REScoop Plus

D3.4 – Effectiveness Report 2

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Contents

Management summary

This report presents the results of the analysis on the effectiveness of activities of energy supplying European REScoops (Renewable Energy Cooperatives) to influence and help their members to save energy and to invest in renewable energy.

This report concerns the second of two reports published as deliverable D3.3 of the REScoop Plus project. The overall objective of REScoop Plus is to further develop energy savings as an activity for European REScoops. To reach this overall goal the sub question for Work Package 3 is, 'What behavioural and social aspects influence energy savings and investment by consumers and members of REScoops?'

The report under deliverable D3.3 assesses the effectiveness of activities and tools used by (selected) REScoops in Europe.

Following exploratory research (Deliverable 3.1), the development of an analytical framework and research design, a first round of surveys was conducted in Spring 2017 with six REScoops in five different EU states. In total, in 2017 a response of 10,585 was achieved. A second round of surveys was conducted in Spring en Summer 2018 with seven REScoops in six EU states. In total, in 2018 a response of 7,556 was achieved.

The main conclusions of both the survey analysis are presented below. First, in part 1 results are presented on the analysis regarding energy savings. Second, in part 2 this is done for the results regarding the analysis of investments in renewable energy technology.

Results on energy savings

A large majority of respondents indicates to engage in behavioural action to lower energy consumption. This applies to both energy curtailment and energy efficiency behaviour. When asked whether to have saved energy since obtaining REScoop membership 40%-65% of respondents among REScoop argues to do so. Of those who measured their energy consumption 21-22% indicate to use at least 10% less energy, and between 9-10 % indicates to have saved at least 20% energy. On average REScoop members in the 2018 survey save 4-6% on energy consumption since obtaining REScoop membership. REScoops standing out in terms of members reporting energy savings are EBO, Enercoop and Ecopower. These are all REScoops that can be considered rather mature.

Energy saving behaviours are undertaken by the majority of respondents, only a minority claims that these behaviours can be attributed to REScoops. For energy curtailment this is considerably less (15-17%) than for energy efficiency behaviours (20-30%), though there is a variation between REScoops. The majority of respondents indicate that energy savings have become more important to them since becoming a REScoop member. They also indicate a higher knowledge level on energy issues. Respondents also indicate to have undertaken more (individual) energy savings actions since becoming a REScoop member or customer of energy supplied by REScoops. In both the 2017 and 2018 survey nearly half of the respondents indicated to consume less energy since they became REScoop members. General factors related to REScoop positively, significantly statistically related to energy savings (and intention to save energy) are: attending meetings organised by REScoops, length of REScoop membership in years, experiencing trust among REScoop members, specific actions implemented by REScoops, in particular EnergieID, Dr Watt, InfoEnergia, and personal advice. Moreover, users were generally satisfied with these. However, only a relatively small - but growing - portion of the respondents indicate to have engaged with these actions.

Rival factors found to have a statistical significant relation to energy savings concern: motivational factors, behavioural factors (e.g., goal-setting, intention), social factors (in particular social network), knowledge level, demographics and household characteristics. Although factors mentioned here are classified as 'rival' some of them can in fact be influenced by REScoop tools and measures, and contribute to energy savings; i.e. motivational factors, behavioural factors, social network and knowledge level. This is more difficult for structural factors like demographics and household characteristics.
In sum, it looks like there are three forms of REScoop engagement to members (i.e, membership itself, engagement activities, and the use of specific measures), that all have the potential to contribute in a positive way to REScoop members' energy savings intention, energy saving behaviours and in the end saving energy itself. The best results will arguably be met when these conditions are all at play and complement each other, in a way to trigger energy saving behaviours among REScoop members.

Results on investment in renewable energy

The 2017 survey revealed that half of the REScoop members indicate not to have invested in renewable energy technology since becoming a REScoop member. 24% indicates to have made investments since becoming a REScoop member. 27% indicates wanting to invest in the next few years. Investments are on average in the range of 500-2500 euros. The 2018 survey results confirm these results, but also revealed variation in investments across REScoops, with Enostra members investing most and other REScoops having members that hardly invest at all.

There is a small difference in willingness to investment prior to becoming a REScoop member and after having become a REScoop member. The longer respondents are REScoop members the more willing they become to invest. Moreover, REScoop members and consumers consider financial-economic return on investment of less importance than production and consumption of renewable ('clean') energy. The 2018 survey revealed that REScoop members indicate a payback period of between four and five years as acceptable. REScoop members indicate willing to invest significantly more than respondents who are not REScoop members (confirmed in both the 2017 and 2018 surveys).

An important result of the survey is the social environment REScoops have to offer to their members. The 2018 SOM Energia survey showed that the more often one visits REScoop meetings, the more one identifies oneself with SOM Energia, and the more one experiences interpersonal trust between REScoop members, the more willing one becomes to invest. The 2018 survey results showed a number significant statistical relationships between social factors (among which social norms) and investments. This was observed among EBO, SOM Energia, and Enostra. Persons who like to be seen as using energy efficiently or consuming energy efficiently showed significant statistical relationships to investment in renewable energy. In addition, this applies to cases in which friends and family also adhere to these values, or are also REScoop members.

In sum, becoming a member of a REScoop can be argued to contribute to making investments in renewable energy technology. It looks like the social environment the REScoop offers – a high trust community with many enticing social meetings with people having pro-environmental and pro-conservation mind sets – appeal to people and trigger them to invest in renewable energy technology. Moreover, in common with energy savings, the longer one is a REScoop member the more one becomes willing to invest. In sum, both membership, engagement activities, and (some, but limited) specific measures were found to have positively influenced investment in renewable energy technology.

1 Introduction

1.1 *About REScoop plus*

This report is the second report of deliverable D3.3 of the REScoop Plus project, a deliverable that falls under Work Package 3. The overall objective of REScoop Plus is further develop energy savings as an activity for European REScoops. To reach this overall goal the sub question for Work Package 3 is, 'What behavioral and social aspects influence energy savings and investment by consumers and members of REScoops?'

The focus in the REScoop Plus project (the successor to the FP7 REScoop20-20-20 project) is on studying the claim that energy supplying REScoops are successful in supporting energy consumers in saving energy Elaboration about this claim and plausible explanations for this success in realized energy savings is not only relevant for REScoops, but also in a wider context, (i.e. one can also learn from the revealed mechanisms, and theoretically generalize about the energy saving potential to other energy consumers).

Therefore, the result of this work package will not only contribute to the development of energy saving activities of REScoops but will also contribute to the generalization of the results to other target groups than REScoop members and to expand the memberships of REScoops to other groups than traditional REScoop groups (middle class, middle age males).

Together with a number of successful decentralized energy supplying cooperatives, the project measured overall energy savings of REScoop members and identified best practices (in terms of projects and incentives with high leverage, and hence impact). The REScoop Plus project partners are members of the federation of European REScoops, entitled REScoop.eu. Work package 3 focusses on the tools and actions of these REScoops that are already in place or are planned to be implemented by the REScoops in the project on the short term.

The results of Work Package 3 will be disseminated throughout the REScoop.eu network and to policy makers. The ten REScoop partners of the REScoop Plus project are Avanzi (Italy), Coopernico (Portugal), Enostra (Italy) Ecopower (Belgium), Enercoop (France) EBO (Denmark), ODE-NL (The Netherlands), REScoop.be (Belgium), SEV (Italy) and SOM energia (Spain).

1.2 *About this effectiveness report*

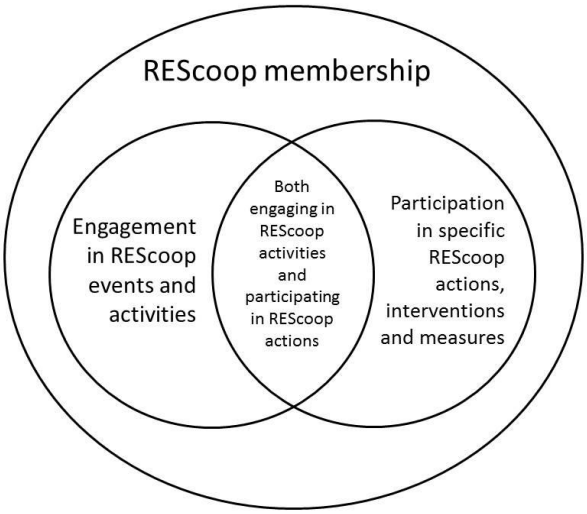
The claim that measures from energy supplying REScoops stimulate consumer energy savings is an effectiveness question. Effectiveness means that the existence of activities and measures from REScoops are not only related to (REScoop) consumer energy savings (by lowering their energy consumption pattern), but are also (or at least partially) caused by these measures, and that the energy savings are not (only) caused by other factors (which can be viewed as rivalry explanations). In the REScoop Plus project research on the effectiveness of the REScoop measures was conducted in two different ways.

First, by using and analysing energy consumption data. In a previous deliverable under another work package deliverable of the project (D.2.3; Work Package 2 by TUN) the data of the overall energy savings of the REScoop members were correlated against REScoop members participating in or being exposed to certain measures by the REScoops. Significant statistical relationships (i.e. correlations between variables) should not be confused with causation, though. Causation not only assumes covariation and logical time order between cause and effect but also a causal relation.

The second way was conducting social and behavioural (scientific) research with the help of surveys among REScoop members. However, it is difficult in social and behavioural research to establish sound evidence for causal relationships. In order to do this, ideally experiments are required (in laboratory conditions, to stabilize background conditions, while using both treatment and control groups).
For reasons of restrictions in time and budget setting up this type of experiments was, however, not possible in the REScoop Plus project. Therefore, alternative ways had to be used to study assumed causal relations. In the end this was done by using five research strategies to analyze effectiveness, analyzing statistical relationships between actions and achieved goals (i.e. analyzing correlations), reported effectiveness by respondents, analysis of trends in longitudinal energy consumption data, comparing groups, and analyzing rival factors (see hereafter).

The interventions REScoop undertake themselves make it difficult to establish sound evidence for causal relationships. REScoops influence the behaviour of their members in different ways. To create more clarity conceptually, we will address what REScoop membership entails vis-à-vis general membership, actions, and events REScoops organise. Therefore, we discern three (overlapping) subsets of REScoop membership. In this classification general membership is the first way REScoop influence their members. It is an overlapping set of the way REScoops influence their members. Within this set there is the engagement of members in the REScoop, for instance by attending meetings, or financially contributing, or via participation in specific actions or measures organized by REScoops. Figure 1 presents a graphical overview of the influence spheres REScoop have on their members.

***Figure 1 1**: Venn diagram of REScoop membership, discerning between general membership, engagement in REScoop activities and participation in specific REScoop actions. (Survey 2018)*



To link the respondents' energy conservation behaviour to the assumed influence of REScoop actions we discern between specific and unspecified measures in relation to the respondents' (actual) behaviour. Unspecified measures entail the general presumed influence of being a member and (indirectly) being exposed to REScoop actions and information. On the other side, specific measures entail interventions for which information is available on which members participated in these specific actions or were exposed to them in another way (becoming a target group for certain interventions).

We presume that the mechanism of REScoop influencing their members to attain certain goals (like saving energy) works as follows. REScoop membership potentially influences energy saving for a number of reasons. Becoming a REScoop member (and/or customer) can be seen as making an informed choice; in other words, one chooses deliberately to engage in using green energy. The reason to become a REScoop member can be motivated by environmental or sustainability concerns or by pragmatic financial or technical reasons, like the expectation to receive better service provision or more comfort. If one becomes a REScoop member, one receives information on the importance and ways to save energy. This could mean that the information level of the REScoop members on the importance of renewable energy and possibilities to save energy increases after becoming a member, which could lead to a higher knowledge level (on renewable energy and energy saving options). However, more information or awareness do not automatically mean that one also engages in actions to attain a certain goal (like saving a certain amount of energy). We assume that it is easier for REScoops to influence members who are more financial and actively engaged in their REScoop, for instance because they hold shares in their REScoop or visit REScoop meetings. This is a particular subset of REScoop members; i.e., the subset of engaged members.

Examples of specific actions or measures undertaken by REScoop are: Ecopower's EnergyieID or Enercoop's Dr Watt program. An overview of all type of measures is presented in deliverable D3.1

("Report on specific tools of Supplying REScoops in Europe"). The REScoop members who participate in these actions can mostly be seen as belonging to a subset of members who deliberately choose to be exposed to these measures. However, sometimes the REScoop targets particular groups with specific measures, like members who consume relatively much energy compared to peers with a similar (socio-demographic or household type) profile but with a lower energy consumption.

However, the survey research approach we used did have a few shortcomings in relation to analyzing the mechanism in which REScoops influence their members in a valid way. For instance, we could not test whether information or awareness levels have actually increased since people became members of a REScoop. Therefore, we had to use proxies like, ''if Rescoop members think that since they became a member renewable energy became more important to them', and, 'if their level of knowledge and of (other) household members in the field of energy in the past three years has improved.' However, a raised awareness and knowledge level does not automatically lead to more energy saving actions one engages in. In order to do this, we need to find whether REScoop members' energy use has changed since they obtained REScoop membership, the ways in which they conserve energy themselves, and how they behave while doing so, i.e. engaging in energy curtailment and/or efficiency behaviour.

An important reservation we want to make is that when one engages in more energy saving behaviour (either curtailment or efficiency) since becoming a REScoop member does automatically mean that this is related to REScoop membership itself. There are also other factors, external to REScoops, that can potentially influence this. Therefore, we need questions that address specific relations between the behaviour of REScoop members and the contribution to this behavior by the REScoop (i.e., "Did you undertake the following energy savings actions, and if yes, to what extent can they be related to your REScoop's actions?"; assuming a contribution by REScoop actions to energy consumption behaviour). Moreover, we need questions that relate specific REScoop measures to individual household energy saving actions (be they energy curtailment or energy efficiency behaviours).

We asked respondents to reveal information on effectiveness judgment ex-post, asking them about the influence (correlation) of a certain REScoop action or measure (either specified or unspecified) and energy consumption behaviour, but also asked respondents to compare energy consumption before and after being exposed to a certain measure (or more generally: after obtaining REScoop membership).

The next part of the mechanism in which REScoops influence their members is that energy saving behaviours by REScoop members are influenced by REScoop action and not by other factors (i.e., rival explanations). To gain more insight in causation we need to exclude rival explanations for the influence of REScoop actions. We based rival factors on a research model (see hereafter), and compared situations in which the REScoop actions were present and absent (comparing trends in time, and comparing groups with and without exposure to REScoop actions), and analyzed whether there was a significant statistical relationship with REScoop members energy saving behaviour items using bivariate correlations.

After assessing the REScoop actions influencing their members we question factors in the implementation of these measures. Was success or failure due to the way the measures were implemented? This is relevant for the unspecified influence of REScoop membership (e.g., that REScoop members are satisfied with the services provided by REScoops) and for specific measures. If REScoop members are unsatisfied with the activities their REScoop organises this would explain non-use and poor implementation, or a lack of influence of these activities on energy saving behaviour. We consider recommendation of activities to others is closely related with satisfaction.

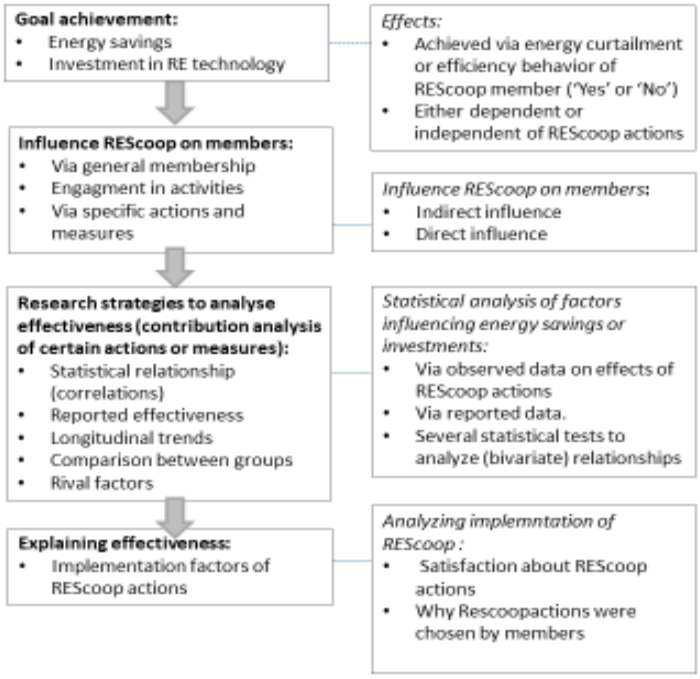
Finally, the question is whether the REScoop actions described actually works in practice. One indication is that Rescoop members state that energy services offered by REScoops are better than by other providers. If part of the assumed influencing mechanism does not work, this can be analyzed. For instance, by using information not reaching REScoop members, or information not leading to energy conservation behaviour, or REScoop members engaging in energy conservation behaviour for other reasons than REScoop actions (i.e., rival factors).

1.3 *Research design and methodology*

The analysis in this report is based on surveys among REScoop members, non-members clients (consuming energy supplied by REScoops) and receivers of REScoop newsletters (or people otherwise connected to the REScoop community) of a selected set of REScoops within the REScoop Plus project consortium. They are: Coopernico (Portugal), Enostra (Italy) Ecopower (Belgium), Enercoop (France) EBO (Denmark), SEV (Italy) and SOM energia (Spain). Detailed information on the output of the separate surveys are for the 2017 survey attached to the 2017 report as appendices and for the 2018 survey as appendices to this report. In addition, results from a complementary study on longitudinal data and effects of a limited set of REScoop interventions - Deliverable D2.3 - Data analysis report – were used.

In principle, we followed the logical steps of a general (public) policy effectiveness evaluation to determine the influence of REScoop actions on the goals of energy saving by members and their investment in renewable energy technology. Effectiveness research design is based on the principle of the experimental research model (pre- and posttest, with experiment and control groups). In our design we were limited in the actual use of new trials or experiments, because of the difficulty to either collect pre-test data or the difficulty to match the post-test with the moment the survey was taking place. This is related to the best practices and the Toolkit that is developed in this project (under Work Package 4). Research design and methodology of these trials were discussed in deliverable D3.2 Evaluation Methodology. The role out of a limited set of measures and interventions among selected REScoops provided information on the role out of best practices (toolkit) in new situations. Figure 2 presents a graphical overview of the research approach used in this study.

***Figure 1.2**: Effectiveness study research process approach.*



Effectiveness evaluation of the REScoop actions starts with determining the level of goal achievement of these actions. The goals of REScoops concerning energy saving are actual and perceived energy savings
by the REScoop members, energy saving behaviour actions by REScoop members and investments in RES technology by REScoop members. In the goal achievement step, these effects are being measured and independent of REScoop actions.

Next step in our research is correlating REScoop actions with found or reported effects. This is the first step of the contributing analysis preceding the actual analysis of effectiveness. REScoop actions are divided into three subsets of REScoop influence. Membership as overall subset, and engagement and exposure to REScoop measures as (potentially overlapping) subcategories within the overall set of REScoop members. However, statistical relationship (i.e. significant correlation between variables) does not mean that there is also causation. The claim that energy supplying REScoops stimulate REScoop member energy savings as an effectiveness question can be answered by using both qualitative and quantitative research designs to determine effectiveness of REScoop actions. The analysis in this report make use of some of the results of a complementary study in the REScoop Plus project, of which the results have been published in deliverable D2.3 – the Data analysis report.

Both research designs basically use an experimental logic that builds on measuring energy consumption before and after the implementation of a REScoops actions (or energy investments before and after) compared with members or non-members (who are not exposed to REScoop induced actions and measures). We can compare a REScoop as a whole (with their members being exposed to a set of different measures and/or the influence of being a member), or the subset

membership. Alternatively, we can look at the subsets of engaged members and those exposed to specific actions and measures.

Effectiveness of REScoop measures means that the energy consumption of the experiment group (of which the members or part of members are exposed to a certain REScoop action or measure) after being exposed to a certain REScoop a measure is lower when compared to the situation before a measure was implemented, and is lower than that of the control group (non-members or part of REScoop members who have not been exposed to a certain REScoop induced measure). This difference is assumed to be caused by a (certain) REScoop measure and not by other factors (i.e., rival explanations).

The qualitative research design follows the same experimental logic but relies on REScoop members' qualitative assessment on the effectiveness of certain REScoop measures. They are asked, using structured (but closed-ended) questions, how much they saved (measured), how much they think they saved, and in how far their energy saving behaviour is influenced by the REScoop they are members of.

Because of the subjective nature of such research methods, they are usually not the only element in an evaluation. Evaluation research typically uses multiple methods, to compensate shortcomings of mono- methods evaluation research (Walker, 2004.) In this second Effectiveness Report D3.4 we present, analyze and integrate results and insights from the four different effectiveness research strategies.

The first strategy is reported effectiveness. By asking REScoop members how they experience and value interventions, tools and measures implemented by REScoops, while seeking to analyse these data against actual or perceived energy consumption and renewable energy investments. In the questionnaire used in this survey questions and items were based on a research model presented in report D3.2 Evaluation Methodology.

The second strategy is trend analysis in longitudinal data. Differences before and after interventions (REScoop actions) give us information about the influence of REScoop actions. Longitudinal trends show through the use of longitudinal data (which derives from Work package 2, report deliverable 2.3), In the D2.3 - Data analysis report (by TUC; Work package 2) time series of data on the dependent variable (energy consumption) were established and analyzed. This was done to analyze trends over time. This energy consumption data is general on REScoop level, but can also partly be correlated with specific measures.

The third strategy is comparing groups who are exposed to a certain measure or intervention to groups who are not. We only had (very) limited means to obtain data from other groups than REScoops for legal privacy reasons and lack of other energy supplier data for completion and business reasons. Comparing with the community around the REScoop was a second-best option, but taking as a control group people who receive the newsletter from the REScoop and are not a member or customer is a far from perfect and unbiased control group. Like mentioned before we had given practical research reasons only very limited possibilities to perform trials with measures and interventions among selected REScoops. These trials are related to the best practices and the

Toolkit that is developed in this project (under Work Package 4). Research design and methodology of these trials were discussed in deliverable D3.2 Evaluation Methodology. Information on the role out of best practices (toolkit) in new situations is a source for group comparison.

The fourth strategy concerns analysis of rival factors. This is done by looking into the influence potential rival factors have, and ruling their influence out (if applicable). This means a focus on elimination of rival factors under the assumption that it is key interventions (or in this case specific actions or measures implemented by REScoop) that - theoretically speaking – explain the change in outcome variables (i.e. effects in energy savings or investment in RE technology). This is done through an elimination process of rivalry factors in reconstructing (assumed) causal mechanisms (inspired by the 'modus operandi approach', Scriven, 1974).

This (second) effectiveness report (2018) builds on the results of the 2017 effectiveness report (D3.3), and emphasises the influence that REScoops (and hence the measures and interventions they implement) have on their members according to these members, regarding energy savings and renewable energy investments. Either in general as a member of a REScoop or as a reaction on a specific measure by a REScoop. The second effectiveness report (2018) covers both the results of the first survey (2017) and second survey (2018). The results of the different effectiveness research strategies are presented in an integrated manner, which allows us to verify key claims about the effectiveness (and effects of) REScoop activities, actions, measures, and other interventions.

1.4 *Research model and rival factors explaining energy savings and investments in renewable energy technology*

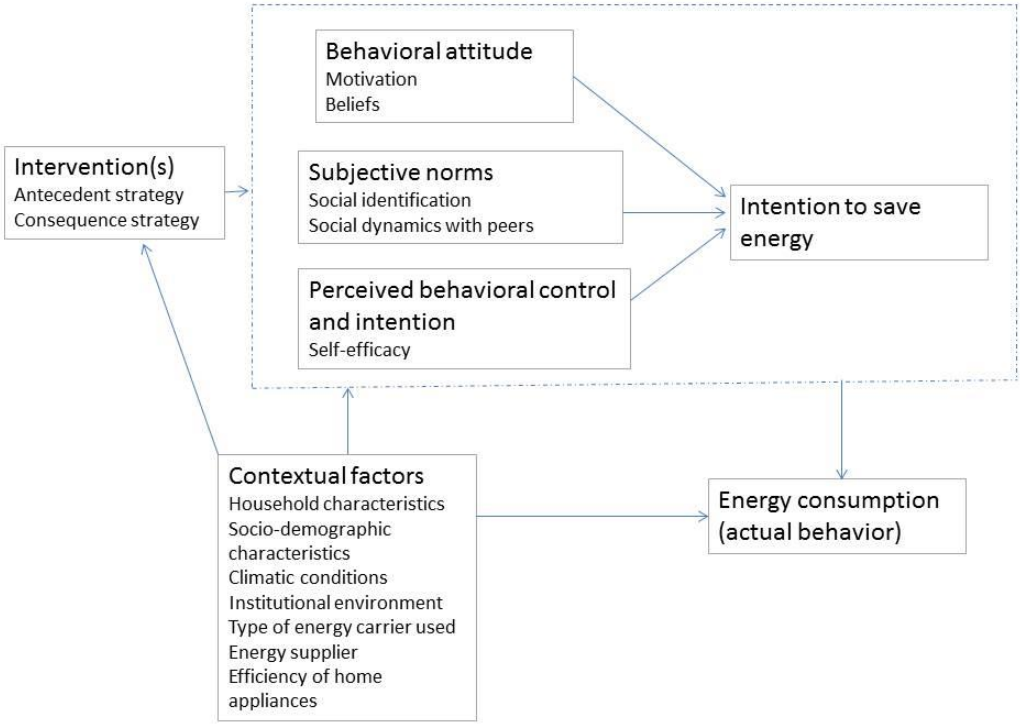
To be able to say more about the (potential effectiveness) of the measures we follow the principle of the 'modus operandi method' (Scriven, 19741). The principle of this method is to eliminate rival explanations in the explanation of a certain phenomenon, while trying find evidence that supports certain claims on the direct (expected) relationship between a given measure and the (expected) effect on an outcome variable (like energy consumption). In order to this we first need to know which factors besides the theoretical (independent) variable of interest (i.e., a given action or measure implemented by a REScoop) might be a plausible (theoretical) explanation for energy savings among REScoop members. Next, one needs to research which of these factors are present in practice, and actually influence the outcome variable.

Figure 1 presents a simplified research model that forms the conceptual basis of our empirical intervention studies. It incorporates insights from different theories and research traditions (mostly Theory of Planned Behaviour (Aizen, 2005 2) and policy evaluation theory, Hoogerwerf and Bressers, 19913), and insights that were derived during previous research, a pilot study, and expert meetings (see for more detail deliverable D3.2 Evaluation methodology). In this research model, the REScoop measures are to be found in the box 'intervention(s)'. Interventions (hence, REScoop measures and tools) are thus expected to directly influence behavioural attitude and subjective

[1] Scriven, M. (1974). Maximizing the power of causal investigations: The modus operandi method. In W. J. Popham (Ed.), Evaluation in education: Current applications (pp. 68-84). Berkeley, CA: McCutchan Publishing.
[2] Ajzen, I. (2005): Attitudes, Personality and Behavior, Open University Press
[3] Bressers, J. T. A., & Hoogerwerf, A. (1991). Beleidsevaluatie. Alphen aan de Rijn: Samsom H.D. Tjeenk Willink.

norms, and indirectly intention to save energy and actual energy consumption behaviour(s). The model, however, also contains the box 'contextual factors'. This is theorized to directly influence energy consumption, next to also influencing most of the other variables in the model. For these reasons, it is clear that REScoop actions cannot solely influence energy consumption. More conditions are required, before lowering of energy consumption is expected to occur.
In other words, there are many rival explanations that could plausibly explain for lowering of energy consumption (i.e. energy savings). Next to perceived self-control there are many contextual factors. The latter can be mostly discerned into household characteristics, demographics and environmental conditions.

***Figure 1.3**: simplified research model to explain energy savings among households. (Survey 2018)*



1.5 *Survey preparation and implementation*

The online surveys were undertaken with the survey program LimeSurvey under the license of the University of Twente, on the secure server of the Institute for innovation and Governance Studies (IGS) Data lab of the University of Twente.

With the help of contact persons at the REScoop partners the original English basic questionnaire was translated and adjusted into six 2018 native languages for 2017 and 8 for 2018 for the REScoops that participated in the survey. Native languages concerned: Flemisch for Ecopower in Belgium; Danish for EBO (Hvidovre Fjernvarme, FDHvidovre, and Avedøre) in Denmark; French for Enercoop in France; Portuguese for Coopernico in Portugal; Italian for Enostra in Italy; and German and Italian for SEV in the bi-lingual Trentino-Alto Adige (Southern Tyrol) region in Northern Italy.

