of goodness of fit: CFI= .930. Considering the recommendations by Bentler (1992) and Hu & Bentler (1999), this model fits appropriately the data (see Figures 11 and see Appendix 2 for the full model). The results show that the proposed theoretical relationships are supported by the data; each variable is related to the next variable in the causal chain as expected.





3.3 DIFFERENCES IN PRO-ENVIRONMENTAL BEHAVIOUR AT WORK BETWEEN JOB POSITIONS

3.3.1 PRO-ENVIRONMENTAL BEHAVIOUR FOR DIFFERENT JOB POSITIONS

Concerning energy use at work, we do see a significant difference for people at the operational level and at management level (see Figure 12). When we look at recycling at work, we cannot see significant differences between people at different levels of the organization (see Figure 13).

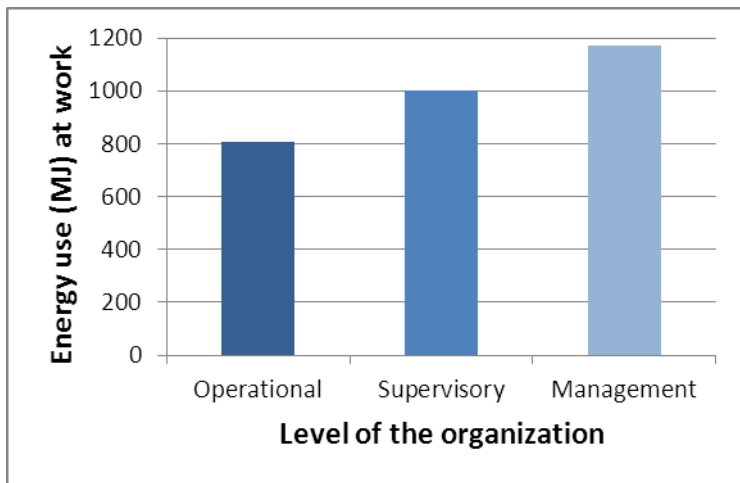


Figure 12 Mean scores on energy use (MJ) at work per level of the organization

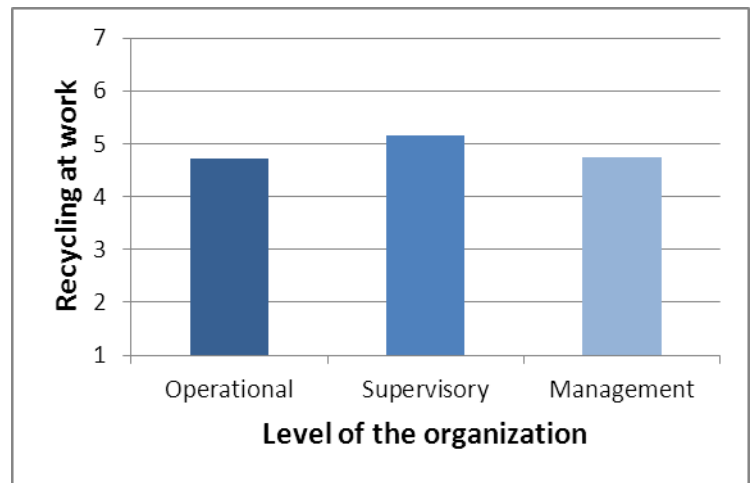


Figure 13 Mean scores for recycling at work (on a scale from 1 to 7) per level of the organization

Moreover, the results do show that people at the supervisory level more strongly believe that people in their organization take their behaviour as an example than people at the operational or the management level (see Figure 14).

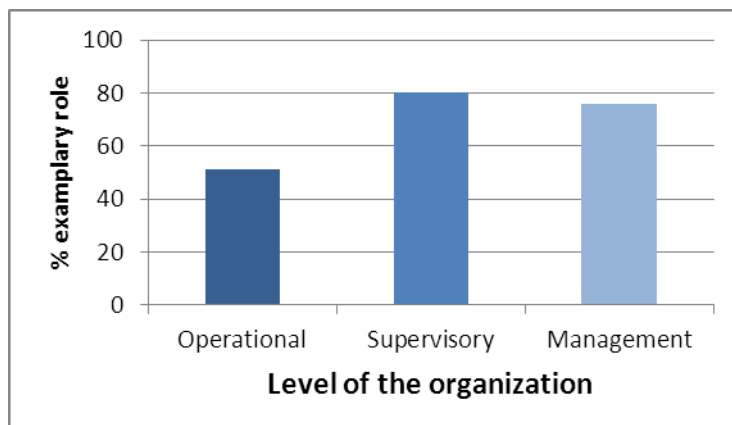


Figure 14 Percentage indicating to have an exemplary role in the organization per level of the organization



Next, we conducted regression analysis to examine to what extent having an exemplary role in the organization predicts pro-environmental behaviour at work (see Table 20). We found that having an exemplary role explained only 1% of the variance in energy use at work. This indicates that people who believe to have an exemplary role in their organization use more energy at work. Having an exemplary role in the organization explained 2% in the variance in recycling at work. Believing to have an exemplary role is thus associated with higher recycling levels.

Table 20 Relationship between having an exemplary role in the organization and pro-environmental behaviour at work

	R ²	F	β (Standardized Beta)
Energy use (MJ) at Work	1%	4.44*	.10
Recycling at Work	2%	8.78**	.13

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

CHAPTER Q-4: CONCLUSION

In this report we aimed to provide more insight into which individual factors influence pro-environmental behaviour at work. More specifically, we tested to what extent values, worldviews, different types of norms, environmental identity and efficacy affect pro-environmental behaviour at work. Moreover, we aimed to examine spillover effects from one type of pro-environmental behaviour to other types of such behaviour. For this purpose, we tested relationships between different types of behaviour at work (i.e., energy use and recycling), and relationships between pro-environmental behaviour at work and pro-environmental behaviour at home. To address these questions, we undertook a quantitative study among employees at different levels in the organization in four case study areas (Enel Green Power in Italy, Aquatim in Romania, the University of Corunna in Spain and the Municipality of Groningen the Netherlands).

4.1 SPILLOVER OF PRO-ENVIRONMENTAL BEHAVIOUR

Our results reveal that people in the different case study area use different amounts of energy at work and also show differences in the level of recycling at work. In the Italian case study area people used significantly more energy at work, while in the Dutch case study they used the least. In the Romanian case study people recycled significantly more at work than in the other case studies. The latter may be due to the fact that different facilities for recycling are offered in the different case study areas, making recycling of some materials feasible or even necessary, while inhibiting some types of recycling. For example the results of the analysis done in the Romanian case study area in previous work packages (focus-groups in WP2 and interviews in WP3) revealed that separate waste collection is the most visible component of the Environmental Management System that was implemented in the organization. People in the organization think they are capable to recycle because the organization provides them with facilities (i.e. they have different bins for separate waste collection placed in each office and workspace). This may also be the reason why the different types of recycling behaviour at work correlated weakly.

Our results showed that pro-environmental behaviour at home does show a different pattern compared to pro-environmental behaviour at work. While at work people used comparable amount of energy, except for the Italian case study, at home people from the Romanian case study used more than twice the amount of energy compared to the Dutch and Spanish cases. Furthermore, where the Romanian participants recycled the most at work, at home they recycled the least. A possible explanation for the differences in energy use may be structural differences leading to a different level of demand for energy, for example due to differences in climate or infrastructure. As regard to recycling at home a possible explanation might be again that different facilities for recycling are present in the different case study areas.

Our results suggest that the spillover of pro-environmental behaviour does take place, but is limited to spillover from one location (work) to another location (home), while spillover from one type of behaviour (energy use) to another type of behaviour (recycling) was very minor and only present in the overall sample and in the Italian case study. On the one hand we thus found that people who engage in a particular pro-environmental behaviour at work are also likely to engage in this behaviour at home. On the other hand we found almost no significant relationship between energy use and recycling, which means that using much energy does not mean that one does not recycle (and the other way around). Moreover, because we did not find a strong or significant relation between the different types of recycling at work, based on our results we can conclude that also within the domain of recycling at work there was no spillover effect between the different types of recycling. A possible explanation is that people do not see a clear connection between different types of pro-environmental behaviour, and therefore act not consistently in this respect, while they do see a connection between similar behaviours in different locations (work and home). Another, perhaps more plausible, explanation is that energy use and recycling are influenced by different factors (Abrahamse & Steg, 2011).

Based on these results we cannot directly state the direction of the spillover effect, thus if pro-environmental behaviour at home leads to more pro-environmental behaviour at work or the other way around. What we can say is that in order to change pro-environmental behaviour at work we can now argue that it is necessary to focus on different types of behaviour, since there is no spillover between the different types of behaviour. Changing energy use will for example not directly lead to more recycling, these types of behaviour need both to be addressed.

4.2 THE INFLUENCE OF INDIVIDUAL FACTORS ON ENVIRONMENTAL BEHAVIOUR AT WORK

We studied relationships between different individual factors and pro-environmental behaviour at work. Interestingly, we found significant relationships between all individual factors and recycling at work, except for egoistic and hedonic values. On the other hand, energy use at work was only significantly related to egoistic values, but to none of the other variables included. These findings are in line with previous research that also suggests that individual factors are not very predictive of energy use at home, but far more predictive of recycling (Abrahamse & Steg, 2011). Below we discuss these results in more detail.

The first individual factor we considered was values, which we defined as trans-situational goals which serve as a guiding principle in people's life. We found that on the overall people strongly endorse biospheric, altruistic and hedonic values, while egoistic values seemed to be less important, but there were also some differences. More specifically, people from the Dutch case evaluated biospheric values as less important than people from the Spanish,

Romanian and Italian cases. People from the Spanish case study strongly endorsed altruistic values in comparison to the other cases and participants from the Romanian case study had stronger egoistic values. People from all case studies scored comparable on hedonic values, except that the Italian participants scored slightly lower. Our findings show that energy use at work is positively related egoistic values, which means that the more strongly people endorse egoistic values, the more energy they use at work. Thus the more people are focussed on individual costs and benefits as reflected in social status, prestige, control or dominance, the more energy they use. This finding is in line with previous research that generally showed that egoistic values are negatively related to pro-environmental actions (see Steg & De Groot, 2012, for a review). Moreover, we did not find a relationship between biospheric, altruistic and hedonic values and energy use at work. This does suggest that energy savings can be promoted by decreasing the saliency of egoistic values in choice situations.