The respondents had to enter the online survey via a survey link they received from the REScoop they were either a member or a client to. No tokens or other ways to establish the identities of the respondents, were used (for legal reasons). All respondents were to be considered anonymous. The data
on energy consumption from the REScoops was also anonymous. Hence, survey data cannot be traced back to the actual households they derive from.

The online survey links were unique for all of the REScoops. The respondents could choose between either their native language or the original English. In the translation process questions and answer items were tailored to country specific conditions and circumstances. In this process, some questions were omitted because the questions were not deemed relevant in certain country settings (like statements on nuclear energy, or centralised national energy supply systems). Other questions were changed to match cultural factors of questioning (e.g. a statement on using sustainable food instead of using electrical cars).

In the second round of surveys a number of questions were textually improved. Some questions were omitted from all surveys or specifically for a certain REScoop. To make it possible to repeat the questionnaire in the same population in some cases sets questions were made facultative to answer again. Shortening of the questionnaire was also necessary to add more questions on specific measures. Similar questions on the measures were used in different Rescoops, including the ones were the best practice measures were rolled out. For instance, similar questions on the EnergieID measure were asked for Ecopower, where it was used first, and Coopernico, Enostra and SOM energia where it was rolled out in the REScoop Plus Toolkit dissemination program.

The survey samples were derived in close collaboration with contact persons of the REScoops. Either a customer database with e-mail accounts was used or a database containing anyone who received a newsletter from a REScoop (which means that respondents do not have to be REScoop members or customer). This difference in approach was related to the business model used by the respective REScoops. The use of the broader community (i.e. the 'newsletter group') enabled us to also collect data among non-members, as some of the REScoops possessed a database with 'interested citizens'.

Next, the REScoop partners sent survey links to the respondents. The newsletters and e-mails contained text to explain the purpose of the survey, the research project, and REScoop Plus at large. In addition, the online survey link was coupled with the newsletters and the website on which the online survey was located. To raise the response rate, follow up announcements were used using the REScoops' social media and websites.

Therefore, one can state that the total sample of respondents consists of the community around European REScoops, which are partly REScoop-members, but can also contain other interested persons who receive the REScoop newsletter, visit the REScoop website, or learned about the survey via social media. The total survey response of the 2017 survey comprised of 10.585 respondents, and in the 2018 survey of 7.556 respondents. Figure 2 presents an overview of the survey responses, also showing response per REScoop.

***Figure 1.4**: Survey responses per REScoop for the 2017 and the 2018 surveys.*

Name REScoop	Total response 2018	Total response 2017
Coopernico	76	239
EBO (Hvidovre Fjernvarme, FDHvidovre, and Avedøre)	193	210
Ecopower	3879	1111
Enercoop	521	8805
Enostra	175	154
SEV (Italian speaking)	50	
SEV (German speaking)	274	
SEV (integrated)	324	66
SOM Energia	2388	
Total	7556	10585

In the database among those who are not REScoop members, there is a bias towards persons that were able to use the broader REScoop community database. The analysis of the REScoop measures' effectiveness was largely conducted based on the analysis of the dataset containing all respondents (including those who indicated not to be REScoop members). Next to analyzing differences between members and non- members attention is also paid to other issues, like differences between REScoops, and differences between REScoop members (for instance based on gender, or duration of REScoop membership).

The statistical analysis was conducted using the software package IBM SPSS Statistics, version 25. For the analysis, it was important to construct of a number of variable scales in line with the variables present in the theoretical model (see Figure 1). Scales were made regarding the following variables:

a) motivational factors;
b) behavioural factors;
c) social factors;
d) knowledge and importance levels;
e) energy savings behaviour (on both energy curtailment and efficiency behaviours).

The statistical data analysis involved multiple statistical tests, like T-tests and bivariate correlations. Several non-parametric tests had to be undertaken to analyze items with a non-continuous character. Statistical tests used and their results are presented per (sub) section in the Results chapter (Chapter 2).

1.6 *How to read the report?*

In the next two chapters, the analysis of the results of the survey will be presented. First, in chapter 2 in Part 1 of the research attention will be paid to effectiveness and goal achievement of REScoops' measures targeting their members and others to save energy. In other words: Did respondents engage in energy savings behaviours, and they succeed in saving energy, and if yes, did this result from contribution by REScoop action? Second, in chapter 3 Part 2 of the research will present the analysis the influence of REScoops on investments in renewable energy by members and others. The report ends with a conclusion, answering the main research question. The main text contains annexes with tables supporting the analysis and conclusions. In a separate annex to this report, we present the output of all the surveys in a separate document.

2 Part 1: Energy savings by REScoop members

2.1 *Goal achievement of energy saving targets*

The goal of the REScoop activities and measures addressed in this study is that REScoop members save energy. To find out whether these REScoop actions are effective we first have to find out whether REScoop members save energy (goal achievement), and secondly if they save energy due to the actions by a REScoop (effectiveness). The same goes for investments in renewable energy technology. The investment by REScoop members will be presented in in part 2. For energy savings, we present the results of both the 2017 and 2018 surveys, and the statistical analyses.

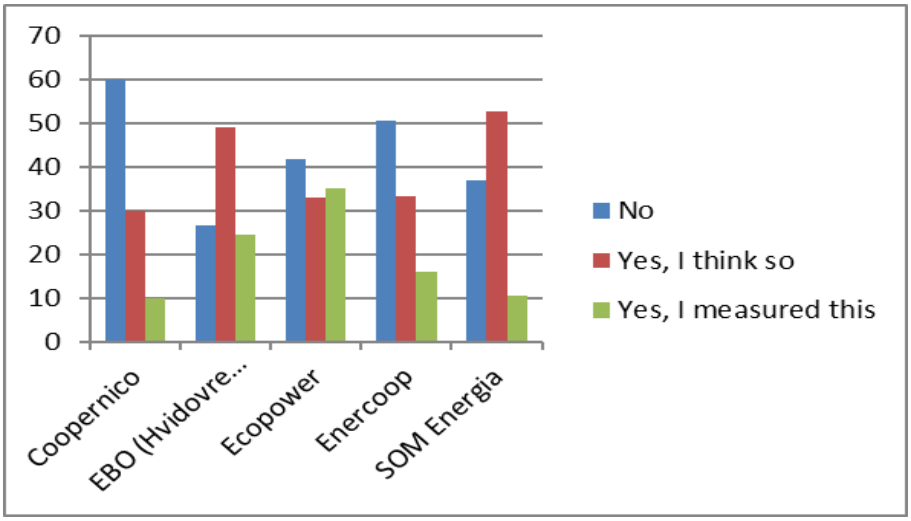
Energy saving can be operationalized as either actual measured energy savings, or self-reported energy savings. On top of this energy saving by REScoop members can also be operationalized as reported energy saving behavior (like lowering one's thermostat when leaving home).

In 2017 in the integrated dataset only 10.5% of the respondents indicated to know how much energy they saved between 2015 and 2016 because they either measured it themselves or inquired it at their energy supplier (REP 2017 Report 2017 I.1). In the 2018 survey the percentage of REScoop customers that measured their energy use is higher, but there are large differences between the REScoop (Figure RES4).

Reported energy saving

The 2017 survey showed that 47.2% of the respondents agreed with the statement whether they consume less energy since becoming a REScoop member. The majority (52.8%), however, did not agree (Report 2017 I.2). The 2018 survey, however, reveals that the responses vary strongly across REScoops (see Figure RES4).

F*igure RES4*: *Lowering of energy consumption (Survey 2018).*



Of those enquired the majority sees no change. However, a substantial group of respondents report they think they saved energy. Figure RES4 shows remarkable differences between the cooperatives. EBO concerns the lowering of energy consumption after converting to sustainable district heating.

Enostra and Coopernico have many members that only very recently obtained REScoop membership. Detailed background information on this can be found in the Appendix.

Actual measured energy saving

Next to asking respondents whether they saved energy, we asked the ones that indicated to have measured energy savings (either by themselves or via their energy supplier) how much energy they saved. Of those who indicated to know the size of their energy savings in 2017 40% revealed to have energy savings of at least 10% over this period. This figure concerned an average for all REScoops participating in the surveys (integrated dataset).

Results of the 2018 survey reveal that relative frequencies of those indicating to have saved more than 10% energy vary between 14,3% (Enostra) to 34,8% (EBO). The average would be around 21-22%, which is considerably less than the 2017 survey figure (i.e., 40%). A reason for this would likely be the overrepresentation of Enercoop in the 2017 sample. In the 2018 survey 28,8% of Enercoop members indicated saving of more than 10%. Up to 18% of respondents at REScoops (i.e., Enercoop) indicated to have saved more than 20% energy. On average this would be between 9% and 10% of the respondents. See also Figure RES 1' (background details can be found in the Appendix).

***Figure RES1**: Measurement of energy savings. (in%; 2018 survey)*

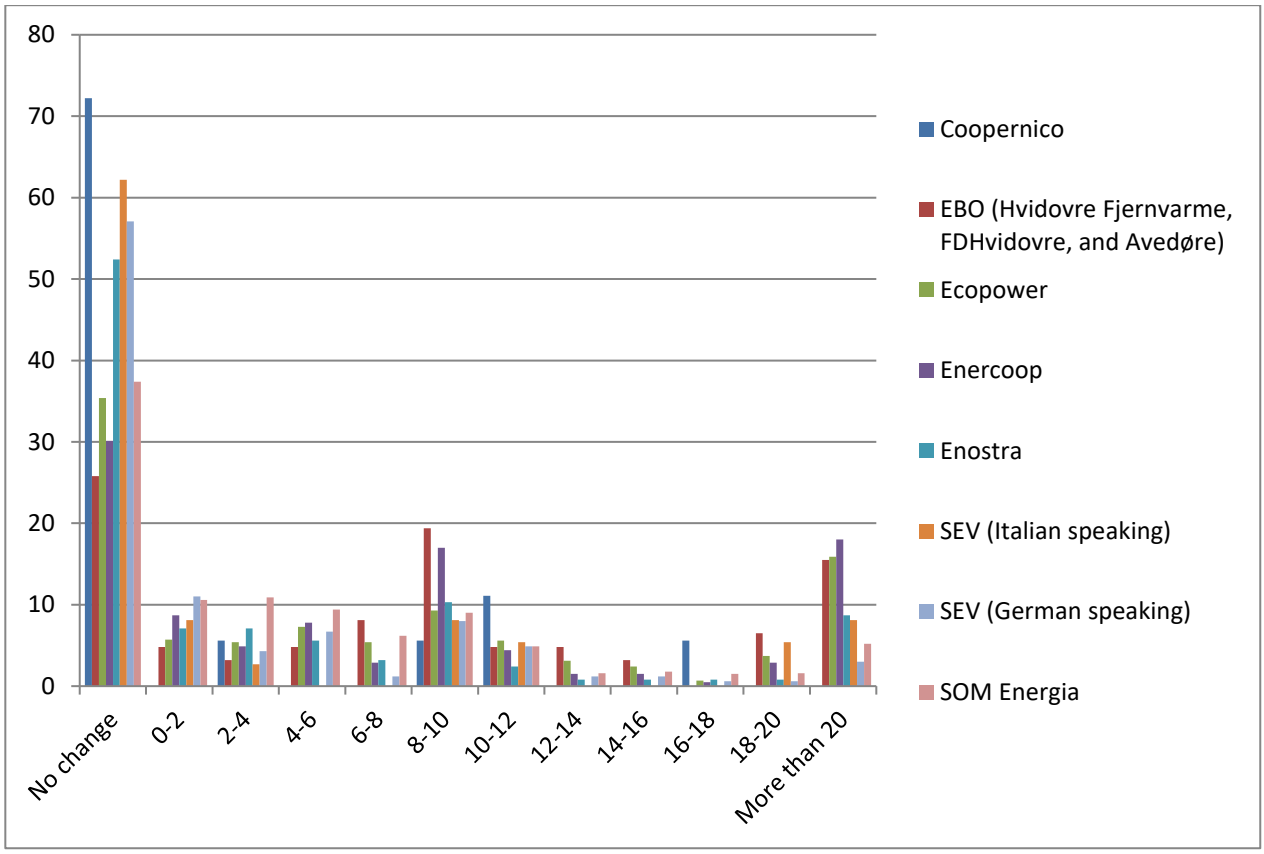
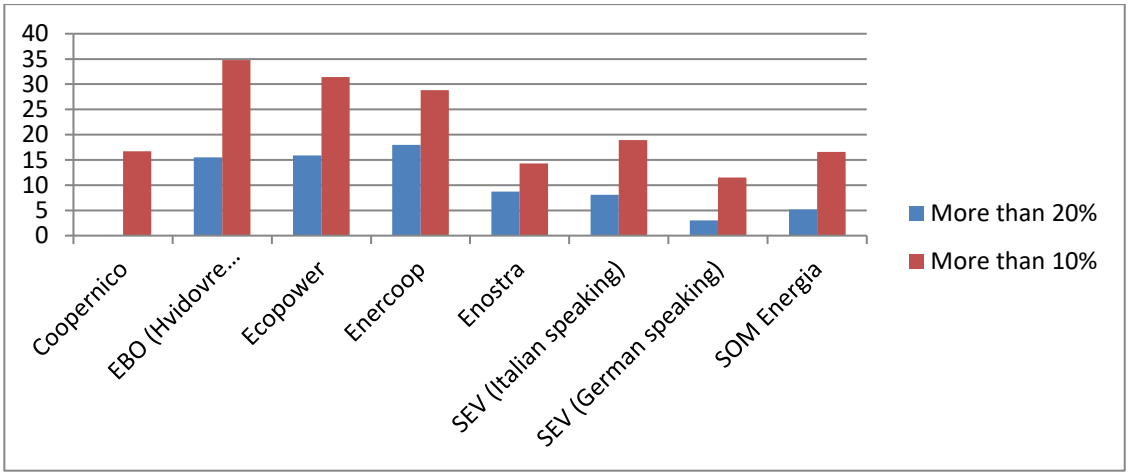
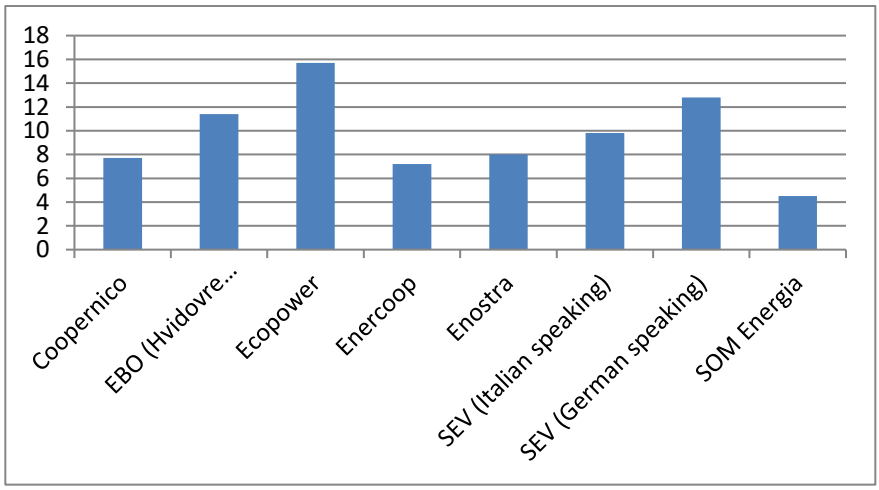


***Figure RES1'**: More than 10% and 20% energy savings per REScoop. (in % of respondents; 2018 survey)*



One obvious explanation for the level of energy savings achievement we see, would be that REScoop members already start saving energy before they became a member. Another explanation would be the so-called rebound effect. This means that once people have adapted their energy consumption behavior or invested in efficient energy equipment, they start to think that they can use more energy, because they perceive that this energy is more efficiently used and 'clean', anyway. Perhaps related to this behavioural phenomenon is the observation that the 2018 survey revealed that some of the respondents reported to have actually started using more energy (See Figure RES5). This varies between 4,5% (SOM Energia) and 15,7% (Ecopower). The average would be between 9% and 10% of the REScoop members for the REScoops participating in the 2018 survey.

***Figure RES5**: Respondents indicating having started to actually use more energy. (in %; 2018 survey)*



Energy saving behavioural actions

An indicator for energy savings is engaging in energy savings behaviour. REScoop members might or might not undertake different kinds of energy saving measures in their households. In both the 2017 and 2018 survey, the respondents were asked whether they undertook certain particular energy saving behavioural actions. First, we do this without raising the question whether these actions can be attributed to REScoops.

The actions pertaining energy saving behaviour addressed concern:
Energy curtailment behaviour (conservation - energy savings through behavioural change);
Energy efficiency behaviour (adoption of efficient energy technology).

The latter requires that decisions are more deliberately taken. The first category rather implies day-to-day behaviour. Further, the actions differ in how the following issues influence energy consumption behaviours, i.e.:

- information;
- equipment;
- finance plays;
- daily effort;
- comfort;
- and whether heat (e.g., from a district heating grid) is used or electricity.

Items used to indicate energy curtailment behaviour

- lowering the house temperature (the thermostat) when leaving the own house;
- adjusting the thermostat to a lower temperature when opening the window;
- turning off lights when leaving rooms;
- adjusting the thermostat;
- taking shorter showers.

Items used to indicate energy efficiency behaviour

- when buying a washing machine, refrigerator, freezer the respondent one selects equipment with a high energy efficiency level;
- putting electrical home appliances out of standby-mode (e.g. by using a 'standby-killer');
- installing thermal insulation at home;
- changing incandescent lighting to highly energy efficient lightning (e.g., LED lighting).

When compared to the 2017 survey new sets of questions concerning specific measures were inserted in the 2018 survey. Part of the respondents who participated in the 2017 survey also participated in the 2018 survey. Because of the anonymity of the respondents, we could not avoid this. To avoid response problems due to the length of the survey and too many repetitions of questions, these questions were only used in surveys among:

- REScoops, in which no survey was conducted previously in 2017 (i.e., SOM energia);
- 'young' REScoops with strong growing membership numbers, that have potentially large numbers of new respondents (i.e., Coopernico, Enostra);

- REScoops, where the respondents at forehand indicated that they were prepared to answer questions for a second time (i.e., Enercoop).

In figure 2.1 an overview is presented of the percentages of REScoop members in the 2018 survey who indicated to have engaged in energy saving behaviours. For more details on the results for a number of curtailment behaviours and efficiency behaviours on the basis of the 2018 survey data see section 2.2 reported influence of REScoop actions on energy saving actions (See Figures ESAV5, ESAV6 (curtailment); ESA4, ESAV9, ESAV11, ESAV12 (efficiency).
The 2017 survey already showed that most REScoop members take these energy saving actions. In the 2018 survey for the four REScoop we survived given the reasons above, for curtailment behaviuor the examples show that by far a majority of respondents engage in such behaviours, however, only few argue that they do this because of REScoop action (15% -17%). For efficiency behaviour the examples at Enercoop and SOM Energia show fairly higher relative figures mentioning contribution to REScoop action (between 20% and 30%). In sum, the far majority of REScoop members engage in energy saving behaviour, and between 15% and 30% argue that this is because REScoops intervened (in one way or another). When looking into efficiency behaviour concerning the adoption of renewable energy technology, results among Coopernico and Enostra reveal relatively high adoption rates. Especially, Coopernico performs well in this regard, showing a 77% adoption rate on solar energy technology and 62% on heat pumps. However, one should be a bit cautious here, as the Coopernico survey had a low response rate.

Figure 2.1: Percentage of respondents engaged in energy savings behaviour (per REScoop) (in %; Survey 2018)

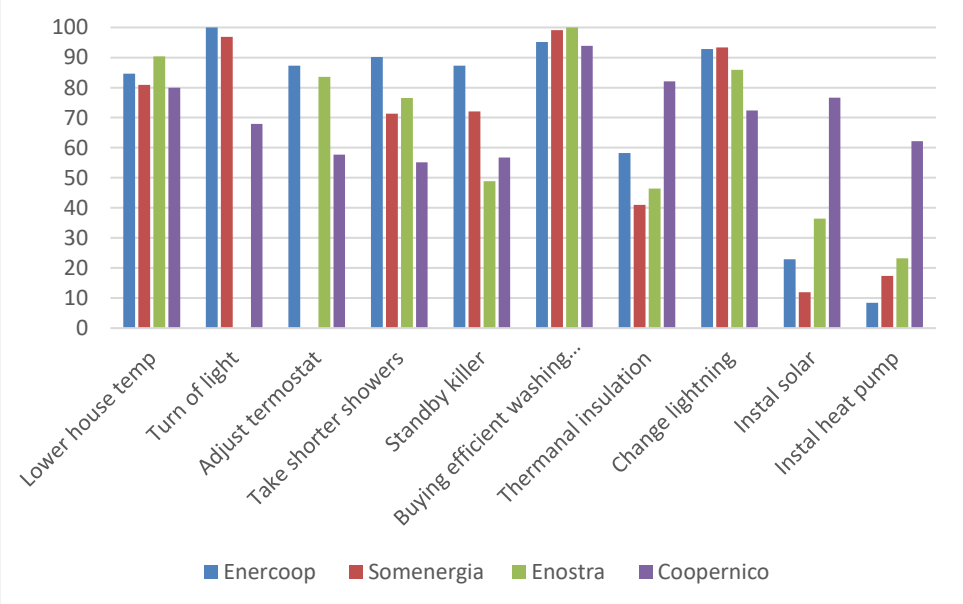


Figure ESAV11: I installed solar panels to my home (either solar thermal or PV). (in %; Survey 2018)

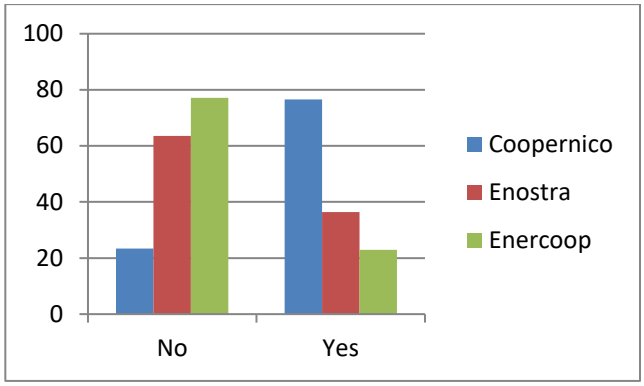
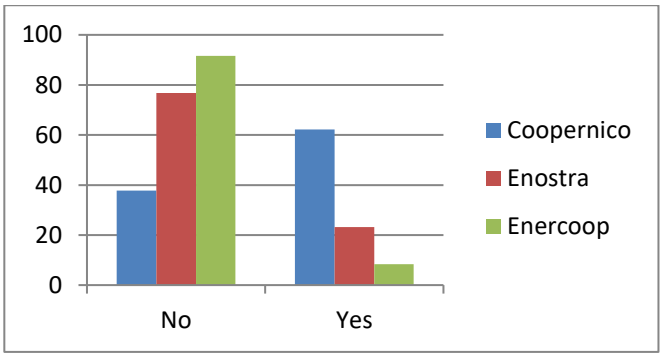


Figure ESAV12: I installed a heat pump in my home. (in %; Survey 2018)



For goal achievement, the question is not whether the saving actions are undertaken because of REScoops action, but whether they have been undertaken at all. But without a reference to REScoop contribution we do not know in which period. REScoops could be giving general or specific information on how to engage in energy savings behaviour (e.g., to undertake certain energy savings actions), information on the consequences of not saving energy, or help by the REScoop in a different way, like providing energy efficient lighting (e.g., LED), or cost saving deals regarding installation of thermal insulation. We cannot talk about goal achievement if the effects were already there at the moment when the respondents obtained REScoop membership. However, there is another baseline because the REScoop can be older or younger. Asking REScoop members if undertaking energy saving behavioural actions was influenced by the REScoop is only relevant in cases REScoops where respondents are are members of a REScoop long enough to be actually influenced. For the newer REScoops, like Coopernico and Enostra, we only yes or no could be answered by respondents in the questionnaire on whether they engaged in energy saving actions. Remarkably, the results show that the 'no's' are much higher than those among members of 'older' REScoops.

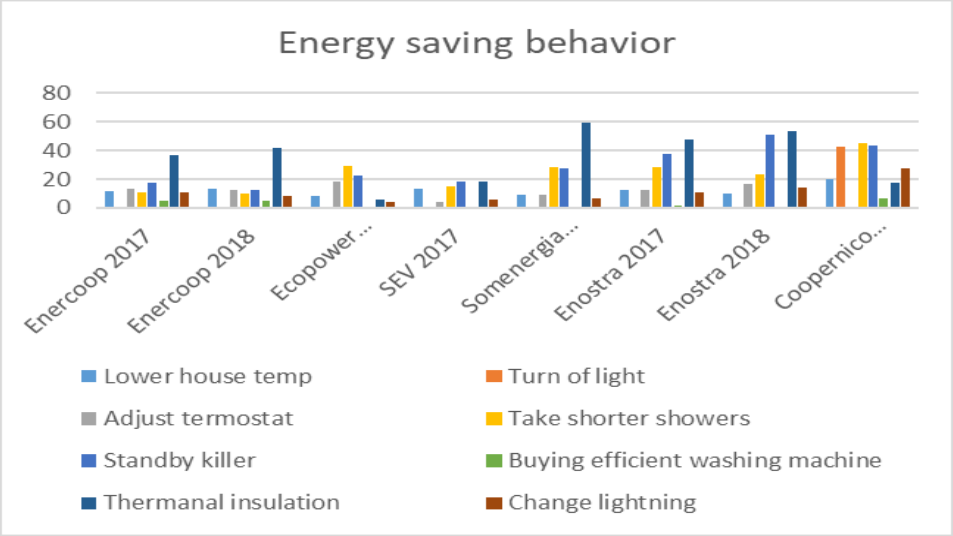
If we look at the no's (not undertaking this energy saving behaviour) it looks that the relatively new members of younger REScoops score lower on energy saving actions that REScoops can influence by information (See Table 2.1).

***Table 2.1**: Percentage of respondents not engaged in energy savings behaviours (per REScoop).*

	Enercoop 2017	Enercoop 2018	Ecopower 2017	SEV 2017	Somenergia 2018	Enostra 2017	Enostra 2018	Coopernico 2018
Lower house temp.	11,5	13,4	7,9	13,6	9,1	12,3	9,6	20
Turn off the lights	0,5	0	0,5					42,3
Adjust thermostat	13,1	12,6	18	4,5	9	12,3	16,4	
Taking shorter showers	11,2	9,8	29,3	15,2	28,7	28,6	23,5	44,8
Using standby killer	17,9	12,4	22,1	18,2	27,9	37,7	51,1	43,3
Buying an efficient washing machine	5,3	4,8	1	0	0,9	2	0	6,7
Thermal insulation	36,6	41,7	6,1	18,2	59	47,8	53,6	17,9
Change lighting	11,2	8,2	4,2	6,1	6,6	11	14,1	27,6

Some things people might not have thought about certain actions, like investing in stand-by killers or more obvious actions, still need to be brought under the explicit attention. Furthermore, there is the difference in comfort influencing measures, like taking shorter showers. We see more no's among the younger cooperatives Enostra and Coopernico with relative more new members, than with the long established cooperatives Enercoop and Ecopower. where more members might be influenced by their REScoop.

***Figure 2.2**: Percentage of respondents not engaged in energy savings behaviour (per REScoop).*



Conclusion goal achievement

A large majority of respondents indicates to engage in behavioural action to lower energy consumption. This applies to both energy curtailment and energy efficiency behaviour. When asked whether to have saved energy since obtaining REScoop membership 40%-65% of respondents among REScoop argues that did so. Between 10% and 33% claim to know to have saved energy, because their energy was measured. Of those who measured their energy consumption, the majority of respondents indicated no change in energy consumption. However, about 21-22% indicated to use at least 10% less energy, and between 9% and 10% indicate to have saved at least 20% energy. However, on the other hand there is about the same proportion of respondents who indicate to have actually started using more energy since becoming a REScoop member. REScoops that stand out in terms of members claiming energy savings are EBO, Enercoop and Ecopower. These are all REScoops that can be considered as rather mature.

2.2 *Effectiveness strategies*

In chapter 1 we described five effectiveness strategies to learn more about the 'cause and effect' (causal) relations of Rescoop actions and energy saving. They are:

1. Analyzing statistical (linear) relationships (correlations);
2. Analyzing reported influence of REScoop actions on REScoop members energy behaviour;
3. Comparing 'experiment' and control groups;
4. Analyzing trends in longitudinal data;
5. Studying rival factors (using the 'modus operandi logic').

2.2.1 Analyzing statistical relationships

If more energy savings are realized by REScoop members after become members this does not automatically mean that REScoop actions caused this, and the actions where effective in terms of goal attainment. To be able to fulfill the criterion of effectiveness three conditions have to be met. First, the REScoop action has to precede the found energy savings in time. Second, more actions should lead to more effects in terms of energy saving (covariance), and third, there should not be any rival explanations (fully) explaining for the energy savings realized. Therefore, even if the energy savings increase after one became member of a REScoop we have to link this with the REScoop action (correlation) and (also) exclude rival explanations. In this section we will look into statistical correlations between REScoop actions and (realized) energy saving. In the next section, we look into the effectiveness strategies we use to exclude rival explanations.

Before analyzing correlations, we split REScoop actions in the three overlapping categories of subsets, presented in the first chapter:

- Actions pertaining to general REScoop membership;
- Engagement in REScoop events and activities;
- And exposure or participation in specific REScoop actions or measures.

For all three categories, we first discuss whether the condition is fulfilled that the REScoop action precedes the found energy savings. Second, whether more actions lead to more effects in terms of energy saving (covariance).

Membership

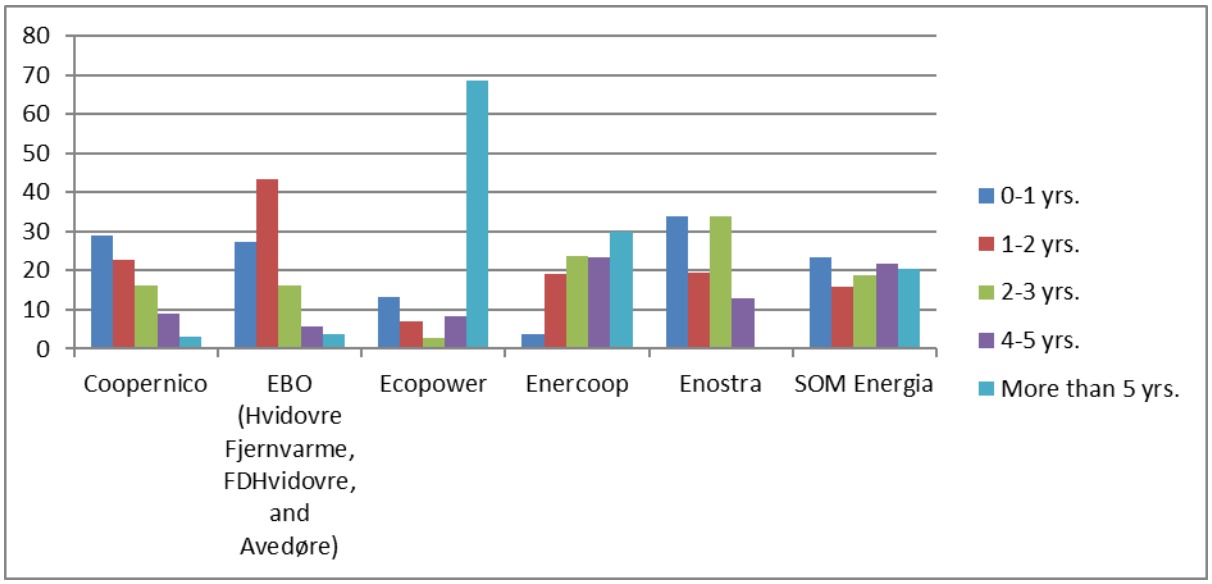
In the 2017 survey (integrated) dataset almost 45% of the respondents indicated to be a REScoop member. When omitting non-response this was even 55%. For the remaining 45% of the respondents this means that they explicitly answered not to be a REScoop member (See Report 2017, D3.3.a; Report 2017 I.6). The 2018 survey shows how different the combinations between membership and customer/client is among the REScoops surveyed (see Report 2017 RES1).

***Report 2017 RES1**: REScoop membership. (in %; 2018 survey)*

Name REScoop	Member-ship (% yes)	Client/ customer (%)	Both member and client/ customer (%)
Coopernico	73,8		
EBO (Hvidovre Fjernvarme,etc.	100%		
Ecopower	6,1	90,8	
Enercoop	24	6,4	62,2
Enostra	31,7	6,2	11,7
SEV (Italian speaking)	51,2		
SEV (German speaking)	95,8		
SOM Energia	28,3	11,7	59,2

Of those respondents who reported to be a member of a REScoop in the 2017 survey, the number of years membership one was REScoop member was on average 2-3 years. The most occurring answer category in terms of length of membership, however, pertained ‘more than 5 years' (reflecting 15.5% of all respondents) (REP 1 Report 2017 I.7). Using 2018 survey data membership years per REScoop are presented in Figure RES2. Unlike the integrated 2017 dataset one can observe clear differences between the older REScoops (i.e. Ecopower, EBO and Enercoop) and younger REScoops (i.e. Coopernico, Enostra, SOM Energia). See Figure RES2.

***Figure RES2**: Length of REScoop membership (in years). (Survey 2018)*



REScoop membership and REScoop actions

Overviews for correlations between REScoop membership and actions, to energy savings items are presented in Tables Z1 (Ecopower, survey data 2018), Z2 (Enercoop, survey data 2018) and Z3 (SOM Energia, survey data 2018).

The Ecopower data presents several significant results with four items correlating to measured energy savings (i.e. length of customership, visiting of Ecopower meetings, and using EnergieID). These items, and in particular EnergieID, were also found to correlate significantly to intention to lower energy consumption intensively. EnergieID was also found to correlate significantly to intention to only use locally produced energy. Overall, significant items were found to have higher correlation values to intention to lower energy consumption than to measured energy consumption.

At Enercoop five items were found to correlate significantly to measured energy conservation, i.g.: length of membership, length of consumership, visiting of Enercoop meetings, and participation in the Dr. Watt program. Claiming that energy savings have become more important after joining Enercoop, was found to correlate significantly to both measured energy conservation, intention to lower energy consumption, and intention to only use locally produced energy. The Energy Savings wiki was found to correlate significantly to intention to use locally produced energy (but not to energy saving behaviour or intention).

At SOM Energia both items indicating (appreciation of) general membership and the use of Infoenergia were found to significantly correlate to all three energy items. Especially, the items of joining SOM Energia and overall satisfaction with services provided by SOM Energia were found strongly significant with intentions to save energy and use only locally produced energy. Participating in TupperWatt meetings was found to significantly correlate to intention to save energy intensively.

For EBO (Hvidovre Fjernvarme, FDHvidovre, and Avedøre) a significant result was found regarding the effect of being a shareholder of Hvidovre Fjernvarme and measured energy conservation since converting one's home (primary) energy system into a district heating (r = 0,414; p =,004). Other significant results with REScoop actions could not be established (neither on intention to save energy).

***Report 2017 Z1**: Bivariate correlations between items indicating REScoop membership and REScoop actions, and energy savings (intention and behaviour). (Ecopower, 2018)*

		In case you measure your energy use, how much did you save compared with before you became customer of ECOPOWER?	I have the intention to lower my energy consumption patterns intensively	I have the intention to only use energy that has been produced locally
How long have you been a cooperative member of Ecopower (in number of years)?	Pearson Correlation	.[b]	-0,043	-0,036
	Sig. (1-tailed)		0,301	0,330
	N	0	153	152
How long have you been a customer of Ecopower for energy supply (in number of years)?	Pearson Correlation	,236**	-,045*	0,006
	Sig. (1-tailed)	0,000	0,015	0,379
	N	1233	2319	2314
How often do you visit meetingsorganised by your REScoop?	Pearson Correlation	,117**	,097**	,158**
	Sig. (1-tailed)	0,000	0,000	0,000
	N	1056	2472	2467
After starting using EnegergieID, energy savings have become more important to me	Pearson Correlation	,111*	,228**	0,036
	Sig. (1-tailed)	0,020	0,000	0,192
	N	345	594	595
EnergieID has contributed that I save more energy in my household.	Pearson Correlation	,135**	,271**	,088*
	Sig. (1-tailed)	0,006	0,000	0,016
	N	347	595	597
After I started using EnergieID local production of renewable energy has become more important to me.	Pearson Correlation	0,049	,262**	,235**
	Sig. (1-tailed)	0,182	0,000	0,000
	N	339	582	585
EnergyID has contributed to me producing renewable energy at home	Pearson Correlation	0,079	,273**	,239**
	Sig. (1-tailed)	0,080	0,000	0,000
	N	317	539	543

**. Correlation is significant at the 0.01 level (1-tailed).

*. Correlation is significant at the 0.05 level (1-tailed).

***Report 2017 Z2**: Bivariate correlations between items indicating REScoop membership and REScoop actions, and energy savings (intention and behaviour) (Enercoop, 2018).*

		In case you measured your energy consumption yourself, or received information on energy consumption by your energy supp	I have the intention to lower my energy consumption intensively	I have the intention to only use energy that has been produced locally.
How long have you been a consumer of Enercoop (in number of years) ?	Pearson Correlation	,192**	-0,066	-0,002
	Sig. (1-tailed)	0,009	0,116	0,483
	N	153	332	333
How long have you been a member of Enercoop (in number of years)?	Pearson Correlation	,196**	-0,058	-0,004
	Sig. (1-tailed)	0,003	0,117	0,468
	N	191	418	417
How often do you visit meetings oganized by your Rescoop?	Pearson Correlation	,309**	0,016	-0,019
	Sig. (1-tailed)	0,000	0,369	0,347
	N	191	419	418
After joining Enercoop, energy savings have become more important to me	Pearson Correlation	,331**	,225**	,114**
	Sig. (1-tailed)	0,000	0,000	0,010
	N	189	417	416
Have you participated in the Dr Watt program offered by Enercoop?	Pearson Correlation	,168**	0,084*	-0,065
	Sig. (1-tailed)	0,009	0,033	0,079
	N	200	472	472
Have you ever been on the Energy Savings Wiki of Enercoop?	Pearson Correlation	0,044	0,072	0,094*
	Sig. (1-tailed)	0,267	0,058	0,020
	N	200	474	473
Do you consider that the energy savings tip of the month has helped you reduce your consumption of electricity?	Pearson Correlation	0,124	,233**	0,102
	Sig. (1-tailed)	0,145	0,003	0,117
	N	75	137	138
I would be ready to participate in meetings to help reduce my energy consumption	Pearson Correlation	0,157	,138*	,177**
	Sig. (1-tailed)	0,054	0,019	0,004
	N	106	225	225

**. Correlation is significant at the 0.01 level (1-tailed).

*. Correlation is significant at the 0.05 level (1-tailed).

***Report 2017 Z3**: Bivariate correlations between items indicating REScoop membership and REScoop actions, and energy savings (intention and behaviour) (SOM Energia, 2018).*

		In case you measure your energy use. How much did you save compared with 3 years ago?	In case you measure your energy use, how much did you save compared with before you became member of Som Energia?	I have the intention to lower my energy consumption intensively
I am completely satisfied with the energy services my Som Energia offers me	Pearson Correlation	0,014	,110**	,071**
	Sig. (1-tailed)	0,355	0,002	0,002
	N	707	666	1706
After joining Som Energia, energy savings have become more important to me	Pearson Correlation	,226**	,314**	,325**
	Sig. (1-tailed)	0,000	0,000	0,000
	N	708	661	1704
Infoenergia services is useful to encourage efficiency actions in my household	Pearson Correlation	,136**	,169**	,178**
	Sig. (1-tailed)	0,004	0,001	0,000
	N	389	344	897
Did you use Infoenergia recommendations offered by Som Energia?	Pearson Correlation	,114*	,167**	,183**
	Sig. (1-tailed)	0,014	0,001	0,000
	N	365	324	832
Were you part of a Tupper watt meeting?	Pearson Correlation	0,032	,072*	0,018
	Sig. (1-tailed)	0,185	0,035	0,216
	N	764	634	1858

**. Correlation is significant at the 0.01 level (1-tailed).

*. Correlation is significant at the 0.05 level (1-tailed).

Engagement

The Ecopower data presents a significant result for visiting of Ecopower meetings correlating to measured energy savings. Also, at Enercoop we found visiting of Enercoop meetings to correlate significantly to measured energy conservation.

Members exposed to specific REScoop measures

Specific REScoop measures

In this section we present a set of specific REScoop measures that REScoop in Europe use to persuade their members to conserve energy. They are: EnergieID (Ecopower), Dr. Watt (Enercoop), TupperWatt (Enercoop), InfoEnergia (SOM Energia), Package Approach (EBO).

EnergieID

EnergieID was founded in 2014 as a cooperative under Belgian law. The organization is active in Belgium and the Netherlands and recently Portugal and Italy and has one main goal: contribute to the transition to an environmentally sustainable, socially just and economically Report 2017society by setting up services in the field of information technology. Cooperatives can become a member of EnergieID. They pay EnergieID to use the tool for their customers.

As a first service, EnergieID has set up a SaaS-platform (software as a service) to help families and organizations to manage their energy and water consumption as well as their transport kilometers and renewable energy production. For example, it can be used as a platform for an energy saving competition between schools. Users can create an account for free, compare their consumption with similar user profiles and can share their data with the service providers of their choice. Meter readings can be entered manually or automatically by compatible smart energy devices (e.g. Flukso.net, Smappee.com, Arcus-EDS KNX IP gateway) or smart meters (DSMR P1 Smart Meters).

EnergieID shares costs with its co-operative members and provide a shared and secure database to help as much users with their energy management. By sharing the platform, EnergieID can gather relevant data more quickly to compare and analyze. As of beginning of August 2017, almost 18.000 users are active on the platform.

EnergieID is a platform for active customers of a cooperative. It is expected from those customers who want to participate to fill in their own data and for the cooperative to be the first line of support. Customers sign up with an account on EnergieID and on a monthly basis they fill in their energy use. Data-integrations are provided for some systems to automate data entry. Then together with the help desk service of Ecopower the invoice and consumption are analyzed and discussed. This can be done by phone or email. The customers fill in the data. EnergieID follows up on the consumption of customers using EnergieID and compare it with similar households.

Dr. Watt

Dr Watt is an online tool including an offline training course to help consumers make a self-diagnosis of their specific electricity consumption. It is a tool for consumers to understand their consumption. With Dr. Watt you measure everything what has a plug. The diagnostics are made visual online. The report gives consumers the opportunity to look at every appliance separately instead of only general advice. This makes the advice very effective. The service is offered to members and non-members of the REScoop. The aim is to help individual consumers reduce their energy consumption. First, by giving them the tools to measure their consumption and understand it. Second, by reducing their consumption while maintaining the same comfort level with personal advises from Dr Watt.

It starts with a training by an energy expert. A meeting with a group and an energy expert is organized where the expert presents the importance of the energy saving and the expert explains how to do to the self-diagnosis by using a wattmeter (provided by the expert) and the online service. Next, participants start with the self-diagnosis for six weeks. The participant will measure the consumption of every electrical device with the wattmeter and put the data on the online

service. It does not register heating. Water electrical consumption and electrical heating of food are estimated by ratios. This data and the program will give the potential energy savings that can be achieved by the consumer and compare it to the other participant's results and personal made advices.

Finally, there is a feedback meeting. In this meeting the expert will analyze the results of each participant, and answer their questions. It is also the opportunity for participants to share their experience and ask for advices within the group. Participants are also given access to different sharing tools in the platform to give them the possibility to exchange experiences online.

TupperWatt

Inspired by the Tupperware company in the 1950s who decided to start offering their products via mail order companies and direct selling, the so called "Tupperware meetings" were introduced. These are small groups of people who are given product demonstrations and could place orders afterwards. "TupperWatt meetings" are a tool for the Enercoop members who want to be more involved in the Rescoop's activities and coincides with the REScoops goal to put the citizen at the center of energy issues. This kind of meeting is perfect to be consistent with the REScoop's communication strategy: not too much advertising, creating social links within a community, and sharing of experiences.

TupperWatt meetings are arranged and led by a member of the cooperative in a pleasant and friendly environment (at home or in a public space like a coffee shop) among family or friends, where they will introduce Enercoop, its values and more topics revolving around the energy transition. It is a good way to have a direct testimony by a member of the Rescoop. There is no specific communication strategy for the TupperWatt meetings. When a member wants to become more involved in his or her cooperative, it is one of the tools made available to them. Enercoop lends the communication and training tools to present the cooperative. The meeting can be led by the member or one of Enercoop employees if need be.

InfoEnergia

InfoEnergia is a service for all the customers of an energy supplying cooperatives or companies. It is a personalized energy awareness service. It provides information to consumers through two channels.

First, via a monthly report with benchmarking against yourself and similar customers and has useful tips. Customers receive this report once a month as e-mail attached PDF. Second, via a customer portal where the monthly reports and extended information is available (i.e. smart metering measurements).

Som Energia started with InfoEnergia as an extra service for their members. Instead of just sending invoices Som Energia also sends reports on the energy use of their customers. In this report customers are compared with similar household benchmarks, with previous periods. They also get personalized energy saving tips. The service desk of Som Energia is trained to know how the system works and how the reports are created. This way they can handle any questions from customers concerning the report.

Package approach district heating expansion

EBO Consult manages administrative and technical tasks of several local district heating non-profit cooperatives, called Hvidovre Fjernvarme, FDHvidovre, and Avedøre. Each cooperative is owned and directed by citizens and consumers. One of the administrative and technical tasks that EBO Consult manages for Hvidovre Fjernvarme is to expand district heating in Hvidovre, which is a suburb in Copenhagen. The expansion of district heating is accomplished by separating the expansion area into projects. Each project starts with a marketing period.

A measure that is used to achieve the 30% is the Pakkeløsning – a conversion package for the home owner. The Pakkeløsning is: 1) A home visit and an agreement of where the district heating unit is going to be installed; 2) An establishment of a heat service line to the consumer's house and a restoration of the garden; 3) A removal of the consumer's existing heating source; 4) A delivery and an installation of a new district heating unit. Therefore, the Pakkeløsning is a total district heating installation. Hvidovre Fjernvarme can offer district heating at a cheaper price, because of the discount when e.g. multiple district heating units are ordered at the same time, constituting the reason for why 30% of the heat demand have to accept district heating before a project can begin. In order to encourage the home owners to act, the Pakkeløsning is offered in a limited time period. If 30 % of the heat demand do not accept district heating in the limited time period, the home owners cannot get district heating and the Pakkeløsning. The time period normally runs in a few months. In a successful project, 30 % of the heat demand accept district heating in the limited time period. When 30% has accepted district heating, it follows that the home owners in the particular project can get the Pakkeløsning. In addition to the Pakkeløsning, Hvidovre Fjernvarme offers the home owners in a successful project an energy loan, enabling more people to afford the installation of district heating. It is a low-cost loan with a low interest rate.

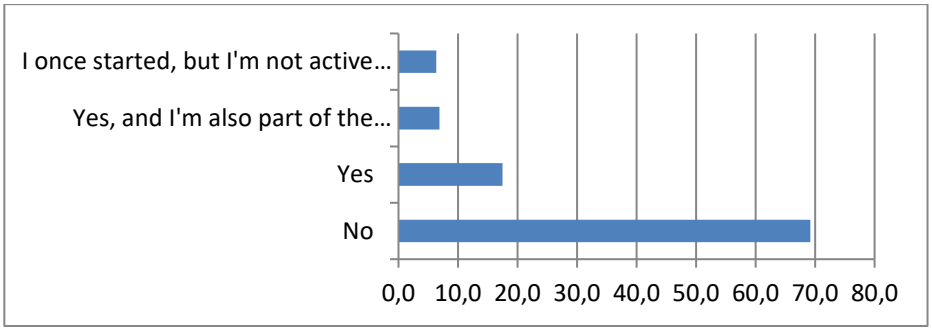
Participation in specific REScoop measures

We analysed whether REScoop members were involved in the specific REScoop measures described above.

Participation in EnergieID

In the 2017 Ecopower survey questions were asked about three measures: EnergieID, energy advice and a brochure (see report D.3.1 for background information on these measures). Of the respondents, only a small part indicates to be using the mentioned measures (e.g., 20% use the measure EnergieID (Report 2017 17). In the 2018 survey 24% of the Ecopower respondents use or used EnergieID (Figure SAT 20). One fifth (5,3 % of the total respondents) were also member of the so-called ECOPOWER-group within EnergieID. Another fifth (5%) was not active anymore on the moment of surveying. EnergieID was rolled out as best practice measure of the toolkit in Portugal and Italy. In Portugal only 23 respondents used or started to use EnergieID. In Italy only 31 respondents used or started to use EnergieID.

***Figure SAT 20**: Are you measuring your energy us with EnergieID (www.energieID.be)? (Survey 2018)*



Participation in Dr Watt

In the 2017 survey of the Enercoop respondents only a minority indicated to be using measures offered by Enercoop (31%, for example, has asked for advice; but only 3% indicated to have followed a Dr Watt-training) (Report 2017 I.15). In the 2018 survey more than one third (37,6%) of the Enercoop respondents indicated to have participated in the Dr Watt program (See section Implementation Figure [Ener1]).

Participation in InfoEnergia

In the 2017 survey SOMenergia was not included. SOM energia started with 1000 customers in the testing phase and reached 40.000 a half year later. Of those enquired in the 2018 survey 58% indicate to have received information about InforEnergia. And 81% indicated to actually have used recommendations to lower ones' energy consumption (See section Implementation Figure [Ener1]).

Participation in the Package approach

There are only respondents in the EBO 2018 survey that used the package approach when installing district heating. Of those enquired in the 2018 survey more than 88% indicated to have chosen the package approach when installing a district heating system. (See section Implementation; Figure EBO RES10) presents an overview of satisfaction with this service).

Participation in the technical service

Of those enquired 76 respondents at EBO participated in the technical approach (See section Implementation; Figure EBO RES15 which presents an overview of satisfaction with this service).

Covariance between specific measures and energy consumption data

We present here information on the covariance between specific REScoop measures and REScoop consumption use data, based on the 2017 statistical analyses on energy consumption data which derives from Work package 2, report deliverable 2.3).

Covariance between EnergieID and energy saving

Three of these measures (Energie ID, advice and the brochure) correlate statistically positive and significant to (indicated) energy savings since the respondents are member of Ecopower. A short-term effect on energy saving (energy savings over 2015-2016) could not be established (Report 2017 I.18)

In the statistical analyses on energy consumption data a clear correlation between registered EnergieID-use and energy. The statistical analysis shows 11,4% yearly kWh consumption reduction for a typical consumer that has registered in EnergieID, with a p-value of less than 0,05.

Covariance between Dr Watt and related measures and energy saving

In the 2017 survey the measures Dr Watt-training, advice, online wiki correlate statistically positive and significant to (indicated) energy savings since the respondents indicate to be member of Enercoop (with the strongest effect in the advisory measure). A short-term effect (to energy savings achieved in 2015-16) could not be established, though (Report 2017 I.16). Based on the results from the statistical analysis on the energy consumption data, Dr Watt has no significant impacts in energy savings in general, for all customer groups. However, when tested on a small sample of a specific contract type (Contract B), significant reductions (almost 50%) was demonstrated.

Covariance between InfoEnergia and energy saving

In the 2017 survey SOMenergia was not included and there were no questions about InfoEnergia.
The statistical analysis of the energy consumption data was performed on only a small sample, since 6-monthly aggregations of measurements was required. Preliminary results show a 7.68% increase in 6-monthly kWh customer's consumption, but a 60,3% decrease in 6-monthly kWh/DD consumption. Both p-values are higher than 0,05, indicating insignificance of the results.

Covariance between package approach and energy saving.

The package approach means that at least 30% percent of the inhabitants of a district change their energy source. The transition from gas to sustainable heat (50%) has a large impact on energy savings.

2.3 *Reported influence of REScoop actions by REScoopmembers*

2.3.1 The reported influence of REScoops on general energy saving behavioural actions

In section 2.1 we already discussed as an indicator for energy savings the undertaking of energy saving behavioural actions by members of REScoops. In section 2.1 the indicator was meant to see whether increase in energy saving behaviours among people can be measured who become REScoop members, thus goal achievement, independent from if this can be attributed to a REScoop.

Here we are looking into reported influence as the first effectiveness strategy. To see a potential reported influence of REScoops on these general energy-saving behavioural actions, respondents were asked whether energy saving actions can be attributed to REScoops to a large extent, a reasonable extent, to a fairly low extent, or not at all. In this set of questions, it was not specified, though, which actions (i.e. interventions, measures) of the REScoops related to the REScoop members this concerned. We already discussed in section 2.1. that for instance REScoops could be giving general or specific information on how to perform the energy saving action, information on the consequences of not saving energy, or help by the REScoop in a different way, like providing energy efficient lighting (e.g., LEDs) or costs saving deals with thermal insulation supplying firms.

In the 2017 survey independent of the type of energy saving actions only a small part of the respondents indicates that their actions can be attributed to a REScoop. The answers show that on the one hand most REScoop members take these energy saving actions, but do not attribute this to a REScoop. About 20% of the respondents indicates that energy savings can be attributed for a large or small part to a REScoop. A larger part indicates that this is not the case (i.e., 45%) (Report 2017 Tables II.4). In sum, the distribution is skewed, with the majority of respondents not attributing energy actions to REScoops.

One plausible explanation for this could be that respondents were already engaged in taking these actions prior to becoming REScoop members. REScoop members were also asked whether they started to save more energy after becoming REScoop members. This revealed that one third (34,3%) indicated to have given more priority to energy savings since becoming a REScoop member (“After having joining my Rescoop, energy savings have become more important to me.”) (Report 2017; D3.3 A; Report 2017 II.5).

When asked to respond to the statement whether ones’ REScoop has contributed to save more energy in one’s household 20,2 agreed or strongly agreed. However, 45% of those who revealed their preference was neutral, and 29,1% disagreed or strongly disagreed to the statement (Report 2017 Tables I.3). In sum, in general respondents are neutral to whether REScoops have contributed to energy savings, although the distribution is a little bit skewed towards disagreement with the statement.

For the 2018 survey to avoid response problems due to the length of the survey and too many repetitions of questions, we asked these questions only to five REScoops (see section 2.1). For curtailment behaviour the examples show that by far a majority of respondents engage in such behaviours, however, only few argue that they do this because of REScoop action (15% -17%). For

efficiency behaviour the examples at Enercoop and SOM Energia show fairly higher relative figures mentioning contribution to REScoop action (between 20% and 30%). In sum, the far majority of REScoop members engage in energy saving behaviour, and between 15% and 30% argue that this is because REScoops intervened (in one way or another).

Energy curtailment behaviour (conservation - energy savings through behavioural change).