Biospheric and to a lesser extent altruistic values were positively related to recycling at work. Egoistic and hedonic values were not significantly related to recycling at work. This means that the more people are concerned with the welfare of the environment and the welfare of others, the more they recycle, while the more people value pleasure or satisfaction for oneself, the less they recycle. This suggests that recycling can be promoted by strengthening biospheric and altruistic values in situations where people make the decision to recycle or not (Lindenberg & Steg, 2007).

As all the other predictors considered in this study, our data show a significant correlation between environmental worldviews and pro-environmental behaviours at work for what it concerns recycling, but not for what it concerns energy use. In line with previous literature the individual endorsement of sustainable principles, as measured through the NHIP scale (i.e., the belief that human development and natural resources use and conservation are functionally and temporally mutually interdependent) is positively, although moderately, correlated to pro-environmental behaviour.

Our results reveal that in the Dutch case study people have a medium environmental self-identity, while the Spanish participants scored medium high and in the Romanian and Italian case study participants see themselves the most as the type of person who acts environmentally friendly. However, we can find a possible explanation for the strong environmental self-identity of participants in the Romanian case study, by looking at the Cronbach's alpha for the environmental self-identity scale (Romania), which is very high (.93) and looking also at the distribution of scores which shows the general tendency of the Romanian participants to choose very high scores, consistently. We cannot know for sure why, but a possible explanation could be desirability. We found that the extent to which people see themselves as a type of person who acts pro-environmentally, thus their environmental self-identity, was slightly positively related to energy use and also positively related to recycling at

work. People who hold a strong environmental self-identity use more energy and recycle more. The positive relationship with energy use is unexpected and surprising, but please note that the relation is very weak and not very meaningful. A possible explanation can be that energy use strongly depends on welfare levels rather than to individual factors such as environmental self-identity, that is, studies on household energy use was strongly related to wealth and hardly related to factors such as environmental concern (cf. Gatersleben, Steg & Vlek, 2002); the same may be true for environmental behaviour at work. Also, it may be that workers have little control over their energy use at work, making individual factors less predictive of energy use behaviour at work. Overall, these results indicate that the environmental self-identity may be an important factor to target in an intervention aimed at promoting recycling at work. Research on the environmental self-identity showed that the environmental self-identity can be strengthened by reminding people of their past pro-environmental actions and by strengthening biospheric values (Van der Werff et al., 2013). This suggests that pro-environmental behaviour (in particular recycling) at work can be promoted by reminding people on their past pro-environmental actions, as this is likely to strengthen their environmental self-identity.

We have distinguished and measured different types of norms including descriptive general and local norms (what is commonly done in general and among colleagues), injunctive general and local norms (what is (dis)approved of by others in general and among colleagues) and personal norms (self-expectations regarding one's own behaviour). Our findings show that overall general descriptive and injunctive norms were low. Local norms were also low in the Dutch and Spanish case study areas, but significantly stronger in the Romanian and Italian case studies. This might be an indication that the Romanian and Italian organizations have special characteristics. A possible explanation has to do with the relationship between social norms and organizational rules. In organizations there are written rules for behaviour that are known and understood by all group members. The norms are unwritten rules – explicit or implied (unspoken)- that serve as guidelines for socially appropriate behaviour and that must be transmitted or taught to new group members (Cialdini, Bator, & Guadagno, 1999). When studying the pro-environmental behaviour in organizations, we have to take into consideration the written rules derived from explicit procedures that can strengthen the social norms transmitted through social influence processes. For example, in Aquatim they have clear written rules on waste management within the organization that clearly stipulate how to collect waste selectively, but the rules concerning energy saving do not stipulate the actions (how to execute the energy saving behaviour). Results in Table 18 (Correlation between norms and pro-environmental behaviour at work) show, especially in the Romanian case study the differences between the two types of pro-environmental behaviour at work– energy use and recycling – in relation with norms. There are significant and positive correlations between descriptive and injunctive local norms and recycling behaviour but norms were not significantly related to energy use at work.

We expected that social norms as well as personal norms are positively related to pro-environmental behaviour at work. We did find a strong positive relationship between descriptive (general and local), injunctive (general and local) and personal norms with recycling at work; also we did find significant but weaker relationships between norms and energy use at work. Our findings indicate that the more strongly people believe that others (and particularly their colleagues) act pro-environmentally at work, and the more they think others expect them to act pro-environmentally at work, the more often people recycle at work. A possible explanation for the strong effect of local norms is that local norms are more salient at the moment of making behavioural choices. In the formation of pro-environmental habits with a place-specific basis (such as recycling), a key role is played by those social actors sharing that specific place with the individual (e.g., the colleagues at work in this case), but which do not necessarily share affective or personal bonds. Therefore, the act of separating the waste at work could be related more to what our co-workers or supervisors do (or think) about it, rather than our relatives or friends. Furthermore, the more people feel morally obliged to act pro-environmentally at work (and thus have strong personal norms), the more they recycle at work. This suggests that creating strong social norms in the organization, indicating that acting pro-environmentally at work is what is commonly done and what is commonly approved of (particularly by people in their organisation), may be a successful intervention to promote pro-environmental behaviour at work. The weak positive relationship between social norms and energy use is unexpected. However, just as in the relationship between pro-environmental self-identity and energy use at work, this can probably be explained other factors being more influential, such as wealth or situational factors.

Our results show that people had the lowest self-efficacy, thus the least confident that one can execute pro-environmental behaviour at work, and the lowest outcome efficacy, thus the believe that one can do something about environmental problems, in the Dutch case study. Highest scores were measured in the Romanian and Italian case studies and the Spanish participants scored in between. We found that both self-efficacy and outcome-efficacy are positively related to recycling at work, but not to energy use at work. The relationship between outcome-efficacy and energy use is weak, again, probably because wealth are situational factors are more important factors in this respect. This implies that the more people believe to have control to execute pro-environmental behaviour at work and the more they believe they can do something about environmental problems by acting pro-environmentally at work, the more likely it is they recycle at work. This suggests that targeting people's level of efficacy may be an effective way to promote pro-environmental behaviour at work, specifically when targeting recycling at work.

Besides the direct relation of self-efficacy with pro-environmental behaviour we did also expect an interaction effect between efficacy on the one hand and environmental self-identity

on the other hand on pro-environmental behaviour. Our results show that the strength of the relationship between self-identity and recycling at work depends on one's self-efficacy. More specifically, we found that the effect of environmental self-identity on recycling at work stronger is for people with high self-efficacy than for people with low self-efficacy. This suggests that when one chooses to target the environmental self-identity in order to improve pro-environmental behaviour at work, as was indicated before, there is an even greater potential for changing behaviour when at the same time self-efficacy is strengthened.

After testing the relationships between the individual factors and pro-environmental behaviour at work separately, we tested a theoretical model that integrate the various individual factors in an integrated framework. This model predicted a causal chain from values, environmental self-identity, outcome efficacy, personal norms to behaviour. The theoretical model was supported by the data. Indeed, values, and particularly stronger biospheric values, were associated with a stronger environmental self-identity, which in turn was related to perceiving one's own pro-environmental actions as more effective in reducing environmental problems (i.e., a higher outcome efficacy). A higher outcome-efficacy in turn was related to a stronger feeling of moral obligation to engage in pro-environmental actions (i.e, stronger personal norms), which finally increased the likelihood of engaging in pro-environmental actions, in particular recycling at work. Personal norms were less predictive of energy use at work. Again, this shows that energy use at work is not strongly related to individual normative considerations, but probably more strongly depends on other factors, such as situational and organisational factors (see our reports on WP2 and WP3). This suggests that many different factors can be targeted to promote recycling at work, as targeting factors further up the causal chain is likely to affect factors further down the chain as well. Furthermore, our results show that behaviour is indirectly influenced by values (especially biospheric values) through the strengthening of the environmental self-identity, which influences the perceived outcome-efficacy and can activate personal norms. This implies that when one aims to target pro-environmental behaviour in the organization, the different factors in this models could be taken into account.



4.3 DIFFERENCES FOR PEOPLE AT DIFFERENT LEVELS IN THE ORGANIZATION

We investigated if people from different levels of the organization differ in their pro-environmental behaviour. We distinguished between three levels; operational, supervisory and management. Not surprisingly we found that, with the exception of the University of Curunna (Spain) – due to the nature of the organization which is formed by a majority of staff with some level of supervision due to the nature of their professional activity - the majority of participants worked at the operational level.

Our results show that people at different job positions use different amounts of energy at work and indicate somewhat different levels of recycling at work. We found that people at the management level used significantly more energy than people at the supervisory and people at the operational level used the least amount. A possible explanation can be found in the nature of the work. For recycling we found that people at the supervisory level recycled more than people at the operational or management level. A possible explanation is that people at the supervisory level feel that they are in a position where other people in the organization take their behaviour as an example, because they have subordinates and have, in comparison to people at the management level, more direct contact with these subordinates. Our results indicate that indeed people at the supervisory level do believe the most that people in their organization take their behaviour as an example. Moreover, our results do also indicate that people who believe to have an exemplary role in the organization recycle more at work. This suggests that the promotion of pro-environmental behaviour at work may be focussed on creating the impression that people do not only act pro-environmentally at work for themselves but also because they fulfil an exemplary role to others.

CHAPTER I-1: INTRODUCTION TO THE INTERVIEWS

Based on the results of the quantitative study, we have conducted a qualitative study to explore the main findings of the quantitative study in more depth. The qualitative interviews were aimed to better understand some relevant processes that appeared from the quantitative questionnaires. For this purpose, we have conducted a series of semi-structured interviews with key actors (i.e., actors at different levels in the organisation that are likely to have different views and perspectives on the issues at stake, so not (only) key decision makers) in the particular organization. These interviews were structured by the specific aims of the project, focusing on understanding how individual factors shape environmentally-relevant practices and behaviours at work, such as recycling, in more depth. Additionally, we have aimed to get more insight in how these individual factors are related to structural factors in the organization, and how both combined affect behaviour at work. Based on the results of the quantitative study and the conclusions we derived from these results we set five aims we wanted to achieve with the interviews. These aims were creating an understanding of why different types of recycling at work were not strongly related, why energy use is not explained by individual factors, creating an understating of what spillover is, and what the process behind self-efficacy is. Below, we briefly describe the sample interviewed, and next discuss the main findings.

CHAPTER I-2: METHOD

2.1 METHODOLOGY

We conducted semi-structured interviews with multiple key actors of the Municipality of Groningen (the Netherlands), University of Corunna (Spain), Aquatim (Romania), and ENEL Green Power (Italy). Hence, in each case study area the sample consists of two to ten key actors from within the organization. We got a varied sample of interviewees (e.g. from different hierarchical positions) as we wanted to create an insight as broad as possible. That we used semi-structured interviews means that we used a flexible method to create a more in depth understanding of the relevant processes deducted from the questionnaire. The interviews are recorded on a digital recorder. Before we did so we did ensure confidentiality and anonymity.

2.2 SAMPLE

Municipality of Groningen

We completed 3 interviews at the Municipality of Groningen with the following key actors:

- 1 employee at the operational level. This was a male senior exploitation employee at the department of urban design and economic affairs at the Municipality.
- 1 employee at the supervisory level. This was a male team leader at the department of urban design at the Municipality of Groningen.
- 1 employee at the management level. This was a male head of municipal engineering at the Municipality of Groningen.

University of A Coruña, Spain

We completed 6 interviews at the University of Corunna, in order to cover the two main categories of staff (teaching and research staff; and administrative staff) and two levels of responsibility and authority: on the one hand, we interviewed regular staff and, on the other, staff in positions of decision making. The sample was gender-balanced, with three women and three men among the interviewees, and we chose staff at different locations throughout the university. The following key actors were interviewed:

- 2 employees occupying administrative positions: one female employee on the operational level within the Faculty of Educational Sciences; and one male employee occupying a supervisory position in the Office of Academic Management.
- 2 employees occupying teaching and research positions without management responsibilities: one male employee from the Faculty of Sociology; and one female employee in the Faculty of Informatics
- 2 employees occupying teaching and research positions in management positions: one female employee from the Faculty of Economics; one male employee from the Faculty of Engineering.

The interviews were held between March the 25th and April the 5th in each of the work locations of the interviewees.



AQUATIM, Romania

We choose to complete 10 interviews at Aquatim because we considered this the best option in emphasising the differences which may occur among the divisions of Aquatim. Conclusions of the questionnaire on individual factors (see D4.2, part 1) cover pro-environmental practices and the influence of individual factors on pro-environmental behaviour, specific to employees who develop their work in locations such as laboratory, waste water treatment plant, and the headquarters of Aquatim. Practices are very different among each location, along with the motivation on engaging in pro-environmental behaviour. We expect to see differences regarding motivation, pro-environmental awareness, and perceived control – because facilities are not equal in each location -, for employees who work in offices and laboratory, compared to employees working on the field.

We interviewed 3 key actors from the Waste Water Treatment Plant (WWTP), 4 from the Headquarters, and 3 from the Laboratory, having the following positions:

No.	Position	Organizational level	Location
1.	Chief of WWTP	Management	WWTP
2.	Foreman, Process Technologist	Supervisory level	WWTP
3.	Process Technologist	Operational level	WWTP
4.	Head of Communication and Public Relations Office	Management	Headquarters
5.	Communication and Public Relations Specialist	Operational level	Headquarters
6.	Economist	Operational level	Headquarters
7.	Economist	Operational level	Headquarters
8.	Water Field Sampling Technician	Operational level	Laboratory
9.	Microbiology Lab Technician	Operational level	Laboratory
10.	Chemistry Lab Technician	Operational level	Laboratory

Interviews, held between February 8th and 19th 2013, in the main building from each division of Aquatim we chose to investigate, lasted between 20 and 45 minutes and were conducted and recorded by Alexandra Docea (for WWTP and 2 interviews from Headquarters) and Daniela Moza (for Laboratory and 2 interviews from Headquarters). Between February 12th and March 10th 2013, Lacramioara Radu did the transcription of the recorded interviews so that we could analyse the data effectively. Alexandra Docea, Daniela Moza and Corina Ilin worked together on analysing the interviews and writing the report.

In all the stages for preparing this report, Peter Kovacs helped us in establishing the contact and dates for the interviews with Aquatim’s employees, ensuring also the locations for interviews.



Enel Green Power, Italy

The interviews at Enel Green Power were carried out according to a particular procedure. We met different EGP personnel in different times and in different types of meeting.

During all the process, relevant information was gathered from three key persons in total:

- 1 employee at the management level from the HR sector
- 1 employee at the operation level from the HR sector
- 1 employee at the management level from the CSR sector.

Procedure at EGP

First, we conducted two discussion meetings (about 60 minutes each) with relevant key actors of the company, involving both the management and operational persons from the Human Resources sector and from the Corporate Social Responsibility sector. A first glance on the preliminary results of the survey were given to the EGP key actors, during the first two meetings, in order to get preliminary feedbacks on the main trends emerged, and also on the better presentation format of the results to be communicated to EGP in order to tailor our scientific data on their specific organizational culture's needs. During these meetings, in particular, a request emerged from EGP personnel for a detailed presentation of the main trends for all pro-environmental behaviours items in the questionnaire, based on answers frequency and percentage distribution for each single item.

After these two meetings, an in-depth interview was then conducted with the EGP responsible for HR, in order to have an understanding of the four open issues to be focused in this phase. The interview lasted for about 45 minutes.

Finally, a third discussion meeting was held with the HR personnel (both management and operation), lasting 90 minutes. In this final meeting, the more detailed EGP results of each single behavioural item were presented and discussed together, also in relation to the four main issues under investigation.

CHAPTER I-3: RESULTS

3.1 CREATING AN UNDERSTANDING OF WHY DIFFERENT TYPES OF RECYCLING AT WORK WERE NOT STRONGLY RELATED

Research question 1: Why is there a weak relationship between different types of recycling at work?

In the quantitative study we found that there are some differences in the level of recycling at work in the different case study areas. Also we found that different types of recycling behaviour at work were only correlated weakly. We wanted to find an explanation for the differences in the different case study areas and for the inconsistencies between the levels of engagement in the different recycling behaviours at work scale. In the first part of the WP4 report (on the questionnaire) we have discussed structural factors as a possible explanation for these findings. We argued that different facilities are possibly offered at a particular case study area, which makes recycling of some materials feasible or even necessary, while inhibiting some other types of recycling, thereby giving the impression that workers do not recycle consistently at work. This seems most likely since the results from the questionnaire do show that people are consistent in recycling at home.

Municipality of Groningen

From the interviews in the Dutch case study we learned that employees, who indicated that recycling is important to them, recycle at work in the ways that are possible, that is, separating paper from the regular waste. Other behaviours such as using your own cup instead of disposable cups or using recycled paper are according to the interviewees not possible at their work settings. They explained for example that coffee machines do not allow you to use your own cup, as the machine does not function when own cups are used. However, the coffee machines do give the opportunity to reuse your disposable cup and that is exactly what the interviewees indicated to do. This is a behaviour related to recycling, which was not included in the questionnaire, but what people who find recycling important do. This suggests that especially in the Dutch case study where relations between different types of recycling behaviour at work were lowest, inconsistencies are probably due to structural barriers present in the workplace.

Another point made by one of the interviewees who did not find recycling in the daily workplace very important is that to his opinion actions towards greater efficiency would be much more effective to reduce environmental impact. An example is the adoption of efficient material (re)use solutions in the operational levels, such as road building, which typically implies a single action might relatively have a much greater impact. Hence, for this interviewee lack of outcome efficacy (i.e., recycling is not seem to substantially affect environmental quality) was an important barrier for recycling.



University of A Coruña, Spain

The interviews, as well as previous parts of the research undertaken in LOCAW, have shown that recycling needs are different for different locations and categories of staff. For all staff, the most common form of recycling is that of paper and toners, as these types of consumption are the most common ones at the university. All buildings produce paper, toner and electronic waste. Nevertheless, the recycling of glass, plastic or batteries is rarely mentioned by the interviewees, in spite of the likelihood that staff would consume at least some of these materials. When prompted to talk about this by the interviewer, it is obvious that these types of recycling are not immediately present in their minds and they need more time to reflect on what happens to these types of waste and why. Also, interviewees answer that other types of recycling are not necessary in their work. When asked if they use plastic bottles their answers are affirmative and they then start thinking about this type of waste.

There are differences in environmental knowledge and awareness, as well as in environmental concern among the persons interviewed, and yet, in spite of this, the recycling of paper and toners is common among all employees and has become part of common practice. This is due to awareness campaigns as well as facilitating infrastructure. All interviewees mention that recycling is easy and costless, as recycling bins are easily accessible and visible in all buildings. One interviewee even describes how, in his building, the recycling of paper has become a collaborative task and, as a result, the cleaning staff have devised a way of facilitating paper recycling among students, by placing visible and well-signalled recipients in each classroom, in order to avoid students throwing paper in the regular bin. This has been done out of their own initiative and it has proven very useful to raise recycling rates among students at the university. This demonstrates the positive effect that involvement of staff has when certain objectives are presented as common. Another interviewee mentions the importance of habit in recycling paper and toners, together with the facilitating infrastructure and the creation of favourable social norms, while at the same time declaring he is not an environmentalist.

When asked about other types of recycling, such as plastic, interviewees admit recycling much less. In terms of initial consumption, they mention the lack of options in the university's machines or cafeterias, in which only plastic bottles are sold. They also mention the lack of adequate information or signalling of water fountains across campus buildings (the university has installed at least one in each building to reduce consumption of plastic bottles) and some indicate that they have started using these fountains when seeing other colleagues doing so. One interviewee mentions that a few years ago a negotiation was undertaken with the company installing vending machines across campus and they were asked to install machines which would sell glass bottles and at the same time include a return recycling option. The

company found it to be too expensive an investment and it is when the water fountains were installed.