***Figure ESAV1**: Lowering the house temperature attributed to REScoop. (in %; Survey 2018)*

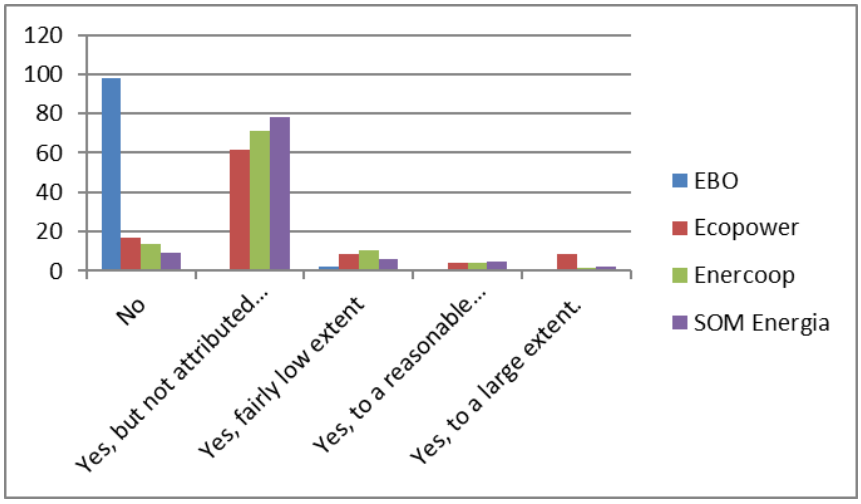


***Figure ESAV2**: I turn off the lights when I leave rooms or my house. (in %; Survey 2018)*

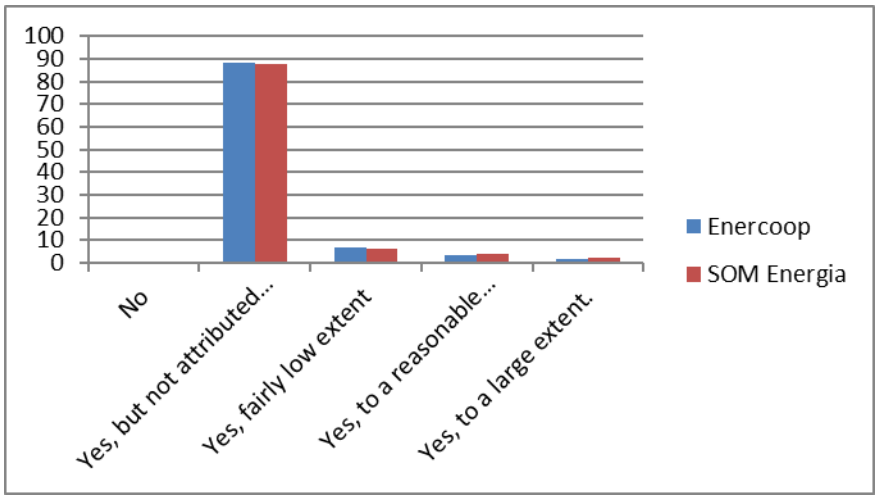


***Figure ESAV5**: I adjust the thermostat to a lower temperature (e.g., 1 or more degrees lower). (in %; Survey 2018)*

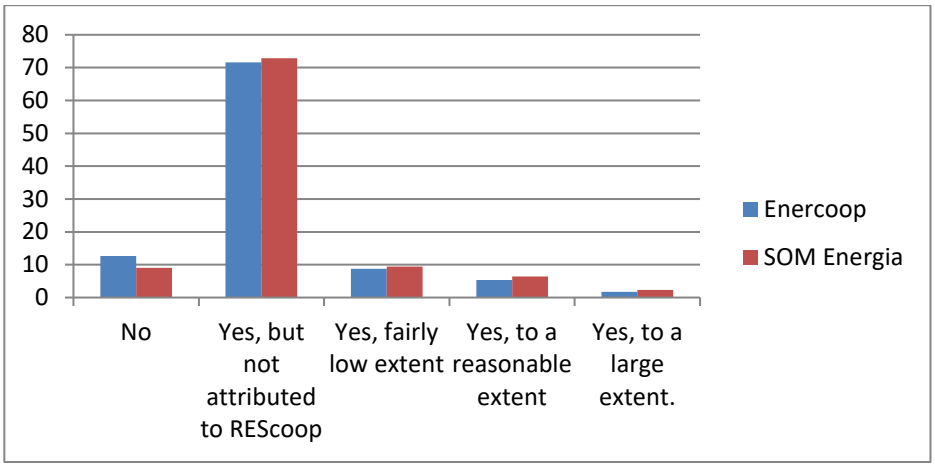


***Figure ESAV6**: I'm taking shorter showers. (in %; Survey 2018)*

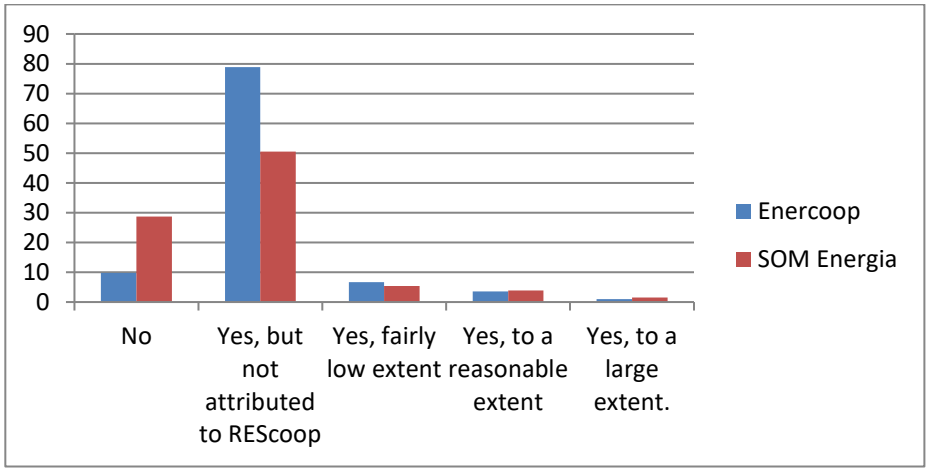


***Figure ESAV4**: When buying a washing machine, refrigerator, freezer I select the one with a high energy efficiency level (i.e., A++ label). (in%; Survey 2018)*

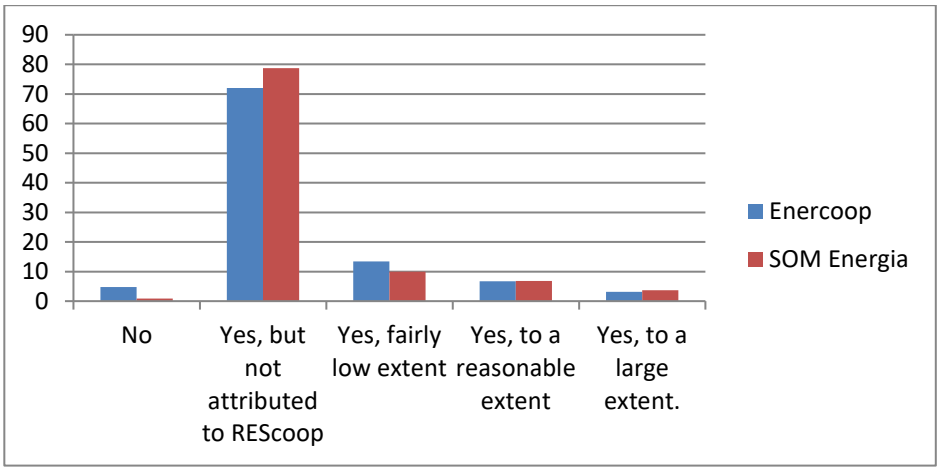
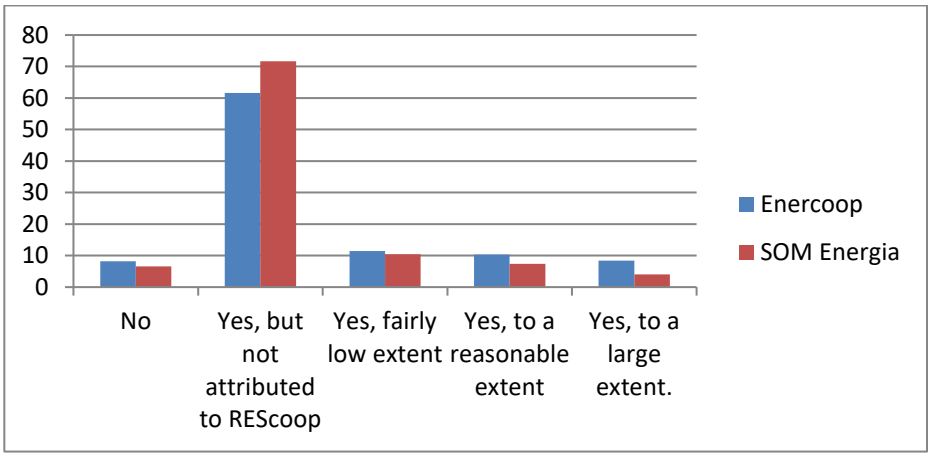


***Figure ESAV9**: I changed incandescent lightning to energy efficient lightning (e.g. LED lightning). (in %; Survey 2018)*



2.3.2 Reported influence of REScoop membership on energy saving behaviour

Being a member implies that one is exposed to the information given by the REScoops and other measures undertaken by the REScoops to influence their members energy consumption behaviour. Next to REScoop members, however, non-members who for instance receive a REScoop newsletter or visit a REScoop website might also be influenced.

Providing REScoop members with information and even teaching them how they should behave does not per definition lead to desirable change in energy saving behaviour. Information might influence the priority of a certain action.

In both the 2017 and 2018 survey REScoop members were asked whether they started to save more energy after they became member of the REScoop and giving energy savings more priority since becoming a member.

In the 2017 survey almost 45% of the respondents indicated to be a member of a REScoop. When omitting non-response to the question this is even 55%. For the remaining 45% of the respondents this means that they explicitly answered not to be a REScoop member (Report 2017 I .6). Of those who reported to be a member of a REScoop, the number of membership years was on average 2-3 years. The most occurring answer category in terms of length of membership is, however, 'more than 5 years' (reflecting 15.5% of all respondents) (Report 2017; D3.3.A; Report 2017 I.7).

For the influence of being a member of a REScoop on (non-specific) energy saving behaviour:
Do you consume less energy since you are a member of Enercoop?
After having joining Ecopower, energy savings have become more important to me.
My REScoop has contributed that I save more energy in my household.

Respondents indicate that after becoming a REScoop member -energy saving is considered important (i.e., at least the majority of the respondents agrees to this; with a reasonable standard normal distribution).

However, they also indicate (yet) to save more energy since having become REScoop members (see the earlier note about this; the distribution is skewed, though, with more denial than confirmation to the statement).

We also looked into the relation between the use less energy since membership and undertaking energy saving measures. The results reveal that the more respondents started saving more energy after becoming a member of a REScoop the more of the energy-saving behavioural actions were undertaken. This applies goes to all of the 9 of measures mentioned (and the extent to which they are attributed to the REScoops). However, strikingly, there no significant correlation was found to link to energy savings in the period 2015- 2016 when prompted. It looks like there is no correlation between measures by the REScoops and the (reported) energy savings on the short term, but there are on the long term (since becoming a REScoop member) (Report 2017; D3.3.A; Report 2017 I.8).

In the 2018 survey a majority of respondents indicate that energy savings have become more important to them since becoming a REScoop member (Figure ALL SAT1). In the 2018 survey depending on the REScoop between 22% and 53% indicate that REScoops have actually contributed to saving energy (Figure ALL SAT1). In the integrated database of the 2017 survey about 20% of the respondents indicated that REScoops contribute to their (individual) energy savings. They also indicate in the 2018 survey a higher knowledge level on energy issues (Figure All SAT6).

***Figure ALL SAT1**: After having joined a REScoop energy savings have become more important to me. (in %; Survey 2018)*

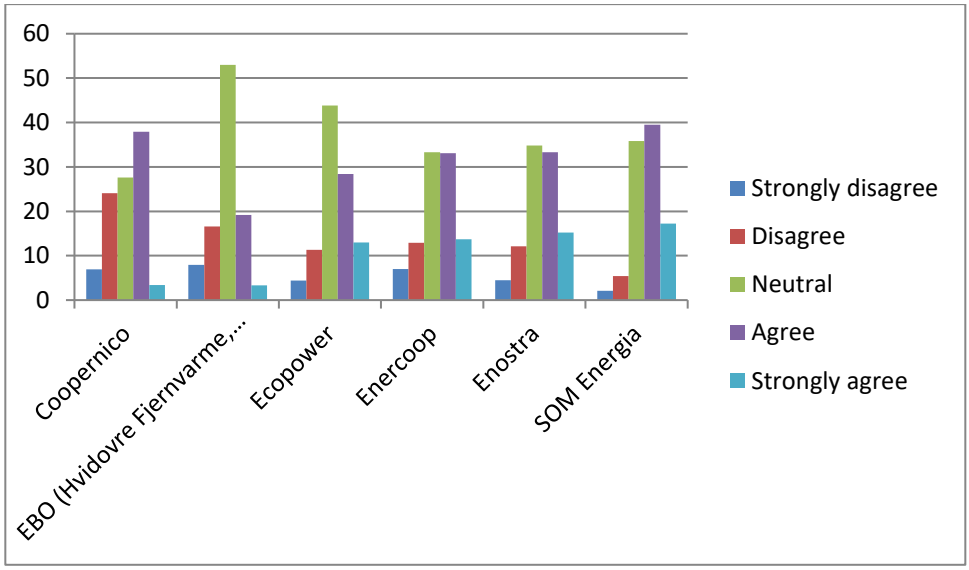


***Figure ALL SAT2**: REScoop has contributed to that I save more energy in my household. (in %; Survey 2018)*

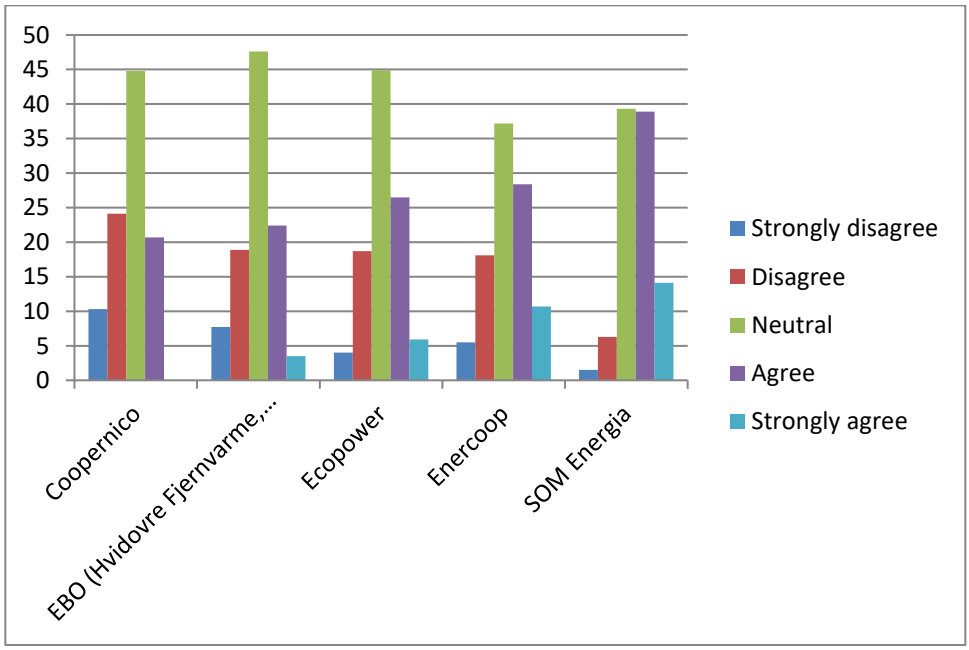
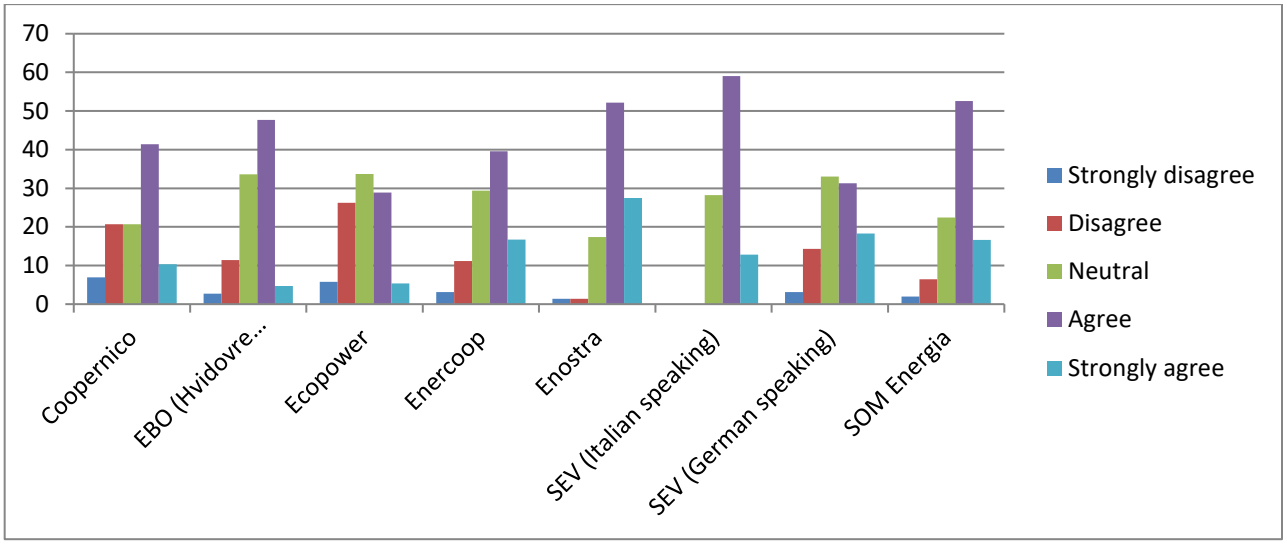


***Figure All SAT6**: REScoop contributing to increased knowledge about renewable energy. (in %; Survey 2018)*



2.3.3 Reported influence of specific REScoop measures

We also tried to assess specific measures or interventions implemented by REScoops. Under specific we mean those measures for which we know which members mention they took part in it or were exposed to (but only in an ex post situation, since we did not have relevant ex ante data). For this survey data on specific measures were collected on: Dr Watt training program (Enercoop), Energie ID (Ecopower), energy advice (Ecopower, Enercoop), brochures/newsletter (multiple REScoops).

Reported influence of EnergieID

For the Ecopower users of EnergieID for 41,4% it led that after starting using EnergieID, energy savings have become more important to them (Report 2017and chart SAT1 Enercoop). And for 32,4% EnergieID has contributed that the respondents save more energy in their household. (Report 2017 SAT2 Enercoop). For 22,9% if lead that after starting to use EnergieID, local production of renewable energy has become more important to them (Report 2017 SAT3 ECOPOWER). And for 14,2% if even lead that EnergyID has contributed to them producing renewable energy at home (Report 2017 SAT4 EOPOWER).

***Figure SAT1**: ECOPOWER After starting using EnergieID, energy savings have become more important to me. (Survey 2018)*

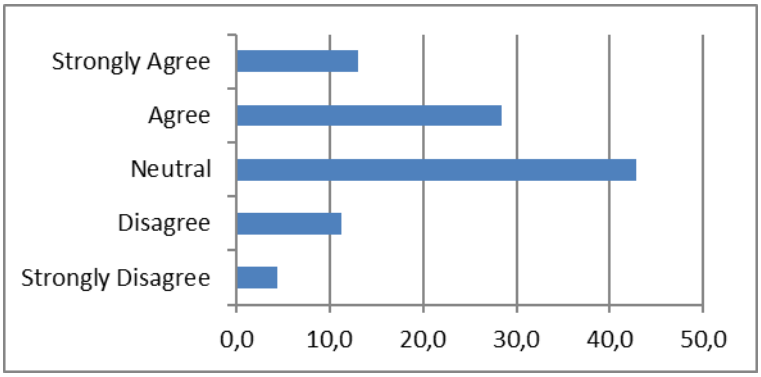


***Figure SAT2**: ECOPOWER EnergieID has contributed that I save more energy in my household. (Survey 2018)*

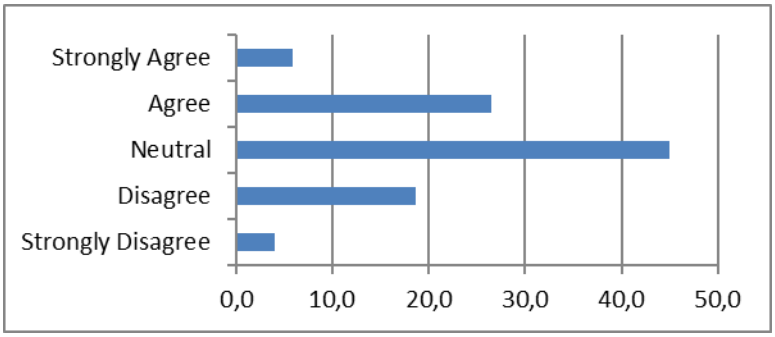


***Figure SAT3**: ECOPOWER After I started using EnergieID local production of renewable energy has become more important to me. (Survey 2018)*

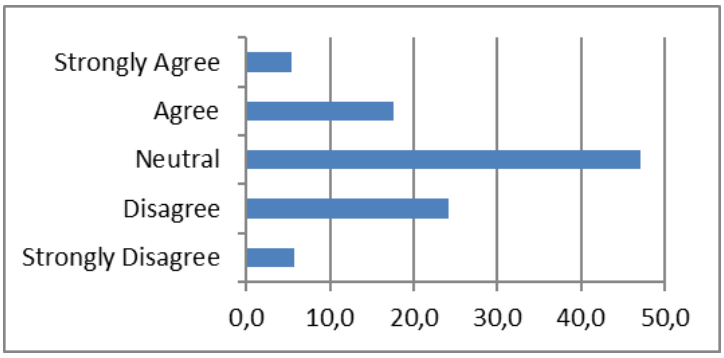
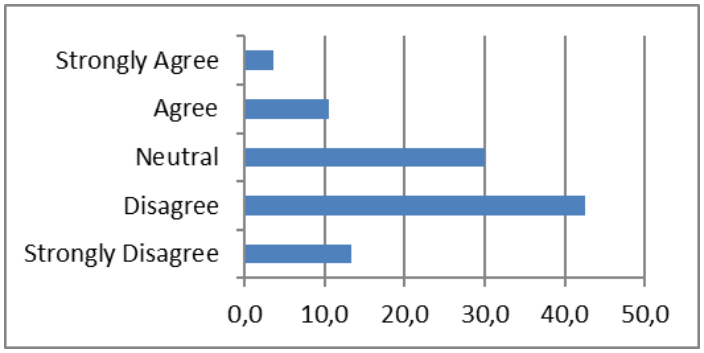


***Figure SAT4**: ECOPOWER EnergieID has contributed to me producing renewable energy at home. (Survey 2018)*



Reported influence of Dr Watt and other Enercoop measures

If we look at the measures by Enercoop according to a very large majority of the users of respondents Dr Watt Of those who participated in Dr. Watt 93% was at least satisfied, and 31 indicated to be very satisfied and this program helped them to reduce consumption (Figure [Ener 3]). In contrast for the Energy Savings Wiki this was a minority (Figure [Ener 3]), and for the energy savings tip of the month (see Figure [Ener 6]) only a very small minority.

Figure [Ener3]: Do you consider that the Dr Watt program has helped you reduce your consumption of electricity? (Survey 2018)

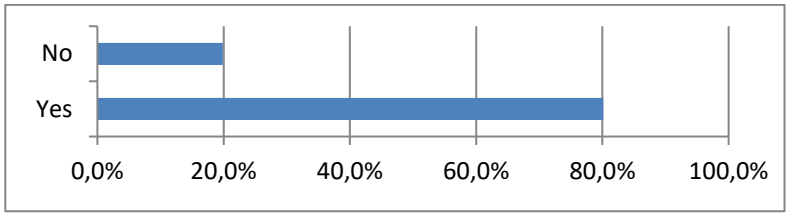


***Figure [Ener6]**: Do you consider that the Energy Savings Wiki of Enercoop has helped you reduce your consumption of electricity? (Survey 2018)*

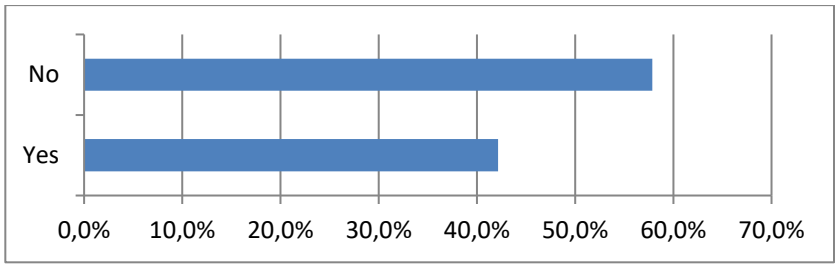
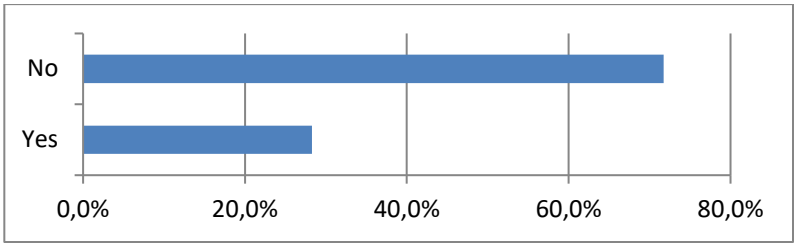
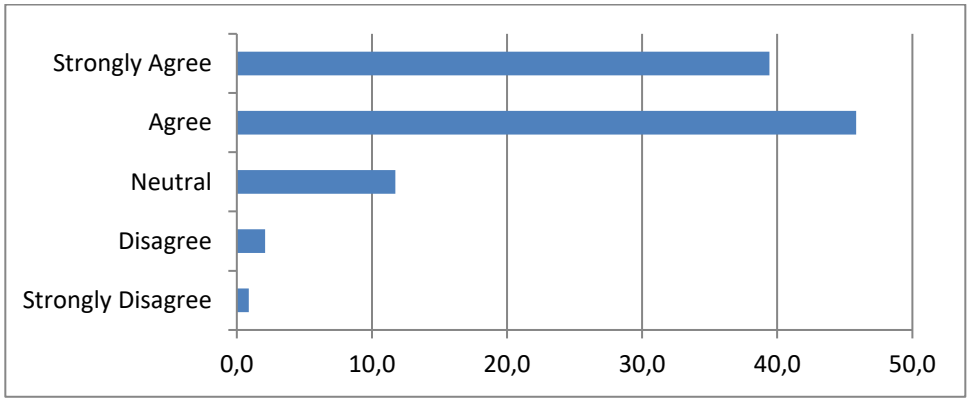


***Figure [Ener8]**: Do you consider that the energy savings tip of the month has helped you reduce your consumption of electricity? (Survey 2018)*



Som energia Infoenergia services

***Figure [BEH71]**: Infoenergia services is useful to encourage efficiency actions in my household. (in %; Survey 2018).*



EBO

One argument to want to receive the technical service was saving energy. This means that part of the EBO respondents see an influence of receiving the technical service on their energy uses (Figure EBO T1). This was not the case for the package approach. The Package solution was chosen because it came at the right moment and was considered a great offer, it was easy and cheap (Figure EBO T2).

***Figure EBO T1**: Arguments to choose the technical service. (Survey 2018)*

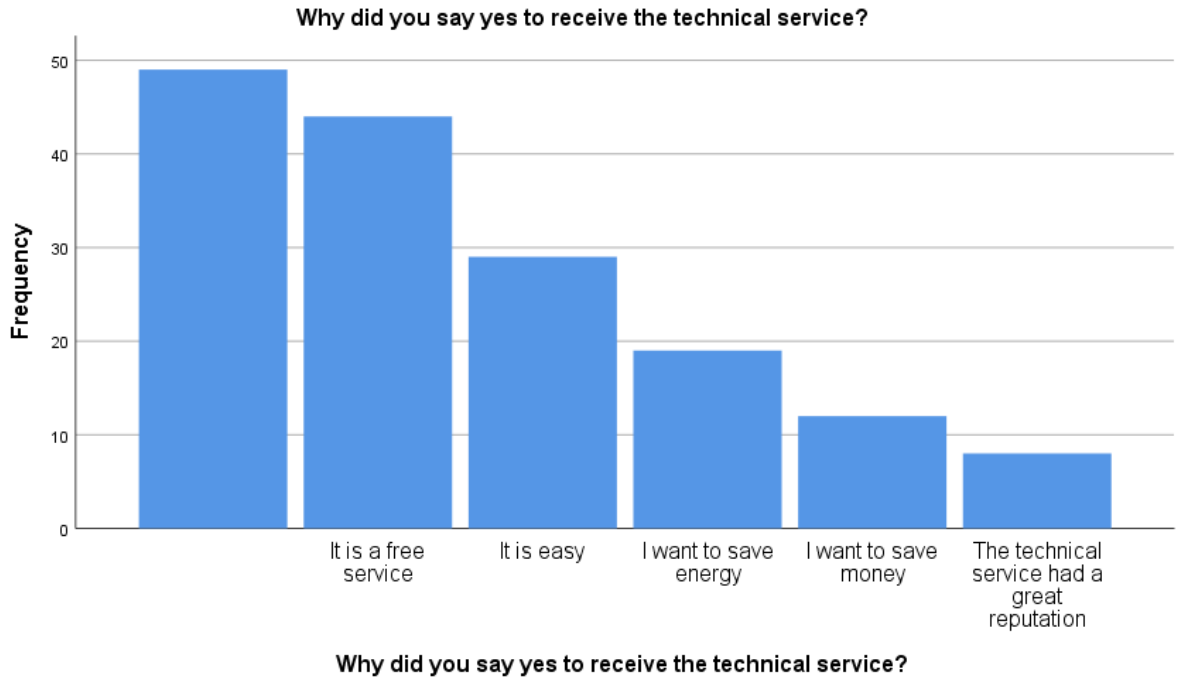
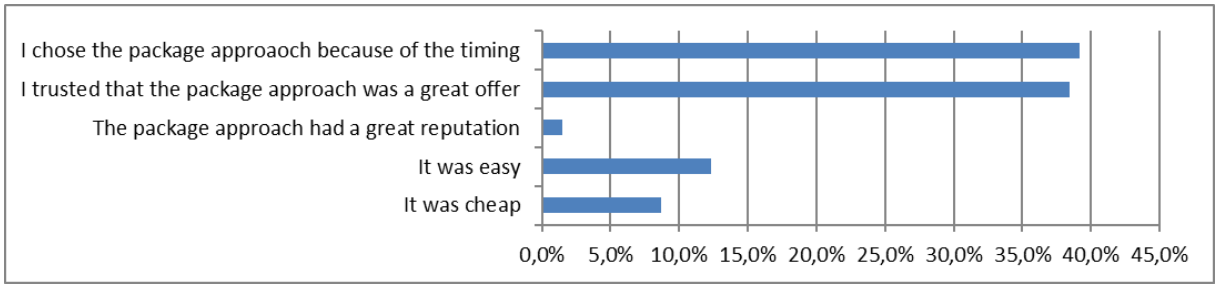


***Figure EBO T1**: Why did you choose the package approach? (Survey 2018)*



Some questions also point to general principles how certain instruments can the influence energy savings. A large majority of the Enercoop respondents think that digital tools can help to reduce energy use (Figure [Ener9] and they are ready to use these tools (Figure [Ener10]. They also acknowledge the importance of personal contacts (with experts, advisers and other consumers) for receiving information on energy consumption and for help to reduce it.