In terms of plastic recycling, the employees mention the lack of knowledge and information on the adequate infrastructure to recycle, and this is also the argument mentioned for batteries recycling. Most recommend more information and awareness campaigns, as well as a change in messages showing the impact of not recycling in graphic form, emphasizing the impact on the environment, but also on communities and neighbours (at work) – suggesting that messages need to be tailored to either biospheric or altruistic motives.

Interviewees mentioned the lack of knowledge regarding appropriate infrastructure, the lack of options, as well as a lack of outcome efficacy as the main barriers for recycling.

AQUATIM, Romania

Recycling in Aquatim has a different nature according to each location and its work specificity. For example, in offices, recycling is done for paper, plastic, and (occasionally) iron, and additionally, for the WWTP and laboratory, recycling is done for sludge, process fat and sand.

At work, paper and plastic is always separated from other types of waste, because the company supplied, for each office, separate waste containers for plastic, paper, and glass. At home, we can see a different perspective: in some cases interviewees are not motivated to separately collect waste because the city's waste company does not lift the waste separately, even if some homes are equipped with separate waste containers. In other cases the waste company did not provide separate waste containers for the citizens.

Investigating the use one's own coffee cup, interviewees who have access to kitchen said they always use their own cups. In most cases, interviewees use their own cup for environmental reasons and consider the kitchen as an advantage, a facilitator for pro-environmental behaviour.

Regarding the use of e-mail instead of regular mail, or use of online procedures instead of paper printed ones, the rules are very strict and most papers have to be signed and archived in hand out format. When printing on both sides, most of the time there is an environmental reason in doing so. Looking at the interviews, we assume that this behaviour differs according to the organizational department. For example, employees of financial office print on both sides for saving company's money. Maybe they think like this because of the nature of their work, thus being more aware of the costs of materials. On the other hand, employees from WWTP and laboratory, try to save paper because they think in more pro-environmental terms.



The structural factors influencing recycling behaviour, as resulted from the interviews, are the unwritten rules provided and promoted by superiors, rules which can create a sense of moral obligation, and could later be assumed as personal norms, among employees. Also, formal rules, facilities and knowledge of the fact that waste is selectively collected by the contracted waste company, positively influence waste related behaviour. In other words, outcome-efficacy (knowing the fact that there is continuity after the behaviour is consumed, and there is an authority - institutions, managers - promoting the environmental behaviour) has great impact on pro-environmental behaviours of Aquatim's employees.

Due to the different nature of recycling materials existing in Aquatim, the work recycling scale might not be reliable because of its first item, which refers to how often employees use recycled paper at work. For employees recycling paper has different meanings and during the interviewees we did not find a general meaning for it. For example, recycled paper could mean reuse of old papers for drafts, printing or writing on recycled paper bought by the company, or could mean even toilet paper made from recycled materials. There is no formal rule for use of recycled paper at work; therefore employees have different ideas of what it could mean. We assume this is not only a particularity of Aquatim. We consider that, in other companies from Romania, there isn't a highly developed culture for using recycled paper.

EGP, Italy

According to the interviewed key persons in EGP, a first explanation for such result could be due to the fact that in EGP the focus of the problem of recycling at work is only related to the use of recycled and re-use of printed paper, while there is a less concrete possibility for the single individual to engage in recycling and sorting of other materials, such as plastic or batteries, although the separated bins for paper and plastic are present in the office space. Furthermore, it should be taken into consideration that paper consumption at home is probably less frequent, compared to the office. In the opinion of the EGP key person, work and home are two distinct contexts, which are not easily comparable about the issue of material consumption. Anyway, understanding the differences and communalities of employees' pro-environmental behaviours across these two distinct contexts (home and work) is certainly an interesting issue for a company like EGP, particularly from the point of view and for the main goals of the human resources sector.

3.2 CREATING AN UNDERSTANDING OF WHY ENERGY USE IS NOT EXPLAINED BY INDIVIDUAL FACTORS



Research question 2: Why are individual factors not predictive of energy use at work?

In the analysis of the data from the questionnaires we found no significant relations between the individual factors included and energy use at work. Although these findings are in line with previous research on household energy use (e.g. Abrahamse & Steg, 2011) we aimed to have a closer look at the factors that influence energy use at work.

Municipality of Groningen

Data from the Dutch case study suggest that energy use is partly influenced by motivational factors and partly by structural factors and that the interaction is crucial. The results revealed that employees who reported not to care for the environment or not ascribed responsibility to themselves for environmental problems do not try to use as little energy as possible. Their behaviour is more determined by the motivation to create a pleasant workplace, such as having a warm office by turning up the heater and having fresh air at the same time by opening a window. What is especially interesting is the notion that people who do not value using as little energy as possible do see possibilities to decrease energy use (so they have a high level of self-efficacy), but do not see how this can be effective on an individual basis to counter environmental problems. This again suggests that workers think individual actions are futile, and hence, a lack of outcome-efficacy. However, sometimes they do find themselves in the position that the organization “forces” them to act energy efficient. For example, the Municipality offers only very limited parking places to employees. This means that commuting by car is not facilitated by the Municipality for the majority of the employees and that many workers face important barriers to commute by car. This suggests that structural factors are more important for commuting behaviour than are motivations. Another example is travelling for work purposes. When an employee needs to travel for work within the city of Groningen, it is faster to travel by bike than by car due to the urban design, which is another example of a structural factor influencing transport choices. This means that people who are not motivated to behave pro-environmentally sometimes do act pro-environmentally because of structural factors, which make driving not attractive. In these cases, workers are likely to use sustainable modes of transport for egoistic or hedonic reasons.

Employees who do find it important to use as little energy as possible indicate to behave in an energy efficient way, but sometimes experience barriers. For example, sharing an office with a colleague diminishes the control over heating and turning off lights. Besides, a lot of energy use is directly related to the function of the employee and the daily tasks within that function. For example, as an exploitation employee working behind the computer all day is necessary

or as a head of municipal engineering travelling to external locations, not always accessible by bicycle or public transport, is often required. Still, they indicated to see options in which people can effectively decrease energy use at work. These results thus suggest that individual factors influence the intentions to use as less energy as possible at work for some workers but not for all workers and that workers face structural factors determining if intentions are put into actual behaviour.

In sum, the interviews at the Municipality of Groningen revealed two factors that may explain why individual factors are not strongly predictive of energy use at work: first, structural factors strongly affect energy-related behaviour at work (preventing those who care about energy use to save energy use, and forcing those who do not care so much about energy savings to limit their energy use), and second, social factors (e.g., sharing a room) inhibit workers to act upon their own preferences.

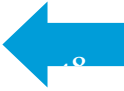
University of A Coruña, Spain

In terms of energy consumption, there are several consumption categories over which the staff has no control. Heating and cooling systems are centralized and they constitute a structural barrier for reducing energy use. Also, due to specific systems installed when the university was built, interviewees mention that it is more expensive to close down the systems for a short period of time and restart them again, then let them run including in warmer weeks, such as March or April ones.

One of the main barriers mentioned was the lack of feedback on departmental and office consumption, as well as on the levels of reduction that could be achieved. Also, feedback on costs for energy consumption is lacking, and this is mentioned as a very important motivator for energy behaviour in the household. Several interviewees consider low outcome efficacy (considering personal impact as low) as one of the main barriers for reducing their consumption in those areas on which they do have control, such as turning the lights off when they go out of their workspace, or putting computers on standby.

Another important barrier mentioned has to do with the structural barriers stemming from the initial plans for the buildings. For example, one interviewee mentions how, in spite of having natural light in his office, he is forced to lower the blinders and use artificial light because sunlight is so intense sometimes he cannot see the computer screen. This is related to the fact that most parts of the particular building he is in were designed as large gathering spaces, so natural light was in order. Initial planning did not consider other uses or separating different parts of the building and providing them with different designs. As a structural facilitator, interviewees mention lighting systems with presence detectors. They also consider this a device they have seen at work and some say they could or intend to implement it at

home. This is an example of a structural condition promoting energy efficiency that is seen at work and could potentially be translated into the home space.




Lack of environmental concern and lack of habit are also mentioned among the barriers. For those interviewees who say to care about saving energy, several elements of the organizational culture are mentioned as important barriers. One of these elements has to do with a pressure to be seen by others as being present at work and doing one's job, so even when a person needs to go out of the office for a while, they leave the lights on to show that they are returning very soon. One interviewee mentions that a part of the administrative staff has asked for a week off around Christmas time which could have been discounted from their summer time. This request was due to a low level of administrative load during that time, and would have supposed a reduction in energy used (as it is winter and heating is used extensively). This request was denied in spite of the low workload. Because of these types of interactions with the organization, as well as the lack of effective work-family balance mechanisms, administrative employees have a perception that the organization does not care about them and thus they will not save energy to reduce economic costs for the organization. Countering this perception would facilitate those people motivated to reduce energy to do so and would make university policy in this direction more effective.

In sum, the lack of feedback mechanisms, structural barriers and some tensions between employees and the organization are among the factors explaining why energy consumption is not explained by individual factors. One interviewee proposes the creation of commissions in each Faculty who would deal with issues of energy efficiency, present the data on consumption to staff and come up with adequate reduction measures (the different Faculties at the University organize different Commissions in order to ensure representation and participation of staff in decisions made on academic and other aspects pertinent for the University. A Commission dealing with environmental issues does not exist at Faculty level. The organism in charge of these is the Office for the Environment). This proposal suggests the necessity for feedback, facilitating structural conditions and the message from the organization that this is a relevant point on its agenda.

AQUATIM, Romania

Individual factors might not predict energy consumption at work because of four barriers: structural factors, the motivation to create a pleasant workplace and maintain wellbeing, outcome of the company, and the reference point to which employees relate when they perceive energy consumption as being high or low.

We speak of structural factors in terms of facilities to which employees have limited access, such as automatic lighting and wasteful space arrangements (windows display, lack of storage

spaces, boxes obstructing daylight). These structural factors were discussed extensively in WP3, Deliverable 3.2. 

The second factor, the same as in the case of Groningen Municipality, consists in the motivation to create a pleasant workplace, as leaving the lights on during the day, having a warm workspace, leaving the computer on. Even when behaviours such as turning the computer off occur, the reasons are not pro-environmental, but more egoistic (i.e., turning off the computer so that nobody can have access to its content). From the interviews we can also see the concern on others' wellbeing, and the proceedings of descriptive and injunctive norms (i.e. when there is sufficient daylight, employees don't turn off the lights because they don't want to disturb their colleagues). In some cases, encountered at the laboratory, where the number of employees is lower than in other locations of Aquatim, and where employees know each other for a long time, there is a powerful influence on behaviour generated by employees' biospheric values (i.e., when an employee tells his colleague to turn off the light, the colleague is more likely to assume that the behaviour was requested for pro-environmental reasons, and not for the welfare of the other) and by the social status of their colleagues (i.e. the informal leader's opinion is considered more important).

The third factor refers to outcome of the organisation: clean water. Employees say that the outcome of the organisational process is good for people and environment. Because the company provides clean water, the energy consumption is worthwhile and they stop trying to reduce energy. But the way employees perceive the importance of energy reduction is not only about the outcome of the company, but also about the reference point to which employees relate when they consider energy consumption as being high – fourth factor. Interviews analysis shows that, especially employees from the WWTP, working directly with high energy consumption technology, think that "smaller" behaviours, such as turning off the computer, have no impact on the environment, comparing to bigger technology consumers. Nevertheless, employees from WWTP have biospheric values and relate their behaviour to pro-environmental norms. Also, according to the specificity of WWTP activities, they try to implement different solutions for alternative energy (i.e. burning the sludge), and try to reduce energy consumption to as low as possible (i.e. frequency converters, reducing the level of oxygen for the biomass).

WWTP is a very interesting location because here we can see, more than in other locations, the interaction of structural factors with individual factors. Employees endorsed biospheric values not only from their education, but also because of the WWTP vision for improving the environment. Therefore, they are more aware and motivated in developing pro-environmental behaviours at work and outside work.



EGP, Italy

The main reason that the interviewed person proposed for explaining the lack of predictive power of the psychological factors on the measures of energy use is to be found in the lack of control that EGP workers have upon energy consumption actions. There are automated processes in EGP offices that explain this fact: for example, the single employee cannot easily manage air conditioning in the main EGP building in an autonomous way. The same occurs also for lighting. On the contrary, persons in EGP are more autonomous in enacting recycling behaviors. Having said this, it should also be taken into account that, only for EGP, a positive significant relation was detected, with the endorsement of altruistic values predicting saving on energy use (Beta = -.30, explaining the 8% of variance).

3.3 CREATING AN UNDERSTANDING OF WHAT SPILLOVER IS

In the quantitative study we found a positive association between similar pro-environmental behaviours at work and at home. These results suggested a spillover effect of pro-environmental behaviour from one location (work) to another location (home). Positive spillover is the regular term used for indicating that adopting a particular behaviour increases or decreases the motivation for an individual to adopt other related behaviours. Unfortunately, based on the questionnaire study, we cannot directly state the direction of the positive spillover effect, so it is not clear if pro-environmental behaviour at work leads to more pro-environmental behaviour at home or the other way around, or if the association is better explained by another factor (e.g., one's values, environmental identity, or worldviews). Also, the literature does not provide a clear explanation on the exact nature of and the process behind positive spillover effects. Yet, it is important to better understand possible spillover effects, as the effectiveness of initiatives to increase pro-environmental behaviour is not only determined by the extent to which they are able to spark the targeted behaviour, but also how the induced behaviour in turn influences other pro-environmental behaviours. This influence can be positive as well as negative. Such spillover effects might exist between pro-environmental behaviours in different locations (i.e. work and home) and or different pro-environmental behaviours within one location (i.e. workplace).

Research question 3a: Is there a relationship between pro-environmental behaviour at work and at home?

Within this research we first aimed to create an understanding of the more complex dynamics of the relationship between behaviour at work and at home. Thus, what causes people to act consistently in the same behavioural domain at different locations? One possible explanation is that people want to be (seen as) consistent and see a connection between similar

behaviours in different locations (work and home). Another is that one underlying factor, like identity, influences the same behaviour at different moments. We examined the likelihood of these explanations in the interviews.



Municipality of Groningen

All interviewees from the Dutch case study indicated to behave very similarly at work and at home with regard to energy use and recycling. The interviews learned us that on the one hand, employees who do not behave pro-environmentally at work do also not behave pro-environmentally at home, because they do not perceive it as something worthwhile or effective (i.e., a lack of outcome efficacy). Again, they indicated that structural (efficiency-based) solutions are far more effective to reduce environmental problems. On the other hand, employees who do use as little energy as possible and try to recycle as much as possible at work, do this at home as well, because they see it as their responsibility to do ‘the right thing’ and because it is perceived to be important for their self-image. This suggests that the so-called positive spillover of pro-environmental behaviour between work and home is influenced by a common underlying factor. More specifically, this suggests that the underlying factor for consistently acting pro-environmentally between locations are values and having a strong environmental self-identity, as interviewees indicated that they see acting pro-environmentally as “the right thing to do” and as something they find important in life. The impression is created that the underlying factors for not acting pro-environmentally are low biospheric values, having a weak environmental self-identity and scepticism concerning the impact of the behaviour on the environment. Thus, while consistent pro-environmental actions are caused by individual factors, the absence of spillover is caused by the presence of structural barriers.

University of A Coruña, Spain

The interviewees stated that they perceive the two areas of work and home as different areas, which, in some cases, meant that they do not perceive that they actually do the same things, and in others it meant that they perceive they do more at home than at work, and one interviewee actually said that it is easier to bring to work practices from home than viceversa. The perception that recycling and energy reduction behaviours are easier at home is based on the idea that cost is an important motivator, as well as on the fact that at home some things are easier to do, as people know where everything is (in the case of the infrastructure for recycling) and they have more control over devices (in the case of energy consumption).

People who are interested in recycling at work also say they recycle at home, while in the case of energy consumption people generally say they save more energy at home than at work. For recycling, it seems that the reasons behind the consistency lie in personal values, considering there is a high-functioning facilitating infrastructure for both home and workplace in the Spanish case. For example, one interviewee mentions that he cares about living in a community and not seeing things that he does not like and that affect others, such as waste that is not adequately placed or recycled. Outcome efficacy seems to also be an important determinant of spillover, as interviewees mention that they recycle paper at work and they also recycle at home, but only when they perceive they use a lot of paper at home (such as when they subscribe to a newspaper). Otherwise, they manifest that recycling would not make sense as it would not have a high impact.

Structural conditions are mentioned as barriers for the lack of spillover. Nevertheless, as it was described before, a structural change, such as installing lights with presence detectors, can be a model for doing so at home as well, which illustrates the importance of the work place as a laboratory for the effectiveness of certain changes and conditions.

In sum, it looks like structural barriers are very important determinants of the lack of spillover, as well as low biospheric values. Also the perception of work and home as two very different areas with different functions constitute a barrier for positive spillover.

AQUATIM, Romania

The direction of spillover from home behaviours to work, can be seen both in recycling and energy consumption. Unfortunately for our research, the reasons for doing this are not environmental, but financial. People are used to consume less energy and fewer resources at home, to save money; therefore they act according to egoistic values. There are a few pro-environmental behaviours brought from home to work, which are due to structural factors in the organisation and due to personal norms (i.e. one employee says it is best to have pro-environmental behaviours because it's good for the future).

Spillover from work to home refers to selective waste collection of waste, and water consumption. The organisation has rules and provides facilities for separate collection of waste, and employees start to apply the same behaviour at home. At home they encounter barriers coming from the waste company, which does not lift the waste separately, therefore their behaviour of collecting separately, most of the time, is done in vain. Because of their biospheric values, some employees don't stop the separate waste collection even if there is low outcome-efficacy. But most of employees give up this behaviour if they don't see the outcome.

Regarding water consumption, we can conclude that company's profile and the fact that employees are aware of the process for obtaining clear water makes them behave more economically when consuming water, energy and other resources at home. Interviewees stated that after they realised how difficult it is to obtain clear water, they became more aware of protecting other resources, also.



EGP, Italy

The fact that respondents in EGP seem to behave in a similar way, and transfer environmental good practices, from work to home and vice versa, is considered in positive terms from the point of view of the company management. For example, according to the interviewed person, there has also been a precise strategy of the company in the last decade in order to stimulate employees not to have a difference between personal and professional life in relevant behavioural patterns. This is for example the case for what it concerns a critical issue like safety. The company wants to have a responsibility on the safety of the employees. Just to make an example, in the whole Enel group they make training processes for safe driving, not only for work purposes, but also, for example, regarding travels to go on holiday. According to the key person, in the company there is this idea that people should assume a coherent mindsets, and that one is always the same person both at work and out of work: the attitude must be the same. For the company it would be very interesting to discover if there is any indication of a different attitude between work and home behavioural styles. From the opinion expressed by the interviewee, it emerged that this is a cultural mindset which is not specific to EGP, being more general to the Enel group. However, in the case of environmental behaviours, it is not easy to drive these processes of positive spillover from work to home for the entire Enel population, because one thing is to manage 3000 employees (the size of EGP), and another thing is to do it for all the Enel group.

Research question 3b: Why did we find no relationship between energy use and recycling?

Besides we did not find a significant relationship between energy use and recycling. This suggests no spillover effect from one behavioural domain (energy use) to another behavioural domain (recycling). We wanted to clarify this and investigate if this inconsistency is for example a result of the fact that people do not see a connection between behavioural domains for pro-environmental behaviour and therefore do not perceive their behaviour as necessary inconsistent. An alternative explanation we wanted to investigate is that energy use

and recycling are influenced by different factors, and hence, that engaging in energy saving behaviour does not mean that people also engage in recycling.