***Figure [Ener9]**: I am convinced that digital tools are a good way to inform on energy consumption and help to reduce it. (Survey 2018)*

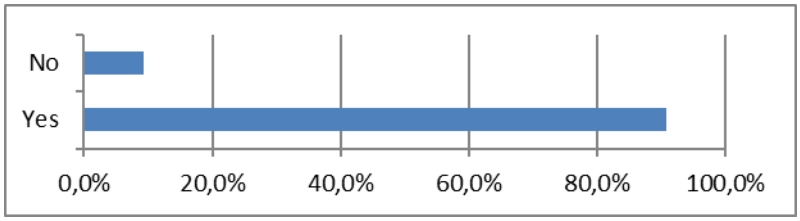


***Figure [Ener10]**: I would be ready to use digital tools to reduce my energy consumption. (Survey 2018)*

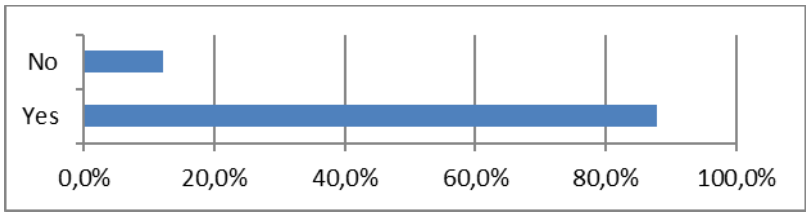
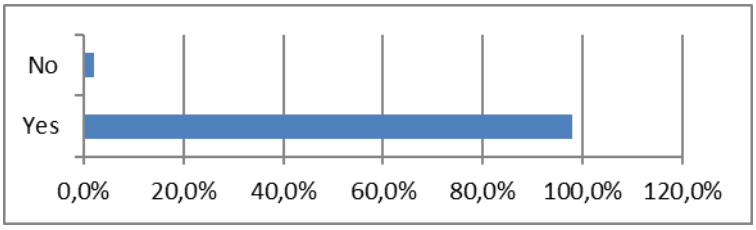


***Figure (Ener11]**: I am convinced that meeting in person with experts or other consumers are a good way to inform on energy consumption and help to reduce it. (Survey 2018)*



2.4 *Effectiveness strategy longitudinal consumer energy user data*

In project deliverable D2.3 – Data Analysis Report on the basis of the datasets that the REScoops participating in REScoop Plus provided (by Technical University of Crete) - longitudinal energy consumption related data from six REScoops were statistically analyzed. Part of this analysis is related to questions on effectiveness of specific measures implemented by REScoops. In the report D2.3 the impact of the various interventions by REScoops were (also) assessed.

A main conclusion was that the formation of REScoops and specific practices already adopted by them lead to increased energy efficiency and environmental benefits. More specifically:

- Joining a REScoop leads to more than 20% reductions in energy demand;
- Installing energy production equipment (e.g. solar panels on one's own rooftop) reduces REScoop members' electricity demand by more than 45%;
- Subscribing to consumption monitoring and savings suggestions software platforms results to approximately 35% consumption reduction.

Furthermore, the report shows that energy efficiency interventions of various types, such as technical support, special tariffs, energy generation schemes, and installing smart meters, leads to substantial reductions as measured in various consumption indices. We summarize some important results that are complementary to those found in our survey results.
In the Danish case, the results come from 300 customers of the Danish district heating cooperative, administrated by EBO. The results show that both becoming a cooperative member and receiving technical support were shown to be beneficial, since the analysis shows:

- a 19,9% reduction in average heating energy consumption in kWh/m2 (which can be seen as the effect of becoming a cooperative member);
- a 20% reduction in average heating energy consumption in kWh/HDD (effect of receiving technical support);
- and, a 21,4% reduction in average heating energy consumption in kWh/(m2*HDD) (effect of receiving technical support).

In the case of Ecopower (Belgium) a great number of REScoop members are 'prosumers', i.e., they both produce and consume energy. More specifically, the percentage of the total number of cooperative members that are prosumers is 43,04%. Furthermore, Ecopower has implemented two specific measures, namely EnergieID (software monitoring electricity generation and consumption) and information leaflets that target consuming customers who consume too much electricity. The analysis shows that becoming a prosumer has had the greatest positive effect on electricity consumption reduction since it has led to 50,06% reduction in yearly electricity consumption in kWh/No. of residents and 45,84% reduction in yearly kWh/m2. Both becoming a cooperative member and a prosumer have led to significant reduction of CO2 produced, namely 235,12 and 291,03 kg, respectively. Also, registering to the EnergieID software induced more than 10% reduction in every energy consumption index that was examined. However, the analysis regarding the application of the energy efficiency leaflets intervention is inconclusive.

In the case of Enercoop (France) only a portion of the members was exposed to the energy efficiency intervention 'Dr Watt' (software package with training sessions). The analysis concludes that the application of Dr. Watt has led to very positive results, as it caused a percentage reduction of 60,31% electricity consumption in kWh/DD and 405,08 kg less CO2 emissions per customer on average monthly.

2.5 *Effectiveness strategy comparing groups*

Our third strategy is comparing groups, with the expectation that in one of the groups (the experiment groups) the intervention is present and in the other group (the control group) not. A comparison, given that all other factors are equal, would suggest an influence of the intervention. We compare here the groups of members and not members, the cohorts of people who are longer and shorter member and mature and less mature REScoops as different groups of members.

2.5.1 REScoop members and non-members Analyzing differences for energy savings intention and behaviour based on REScoop membership

In the 2017 survey of the total number of respondents 44,7% indicate to be REScoop members. 36,7% percent of respondents indicate not to be REScoop members. When comparing distributions between the two groups regarding the number of energy-saving actions household members engage with there is a significant difference between REScoop members and non-members ($p < ,000$). Moreover, the means of energy savings actions taken by REScoop members (7,79) is (significantly) higher than those of non-members (7,57). In addition, there appears to be a significant difference ($p < ,000$) between REScoop members and non-members regarding the distributions when indicating whether REScoops (either with the respondents as members or as consumers of energy supplied by REScoop) have contributed to energy savings in ones' household. Moreover, when comparing means REScoop members indicate a higher contribution of energy savings than non-members do.

In the 2018 survey analysis of assumed differences between REScoop members and non-members was also performed. This was done for Ecopower and Enercoop (for reasons of having large enough samples that allow for statistical analysis). T-tests were performed on items concerning 'intention to lower energy intensively' and 'intention to only use locally produced energy'.

Results of the Ecopower analysis reveal significant results on both indicators between those who are (only) Ecopower members and those who are neither a member nor a customer of Ecopower, with the latter having the higher mean. Strikingly, those who are not members reveal a higher intention to save energy (perhaps Ecopower members have already undertaken many actions to lower their energy consumption and their consumption rate is already at a very low and efficient level). In addition, customers of Ecopower were found to have a higher intention to only use locally produced energy than members of Ecopower. At Enercoop the opposite result was found: members indicated higher intention to only use locally produced energy than non-members did. This also applies to those who are both a member and a customer of Enercoop. They also significantly vary from those who are neither customers nor members in their intention to only use locally produced energy. For more details see the appendixes.

2.5.2 Different years of REScoop membership (cohorts)

In the 2017 survey we found a significant positive statistical relationship between years of REScoop membership and individual energy savings actions undertaken. Moreover, a strong significant positive relationship was found between years of REScoop membership and energy savings since having become a REScoop member. In sum, the longer one holds a REScoop membership, the more likely it is that one engages in individual energy savings actions, and the more one is inclined to report to have made energy savings since becoming a REScoop member. This also holds for reporting energy savings which one attributes to REScoop memberships (and hence, actions implemented by REScoops).

2.5.3 Mature and immature REScoops

In the academic literature research has been conducted comparing new 'immature' REScoops to older, relative 'mature' REScoops. In this research scholars paid attention to differences REScoop

members have concerning the core values they adhere to. However, in those studies little attention was paid to whether differences exist regarding energy savings realized, investments in renewable energy technology, REScoop's energy services, and REScoop's contribution to energy savings among REScoop members.

Results of our 2017 analysis (which should be read with caution though because of the low response rate by members of immature REScoops: i.e. SEV, Enostra and Coopernico; see also See Report 2017 II.5.2) reveal that no significant differences exist when regarding reported energy savings over 2015-2016, reported energy savings since becoming a REScoop member, and investment in renewable energy since becoming a REScoop member. However, significant differences were found regarding the number energy saving actions undertaken, the reported contribution of REScoops to energy saving actions taken, and future investments in renewable energy technology.

In all of those cases the means found were higher for immature REScoops. A reason for this could be that members of mature REScoops have already been targeted by their REScoop when they became new members, and complied in terms of taking energy savings actions and already making investments, which would leave out the necessity to do it again a few years later (having longer membership, and the REScoop
having become more mature). Another reason could be the overrepresentation of Enercoop in this survey's sample, having members that are presumably consuming green power supplied by Enercoop, while taking less interest in lowering individual energy consumption, and making investments in renewable energy individually. This claim finds support with the fact that members of Ecopower (the only other REScoop with response over 1000 in this survey) report to have saved (much) more energy (0,73) than Enercoop members (0,39; a significant difference)1.

We also analysed differences between mature and immature REScoops regarding satisfaction with services delivered by REScoops. Significant differences were found regarding REScoops being reported to have contributed to energy savings, knowledge level increase, contribution of REScoops to increased knowledge level, judgement on REScoops offering better energy services than traditional energy suppliers, and satisfaction with REScoop services.

With the exception of the latter the immature REScoops hold the edge on these items scoring higher means than mature REScoops. A plausible explanation to this could be that new (immature) REScoops feel that they should provide more services (like knowledge provision etc.) to support their members. Another one could be related to organizational size and type of organization. Whereas new, still small-scaled REScoops are likely to be in closer geographical proximity to their members (and likely also in social terms), the more professional mature REScoops might have become more distanced (socially and geographically), supplying green power, but being less involved to their members (and perhaps so, because they already were in the past, but grew so much that they cannot do this anymore).

1 However, of those who looked it up or measured energy consumption themselves Enercoop members report more energy savings over 2015-2016.

2.6 *Effectiveness strategy excluding rivalry factors*

The last effectiveness strategy we present here, is based on the 'modes operandi method' or 'detective paradigm' (Scriven, 1974). If there are factors other than the REScoop activities that influence household energy savings the question is whether these factors are present (step 1) and whether they influence (statistical relationships) energy savings (step 2). Adhering to the research model developed under Deliverable 3.2 we discern the following factors: motivations, behavioural factors, social factors, demographic factors and household characteristics.

2.6.1 Presence of rivalry factors explaining energy savings (step 1)

Based on the 2017 integrated dataset we first present descriptive statistics of the presence of these factors and the sub- items they convey (step 1). In the next subsection we the results of statistical tests exploring any statistical relationships. (Step 2). Tables presenting the main descriptive statistics per cluster of factor are presented in appendices of the 2017 report. Regarding the information presented below a precaution should be made regarding the interpretation of the results vis-à-vis the role of REScoops. Although these factors can be viewed as being independent from actions undertaken by REScoops it has to be argued that motivational factors, social factors and behavioural factors can, in fact, be manipulated by REScoops.

A2.1. Motivational factors [Report 2017 II.1.1]

a) Most of the respondents consider production of renewable energy of great importance.
b) Although return on investment (of investments in energy efficient measures) is considered important by respondents, it is given less weight than production of renewable energy.
c) A low energy price is considered of less importance than whether energy is generated from renewable sources.
d) Respondents consider a transparent energy price of great importance.
e) Just about all respondents consider environmental issue of great importance.
f) Just about all respondents dislike nuclear energy.
g) Just about all respondents strongly agree that (human induced) climate change should be prevented.
h) About 85% of the respondents agrees with the claim that in order to reach societal goals one can best organize at the local (community) level.
i) More than 80% of the respondents dislikes large-scale centralized energy companies.
j) Over 90% of the respondents holds the opinion that national government policies mainly support traditional (centralized) energy systems (as opposed to decentralized renewable energy systems).

A2.2. Behavioural factors (addressing intention, goal-setting, efficacy) [Report 2017 II.1.2]

a) Over 80% of the respondents view themselves capable or even very well capable of actually realizing intended energy saving targets. 60% view themselves generally capable to realize any other intended goals. This means that they view themselves better capable to achieve intended energy saving goals than other intended goals.
b) Over 60% of the respondents has the intention to lower their energy consumption patterns.

c) Over 60% of the respondents has the intention to only use energy that has been generated locally.
d) 70% of the respondents commits themselves easily when they are challenged to save energy.
e) 80% of the respondents has the intention to continually improve the energy efficiency level of their households.

A2.3. Social factors (trust, social environment, identification within one's social group) [Report 2017 II.1.3]

a) Over 85% of the respondents experiences a high level of interpersonal trust between REScoop members.
b) Over 85% of the respondents likes to identify oneself with a green energy supplier.
c) Over 85%% of the respondents likes to be seen as a person who uses energy efficiently.
d) Over 80% of the respondents likes to be seen as a person who uses an electrical vehicle instead of a traditional fossil fuel vehicle.
e) An ample majority of the respondents does not experience social pressure to save energy (reduce energy use).
f) About 70% of the respondents experiences that energy saving is considered an important value among family and friends.
g) Generating one's own energy locally, however, is considered less important among friends and family (although 45% does consider it important).
h) A majority of the respondents reveals that only few of their friends and/or family members are members of an energy cooperative.
i) Only few respondents agree to the claim that they like to be the first one among their friends who adopts a technological innovation.

A2.4. Demographic factors [Report 2017 II.1.4]

a) Of the income categories the average category of the respondents is between 30,000 and 40,000 euros annually (median).
b) Of the (estimated) size classes of households the average size is between 90 and 110 square metres (median). The size class most often reported, however, is 130 square metres or more (modus). Respondents appear to often live in households of a relatively big size.
c) On average respondents are highly educated. At least 70% of them have at least a bachelor's degree at the University of Applied Sciences. Over 40% has even a Master degree at the University.

A2.5. Household characteristics [Report 2017 II.1.5]

a) Of the household size categories (in terms of household members), the category of two household members has the highest frequency.
b) The home type most frequently observed is self-detached homes (38%). Second most frequently mentioned is apartments (28%).
c) 63% of the homes is owned by the occupiers. Less than 25% of the homes comprises tenants.
d) In only a minority of the households children below the age of 18 live (37%).

e) In 20% of the households the number of household members changed during the last two years.
f) Of the respondents the far majority revealed to live in a home with a female majority.

A2.6. Knowledge level and importance given to energy issues

Of the respondents the majority (57.4%) claims that their knowledge level on energy issues has increased over the last three years. 35% claims that this increase in knowledge level can be attributed to a REScoop (with a skew distribution indicating more agreement than disagreement in favor of this statement). However, no statistical (significant) difference was found when comparing knowledge level increase (over the last three years) between REScoop members and non-members.

2.6.2 Statistical relationships between rivalry factors indicators and energy savings (step 2)

For motivational factors, behavioural factors, social factors, demographic factors, household characteristics, and knowledge level statistical tests have been conducted to explore statistical linear relationships that significantly correlate with (reported) energy savings (i.e. bivariate correlations and ANOVAs). In order to do this energy savings were operationalized in multiple ways: first, by asking respondents whether they report any energy savings since becoming a REScoop member; second by asking respondents to indicate how much energy they had saved following direct or indirect measurement over the period of 2015-2016; and third, by asking them in how many individual energy saving actions they had engaged (e.g., lowering the thermostat when leaving home). Relations reported below were deemed significant when $p < ,01$ (which indicates a confidence level of 99,99%). Table 2.3 presents the results of the correlational analysis. Significance is indicated by * or ** signs (indicating significant P- values). However, given the large size of the survey in terms of observations, we suggest to rather look at the size of correlation coefficient (i.e. Pearson's R or Spearman's rho) than at mere significance, indicated by the p-value.

A3.1. Motivational factors [Report 2017 II.2.1]

There is a positive statistical relation between motivations addressing respondents disliking large-scale centralized energy systems and energy savings since having become a REScoop member. This also applies to the number of reported energy saving measures (even showing a stronger statistical relationship). The relationship is, however, not found against reported energy savings in 2015-2016.

A3.2. Behavioural factors [Report 2017 II.2.2]

There is a rather strong positive statistical relationship between behavioural factors (e.g., intentions, commitment), and both energy savings since having become a REScoop member, and the number of individual energy saving measures undertaken. A positive relationship with energy savings reported in 2015-2016 was also found, but appears to be weaker.

A3.3. Social factors [Report 2017 II.2.3]

There is a positive statistical relationship between social factors (especially social network), energy savings since becoming a REScoop member, and the number of actual energy saving measures undertaken.

Table 3: *Bivariate correlations between selected items and energy savings.*

	Energy Savings		
	Energy savings since becoming a REScoop member	Reported Energy savings over 2015-2016	Sum of energy savings actions undertaken
Motivational factors			
Environmental motivation	n.s	n.s.	.164 **
Decentralization motivation	.063 **	n.s.	.137 **
Behavioural factors			
Behavioural scale	.220 **	.082**	.282**
Social factors			
Social norms	.091**	n.s.	.182**
Social network	.179**	-.070*	.225**
Demographic factors			
Income	n.s	n.s.	n.s.
Educational level	-.154**	.116**	-.041**
Home size (sqm.)	.041**	-.054*	.242**
Home ownership	.081**	-.116**	.256**
Tenancy	-.081**	.121**	-.259**
Household characteristics			
Household size (members)	-.027*	n.s.	.051**
Change over the last 2 yrs.	-.072**	n.s.	-.060**
Gender division	.047**	n.s.	.039**
Presence of kids (<18 yrs. of age)	.055**	n.s.	-.024*
Knowledge level and weight given to energy issues			
Scale on knowledge and importance	.302**	-.059*	.076**
REScoop related items			
REScoop membership	Not relevant	n.s.	.088**
Number of years membership	.340**	-.180**	.075**
Age of REScoop	n.s.	n.s.	-.081**
Satisfaction with REScoop services	.122**	n.s.	.025*
Higher knowledge level due to REScoop actions	.209**	n.s.	.076**

**. Correlation is significant at the .01 level (1-tailed).
*. Correlation is significant at the .05 level (1-tailed).
n.s. Non-significant.

A3.4. Household characteristics [Report 2017 II.2.5]

a) There appears to be a relatively small negative statistical relationship between the size of households (in terms of household members) and energy savings since becoming a REScoop member. However, this factor correlates stronger (and also positively) to the number of actual energy saving measures undertaken.
b) There is a negative statistical relationship between change in household member size, energy savings since becoming a REScoop member, and the number of actual energy savings measures taken. This is no wonder since households that have decreased in size are also expected to lower energy consumption. There is however, no statistical relation between household size and energy savings reported over 2015-2016.
c) Gender balance appears statistically related to energy savings. The more 'male' the gender balance is the more respondents report energy savings since becoming a REScoop member, and the more measures they take to save energy. However, the more 'female' the gender balance of a household is the larger the size of energy savings they report on the short run (i.e. over 2015- 2016).
d) There appears to be a rather small negative relationship between the presence of children below the age of 18 in households and energy savings since becoming a REScoop member. However, when confronted to energy savings in the short run (over 2015-2016) the relationship appears to be relatively small and positive.
e) In sum, when reflecting on household characteristics it appears that although a few significant correlations were found they only show relatively weakly related statistically to energy savings items (indicated by the relatively small sizes of the correlation coefficients when compared to other items outside the demographics cluster).

A3.5. Demographics [Report 2017 II.2.4]

a) There is no statistically significant relationship between annual income and energy savings.
b) There is a poor negative relationship between level of education, and both energy savings since becoming a REScoop member and the number of actual energy savings actions taken. However, education level correlates (poorly) positive to the size of energy savings over 2015-2016.
c) There is a strong positive statistical relationship between home size (in square meters of floor surface) and the number of individual energy saving actions undertaken. The relationship is weaker (but still significant) against energy savings since becoming a REScoop member.
d) Home ownership appears positively statistically related to energy savings since becoming a REScoop member and to number of energy saving measures taken. Oddly, home ownership appears negatively related to the size of energy savings reported over 2015-2016.
e) Opposed to effects found related to home ownership are effects found related to tenancy.
f) Tenancy appears negatively related to energy savings since becoming a REScoop member and to number of energy saving measures taken. However, tenancy appears positively related to the size of energy savings reported over 2015-2016.

A3.6. Knowledge level and importance given to energy issues

There is a strong positive relationship between knowledge level (and importance given to energy issues) and energy savings since becoming a REScoop member. The relation between knowledge level and individual energy savings actions is also positive and significant, but weaker. An even weaker (and negative) correlation was found between knowledge level and energy savings over 2015-2016.

2.6.3 Bivariate correlations

Motivation

For the Enercoop, Ecopower and SOM Energia surveys data analysis was conducted to establish insight into statistical relationships between motivational factors and energy savings. This was done for a set of eight common social items (indicating motivation and beliefs people have) using bivariate correlations ($p < .05$). For energy savings three items were used: (i) measured energy savings since obtaining REScoop membership, (ii) intention to lower energy use intensively, and (iii) intention to only use locally produced energy. Report 2017 X presents an overview of the results of the analysis, with significant correlations indicated by grey cells. For more details see Appendix N. (Bivariate correlations motivational items x energy saving intention and behaviour)

***Report 2017 X**: Bivariate correlations between motivational items and energy savings (intention and behaviour) with significant correlations (p < ,05) in grey (Enercoop, Ecopower, SOM Energia, 2018).*

	Enercoop			Ecopower			SOM Energia		
	Measured energy savings	Intention to lower energy consumption intensively	Intention to only use locally produced energy	Measured energy savings	Intention to lower energy consumption intensively	Intention to only use locally produced energy	Measured energy savings	Intention to lower energy consumption intensively	Intention to only use locally produced energy
Production of RE is important									
Lower energy price more important than sustainable energy			-	-		-			-
Environmental issues matter to me									
I do not like the use of nuclear energy									
Global climate change is important. It needs to be prevented									
To reach societal goals we can organize ourselves better in local communities									
I distrust large-scale traditional energy companies									
National government mainly supports traditional (centralized) energy systems									

Social factors

For the Enercoop, Ecopower and SOM energia surveys analysis was conducted to establish insight into statistical relationships between social factors and energy savings. This was done for a set of six common social items (indicating social norms and the social environment people have) using bivariate correlations ($p < ,05$). For energy savings three items were used: (i) measured energy savings since obtaining REScoop membership, (ii) intention to lower energy use intensively, and (iii) intention to only use locally produced energy. Report 2017 Y presents an overview of the results of the analysis, with significant correlations indicated by grey cells. For more details see Appendix Bivariate correlations social items x energy saving intention and behaviour

***Report 2017 Y**: Bivariate correlations between social items and energy savings (intention and behaviour) with significant correlations ($p < ,05$) in grey (Enercoop, Ecopower, SOM Energia, 2018).*

	Enercoop			Ecopower			SOM Energia		
	Measured energy savings	Intention to lower energy consumption intensively	Intention to only use locally produced energy	Measured energy savings	Intention to lower energy consumption intensively	Intention to only use locally produced energy	Measured energy savings	Intention to lower energy consumption intensively	Intention to only use locally produced energy
I experience a high level of interpersonal trust between members of my REScoop									
I like to be seen as a person who buys ecological groceries instead of conventional ones at the groceries									
I like to be seen as a person who uses renewable energy									
I like to be seen as a person who uses energy efficiently.									
Saving energy is considered an important value among my friends and family									
Generating one's own energy locally is considered important among my friends and family									

For the item 'I like to identify myself with a green energy supplier' significant correlations were found for all three items in the Enercoop and Ecopower data (for SOM Energia the item was not part of the survey). For the item 'Many of my friends and/or family members are REScoop members' significant correlations were found on the items regarding intention to lower energy consumption intensively and intention to only use locally produced energy in the Enercoop and Ecopower data (for SOM Energia the item was not part of the survey). In the SOM Energia survey an item was included, 'I like to identify myself with Som Energia'. The item turned out to correlate significantly with all three energy saving items. In the Ecopower survey two unique items used, 'I experience social pressure to save energy (reduce energy use), and, 'REScoops and the persons who run them have a very high reputation locally' were found to significantly correlate to intention to save energy and intention to use local energy. The item on REScoops and high local reputation was also found to correlate significantly to measured energy savings (since obtaining REScoop membership). See

Appendix *Bivariate correlations social items x energy saving intention and behaviour for more details.*

Socio-demographic and household characteristics

Research on energy consumption and energy conservation show that next to (policy) interventions and householder behaviour, indicate socio-demographic and household characteristics have a great impact. So, did the results of the 2017 REScooop Plus survey. Like the 2017 survey the 2018 survey used items to measure socio-demographic and household characteristics. Whereas the 2017 survey report focused on overall REScoop socio-demographics and household characteristics the 2018 analysis focuses only on those of one particular REScoop, i.e. Ecopower (the REScoop with the largest response figure).

Analysis on bivariate correlations was performed on nine household characteristics, and tested against measured energy conservation (since obtaining REScoop membership), intention to lower energy consumption intensively and intention to only use locally produced energy. The only items significant to measured energy conservation found, was education level ($r = 0,095$; $p = 0,001$) with the higher the education level the more likely that energy is saved. For intention to lower energy consumption intensively, five items were found to significantly correlate, i.e. kids living at home ($r = 0,121$; $p = ,000$), household size in terms of household members ($r = -0,083$; $p = 0,000$), household income ($r = -0,102$; $p = 0,000$), education level ($r = -0,109$; $p = 0,000$) and year in which the house was constructed ($r = -0,038$; $p = 0,028$). In sum, the more kids living at home the higher the likelihood that one intends to save energy, and (vice versa) lower the number of household members, education level, household income or year in which the house was constructed the higher the likelihood that one intends to save energy.

For a few items correlations could not be analysed because of the nature of the operationalization of the constructs used. For these items means and standard deviations were calculated for categories used. When looking into energy carriers among different user classes respondents who indicate to use heat from district heating using a sustainable source indicate the highest means on measured energy savings, and intention to save energy intensively. When looking into home age among different user classes respondents who indicate to live in homes constructed during the 1970s have the highest intention to save energy. However, those living in homes constructed between 1950 and 1970 indicate the highest mean in terms of measured energy conservation. When looking into home ownership respondents who indicate to own the house they occupy indicate the highest intention to save energy. On the contrary, it is respondents who indicate to rent living space who claim to have saved most energy. Finally, when addressing type of house, it is respondents living in detached indicating the highest intention to lower energy consumption intensively. However, it is those living in semi-detached homes who claim to have the highest figures in terms of measured energy savings. In addition, it is respondents living in apartments who indicate the highest intention to only use energy that has been produced locally. See Appendix L. Background variables (Ecopower, 2018) for more details on these items.

2.7 *Explaining effectiveness*

In the previous section we analyzed the effectiveness of REScoop actions. In this one we will address factors that matter to the implementation of these measures. We want to determine whether success or failure was due to the ways in which measures were implemented? This is relevant for the unspecified influence of REScoop membership (e.g., that REScoop members are satisfied with the services provided by REScoops) and for specific measures. If REScoop members are unsatisfied with the activities their REScoop organizes this would potentially explain for non-use and poor implementation, or a lack of influence of these activities on energy saving behaviours. Recommendation of activities to others is closely related with satisfaction.

Satisfaction with REScoops

If members are unsatisfied with their REScoop this would explain non-use and non-implementation and a lack of influence of the measure on energy saving. Report 2017and Figure SAT8 show that a majority of the REScoop members is satisfied with the service provision. And that a majority of the REScoop members agree that REScoops offer better energy services than other energy service providers (Report 2017 SAT7 and Figure SAT7).