Municipality of Groningen

The interviews at the Dutch case study taught us that although energy use and recycling at work are seen as related by the interviewees, different structural factors create opportunities or barriers to act upon pro-environmental intentions. Energy use, for example is seen as something hard to influence, because it is partly dependent on the specifics of the job position of the employee and the workplace. For example, sharing an office diminishes the opportunity to determine your own thermostat setting. Concerning recycling, as was reported in WP2 on the structural factors influencing sustainable everyday practices in the workplace, the Municipality of Groningen encourages and facilitates recycling behaviour, like separating paper from the regular waste. Interviewees indeed indicated that the possibilities concerning certain recycling related pro-environmental behaviours, like recycling paper, were present and good. These suggest that energy use and recycling at work are only weakly related because, at least partly, structural factors within the workplace which makes the influence of individual motivations less decisive.

University of A Coruña, Spain

Interviewees state that many people at the university perceive the relationship between recycling and energy use. Nevertheless, the motivations to act pro-environmentally are not very present in people's minds, as they are not made salient very often. Recycling is done very well out of habit, which was formed as a result of facilitating infrastructure and intensive campaigns by the university's Office for the Environment, but, as we have seen before, this is more the case for paper and toners than for other types of recycling. Energy use is more problematic, as people do not have control over the regulation of temperature or over lights in many spaces. Where they do have control, it seems that energy use is influenced by factors such as structural characteristics and an organizational culture that emphasizes making your working behaviour visible, over reducing consumption of energy. The weak connection between recycling and energy use seems to be explained by the existence of different levels of structural barriers in each case as well as by elements related to the organizational culture.

AQUATIM, Romania

When asked directly, employees answered that there is no higher frequency in performing behaviours for recycling compared to behaviours for energy reduction. But analysing their discourses, we can see that employees are aware of the facilities supplied for recycling materials, and also they speak about the influence of proximity in throwing waste in separate waste collection bins. Also outcome-efficacy is very important for them, because they are motivated to recycle and separate waste when they know that waste company continues the process of recycling. When asked about energy reduction, some interviewees first answered that they don't know if they have this kind of practices at work. From their discourses we can see that lack of control on facilities for energy (heating systems, illumination), hedonic values such as comfort, and injunctive and descriptive norms (i.e., thinking about others comfort, or believing that others expect from the employee to consider their wellbeing, when deciding to leave the lights on during the day) are negatively influencing energy reduction behaviour. Also, energy reduction appears vaguely in the organisational climate, and there are no formal rules for behaviours such as turning off lights when leaving the room, turning off lights during day, turning off computers. At home, the interviewees say they have many energy reduction behaviours, but not for environmental reasons. They try to save money, consuming as little power as possible.

It is clear that there is no relationship between energy consumption behaviours and recycling at work, because the behaviours are performed for different reasons, and employees are much more aware of the importance of recycling, than reducing energy at work.

EGP, Italy

This question is difficult to answer in the Italian case, since the data show a moderate and significant correlation between energy use and recycling at both in work and home contexts (in both cases, $r = -.20$, $p < .05$). We also tried to investigate whether this aspect could be explained through the fact that there are active policies by the company in terms of value promotion. But, according to the interviewee, this is not likely to be the case, since there are not many official communications from the company on how the employees should behave or which values they should endorse in a pro-environmental sense. It is also to be taken into account that, although the EGP mission is to produce and sell energy from renewable sources, not a big percentage of EGP personnel is working there on a voluntary choice basis due to pro-environmental values: a good part of the personnel was already working for the Enel group, and they were then assigned to EGP after the company was created. The interviewee also expressed the opinion that these findings could be explained more with cultural factors in Italy, where the sector of renewable energy production is very old (for example, geothermal



and hydroelectric energy are produced in Italy since the early 20 century). While EGP personnel from other countries (e.g., Brazil, or Chile) is usually younger and only recently started to work on renewable energies (wind and solar). Therefore, it is more likely that work choices in non-Italian countries could be based on pro-environmental value endorsement too.



3.4 CREATING AN UNDERSTANDING OF THE PROCESS BEHIND SELF-EFFICACY

Research question 4: What is the process behind the influence of self-efficacy on recycling at work?

The results from the quantitative study indicated that self-efficacy has a positive influence on recycling at work. The term self-efficacy was operationalized as the extent to which people think they are capable to engage in pro-environmental behaviour at work (Ajzen, 2006). Based on this operationalization we cannot conclude if low levels of self-efficacy are due to structural barriers such as a lack of possibilities within the organization to recycle waste or that this is due to personal factors such as a low self-esteem or knowledge. We have elucidated the process behind the influence of self-efficacy on recycling at work more.

Municipality of Groningen

Although the results from the questionnaire showed that in the Dutch case study self-efficacy was lowest, all interviewees perceived themselves as capable and knowledgeable of engaging in pro-environmental behaviour at work. Employees with the motivation to act pro-environmentally indicated that acting pro-environmentally in general is possible, still for certain behaviours structural barrier are present. For example, using your own cup instead of disposable cups as described before. Acting pro-environmentally is also perceived as possible by employees who do not have a strong motivation to act pro-environmentally. However, these employees do not believe that acting in such a manner is sufficient for doing something about environmental problems (again reflecting a low outcome efficacy). These results suggest that self-efficacy is based on personal factors as well as on structural factors.

University of A Coruña, Spain

Interviewees in the Spanish case study consider that they are capable of acting pro-environmentally in some of the areas of behaviour and not in others. They also think they are knowledgeable (and also that others are) about engaging in pro-environmental behaviour.

Nevertheless, they manifest a low level of outcome efficacy at work, as they consider that their behaviour would not have a big impact, or they state that many people cannot picture the degree of impact their behaviour might have on the environment.



The issue of mobility comes out invariably when these aspects are considered, as mobility is a particularly problematic area due to the structural barriers that are present. Interviewees state that because of the time it takes to come by public transportation when living outside of the city or in the suburbs and the economic cost it entails (due to the need of changing several means of transportation and the relatively extended Spanish habit of going home for lunch and thus needing to come twice a day at the University), the car becomes a much more comfortable and sometimes even cheaper option. They mention that getting rid of some of the structural barriers would help a great deal to promote more sustainable options for transport. For the University, the more viable option would be an on-the-ground metro system which needs the collaboration of several institutions in order to be achieved. Also, economic costs for implementing such a system would need to take into account environmental costs and health costs and benefits.

Employees also say that the lack of feedback contributes to a low level of self-efficacy. Implementing systems of feedback would contribute to diminishing this particular barrier. Structural barriers thus seem to be the most important factor behind a low level of self-efficacy.

Finally, age is mentioned as a factor by one of the interviewees, who says that in spite of the fact that the younger generation is more aware of the environmental consequences of their behaviour, and also have a worldview that is more oriented towards conservation, they save less energy than the elder staff, who were raised to possess frugality attitudes. The elderly in this case feels more capable of saving energy, albeit not for environmental reasons.

AQUATIM, Romania

When speaking about efficacy, we have to divide between three important factors relevant for the recycling behaviour: easy access to work facilities for recycling (perceived control), self-efficacy (if employees want to perform the behaviour even if they have no conditions), and the outcome. Looking at structural factors, such as rules, facilities, proximity, we see from the interviews that they are seen as very important for recycling behaviour. Employees are aware of recycling because of the environmental management system, which created and promoted rules for recycling and separate waste collection. All offices are equipped with separate waste collection bins, for paper, plastic and glass, and employees consider they are more likely to pay attention to separation of waste if the bins are under their desk, or very close to desks.

There are some employees who are willing to perform recycling behaviours even if the company doesn't support them with special facilities. For example, one employee who worked in Aquatim for almost 25 years said that he continued to perform pro-environmental behaviour because he endorsed biospheric values and because he believes things can change if people are persistent in their behaviour. He developed pro-environmental attitudes working with impact studies for the environment and from experiences with companies abroad. Other employees also spoke about the importance of example of one's behaviour. In conclusion, norms are also important, because interviewees say they are more likely to recycle, if they see their colleagues doing it too.

Age also appeared in the interviews, as a relevant factor for self-efficacy. Interviewees stressed that people aged over 50, are not willing to perform pro-environmental behaviours, because they spent a part of their lives during communism domination, when the environment was completely ignored at national level. The communism propaganda in Romania promoted the idea that the humans have the power to fight nature and, at a societal level, the need for progress and industrialization. Thus, people developed values with no regard to environment. The younger generations are more open towards environment because they start developing biospheric values at home or at school, through education.

Also, the position in the decision process might be important, because this brings control over adopting pro-environmental procedures. The manager of WWTP speaks a lot about the way she acts pro-environmentally at home, and at work, emphasising her biospheric values. This is also an example of the way structural and individual factors interact, because it is not only necessary to think pro-environmentally, but it is also necessary to have the conditions and possibilities to act.

Self-efficacy may also be influenced by the individuals' identification with the organisation. Interviewees say that if the company has a "green" image, employees are more open towards recycling, or performing other pro-environmental behaviours.

Interviewees also stressed the fact that outcome is very important. Knowing the fact that their behaviour is part of a larger cycle, aiming to maintain a clean environment and protect the resources, they are determined to act pro-environmental. For example, they spoke a lot about the waste company, who doesn't lift the waste separately at home, even if citizens collect waste separately. This creates frustration, and people are more tempted to stop the pro-environmental behaviour. At work they are content because the waste company lifts waste separately continuing the process of recycling.



EGP, Italy

For similar reasons to those exposed in question number 2 and 3b, it is plausible that the level of self-efficacy is not very high among EGP employees, but this feature might be shared with other organizations. According to the interviewee, to address this issue, the organization should conduct general pro-environmental politics (such as it did for safety at work and out of work). The company should be an example for its employees in pro-environmental behaviours (as for safety), to start with. For example, to transmit the value of paper saving or recycling, the company should be coherent with this value: e.g., by sending to each employee a report on amount of paper consumption in a week. The interviewee also expressed the opinion that it would be necessary to build an organizational pro-environmental behavioural style (which could then also be the object of assessments) in order to more efficiently transmit these values to the employees and to really build them within the organizational values system and to embody them within the organizational culture, practices, habits.