Figure SAT8: Satisfaction with service provision REScoop. (in %; Survey 2018)

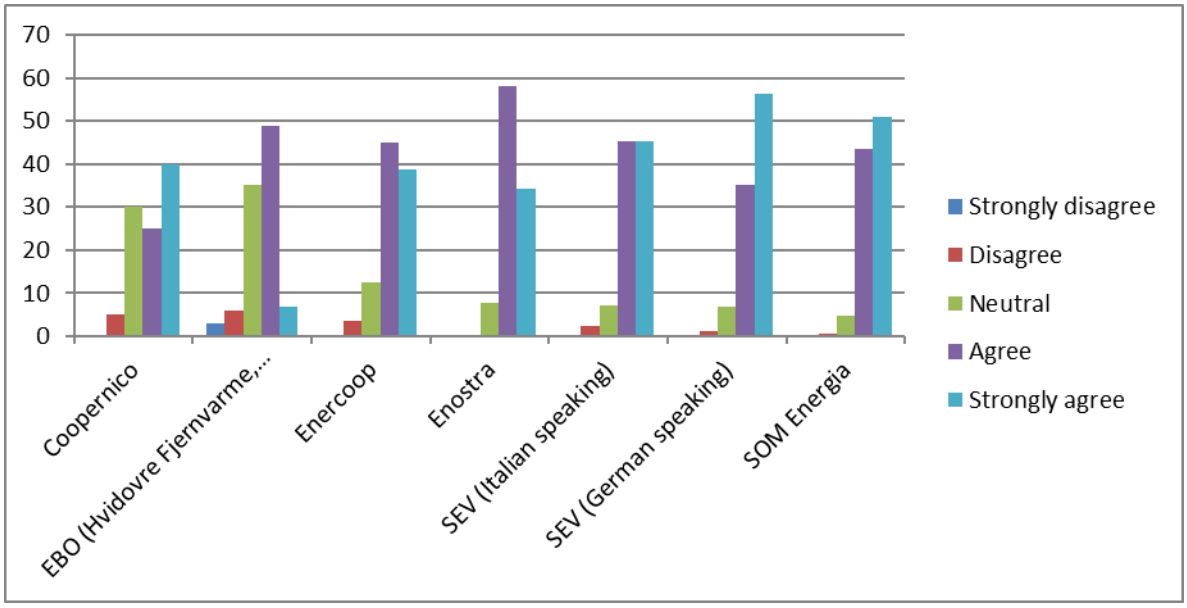
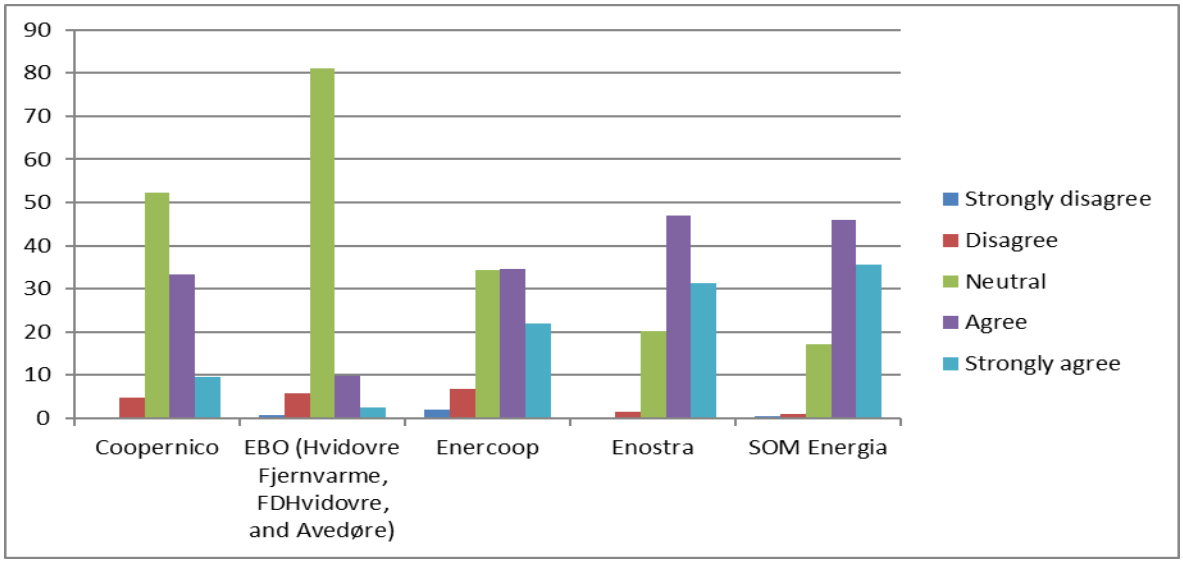


***Figure SAT7**: REScoops offer better energy services than other energy service providers. (in %; Survey 2018)*



Satisfaction with specific measures

If users are unsatisfied this would explain non-use and a lack of influence of the measure on energy saving. Satisfaction is closely related with if ones prepared to recommend the measures to others.

Enercoop Measures Dr Watt, Energy Savings Wiki, and energy savings tip of the month.

In the 2017 survey of the Enercoop respondents who indicate to use the specific measures Dr. Watt-training, advice, online wiki indicated to be satisfied with them (REP1 Report 2017 I.15). In 2018 of the participants, only a very small part was unsatisfied and a large part satisfied (Figure [Ener] 1). A large majority would recommend the program to others (Figure [Ener] 2). Of the Enercoop respondents that used the so-called energy saving Wiki a large majority was satisfied and would recommend the Wiki to their peers (Figure [Ener] 4, Figure [Ener] 5). Of the Enercoop respondents that used the so-called energy savings tip of the month a large majority was satisfied (Figure [Ener].

***Figure [Ener1]**: Have you participated in the Dr Watt program offered by Enercoop? (Survey 2018)*

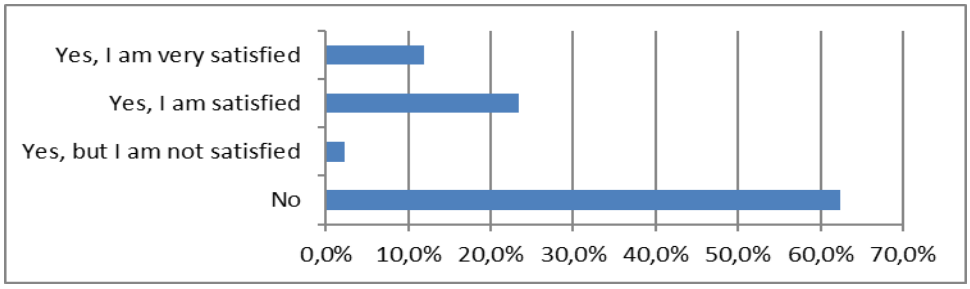
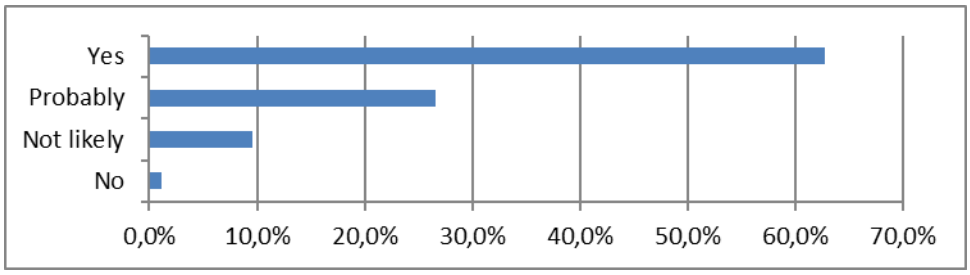


***Figure [Ener2]**: Would you recommend Dr Watt to others (e.g., your peers)? (Survey 2018)*



Ecopower EnergieID

In the Ecopower survey questions were asked about three measures: energieID, energy advice and the use of a brochure (see report D.3.1 for background information on these measures). Of the respondents, only a small part indicates to be using the mentioned measures (e.g., 20% use the measure EnergieID (Report 2017). In the 2018 survey of the 24% of the Ecopower respondents use or used EnergieID (Figure SAT 20) about 20% started but does not use the program anymore. Does this mean that these drop outs are unsatisfied with EnergieID? A factor could be that the respondents think that the tool is too difficult to use or too technical. Report 2017 Ecopower C1 shows that the tool is considered as not to technical. The problem lies in keeping the discipline to gather the data, particular because part of the respondents have the idea that they know already what they need for efficient energy behaviour or already reached considerable savings. The added value of more information disappeared (Report 2017 Ecopower C1).

***Report 2017 Ecopower C1**: In how far do you think EnergieID is technical?*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		2398	77,4	77,4	77,4
	I do not understand much of energy, it might be even simpler	13	,4	,4	77,8
	I find the possibilities of EnergieID to limited to really use for my energy management	65	2,1	2,1	79,9
	I find the possibilities of EnergieID too limited and would like more alternative options for use	92	3,0	3,0	82,8
	I find EnergyID perfectly understandable and usable for me	432	13,9	13,9	96,8
	I manage to use EngergyID, but I do not understand everything	100	3,2	3,2	100,0
	Total	3100	100,0	100,0	

***Report 2017 Ecopower C2**: Why dou you use EnergieID not or not any longer?*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		1040	33,5	33,5	33,5
	I don't get to entering the data	465	15,0	15,0	48,5
	I have alreday enough insight in my energy use	686	22,1	22,1	70,7
	The graphs don't tell me anything	41	1,3	1,3	72,0
	I'm already very efficient so I don't see the added value	362	11,7	11,7	83,7
	Other	506	16,3	16,3	100,0
	Total	3100	100,0	100,0	

Somenergia Infoenergia

Under perceived effectiveness we already discussed the question [BEH71], 'Infoenergia services are useful to encourage efficiency actions in my household \(%)'. A majority of the Infoenergia users would recommend the services to others (Figure Enostra [BEH72]). SOM enegria also made use of the Tupperware meetings concept. Of the SOM energia respondents that participated in these meetings used a large majority was satisfied and would recommend the meetings to other Figure (SOM energia [RES55]; Figure SOM energia [RES56]).

***Figure Enostra [BEH72]**: Would you recommend Infoenergia to others (e.g., your peers)? (Survey 2018)*

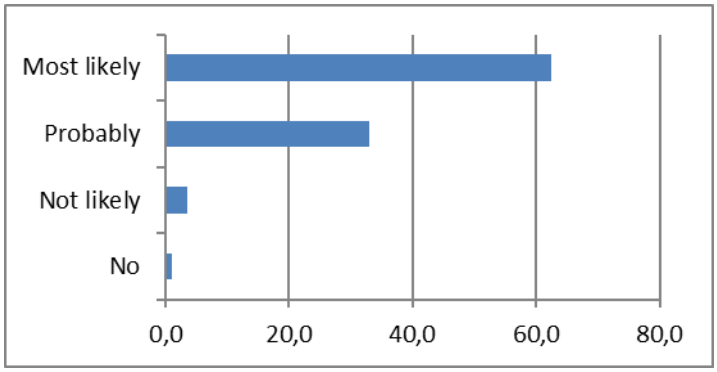


***Figure Somenergia[RES55]**: To what extent are you satisfied with the implementation of Tupper watt meetings? (Survey 2018)*

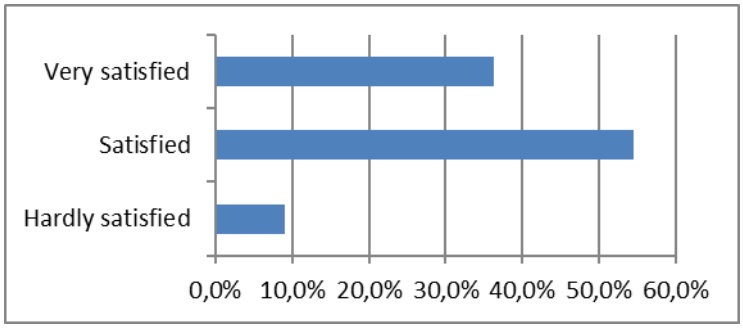
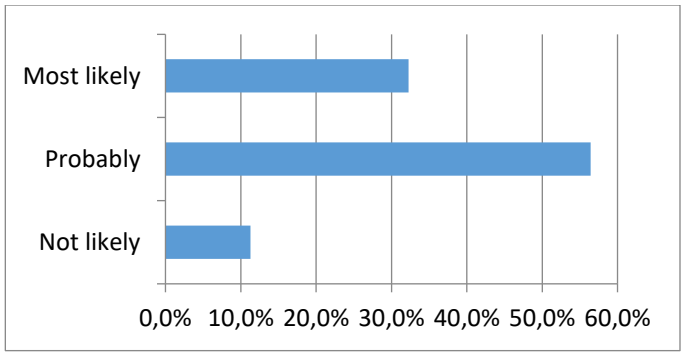


***Figure [RES56]**: Would you recommend Tupper Watt meetings to others (e.g. your peers)? (Survey 2018)*



EBO Package approach and technical package

Of those who participated in the package approach the large majority (95%) reported to have used a conversion package for the home owner (Figure EBO [RES3]). Over 87% indicated to be satisfied with the way in which this conversion package was implemented (See also Figure EBO RES3). Of those having participated in the package approach over 81% indicates to satisfied (See Figure EBO RES10).

***Figure EBO [RES3]**: Did you use the conversion package for the home owner? (Survey 2018)*

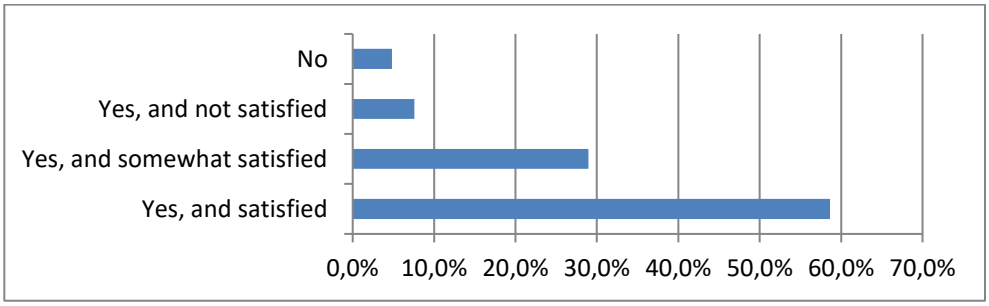


***Figure EBO RES10**: Satisfaction with the package approach (Survey 2018)*

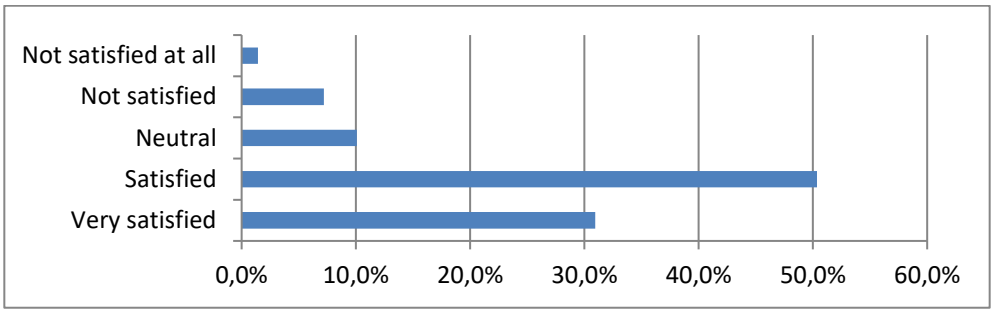


***Figure [RES12]EBO**: Would you recommend the package approach to others? (Survey 2018)*

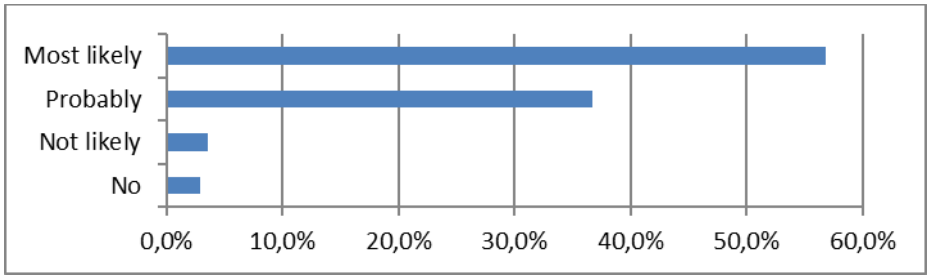


***Chart [RES15] EBO**: To which extend are you satisfied with the technical service?*

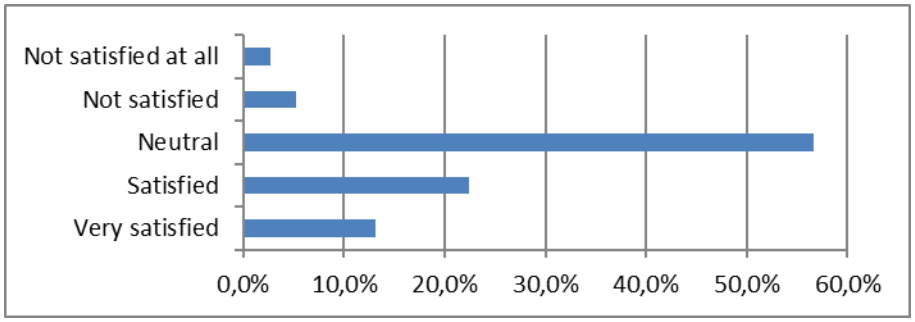
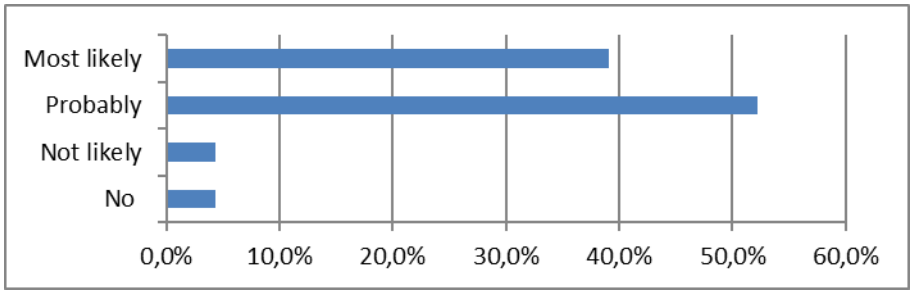


***Figure [RES16] EBO**: Would you recommend the technical service to others?*



3 Investment in renewable energy technology

3.1 *General observations*

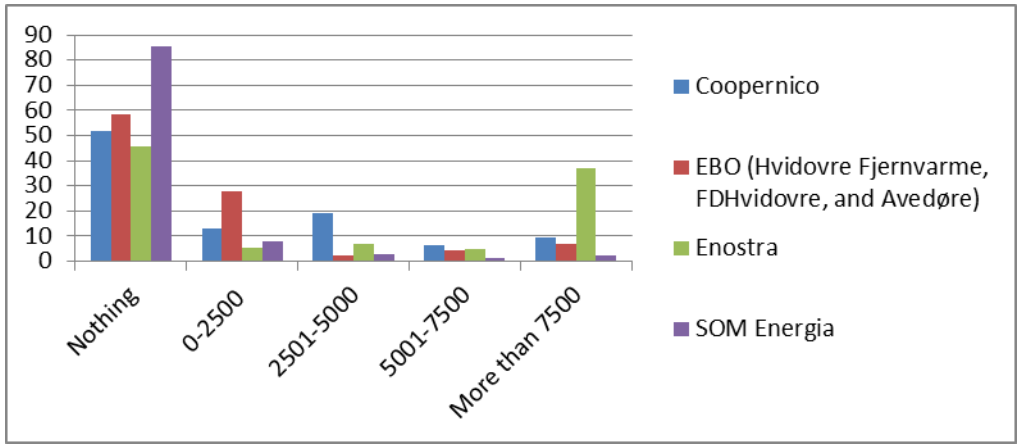
The analysis of the 2017 survey among six REScoops revealed that half of the respondents surveyed indicated not to have invested in renewable energy technology since becoming a REScoop member. 24% indicated to have made investments since becoming a REScoop member, whereas 27% indicated wanting to invest in the next few years. Investments mentioned were on average in the range of 500-2500 euros. 60% of the respondents indicated not to have invested in renewable energy prior to becoming a REScoop member. 21% of respondents did already invest before becoming a REScoop member.

For the 2018 survey data were not analysed in an integrated fashion for all REScoop from which data were collected. Rather data were analysed for all REScoops separately, allowing for cross case comparison.

3.2 *Historical investments*

For the 2018 survey data on investment in renewable energy technology were collected among four REScoops, viz., Coopernico, EBO (Hvidovre Fjernvarme, FDHvidovre, and Avedøre), Enostra and SOM Energia. Analysis on historical investment after households obtained membership of REScoops revealed that investments were mostly in the range of up to 2500 euros per member, with few respondents indicating having made higher investment. Exceptions are Coopernico, where nearly 36% indicated having made higher investments (and 9,7% even indicating having made more than 7500 euros on investments), and Enostra, where 37% indicated having made more than 7500 euro on investments. Figure 3.1 presents an overview.

***Figure 3.1.**: Overview of investments made by members after obtaining REScoop membership. (Survey 2018)*

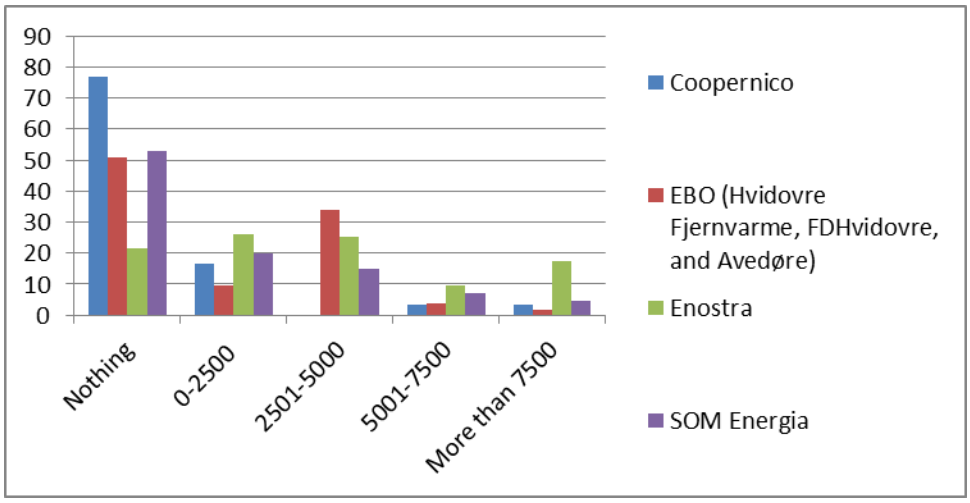


Intention to invest

For the 2018 survey data on future investment in individual households were collecting among members of four REScoops, viz., Coopernico, EBO (Hvidovre Fjernvarme, FDHvidovre, and Avedøre), Enostra and SOM Energia. The analysis revealed that in three out of four REScoops the majority of respondents indicated not intending to make future investments, with Enostra being

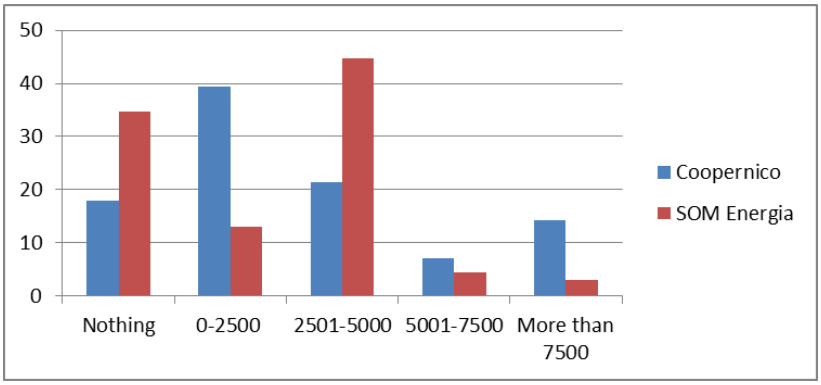
the exception. In the case of Enostra nearly 79% indicated willingness to invest, with the majority revealing investment between 0 and 5000 euros, and 17,5% even indicating investments of more than 7500 euro. Figure 3.2 presents an overview for all four REScoops.

***Figure 3.2**.: Overview of intended future investments in individual households by REScoop members. (Survey 2018)*



Next to data on individual household investment data were also collected among two REScoops (Coopernico and SOM Energia) on intention to invest in collective renewable energy projects. The analysis revealed that over 82% of the respondents of Coopernico is willing to invest, and over 65% of the respondents of SOM Energia. For both the (financial) category with the highest frequency is between 2500 and 5000 euros (for SOM Energia this is even more than 44%). It appears that respondents at Coopernico and SOM Energia express more intention to invest in collective renewable energy projects than in individual household renewable energy projects. Figure 3.3 presents an overview for the two REScoops.

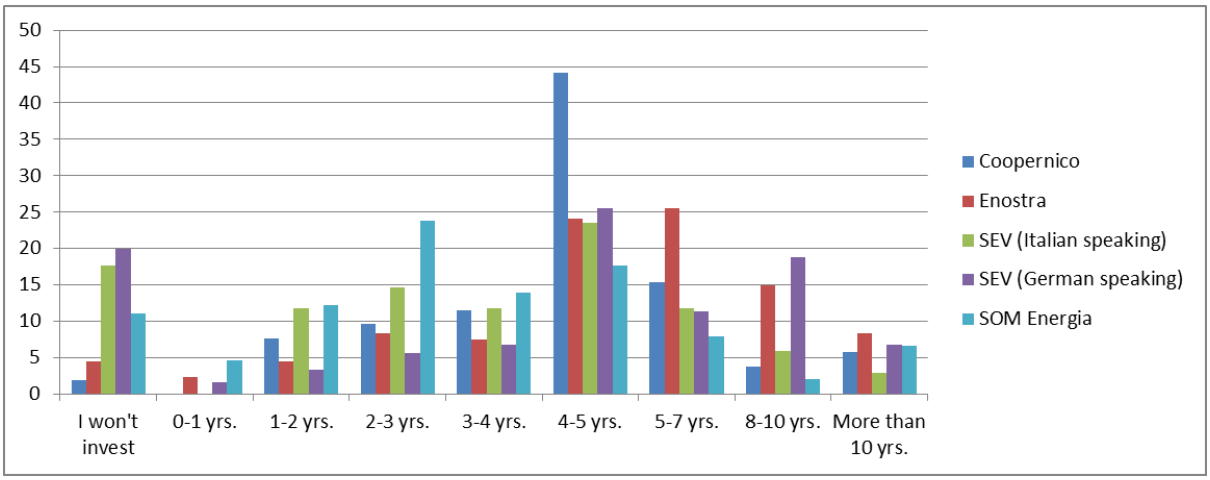
***Figure 3.3.**: Overview of intended future investments in individual households by REScoop members. (Survey 2018)*



3.3 *Payback period*

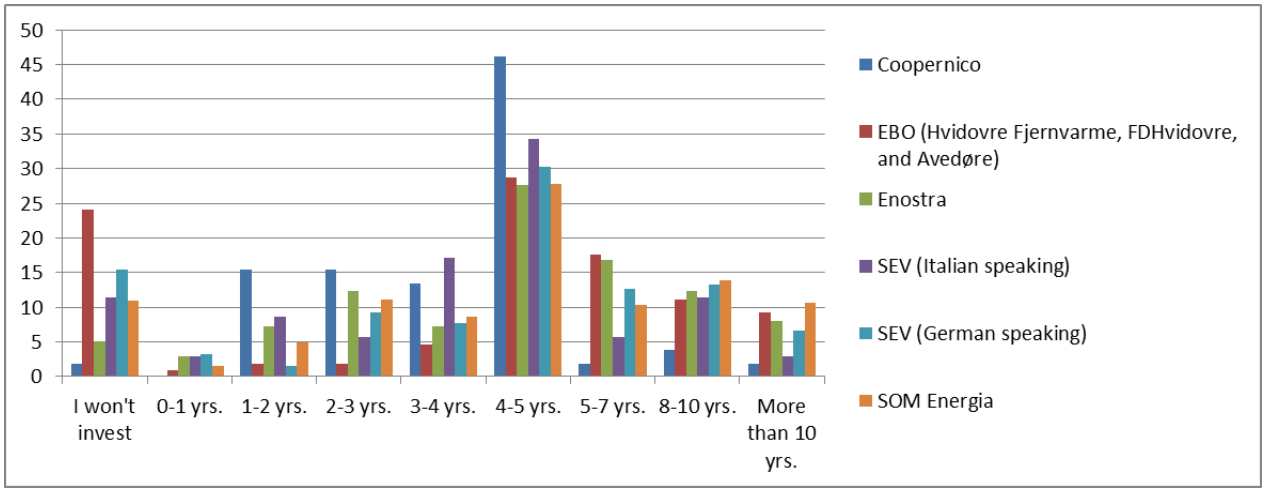
Making investment often goes hand in hand with uncertainties, one of the key uncertainties being payback period. Economic theory learns that the longer the assumed payback period the less one is willing to invest. On the other hand, it is progressive (often experiential) households who show a willingness to accept longer payback periods for sustainable investments, like renewable energy technology or efficient energy appliances. For four REScoops data were collected on accepReport 2017payback period for investment in renewable energy technology (i.e., Coopernico, Enostra, SEV, and SOM Energia). Results (see Figure 3.4) reveal that for most of the REScoops analysed the accepReport 2017payback period is between four and five years. Enostra (again) appears as the most progressive REScoop, showing the category between 5 and 7 years with the highest frequency of mentions.