CHAPTER I-4: CONCLUSION

In this second part of the report we aimed to provide more insight into some relevant processes that appeared from the quantitative questionnaires. These aims were to create an understanding of why different types of recycling at work were not strongly related, why energy use is not explained by individual factors, creating an understating of what spillover is, and what the process behind self-efficacy is. To address these questions, we undertook a qualitative study among employees at different levels in the organization in four case study areas (Enel Green Power in Italy, Aquatim in Romania, the University of Corunna in Spain and the Municipality of Groningen the Netherlands). Below, we list the main findings.

Research question 1: Why is there a weak relationship between different types of recycling at work?

- General reasons for people not to recycle
 - o Lack of outcome efficacy (my contribution is not worthwhile)
 - o Lack of knowledge (I do not know how to do it)
 - o Lack of options (I cannot do it)
- Reasons for inconsistencies in recycling behaviours
 - o Structural barriers for certain recycling behaviours
 - o Some recycling behaviours are not necessary or possible

Research question 2: Why are individual factors not predictive of energy use at work?

- Structural barriers and lack of control
 - o Cultural factors (e.g. leaving the lights on to show others to be present at work and doings one's job)
 - o Social factors (e.g. sharing a room diminishes the control over heating and turning off lights)
- Low outcome-efficacy
 - o Lack of feedback mechanism
 - o The reference point to which employees relate when they perceive energy consumption as being high or low. (e.g. employees working directly with high energy consumption technology, think that "smaller" behaviours, such as turning off the computer, have no relevant impact on the environment)
- Strong conflicting hedonic goals (e.g., energy saving is effortful or not pleasurable)
- Tension between employees and the organization, that is employees having the perception that the organization does not care about them and thus they will not save energy to reduce economic costs for the organization



Research question 3a: Is there a relationship between pro-environmental behaviour at work and at home?

- Why is there spillover from work to home?
 - o Same underlying factors (biospheric values, environmental, self-identity, attitude, outcome-efficacy, personal norms)
- Direction of the spillover effect
 - o Home-work: at home for financial reasons and taken to work
 - o Work-home: awareness of importance created at work and taken to home
- Why is there a lack of spillover?
 - o Different structural barriers
 - o Strong (conflicting) egoistic values
 - o Perception of work and home as two very different areas

Research question 3b: Why did we find no significant relationship between energy use and recycling?

- (In one case study, the Italian, there was a significant relationship)
- Especially energy related behaviour is determined by structural factors
- Different levels of structural barriers for both types of behaviour
- Factors related to the organizational culture
- Both behaviours are performed for different reasons. Employees are more aware of the importance of recycling than reducing energy at work

Research question 4: What is the process behind the influence of self-efficacy on recycling at work?

- Personal factors that form the basis of self-efficacy
 - o e.g. Motivation
 - o Age
- Organizational factors that form the basis of self-efficacy
 - o Structural barriers
 - o Facilities
 - o Feedback

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APPENDIX 1 QUESTIONNAIRE



APPENDIX 1A QUESTIONNAIRE - INTRODUCTION

Dear participant,

This questionnaire is part of a project funded by the European Union and aims to understand which factors affect environmental behavior at work. We conduct this study here in <country> and in three other European countries (<Spain, Italy, Romania and the Netherlands>).

Please read all the questions carefully. There are no correct or incorrect answers, we are only interested in your personal opinion. All your answers will be processed anonymously. The questionnaire will take about 15 minutes to complete. Thank you very much for participating in our study, your contribution is very valuable in guiding environmental policy!

APPENDIX 1B QUESTIONNAIRE - GENERAL QUESTIONS

We would like to ask you some general questions about your personal situation.

1. What is your gender?

- Male Female

2. What is your age?

_____ years old

3. What is your highest level of education?

- No education / preschool
 High school
 College degree
 Master-level degree
 Doctorate-level degree
 Other: _____

4. On what level of the organization do you work? (depending on the organization)

- Top manager
 Management
 Supervisory
 Operation level

5. Do you have an exemplary role in <organization>? That is, do people in <organization> take your behaviour as an example.

- Yes No



APPENDIX 1C QUESTIONNAIRE - INDIVIDUAL FACTORS

Values.

On the next page you will find a list of 16 values with a short explanation concerning the meaning of the value. Could you please rate how important each value is for you AS A GUIDING PRINCIPLE IN YOUR LIFE?

The rating scale is as follows:

- 0 means the value is not important at all; it is not relevant as a guiding principle in your life
- 2 means the value is important
- 6 means the value is very important

- 1 means the value is opposed to the principles that guide you

- 7 means the value is of supreme importance as a guiding principle in your life; normally there are no more than two such values

Your scores can vary of -1 up to 7. The higher the number (0, 1, 2, 3, 4, 5, 6, 7), the more important the value is as a guiding principle in YOUR life. Try to distinguish as much as possible between the values by using all the numbers.

	Opposed to my values	Not important	Important					Very important	Of supreme importance
	-1	0	1	2	3	4	5	6	7
1. EQUALITY: equal opportunity for all	-1	0	1	2	3	4	5	6	7
2. RESPECTING THE EARTH: harmony with other species	-1	0	1	2	3	4	5	6	7
3. SOCIAL POWER: control over others, dominance	-1	0	1	2	3	4	5	6	7
4. PLEASURE: joy, gratification of desires	-1	0	1	2	3	4	5	6	7
5. UNITY WITH NATURE: fitting into nature	-1	0	1	2	3	4	5	6	7
6. A WORLD AT PEACE: free of war and conflict	-1	0	1	2	3	4	5	6	7
7. WEALTH: material possessions, money	-1	0	1	2	3	4	5	6	7
8. AUTHORITY: the right to lead or command	-1	0	1	2	3	4	5	6	7
9. SOCIAL JUSTICE: correcting injustice, care for the weak	-1	0	1	2	3	4	5	6	7
10. ENJOYING LIFE: enjoying food, sex, leisure, etc.	-1	0	1	2	3	4	5	6	7
11. PROTECTING THE ENVIRONMENT: preserving nature	-1	0	1	2	3	4	5	6	7
12. INFLUENTIAL: having an impact on people and events	-1	0	1	2	3	4	5	6	7
13. HELPFUL: working for the welfare of others	-1	0	1	2	3	4	5	6	7
14. PREVENTING POLLUTION: protecting natural resources	-1	0	1	2	3	4	5	6	7
15. SELF-INDULGENT: doing pleasant things	-1	0	1	2	3	4	5	6	7
16. AMBITIOUS: hard-working, aspiring	-1	0	1	2	3	4	5	6	7



Worldviews.

	Totally disagree				Totally agree		
	1	2	3	4	5	6	7
1. Human beings can progress only by conserving nature's resources	1	2	3	4	5	6	7
2. Human beings can enjoy nature only if they make wise use of its resources	1	2	3	4	5	6	7
3. Human progress can be achieved only by maintaining ecological balance	1	2	3	4	5	6	7
4. Preserving nature now means ensuring the future of human beings	1	2	3	4	5	6	7
5. We must reduce our consumption levels to ensure the well-being of present and future generations	1	2	3	4	5	6	7
6. If we pollute natural resources today, people in the future will suffer the consequences	1	2	3	4	5	6	7

Environmental Self-identity.

	Totally disagree				Totally agree		
	1	2	3	4	5	6	7
1. Acting pro-environmentally is an important part of who I am	1	2	3	4	5	6	7
2. I am the type of person who acts pro-environmentally	1	2	3	4	5	6	7
3. I see myself as an pro-environmentally person	1	2	3	4	5	6	7

Environmental organizational identity

	Totally disagree				Totally agree		
	1	2	3	4	5	6	7
1. <organization> aims to reduce its environmental impact	1	2	3	4	5	6	7
2. <organization> is the kind of organization that tries to reduce its environmental impact	1	2	3	4	5	6	7
3. <organization> finds it important to reduce its environmental impact	1	2	3	4	5	6	7

Identification with the organization

	Totally disagree				Totally agree		
	1	2	3	4	5	6	7
1. When someone criticizes <organization>, it feels like a personal insult	1	2	3	4	5	6	7
2. <organization's> successes are my successes	1	2	3	4	5	6	7
3. When someone praises <organization> it feels like a personal compliment	1	2	3	4	5	6	7

Descriptive General Norms.

	Totally disagree				Totally agree		
1. Most people who are important to me act pro-environmentally at work	1	2	3	4	5	6	7
2. Most of the people from my city act pro-environmentally at work	1	2	3	4	5	6	7
3. Most <Dutch/Italians/Romanians/Spaniards>act pro-environmentally at work	1	2	3	4	5	6	7
4. Most people in general act pro-environmentally at work	1	2	3	4	5	6	7



Injunctive General Norms.

	Totally disagree				Totally agree		
1. Most of my neighbours think I should act pro-environmentally at work (optional)	1	2	3	4	5	6	7
2. Most people who are important to me think I should act pro-environmentally at work	1	2	3	4	5	6	7
3. Most of the people from my city think I should act pro-environmentally at work	1	2	3	4	5	6	7
4. Most <Dutch/Italians/Romanians/Spaniards> think I should act pro-environmentally at work	1	2	3	4	5	6	7
5. Most people in general think I should act pro-environmentally at work	1	2	3	4	5	6	7

Descriptive Local Norms.

	Totally disagree				Totally agree		
1. Most of my work subordinates act pro-environmentally at work	1	2	3	4	5	6	7
2. Most of my co-workers act pro-environmentally at work	1	2	3	4	5	6	7
3. Most of my supervisors act pro-environmentally at work	1	2	3	4	5	6	7
4. Most members of my management team act pro-environmentally at work	1	2	3	4	5	6	7

Injunctive Local Norms.

	Totally disagree				Totally agree		
1. Most of my subordinates think I should act pro-environmentally at work	1	2	3	4	5	6	7
2. Most of my co-workers think I should act pro-environmentally at work	1	2	3	4	5	6	7
3. Most of my supervisors think I should act pro-environmentally at work	1	2	3	4	5	6	7
4. Most members of my management team think I should act pro-environmentally at work	1	2	3	4	5	6	7



Personal Norms.