***Figure 3.4.**: AccepReport 2017payback period of renewable energy technology investment. (Survey 2018)*



For five REScoops data were collected on accepReport 2017payback period for efficient energy appliances (i.e., Coopernico, Enostra, SEV, and SOM Energia). Like investment in renewable energy technology the category with the highest frequency in mentioning is between four and five years. Enostra and SOM Energia appear as the REScoops having members that accept the highest payback periods. Figure 3.5 presents an overview of the five REScoops on accepReport 2017payback period for investment in energy efficient appliances.

***Figure 3.5.**: AccepReport 2017payback period of energy efficient appliances investment. (Survey 2018)*



3.4 *Factors assumed to influence investment*

Both factors related to REScoop practices and interventions, and other (non-REscoop) factors were found to be statistically related to investment in renewable energy technology by REScoop members following the 2017 survey. Non-REScoop factors found to statistically correlate to investments in renewable energy (and related operationalisations) concerned: behaviour, social factors (in particular social network), knowledge level, demographic factors and household characteristics. Of the last two categories especially income, home size, ownership, but also gender division and presence of kids (below 18 years of age) seem to matter. Although many factors are classified as 'rival' some of them can in fact be influenced by REScoops (excluding demographics and household characteristics). Report 2017 3.1 presents an overview of bivariate correlations of non-REScoop factors to investment in renewable energy technology (using the 2017 survey data).

***Report 2017 3.1**: Bivariate correlations between selected items and investments in renewable energy.*

	Investments in renewable energy	
	Investments since becoming a REScoop member	Future investments
Motivational factors		
Environmental motivation	n.s.	n.s.
Decentralization motivation	ns.	.042**
Behavioural factors		
Behavioural scale	.040**	.184**
Social factors		
Social norms	.047**	.056**
Social network	.093**	.095**

Demographic factors		
Income	.089**	.108**
Educational level	-.042**	n.s.
Home size (sqm.)	.144**	.170**
Home ownership	.148**	.092**
Tenancy	-.152**	-.099**
Household characteristics		
Household size (members)	.077**	.113**
Change in the last 2 yrs.	-.034**	n.s.
Gender division	.035**	.077**
Presence of kids (<18 yrs. of age)	-.030**	-.070**
Knowledge level and weight given to energy issues		
Scale on knowledge and importance	.074**	.078**
REScoop related items		
REScoop membership	.290**	.141**
Number of years membership	.230**	n.s.
Age of REScoop	n.s.	-.140**
Satisfaction with REScoop services	.050**	n.s.
Higher knowledge level due to REScoop actions	.090**	.076**

**. Correlation is significant at the .01 level (1-tailed).
*. Correlation is significant at the .05 level (1-tailed).
n.s. Non-significant.

3.5 *Relation to indicated energy savings*

The 2017 survey data also revealed that the more people indicate to take energy saving measures (such as insulation or replace inefficient lighting) the more they are willing to invest in renewable energy appliances. However, the effect turns out to be stronger in the case of investments made prior to becoming a REScoop member, when compared REScoop members having made investment after acquiring membership, or revealed future investments. The 2018 survey data revealed that those who already made investments in the past (but after obtaining REScoop membership) are also likely to invest in both individual and collective renewable energy systems in the near future. In addition, 2018 survey data collected at EBO (Hvidovre Fjernvarme, FDHvidovre, and Avedøre) showed a positive significant statistical relationship between those indicating energy savings (since obtaining membership) and investments in energy efficiency equipment (after switching to district

heating) (rho = .212; p<.05). This also holds for intention to future investment in energy efficiency equipment (rho = .268; p<.05).

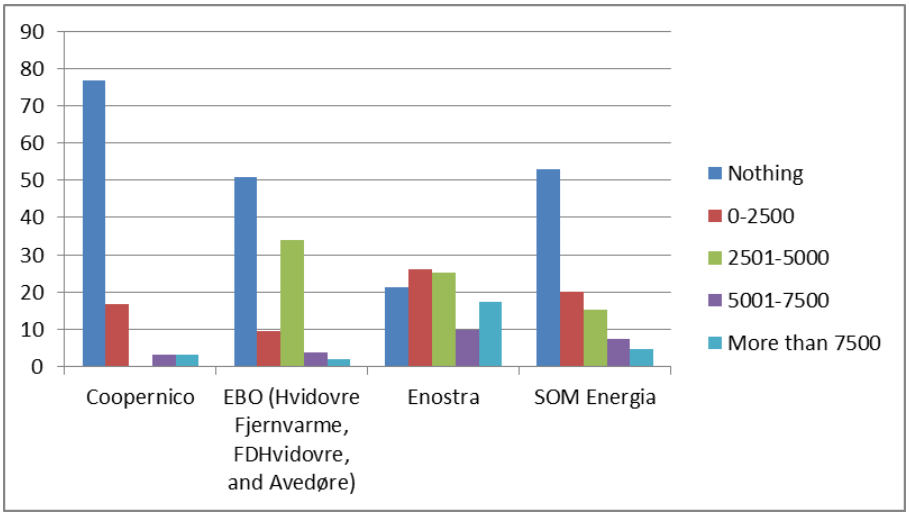
Relation to REScoop membership

Data analysis of the 2017 survey showed a significant difference in willingness to invest in renewable energy (future investments) between REScoop members and non-members. REScoop members indicated willing to invest significantly more than non-REScoop members. For the 2018 survey similar results were also observed at SOM Energia where those who are members were found to invest significantly different (more) than those who are clients (p < .000). The same holds for those at SOM Energia who are both members and clients when compared to those who are clients only (p = .002). See also Appendix T-tests; REScoop membership Investments; SOM Energia.

Relation to length of membership

The analysis of the 2017 survey data revealed a significant positive statistical relationship between years of REScoop membership and the size of investments made since becoming a REScoop member. However, no significant relationship was found between years of REScoop membership and near future investments in renewable energy. In the 2018 survey this funding was confirmed for SOM Energia, which both showed significant correlations between length of membership to both investments made (since obtaining membership), and intended future investments (individual renewable energy). Next to SOM Energia members this also holds for SOM Energia customers. At Coopernico significant results were found for length of membership vis-à-vis intention to invest in individual renewable energy appliances, but also for size of estimated value of shares (in the REScoop) vis-à-vis investments made and future investment in collective renewable energy technology. A closer comparison between REScoops, however, rather reveals the progressive investment behaviour of Enostra members, than a big difference between mature and immature REScoops (See Figure 3.6).

***Figure 3.6.**: Intended future investment in individual renewable energy technology (Survey 2018).*



Differences between mature and immature REScoops

The 2017 survey showed significant differences between 'mature' REScoops and 'immature' (young) REScoops. Generally, the means for future investment was higher for immature REScoops (like Enostra or Coopernico). A reason for this could be that members of mature REScoops have already been targeted by their cooperatives when they became new members, and complied in terms of taking energy savings actions and already making investments, which would leave out the necessity to do it again a few years later (having longer membership, and the REScoop having become more mature). For the 2018 survey data a comparative analysis was not possible because investment data could not be obtained for most 'mature' REScoops (e.g., Ecopower or Enercoop), with the exception of EBO. However, because of its particular nature generalizations cannot be made to other mature REScoops.

Relation to motivational and social factors.

For the 2018 survey data no common motivational items were found to correlate significantly to investment. Nonetheless, a variety of environmental motivational items were found to correlate significantly to near future investment among SOM Energia and Enostra (See also Appendix P. Bivariate correlations motivational items x investment [SOM Energia; Enostra]). Regarding social factors, a number significant correlations were found among EBO, SOM Energia, and Enostra. Persons who like to be seen as using energy efficiently or consuming sustainably showed significant correlations to investment in renewable energy. In addition, this applies to cases in which friends and family also adhere to these values, or are also members of a REScoop. At SOM Energia, indicators regarding social influence of the REScoop, were also found to be significant, i.e., experiencing high trust levels among REScoop members, visiting REScoop meetings, and identifying oneself with a REScoop (see Report 2017 3.1).

***Report 2017 3.1.**: Bivariate correlations between social factors and investment in renewable energy technology at SOM Energia (2018 survey data; with significant correlations in yellow).*

			How much did you approximately invest in renewable energy generation appliances (individually applied to your home) afte	How much do you intend to invest in renewable energy generation appliances (individually applied to your home) in the ne	How much do you intend to invest in collective renewable energy generation projects in the near future?
Spearman's rho	How much did you approximately invest in renewable energy generation appliances (individually applied to your home) afte	Correlation Coefficient	1,000	,234**	,086**
		Sig. (1-tailed)		0,000	0,003
		N	1711	1113	1031
	How much do you intend to invest in renewable energy generation appliances (individually applied to your home) in the ne	Correlation Coefficient	,234**	1,000	,284**
		Sig. (1-tailed)	0,000		0,000
		N	1113	1171	907
	How much do you intend to invest in collective renewable energy generation projects in the near future?	Correlation Coefficient	,086**	,284**	1,000
		Sig. (1-tailed)	0,003	0,000	
		N	1031	907	1131
	I experience a high level of interpersonal trust between members of enostra	Correlation Coefficient	,106**	,081**	,104**
		Sig. (1-tailed)	0,000	0,004	0,000
		N	1503	1054	1020
	I like to identify myself with Som Energia	Correlation Coefficient	,071**	,067*	,113**
		Sig. (1-tailed)	0,002	0,012	0,000
		N	1682	1155	1122
	I like to be seen as a person who buys ecological groceries instead of conventional ones at the supermarket	Correlation Coefficient	,111**	,112**	,082**
		Sig. (1-tailed)	0,000	0,000	0,003
		N	1695	1161	1126
	I like/I'd like to be seen as a person who is appreciated for using renewable energy	Correlation Coefficient	,117**	,135**	,104**
		Sig. (1-tailed)	0,000	0,000	0,000
		N	1699	1163	1124
	I like to be seen as a person who uses energy efficiently	Correlation Coefficient	,083**	,093**	,091**
		Sig. (1-tailed)	0,000	0,001	0,001
		N	1692	1161	1123
	Saving energy is considered an important value among my friends and family	Correlation Coefficient	,068**	0,020	-0,036
		Sig. (1-tailed)	0,002	0,250	0,113
		N	1692	1160	1118
	Generating one's own energy locally is considered important among my friends and family	Correlation Coefficient	,108**	,082**	0,017
		Sig. (1-tailed)	0,000	0,003	0,286
		N	1665	1146	1106
	How often do you visit meetings organized by Som Energia or your local group of Som Energia?	Correlation Coefficient	,172**	,179**	,211**
		Sig. (1-tailed)	0,000	0,000	0,000
		N	1653	1146	1109

4 Conclusion

This report i presents research under work package 3, which seeks to analyse what behavioral and social aspects influence energy savings and investment in renewable energy technology by consumers and members of REScoops. A key aim of the work package is to find empirical evidence that supports the claim that REScoops are effective in persuading REScoop members to engage in energy saving and make investments in renewable energy technology. Following exploratory research *(see Deliverable 3.1 of the REScoop Plus project*), an analytical framework and research design were developed and two rounds of surveys were performed among REScoop members and others. First, in Spring and Summer 2017 a survey was performed among six REScoops in five EU states, with a total response of 10,585. Second, in Spring and Summer 2018 a survey was performed among seven REScoops in six EU nations. Whereas the 2017 survey focused on general REScoop issues, energy savings and investments by members, the 2018 survey paid more intention to specific REScoop actions (measures) and their assumed effectiveness vis-à-vis energy savings and investment by their members. The conclusions of the 2017 and 2018 surveys are presented below. First, results are presented on the analysis on energy savings. Second, this is done for the results on investment in renewable energy technology. For both energy savings and investment, we present the following items: first we address arguments on goal achievement, and then we present arguments on effectiveness (i.e. REScoops contributing to energy savings). The latter entails influence of REScoops on energy savings behaviour, influence of REScoops on energy savings, comparison between groups, and influence of rival factors. Finally, we present final judgements regarding effectiveness of REScoop membership, engagement, and participation in specific REScoop actions and measures.

4.1 *Part I: energy savings*

4.1.1 Goal achievement: energy conservation

A large majority of respondents indicates to engage in behavioral action to lower energy consumption. This applies to both energy curtailment and energy efficiency behavior. When asked whether to have saved energy since obtaining REScoop membership 40%-65% of respondents among REScoop argues to do so. Between 10% and 33% claim to know to have saved energy, based on their energy consumption measurement. Of those who measured their energy consumption the majority of respondents indicates no change in energy consumption since obtaining REScoop membership. However, about 21-22% indicated to use at least 10% less energy, and between 9-10 % indicates to have saved at least 20% energy. However, on the other hand there is about the same proportion of respondents who indicate to have actually started using more energy since becoming a REScoop member, perhaps indicating the so-called 'rebound effect'. REScoops that stand out in terms of members reporting energy savings are EBO, Enercoop and Ecopower. These are all REScoops that can be considered rather mature. Average reported energy savings vary among REScoops, with EBO members indicating 8-10% while others report less. On average REScoop members in the 2018 survey save 4-6% on energy consumption since obtaining REScoop membership.

4.1.2 Effectiveness: contributions to energy savings by REScoops

Influence of REScoops on energy savings actions

Respondents indicate to undertake many (individual) energy savings actions (e.g. by lowering the thermostat, or taking shorter showers). Only, a small part of those respondents, however, indicates that (individual) energy savings actions can be attributed to a REScoop. For energy curtailment behaviours this considerably less (15-17%) than for energy efficiency behaviours (20-30%). However, the longer respondents indicate to be REScoop members the more they engage in energy savings actions, and the more they indicate to save energy.

Influence of REScoop membership on energy savings

The majority of respondents indicate that energy savings have become more important to them since becoming a REScoop member. They also indicate a higher knowledge level on energy issues. In both the 2017 and 2018 survey nearly half of the respondents indicated to consume less energy since they became REScoop members. In the 2017 survey about 20% of the respondents indicated that REScoops contribute to their (individual) energy savings.

The far majority of respondents indicates overall satisfaction with REScoop energy service delivery, and state this to be better than energy service delivery by conventional energy suppliers. Moreover, respondents indicate to have undertaken more (individual) energy savings actions since becoming a REScoop member or customer of energy supplied by REScoops. Other general REScoop factors positively correlating to energy savings (and intention to save energy) are members visiting meetings organised by REScoops, and some of the specific measures like EnergieID, Dr Watt or InfoEnergia.

Specific REScoop measures targeting energy savings

In the 2017 survey a number of specific energy measures and tools implemented by REScoops (i.e. Dr. Watt training sessions, personal advice, or EnergieID) were found to significantly and positively relate to energy savings (since becoming a REScoop member). Moreover, users were generally satisfied with them. For EnergieID users also indicated increased importance and contribution to energy savings. Increasing portions of the respondents indicated to have them (e.g., EnergieID: from 20% in 2017 to 30% in 2018 at Ecopower; Dr Watt: from 3% of Enercoop members to 37% in 2018). Results from the 2018 survey revealed that specific measures using platforms (along with related informational actions) were found to statistically correlate to reported energy savings, whereas sole informational actions (e.g. TupperWatt, or saving tips on the energy saving Wiki) only influenced intention to save energy, but not energy savings itself. Moreover, the 2018 survey at EBO revealed a strong statistical relationship between checking one's energy consumption and reported energy savings. The same was found for having (financial) shares in this REScoop.

Longitudinal time series trend analysis by TUC revealed a number of important findings. First, joining a REScoop leads to more than 20% reduction in energy demand. Second, installing energy production equipment (e.g. solar panels on one's own rooftop) reduces REScoop members' electricity demand by more than 45%. At Ecopower (a REScoop with over 50,000 members) no less than 43% of the respondents were found to be prosumers, generating their own green power, locally. Third, the results show that energy efficiency interventions of various types, such as technical support, special tariffs, energy generation schemes, and installing smart meters, were statistically related to substantial reductions in energy consumption: i.e., those who become prosumers save 50% in electricity consumption (as supplied by Ecopower); those who register with

EnergieID save 10% in energy consumption; and those who partake in Dr. Watt training sessions at Enercoop lower their electricity consumption by no less than 60%.

Comparison between groups

Comparative analysis on energy savings was conducted between REScoop members and non-members, and between members of 'mature' REScoops and 'immature' REScoops (2017 survey). Results show that REScoop members are more engaged in individual energy savings actions than non-members. They also attribute energy savings more to REScoop than non-members do. Between mature and immature REScoops no significant differences were found regarding energy savings. However, the 2018 survey revealed that members of mature REScoops (like Ecopower and EBO) report higher energy savings than their younger counterparts.

Rival factors

Rival factors found to statistically correlate to energy savings (and related operationalisations) concern: motivational factors, behavioural factors (e.g., goal-setting, intention), social factors (in particular social environment), knowledge level, demographics and household characteristics. Of the last two categories especially education level, home size, and ownership appear related statistically. Moreover, motivational factors and socio-demographics seem more strongly related statistically to intention to save energy than reported energy savings. Although factors mentioned here are classified as 'rival' some of them can in fact be influenced by REScoops; i.e. motivational factors, behavioural factors, social network and knowledge level. REScoops can target those factors, and can pursue to influence energy savings among their members in this way (indirectly).

Effectiveness: final judgement

Membership: becoming a member of a REScoop can be argued to contribute to setting the intention to save energy and (next) saving energy itself. This varies between REScoops, though. Results of the 2018 survey show that after having joined a REScoop between 22% and 57% of respondents indicate energy savings to become more important to them. Moreover, between 22% and 53% indicate that REScoops have actually contributed to saving energy. Results also show that the longer one is REScoop member the more one engages in energy savings behaviours and the more one saves energy.

Engagement: REScoops engaging members to actively participate (for example via giving out shares or organizing REScoop meetings) were found to have a significant positive statistical relationship to energy savings reported by REScoop members. Arguably, they contribute to attaining energy savings goals.

Participation in specific REScoop actions and measures: Several of the research strategies and statistical tests we performed found evidence revealing significant positive statistical relationships between particular specific REScoop measures and energy savings, i.e., Dr. Watt, personal advice, and EnergieID for the 2017 survey, and EnergieID, Dr. Watt and InfoEnergia for the 2018 survey. Moreover, REScoop members participating in these measures indicate general satisfaction, and would generally recommend them to others.

In sum, it looks like the three forms of REScoop engagement to members (membership itself, engagement activities, and the use of specific measures) all have the potential to contribute in appositive way to REScoop members' energy savings intention, behaviour and in the end saving energy itself. One can argue, though, that membership and engagement can be seen as necessary

conditions that influence how a REScoop's member engages in energy saving behaviour. Although some results indicate that these factors alone can already stimulate members to engage in energy saving behaviours, results on the specific measures also reveal that they can trigger and reinforce these conditions to REScoop members engaging even better informed, motivated and empowered to do so. However, one should not forget that participating in specific REScoop measures is only possible (or at least in the study presented in this report) if one is REScoop member in the first place. In a nutshell, membership, engagement activities and specific measures reinforce each other, and are, arguably, jointly best possible to trigger energy saving behaviours among REScoop members.

4.2 *Part II: investments in renewable energy technology*

4.2.1 Goal achievement: investment by REScoop members

The 2017 survey revealed that half of the REScoop members indicate not to have invested in renewable energy technology since becoming a REScoop member. 24% indicates to have made investments since becoming a REScoop member. 27% indicates wanting to invest in the next few years. Investments are on average in the range of 500-2500 euros. 60% indicates not to have invested in renewable energy prior to becoming a REScoop member. 21% did already invest before becoming a REScoop member. The 2018 survey results confirm these results, but also reveal variation in investments across REScoops, with Enostra members investing relatively much, and SOM Energia members hardly investing at all.

4.2.2 Effectiveness: contribution to investments by REScoops

Influence of REScoops on renewable energy investments

The 2017 revealed that there is a small difference in willingness to investment prior to becoming a REScoop member and after having become a REScoop member. The longer respondents are REScoop members the more willing one becomes to invest, and the more shares they have in their REScoop (the latter a result found in the 2018 Coopernico survey). Moreover, REScoop members and consumers consider financial-economic return on investment of less importance than production and consumption of renewable ('clean') energy. The 2018 survey revealed that REScoop members indicate a payback period of between four and five years as acceptable. At Enostra, however, a longer payback period of between 5 and 7 years is considered acceptable.

There is a significant difference in willingness to invest in renewable energy (future investments) between REScoop members and non-members. REScoop member indicate willing to invest significantly more than those who are not members (confirmed in both the 2017 and 2018 surveys). At SOM Energia (2018 survey) a significant difference was found between members (and those who are both members and clients) and those who are clients but not REscoop members. Finally, 2018 survey data collected at EBO (Hvidovre Fjernvarme, FDHvidovre, and Avedøre) showed a positive significant statistical relationship between those indicating energy savings (since obtaining membership) and investments in energy efficiency equipment. The SOM Energia 2018 survey revealed that the social environment of a REScoop is important to members. The more often one visits REScoop meetings, the more one identifies oneself with SOM Energia and the more one indicates interpersonal trust between REScoop members, the more willing one becomes to invest.

Comparison between groups

The 2017 survey showed that members of immature REScoops (i.e. 'young' REScoops) are more willing to make more future investments in renewable energy technology than members of mature REScoops. This could not be confirmed by the 2018 survey results, though. What it did reveal was that in particular members of Enostra are willing to invest more than members of other REScoops. The 2017 analysis revealed a statistical relationship between years of REScoop membership and investments made. The longer one is a REScoop member the more one intends to invest in renewable energy or has already made investments. The same effect was found for customers of SOM Energia (but to a lower extent).

Rival factors

Rival factors found to statistically correlate to investments in renewable energy (and related operationalisations) concern: behaviour, social factors (in particular social network), knowledge level, demographic factors and household characteristics. Of the last two categories especially income, home size, ownership, but also gender division and presence of kids (below 18 years of age) seem to matter. Although many factors are classified as 'rival' some of them can in fact be influenced by REScoops (excluding demographics and household characteristics). The 2018 survey results showed a significant number of correlations on social factors among EBO, SOM Energia, and Enostra. Persons who like to be seen as using energy efficiently or consuming sustainably showed significant correlations to investment in renewable energy. In addition, this applies to cases in which friends and family also adhere to these values, or are also REScoop members.

Effectiveness: final judgement

Membership: becoming a member of a REScoop can be argued to contribute to making investments in renewable energy technology. Like with energy savings, the longer one is REScoop member the more one becomes willing to invest in renewable energy, and the more one buys shares in one's REScoop. It looks like the social environment the REScoop offers is in common with social norms people have on environmental conservation norms, and experiencing a high level of trust within the REScoops, which in the end triggers willingness to invest.

Engagement: the 2018 SOM Energia survey showed that the more one visits meetings organised by REScoops the more one intends to invest in renewable energy (either in individual or collective plants) and the more one makes actual investments.

Participation in specific REScoop actions and measures: the SOM Energia 2018 survey showed that the using Infoenergia correlates positively to investment in renewable energy technology and having the intention to invest in collective renewable energy plants.

In sum, both membership, engagement activities, and specific measures were found to have positive statistical relations to investment in renewable energy technology. However, when compared to energy savings, there is more emphasis on having the first two conditions present vis-à-vis triggering investment, than focusing on the third one: specific measures. However, we argue that we did not study many REScoop actions particularly focusing on REScoop members investing in renewable energy technology.

5 Appendices effectiveness report REScoop Plus Deliverable D3.4B

5.1 *Appendix A. Response*

Response REScoop Plus surveys 2017 and 2018.

Name REScoop	Total response 2018	Adjusted response 2018 (after cleaning)	Total response 2017
Coopernico	76	56	239
EBO (Hvidovre Fjernvarme, FD	193	161	210
Ecopower	3879	3100	1111
Enercoop	521	487	8805
Enostra	175	145	154
SEV (Italian speaking)	50	43	
SEV (German speaking)	274	248	
SEV (integrated)			66
SOM Energia	2388	2035	
Total	7556	6275	10585

Response survey REScoop Plus 2018

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Coopernico	76	1,0	1,0	1,0
	EBO	193	2,6	2,6	3,6
	Ecopower	3879	51,3	51,3	54,9
	Enercoop	521	6,9	6,9	61,8
	Enostra	175	2,3	2,3	64,1
	SEV-I	50	0,7	0,7	64,8
	SEV-D	274	3,6	3,6	68,4
	SOMenergia	2388	31,6	31,6	100,0
	Total	7556	100,0	100,0	

5.2 *Appendix B. Characteristics of REScoop membership*

RES1: REScoop membership (in %)

Name REScoop	Membership (% ye	Client/customer (%	Both member and client/customer (%)
Coopernico	73,8		
EBO (Hvidovre Fjernvarme, FDHvidc	100%		
Ecopower	6,1	90,8	
Enercoop	24	6,4	62,2
Enostra	31,7	6,2	11,7
SEV (Italian speaking)	51,2		
SEV (German speaking)	95,8		
SOM Energia	28,3	11,7	59,2

RES2: Length of REScoop membership (in years)

Name REScoop	0-1 yrs.	1-2 yrs.	2-3 yrs.	4-5 yrs.	More thar	Mean	SD
Coopernico	29	22,6	16,1	8,9	3,2	2,42	1,18
EBO (Hvidovre Fjernvarme, FDHvidc	27,3	43,5	16,1	5,6	3,7	2,11	1,01
Ecopower	13,2	7,1	2,7	8,2	68,7	4,12	1,48
Enercoop	3,8	19,1	23,7	23,4	29,9	3,56	1,21
Enostra	33,9	19,4	33,9	12,9	0	2,26	1,07
SOM Energia	23,3	15,7	18,9	21,7	20,5	3	1,46

RES7: Value of shares in REScoop (in %)

Name REScoop	No shares	1-60 euro	61-100	101-200	201-400	401-500	501-1000	1001-2000	Mean	Median	SD
Coopernico	17	47,2	5,7	5,7	7,5	9,4	1,9	5,7	2,04	1	2,04
SOM Energia	46,7	33,6	6,4	4,4	1	3,7	2,5	1,6	1,08	1	1,61

Name REScoop	No shares	1-1000	1000-2000	2000-3000	3000-4000	4000-5000	5000-1000	More thar	Mean	Median	Sd.
Ecopower	2,4	70,5	7,1	8,1	1,5	4,3	3,5	2,6	1,75	1	1,57
SEV (Italian speaking)	81,8	3	9,1	3	3	0	0	0	0,42	0	1
SEV (German speaking)	59,5	19	2,6	8,5	5,2	2	2,6	0,7	1	0	1,63

SOC13: How often do you participate in (local) REScoop meetings?