	Totally disagree				Totally agree		
1. I feel guilty if I do not act pro-environmentally at work	1	2	3	4	5	6	7
2. I feel morally obliged to act pro-environmentally at work	1	2	3	4	5	6	7
3. I feel proud when I act pro-environmentally at work	1	2	3	4	5	6	7
4. I would violate my principles if I would not act pro-environmentally at work	1	2	3	4	5	6	7

Norm Transmission.

How often do you encourage the following people to act pro-environmentally at work

	Never				Always		
1. Your subordinates	1	2	3	4	5	6	7
2. Your co-workers	1	2	3	4	5	6	7
3. Your supervisors	1	2	3	4	5	6	7
4. Your management team	1	2	3	4	5	6	7

Self-efficacy.

	Totally disagree				Totally agree		
1. For me acting pro-environmentally at work is not costly	1	2	3	4	5	6	7
2. For me acting pro-environmentally at work is easy	1	2	3	4	5	6	7
3. For me acting pro-environmentally at work is feasible	1	2	3	4	5	6	7

Outcome-efficacy.

	Totally disagree				Totally agree		
	1	2	3	4	5	6	7
1. I can make a positive contribution to the quality of the environment by acting pro-environmentally at work	1	2	3	4	5	6	7
2. Environmental quality will enhance when I act pro-environmentally at work	1	2	3	4	5	6	7
3. I can contribute to reducing environmental problems by acting pro-environmentally at work	1	2	3	4	5	6	7



APPENDIX 1C QUESTIONNAIRE - PRO-ENVIRONMENTAL BEHAVIOUR AT WORK



Transport related practices.

1. When you commute, how often do you commute by car?

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always

2. How many kilometres per week do you on average commute by car?

_____ km

3. When you travel for work (business trips), how often do you travel by car?

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always

4. How many kilometres per week do you on average travel for work by car (business trips)?

_____ km

5. When you travel for work and need to make a trip of less than 5 kilometre, how often do you use public transportation, a bicycle, or walk rather than drive by car?

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always

6. When you commute or drive for work purposes, how often do you drive in an energy efficient way (looking ahead and anticipating on traffic and brake and accelerate quietly and change to a higher gear as soon as possible)? *<From the previous questions we can derive if this question is applicable>*

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always

7. When you drive for work, how often do you carpool rather than drive alone? *<From the previous questions we can derive if this question is applicable>*

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always

8. How often do you use video and e-conferencing rather than meetings in person for work purposes?

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always



Energy related practices

1. Do you have personal control over the lights at your workspace?

Yes No

2. How many hours a day are the lights on at your workspace?

_____ hours

3. How often do you have the lights on at your workspace when there is no one in there?

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always

4. How often do you switch the lights off in your workspace when you go home and nobody is left in your workspace? *<From the previous questions we can derive if this question is applicable>*

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always

5. Do you use a computer at work?

Yes No

6. At work how often do you switch your computer off when you go home? *<From the previous question we can derive if this question is applicable>*

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always

7. Do you have personal control over the thermostat at your workspace?

Yes No

8. What is the average temperature setting at your workspace when you are working? **(when you are not fully sure, just indicate what you think)**

- lower than 18° C
- 18° C
- 19° C
- 20° C
- 21° C
- 22° C
- 23° C
- 24° C
- more than 24° C

9. During the year when you are at work, how often do you turn on the heating at your workspace? *<From the previous questions we can derive if this question is applicable>*

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always



10. Do you have personal control over the air-conditioning at work?

Yes No No air-conditioning available

11. During the year when you are at work, how often do you turn on the air-conditioning at your workspace? <From the previous question we can derive if this question is applicable>

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always

Waste separation and waste prevention related practices

1. How often do you use recycled paper at work?

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always

2. How often do you separate your paper from the regular garbage at work?

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always

3. How often do you separate your plastic from the regular garbage at work?

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always

4. How often do you use your own cup instead of disposable cups at work?

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always

5. At work how often do you read emails from the computer screen rather than printing them? <From the previous questions we can derive if this question is applicable>

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always

6. At work how often do you use as little paper as possible when printing (e.g., 2 pages per paper, two-sided etc.)?

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always

7. At work how often do you use email rather than regular mail?

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always



8. At work how often do you make use of online procedures rather than on paper (forms etc.)?

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always



APPENDIX 1D QUESTIONNAIRE - PRO-ENVIRONMENTAL BEHAVIOUR AT HOME



Transport related practices.

1. When you travel privately, how often do you travel by car?

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always

2. How many kilometers do you travel on average privately by car per week?

_____ km

3. When you travel privately and need to make a trip of less than 5 km, how often do you use public transportation, the bicycle, or walk rather than drive by car?

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always

4. When you drive privately, how often do you drive in an energy efficient way (looking ahead and anticipating on traffic *and* brake and accelerate quietly *and* change to a higher gear as soon as possible)? *<From the previous questions we can derive if this question is applicable>*

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always

5. When you drive for private purposes, how often do you drive with others rather than alone? *<From the previous questions we can derive if this question is applicable>*

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always

Energy related practices

1. How often do you have the lights on in a room at home when there is no one in there?

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always

2. At home how often do you leave electrical devices (like tv, video, pc) on stand-by?

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always

3. At home how often do you switch your computer off when you leave the house or go to sleep?

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always



4. What is the average temperature setting in your living room when you are at home?

- lower than 18° C
- 18° C
- 19° C
- 20° C
- 21° C
- 22° C
- 23° C
- 24° C
- more than 24° C

5. During the year when you are at home, how often do you turn on the heating?

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always

6. Do you have air-conditioning at home?

- Yes
- No

7. During the year when you are at home, how often do you turn on the air-conditioning?

<From the previous questions we can derive if this question is applicable>

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always

8. How often do you wash when the washing machine is not full?

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always

9. At what degrees do you wash on average?

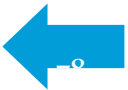
- 30° C
- 40° C
- 60° C
- 90° C

10. How often do you dry your wash outside rather than in a tumble dryer?

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always

11. How many times per week do you take a shower?

_____ times



12. How long do you have the water running on average when you take a shower?
 _____ minutes

13. How many times per week do you take a bath?
 _____ times

Waste separation and waste prevention related practices

1. How often do you use recycled paper at home?

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always

2. How often do you separate your paper from the regular garbage at home?

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always

3. How often do you separate your plastic from the regular garbage at home?

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always

4. How often do you separate your batteries from the regular garbage at home?

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always

5. How often do you separate your glass from the regular garbage at home?

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always

6. How often do you buy goods with minimum packaging?

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always

7. How often do you refuse plastic bags in stores?

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always

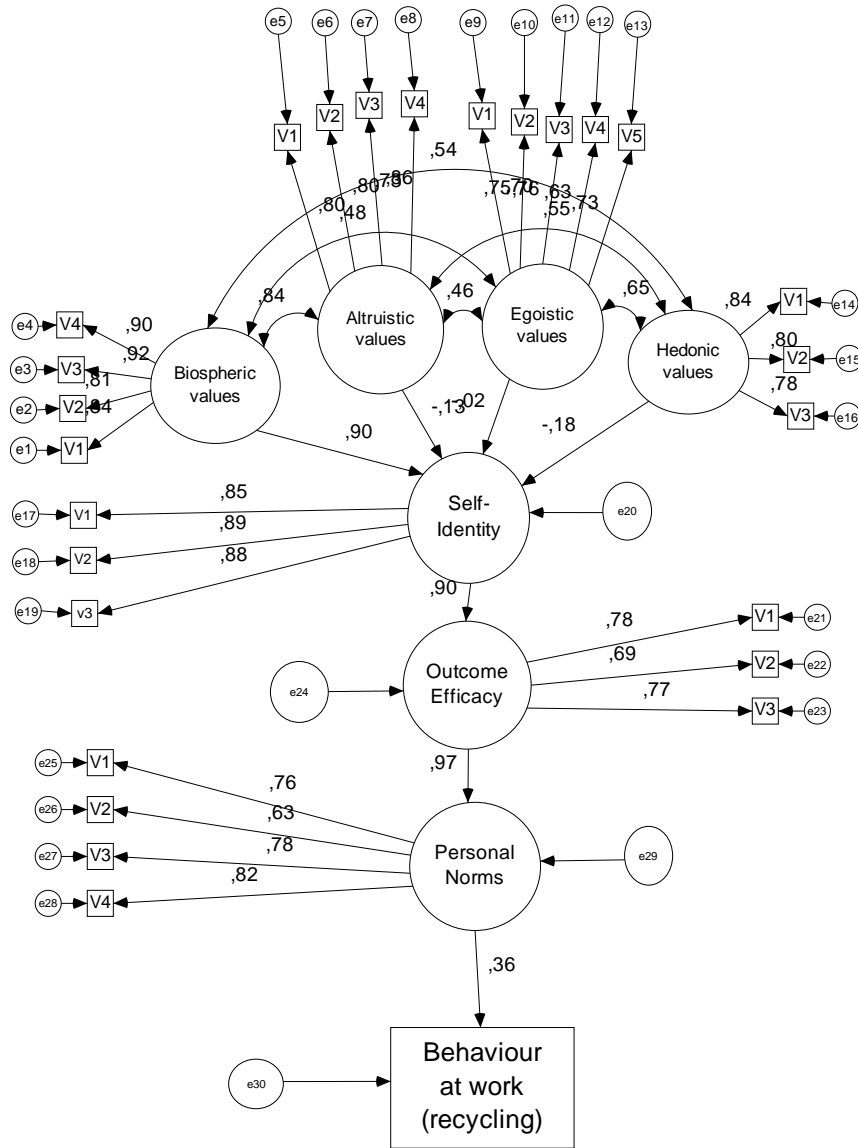
8. How often do you buy organic products?

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always

9. How often do you eat meat during the main meal?

	1	2	3	4	5	6	7	
Never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Always

APPENDIX 2 STRUCTURAL EQUATION MODELING



The role of values, self-identity, outcome efficacy, and personal norms in the whole sample (4 case studies). CFI=.930. Numbers indicate Beta weights (standardized estimates), which mean the relative importance of a predictor in predicting the criterion. The larger the absolute value of the beta weight, the more influence this factor has on predicting the criterion.