Name of REScoop	Never	At most once a yea	Two to three t	Four to fiv	Six to ten t	More thar	Mean	Median	SD
Ecopower	74,4	16,8	6,7	0	1,6	0,5	0,391	0	0,817
Enercoop	59,2	31,5	4,8	1,9	1	1,7	0,59	0	0,95
Enostra	39,4	36,4	21,2	1,5	0	1,5	0,909	1	0,956
Som Energia	75,9	18,6	2,6	0,9	1,1	1	0,356	0	0,812

5.3 *Appendix C. Energy savings and relation to REScoops*

RES4: Lowering of energy consumption

Name REScoop	No	Yes, I thinl	Yes, I mea	SUM 'Yes'
Coopernico	60	30	10	40
EBO (Hvidovre Fjernvarme, FDHvidovre, and Avedøre	26,7	48,9	24,4	73,3
Ecopower	41,9	33	35	68
Enercoop	50,5	33,3	16,1	49,4
SOM Energia	36,8	52,7	10,5	63,2

RES5: Measurement of energy savings (in%)

Name REScoop	No change	0-2	2-4	4-6	6-8	8-10	10-12	12-14	14-16	16-18	18-20	More thar	Median	SD	Mean	More than 10%
Coopernico	72,2	0	5,6	0	0	5,6	11,1	0	0	5,6	0	0	0	2,86	1,56	16,7
EBO (Hvidovre Fjernvarme	25,8	4,8	3,2	4,8	8,1	19,4	4,8	4,8	3,2	0	6,5	15,5	5	3,91	4,67	34,8
Ecopower	35,4	5,7	5,4	7,3	5,4	9,3	5,6	3,1	2,4	0,7	3,7	15,9	3	4,1	4	31,4
Enercoop	30,1	8,7	4,9	7,8	2,9	17	4,4	1,5	1,5	0,5	2,9	18	3	4,07	4,17	28,8
Enostra	52,4	7,1	7,1	5,6	3,2	10,3	2,4	0,8	0,8	0,8	0,8	8,7	0	3,47	3,47	14,3
SEV (Italian speaking)	62,2	8,1	2,7	0	0	8,1	5,4	0	0	0	5,4	8,1	0	3,81	2,3	18,9
SEV (German speaking)	57,1	11	4,3	6,7	1,2	8	4,9	1,2	1,2	0,6	0,6	3	0	2,82	1,78	11,5
SOM Energia	37,4	10,6	10,9	9,4	6,2	9	4,9	1,6	1,8	1,5	1,6	5,2	2	3,16	2,71	16,6

RES5': Measurement of energy savings -> I actually started using more energy

Name of REScoop	Percentage '
Coopernico	7,7
EBO (Hvidovre Fjernvarme, FDHvidovre, and Avedøre	11,4
Ecopower	15,7
Enercoop	7,2
Enostra	8
SEV (Italian speaking)	9,8
SEV (German speaking)	12,8
SOM Energia	4,5

5.4 *Appendix D. Satisfaction with REScoop energy services*

SAT1: After having joined a REScoop energy savings have become more important to me (in %).

Name REScoop	Strongly d	Disagree	Neutral	Agree	Strongly a	Mean	SD
Coopernico	6,9	24,1	27,6	37,9	3,4	3,07	1,033
EBO (Hvidovre Fjernvarme	7,9	16,6	53	19,2	3,3	2,93	0,889
Ecopower	4,4	11,3	43,8	28,4	13	3,34	0,989
Enercoop	7	12,9	33,3	33,1	13,7	3,34	1,084
Enostra	4,5	12,1	34,8	33,3	15,2	3,42	1,039
SOM Energia	2,1	5,4	35,8	39,5	17,2	3,64	0,901

SAT2: REScoop has contributed to that I save more energy in my household (in %).

Name REScoop	Strongly d	Disagree	Neutral	Agree	Strongly a	Mean	SD
Coopernico	10,3	24,1	44,8	20,7	0	2,76	0,912
EBO (Hvidovre Fjernvarme	7,7	18,9	47,6	22,4	3,5	2,95	0,929
Ecopower	4	18,7	44,9	26,5	5,9	3,12	0,914
Enercoop	5,5	18,1	37,2	28,4	10,7	3,21	1,036
SOM Energia	1,5	6,3	39,3	38,9	14,1	3,58	0,86

SAT6: REScoop contributing to increased knowledge about renewable energy (in %).

Name REScoop	Strongly d	Disagree	Neutral	Agree	Strongly a	Mean	SD
Coopernico	6,9	20,7	20,7	41,4	10,3	3,28	1,13
EBO (Hvidovre Fjernvarme	2,7	11,4	33,6	47,7	4,7	3,4	0,854
Ecopower	5,8	26,2	33,7	28,9	5,4	3,02	1
Enercoop	3,1	11,2	29,4	39,6	16,7	3,56	0,997
Enostra	1,4	1,4	17,4	52,2	27,5	4,03	0,804
SEV (Italian speaking)	0	0	28,2	59	12,8	3,85	0,63
SEV (German speaking)	3,1	14,3	33	31,3	18,3	3,47	1,046
SOM Energia	2	6,4	22,4	52,6	16,6	3,75	0,876

SAT7: REScoops offer better energy services than other energy service providers (in %).

Name REScoop	Strongly d	Disagree	Neutral	Agree	Strongly a	Mean	SD
Coopernico	0	4,8	52,4	33,3	9,5	3,48	0,75
EBO (Hvidovre Fjernvarme	0,8	5,7	81,1	9,8	2,5	3,07	0,533
Enercoop	1,9	6,9	34,4	34,7	22	3,68	0,956
Enostra	0	1,6	20,3	46,9	31,3	4,08	0,762
SOM Energia	0,4	1	17,1	46	35,5	4,15	0,761

SAT8: Satisfaction with service provision REScoop (in %)

Name REScoop	Strongly d	Disagree	Neutral	Agree	Strongly a	Mean	SD
Coopernico	0	5	30	25	40	4	0,973
EBO (Hvidovre Fjernvarme	3	6	35,3	48,9	6,8	3,5	0,831
Enercoop	0,2	3,6	12,4	45	38,8	4,18	0,803
Enostra	0	0	7,7	58,2	34,3	4,27	0,592
SEV (Italian speaking)	0	2,4	7,1	45,2	45,2	4,33	0,721
SEV (German speaking)	0,4	1,2	6,9	35,1	56,3	4,46	0,715
SOM Energia	0,1	0,6	4,8	43,5	51	4,45	0,621

5.5 *Appendix E. Energy curtailment behaviour (conservation - energy savings through behavioural change)*

ESAV1: I lower the house temperature (the thermostat) when I leave my house (in %).

Name REScoop	No	Yes	Mean	SD
Coopernico	20	80	0,8	0,407
Enostra	9,6	90,4	0,94	0,295

ESAV1': Lowering the house temperature attributed to REScoop (in %).

Name REScoop	No	Yes, but n	Yes, fairly	Yes, to a r	Yes, to a la	Mean	SD
EBO	98,1	0	1,9	0	0	0,374	0,272
Ecopower	17	61,7	8,5	4,3	8,5	1,255	1,073
Enercoop	13,4	70,9	10,3	4,1	1,4	1,093	0,721
SOM Energia	9,1	78,1	6,1	4,7	2,1	1,125	0,714

ESAV2: I turn off the lights when I leave rooms or my house (in %).

Name REScoop	No	Yes	Mean	SD			
Coopernico	32,1	67,9	0,679	0,471			
Name REScoop	No	Yes, but n	Yes, fairly	Yes, to a r	Yes, to a la	Mean	SD
Enercoop	0	88	6,7	3,4	1,9	1,192	0,581
SOM Energia	0,4	87,6	6	4	2	1,195	0,604

ESAV5: I adjust the thermostat to a lower temperature (e.g., 1 or more degrees lower) (in %).

Name REScoop	No	Yes	Mean	SD			
Coopernico	42,3	57,7	0,577	0,504			
Enostra	16,4	83,6	0,836	0,372			
Name REScoop	No	Yes, but n	Yes, fairly	Yes, to a r	Yes, to a la	Mean	SD
Enercoop	12,6	71,6	8,8	5,3	1,7	1,117	0,75
SOM Energia	9	72,9	9,4	6,4	2,3	1,201	0,779

ESAV6: I'm taking shorter showers (in %).

Name REScoop	No	Yes	Mean	SD			
Coopernico	44,8	55,2	0,552	0,506			
Enostra	23,5	76,5	0,765	0,426			
Name REScoop	No	Yes, but n	Yes, fairly	Yes, to a r	Yes, to a la	Mean	SD
Enercoop	9,8	78,9	6,7	3,6	1	1,069	0,625
SOM Energia	28,7	50,5	5,4	3,9	1,5	0,891	0,788

ESAV7: I put electrical home appliances out of standby-mode (e.g. by using a 'standby-killer') (in%).

Name REScoop	No	Yes	Mean	SD			
Coopernico	43,3	56,7	0,567	0,504			
Enostra	51,1	48,9	0,489	0,502			
Name REScoop	No	Yes, but n	Yes, fairly	Yes, to a r	Yes, to a la	Mean	SD
Enercoop	12,4	51,4	10,5	12,4	13,2	1,624	1,235
SOM Energia	27,9	52,2	6,8	5,8	4,6	1,043	0,996

5.6 *Appendix F. Energy efficiency behaviour (i.e., adoption of efficient energy technology)*

ESAV4: When buying a washing machine, refrigerator, freezer I select the one with a high energy efficiency level (i.e., A++ label) (in%).

Name REScoop	No	Yes	Mean	SD			
Coopernico	6,7	93,3	0,933	0,254			
Enostra	0	100	1	0			
Name REScoop	No	Yes, but n	Yes, fairly	Yes, to a r	Yes, to a la	Mean	SD
Enercoop	4,8	72	13,4	6,7	3,1	1,313	0,796
SOM Energia	0,9	78,7	10	6,8	3,7	1,338	0,774

ESAV8: I installed thermal insulation in my home (in %).

Name REScoop	No	Yes	Mean	SD			
Coopernico	17,9	82,1	0,821	0,39			
Enostra	53,6	46,4	0,464	0,501			
Name REScoop	No	Yes, but n	Yes, fairly	Yes, to a r	Yes, to a la	Mean	SD
Enercoop	41,7	53,3	2,9	1,2	1	0,665	0,685
SOM Energia	59	35,5	2,6	1,9	0,9	0,502	0,727

ESAV9: I changed incandescent lightning to energy effient lightning (e.g. , LED lightning) (in %).

Name REScoop	No	Yes	Mean	SD			
Coopernico	27,6	72,4	0,724	0,455			
Enostra	14,1	85,9	0,859	0,349			
Name REScoop	No	Yes, but n	Yes, fairly	Yes, to a r	Yes, to a la	Mean	SD
Enercoop	8,2	61,6	11,5	10,3	8,4	1,492	1,06
SOM Energia	6,6	71,7	10,4	7,4	4	1,306	0,855

ESAV11: I installed solar panels to my home (either solar thermal or PV) (in %).

Name REScoop	No	Yes	Mean	SD			
Coopernico	23,4	76,6	0,766	0,428			
Enostra	63,6	36,4	0,364	0,483			
Enercoop	77,1	22,9	0,229	0,421			
Name REScoop	No	Yes, but n	Yes, fairly	Yes, to a r	Yes, to a la	Mean	SD
SOM Energia	88,1	8,8	0,7	1,1	1,3	0,1854	0,618

ESAV12: I installed a heat pump in my home.

Name REScoop	No	Yes	Mean	SD			
Coopernico	37,8	62,2	0,622	0,49			
Enostra	76,8	23,2	0,232	0,424			
Enercoop	91,6	8,4	0,084	0,278			
Name REScoop	No	Yes, but n	Yes, fairly	Yes, to a r	Yes, to a la	Mean	SD
SOM Energia	82,6	15,8	0,7	0,6	0,4	0,204	0,506

5.7 *Appendix G. Investment*

INV1: Historical investment (How much did you approximately invest in renewable energy generation appliances (individually applied to your home) after you became a member of a REScoop?) (in %).

Name REScoop	Nothing	0-2500	2501-5000	5001-7500	More than	Mean	SD
Coopernico	51,6	12,9	19,4	6,5	9,7	1,0968	1,375
EBO (Hvidovre Fjernvarme	58,5	28	2,5	4,2	6,8	0,729	1,152
Enostra	45,7	5,5	7,1	4,7	37	1,819	1,845
SOM Energia	85,6	7,9	2,9	1,3	2,2	0,266	0,776

INV2: Intention to invest (How much do you intend to invest in renewable energy generation appliances (individually applied to your home) in the near future?) (in %).

Name REScoop	Nothing	0-2500	2501-5000	5001-7500	More than	Mean	SD
Coopernico	76,7	16,7	0	3,3	3,3	0,367	0,85
EBO (Hvidovre Fjernvarme	50,9	9,4	34	3,8	1,9	0,962	1,086
Enostra	21,4	26,2	25,2	9,7	17,5	1,757	1,368
SOM Energia	52,9	20	15,1	7,3	4,7	0,91	1,178

INV3: Intention to invest (How much do you intend to invest in collective renewable energy generation projects in the near future?) (in %).

Name REScoop	Nothing	0-2500	2501-5000	5001-7500	More than	Mean	SD
Coopernico	17,9	39,3	21,4	7,1	14,3	1,607	1,286
SOM Energia	34,6	13	44,8	4,5	3,1	1,286	1,083

PP1: Acceptable payback period (energy efficiency appliances)

Name Rescoop	I won't inv	0-1 yrs.	1-2 yrs.	2-3 yrs.	3-4 yrs.	4-5 yrs.	5-7 yrs.	8-10 yrs.	More than	Mean	Median	SD
Coopernico	1,9	0	15,4	15,4	13,5	46,2	1,9	3,8	1,9	4,154	5	1,513
EBO (Hvidovre Fjernvarme	24,1	0,9	1,9	1,9	4,6	28,7	17,6	11,1	9,3	4,296	5	2,735
Enostra	5,1	2,9	7,3	12,4	7,3	27,7	16,8	12,4	8	4,474	5	2,079
SEV (Italian speaking)	11,4	2,9	8,6	5,7	17,1	34,3	5,7	11,4	2,9	4,143	5	2,158
SEV (German speaking)	15,4	3,3	1,6	9,3	7,7	30,2	12,6	13,2	6,6	4,374	5	2,421
SOM Energia	11	1,5	5	11,1	8,7	27,8	10,4	13,9	10,6	4,631	5	2,336

PP2: Acceptable payback period (renewable energy technology)

Name Rescoop	I won't inv	0-1 yrs.	1-2 yrs.	2-3 yrs.	3-4 yrs.	4-5 yrs.	5-7 yrs.	8-10 yrs.	More than	Mean	Median	SD
Coopernico	1,9	0	7,7	9,6	11,5	44,2	15,4	3,8	5,8	4,769	5	1,579
Enostra	4,5	2,3	4,5	8,3	7,5	24,1	25,6	15	8,3	5,113	5	1,98
SEV (Italian speaking)	17,6	0	11,8	14,7	11,8	23,5	11,8	5,9	2,9	3,677	4	2,279
SEV (German speaking)	19,9	1,7	3,4	5,7	6,8	25,6	11,4	18,8	6,8	4,347	5	2,634
SOM Energia	11,1	4,7	12,2	23,8	14	17,6	8	2,1	6,6	3,6	3	2,124

5.8 *Appendix H. Interventions by EBO*

[RES3] Sagde du ja til at få en pakkeløsning, da du skulle have fjernvarme? Og i hvilket omfang har du været tilfreds med pakkeløsningen?

	Yes, and satisfied	Yes, and somewhat satisfied	Yes, and not satisfied	No	Total
Raw	85	42	11	7	145
Relative	58,6%	29,0%	7,6%	4,8%	100,0%

[RES9] Did you choose the package approach when installing district heating?

	Yes	No	Total
Raw	132	17	149
Relative	88,6%	11,4%	100,0%

[RES10] To which extend are you satisfied with the package approach?

	Very satisfied	Satisfied	Neutral	Not satisfied	Not satisfied at all	Total
Raw	43	70	14	10	2	139
Relative	30,9%	50,4%	10,1%	7,2%	1,4%	100,0%

[RES11] Why did you choose the package approach?

	It was cheap	It was easy	The package app	I trusted that the	I chose the package ap	Total
Raw	12	17	2	53	54	138
Relative	8,7%	12,3%	1,4%	38,4%	39,1%	100,0%

[RES12] Would you recommend the package approach to others?

	No	Not likely	Probably	Most likely	Total
Raw	4	5	51	79	139
Relative	2,9%	3,6%	36,7%	56,8%	100,0%

[RES4] Do you consume less energy since you are a member of a REScoop? [Service ordning]

	Yes, and I measured this	Yes, I think so	No	Total
Raw	8	44	24	76
Relative	10,5%	57,9%	31,6%	100,0%

[RES4] Do you consume less energy since you are a member of a REScoop? [Technical service]

	Very satisfied	Satisfied	Neutral	Not satisfied	Not satisfied at all	Total
Raw	10	17	43	4	2	76
Relative	13,2%	22,4%	56,6%	5,3%	2,6%	100,0%

[RES16] Would you recommend the technical service to others?

	No	Not likely	Probably	Most likely	Total
Raw	4	4	48	36	92
Relative	4,3%	4,3%	52,2%	39,1%	100,0%

5.9 *Appendix H. Interventions by Ecopower*

[SAT1] After starting using EnergieID, energy savings have become more important to me.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	31	1,0	4,4	4,4
	Disagree	80	2,6	11,3	15,7
	Neutral	302	9,7	42,8	58,6
	Agree	200	6,5	28,4	87,0
	Strongly Agree	92	3,0	13,0	100,0
	Total	705	22,7	100,0	
Missing	999	2395	77,3		
Total		3100	100,0		

[SAT2] EnergieID has contributed that I save more energy in my household.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	28	0,9	4,0	4,0
	Disagree	132	4,3	18,7	22,7
	Neutral	317	10,2	44,9	67,6
	Agree	187	6,0	26,5	94,1
	Strongly Agree	42	1,4	5,9	100,0
	Total	706	22,8	100,0	
Missing	999	2394	77,2		
Total		3100	100,0		

[SAT3] After I started using EnergieID local production of renewable energy has become more important to me.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	39	1,3	5,7	5,7
	Disagree	166	5,4	24,2	29,9
	Neutral	323	10,4	47,2	77,1
	Agree	120	3,9	17,5	94,6
	Strongly Agree	37	1,2	5,4	100,0
	Total	685	22,1	100,0	
Missing	999	2415	77,9		
Total		3100	100,0		

[SAT4] EnergieID has contributed to me producing renewable energy at home.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	84	2,7	13,3	13,3
	Disagree	269	8,7	42,5	55,8
	Neutral	190	6,1	30,0	85,8
	Agree	67	2,2	10,6	96,4
	Strongly Agree	23	0,7	3,6	100,0
	Total	633	20,4	100,0	
Missing	999	2467	79,6		
Total		3100	100,0		

[SAT20] Are you measuring your energy us with EnergieID (www.energieID.be)?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	2053	66,2	69,2	69,2
	Yes	519	16,7	17,5	86,7
	Yes, and I'm also part of the 'Ecopower group' within EnergieID.	205	6,6	6,9	93,6
	I once started, but I'm not active anymore’	189	6,1	6,4	100,0
	Total	2966	95,7	100,0	
Missing	999,00	134	4,3		
Total		3100	100,0		

5.10 *Appendix I. Interventions by Enercoop*

[Ener1] Have you participated in the Dr Watt program offered by Enercoop?

	No	Yes, but I a	Yes, I am satisfied	Yes, I am very satisfied	Total
Raw	295	11	111	56	473
Relative	62,4%	2,3%	23,5%	11,8%	100,0%

[Ener2] Would you recommend Dr Watt to others (e.g., your peers)?

	No	Not likely	Probably	Yes	Total
Raw	2	17	47	111	177
Relative	1,1%	9,6%	26,6%	62,7%	100,0%

[Ener3] Do you consider that the Dr Watt program has helped you reduce your consumption of electricity?

	Yes	No	Total
Raw	125	31	156
Relative	80,1%	19,9%	100,0%

[Ener4] Have you ever been on the Energy Savings Wiki of Enercoop?

	No	Yes, and not satisfied	Yes, and satisfied	Yes, and very satisfied	Total
Raw	274	9	85	106	474
Relative	57,8%	1,9%	17,9%	22,4%	100,0%

[Ener5] Would you recommend the Energy Savings Wiki to others (e.g., your peers)?

	No	Not likely	Probably	Yes	Total
Raw	4	12	104	77	197
Relative	2,0%	6,1%	52,8%	39,1%	100,0%

[Ener6] Do you consider that the Energy Savings Wiki of Enercoop has helped you reduce your consumption of electricity?

	Yes	No	Total
Raw	51	70	121
Relative	42,1%	57,9%	100,0%

[Ener7] Do you read the energy savings tip of the month (conseil du mois) published in Enercoop's Newsletter?

	No	Yes, and not satisfied	Yes and satisfied	Yes and very satisfied	Total
Raw	217	7	115	122	461
Relative	47,1%	1,5%	24,9%	26,5%	100,0%

[Ener8] Do you consider that the energy savings tip of the month has helped you reduce your consumption of electricity?

	Yes	No	Total
Raw	39	99	138
Relative	28,3%	71,7%	100,0%

[Ener9] I am convinced that digital tools are a good way to inform on energy consumption and help to reduce it.

	Yes	No	Total
Raw	313	32	345
Relative	90,7%	9,3%	100,0%

[Ener10] I would be ready to use digital tools to reduce my energy consumption .

	Yes	No	Total
Raw	324	45	369
Relative	87,8%	12,2%	100,0%

5.11 *Appendix J. Interventions by Enostra*

[CHAR10] Which services of ènostra/Retenergie for autoproduction and energy saving might be of interest for you?

Option	Raw frequency	Relative frequency
PV and storage systems	38	32%
Solar thermal panels	8	7%
Charging station and solutions for electric vehicles	23	19%
Thermal insulation of building	23	19%
Solutions to improve efficiency of thermal system	5	4%
Energy performanc ecertificates and monitoring of consumption	22	18%
Total	119	100,0%

5.12 *Appendix K. Interventions by SOM Energia*

[RES201] Have you received information about our service Infoenergia (%)?

	Yes	No	Total
Raw	933	688	1621
Relative	58%	42%	100%

[RES51] Did you use Infoenergia recommendations offered by Som Energia (%)?

	Yes	No	Total
Raw	676	160	836
Relative	81%	19%	100%

[BEH71] Infoenergia services is useful to encourage efficiency actions in my household (%).

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	8	0,4	0,9	0,9
	Disagree	19	0,9	2,1	3,0
	Neutral	106	5,2	11,7	14,7
	Agree	414	20,3	45,8	60,6
	Strongly Agree	356	17,5	39,4	100,0
	Total	903	44,4	100,0	
Missing	System	1132	55,6		
Total		2035	100,0		

[BEH72] Would you recommend Infoenergia to others (e.g., your peers)?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	9	0,4	1,0	1,0
	Not likely	32	1,6	3,6	4,7
	Probably	290	14,3	32,9	37,6
	Most likely	550	27,0	62,4	100,0
	Total	881	43,3	100,0	
Missing	System	1154	56,7		
Total		2035	100,0		

[RES54] Were you part of a Tupper watt meeting?

	Yes	No	Total
Raw	6	1874	1880
Relative	0,3%	99,7%	100,0%

[RES55] To what extent are you satisfied with the implementation of Tupper watt meetings?

	Hardly satisfied	Satisfied	Very satisfied	Total
Raw	1	6	4	11
Relative	9,1%	54,5%	36,4%	100,0%

[RES56] Would you recommend Tupper Watt meetings to others (e.g. your peers)?

	Not likely	Probably	Most likely	Total
Raw	7	35	20	62
Relative	11,3%	56,5%	32,3%	100,0%

SOC20: My active participation in my local group of Som Energia has impact in the development of it.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	343	16,9	28,7	28,7
	Disagree	181	8,9	15,2	43,9
	Neutral	514	25,3	43,0	86,9
	Agree	120	5,9	10,1	97,0
	Strongly agree	36	1,8	3,0	100,0
	Total	1194	58,7	100,0	
Missing	999,00	841	41,3		
Total		2035	100,0		

5.13 *Appendix L. Background variables (Ecopower, 2018)*

Socio-demographics (bivariate correlations x energy saving intention and behaviour).

		In case you measure your energy use, how much did you save compared with before you became customer of ECOPOWER?	I have the intention to lower my energy consumption patterns intensively	I have the intention to only use energy that has been produced locally
Are any kids living in your household (18 years of age or younger)?	Pearson Correlation	0,016	,121**	-0,001
	Sig. (1-tailed)	0,295	0,000	0,480
	N	1117	2335	2323
What is the average age of the household members (age in number of years)?	Pearson Correlation	-0,028	0,001	0,000
	Sig. (1-tailed)	0,164	0,474	0,497
	N	1239	2549	2543
How many members has your household?	Pearson Correlation	0,009	-,083**	0,008
	Sig. (1-tailed)	0,373	0,000	0,353
	N	1235	2541	2535
What is the gender division of the household members?	Pearson Correlation	-0,023	0,010	0,028
	Sig. (1-tailed)	0,209	0,307	0,080
	N	1220	2518	2513

**. Correlation is significant at the 0.01 level (1-tailed).

*. Correlation is significant at the 0.05 level (1-tailed).

			In case you measure your energy use, how much did you save compared with before you became customer of ECOPOWER?	I have the intention to lower my energy consumption patterns intensively
	What is the household income (per year), classified into	Correlation Coefficient	0,047	-,102**
		Sig. (1-tailed)	0,070	0,000
		N	992	2318
	What is the highest educational level among the household members?	Correlation Coefficient	,093**	-,109**
		Sig. (1-tailed)	0,001	0,000
		N	1053	2450
	What is the (estimated) size of your home (in square meters floor space)?	Correlation Coefficient	0,017	-0,030
		Sig. (1-tailed)	0,285	0,067
		N	1080	2477
	Do you own the house or rent the house you are living in?	Correlation Coefficient	-0,022	0,024
		Sig. (1-tailed)	0,236	0,115
		N	1081	2494
	When was your house constructed?	Correlation Coefficient	-0,025	-,038*
		Sig. (1-tailed)	0,202	0,028
		N	1098	2525

Type of primary energy used.

What is the primary energy carrier you use at home?		In case you measure your energy use, how much did you save compared with before you became customer of ECOPOWER?	I have the intention to lower my energy consumption patterns intensively	I have the intention to only use energy that has been produced locally
Electrons (electrity)	Mean	5,1786	3,21	3,41
	N	28	61	64
	Std. Deviation	5,00410	1,066	1,003
Natural gas	Mean	3,9903	2,98	3,07
	N	720	1727	1716
	Std. Deviation	4,07628	0,854	0,903
Biomethane (green gas)	Mean	4,3231	3,14	3,40
	N	65	140	144
	Std. Deviation	4,69077	0,998	1,066
Heat from district heating (non-sustainable energy source	Mean	3,8051	3,05	3,11
	N	195	391	383
	Std. Deviation	3,80897	0,758	0,888
Heat from district heating (sustainable energy source, like wood)	Mean	4,4390	3,23	3,52
	N	82	190	194
	Std. Deviation	4,40285	0,883	0,967
Total	Mean	4,0413	3,03	3,14
	N	1090	2509	2501
	Std. Deviation	4,11978	0,859	0,929

Year of construction of house.

When was your house constructed?		In case you measure your energy use, how much did you save compared with before you became customer of ECOPOWER?	I have the intention to lower my energy consumption patterns intensively	I have the intention to only use energy that has been produced locally
Before 1900	Mean	3,1475	3,05	3,18
	N	61	173	175
	Std. Deviation	3,83769	0,855	0,923
1900-1950	Mean	4,0051	3,03	3,17
	N	196	508	507
	Std. Deviation	4,14543	0,854	0,927
1950-1970	Mean	4,3911	3,02	3,16
	N	179	445	439
	Std. Deviation	4,02843	0,862	0,919
1970s	Mean	4,2404	3,12	3,11
	N	183	337	339
	Std. Deviation	4,11338	0,780	0,872
1980s	Mean	4,3066	3,09	3,08
	N	137	269	274
	Std. Deviation	4,10982	0,817	0,947
1990s	Mean	4,3776	3,11	3,09
	N	143	298	289
	Std. Deviation	4,31637	0,883	0,935
2000-2010	Mean	2,6429	2,85	3,11
	N	112	273	274
	Std. Deviation	3,49480	0,832	0,907
After 2010	Mean	4,2414	2,91	3,24
	N	87	222	223
	Std. Deviation	4,60527	0,977	1,010
Total	Mean	4,0255	3,03	3,14
	N	1098	2525	2520
	Std. Deviation	4,12336	0,858	0,927

Home ownership

Do you own the house or rent the house you are living in?		In case you measure your energy use, how much did you save compared with before you became customer of ECOPOWER?	I have the intention to lower my energy consumption patterns intensively	I have the intention to only use energy that has been produced locally
Rent	Mean	4,2500	2,95	3,09
	N	36	149	149
	Std. Deviation	3,72156	0,849	0,954
Own	Mean	4,0115	3,03	3,15
	N	1045	2345	2342
	Std. Deviation	4,13098	0,861	0,929
Total	Mean	4,0194	3,03	3,15
	N	1081	2494	2491
	Std. Deviation	4,11665	0,860	0,930

Home size (sqm floor space)

What is the (estimated) size of your home (in square meters floor space)?		In case you measure your energy use, how much did you save compared with before you became customer of ECOPOWER?	I have the intention to lower my energy consumption patterns intensively	I have the intention to only use energy that has been produced locally
30 or less	Mean	5,0526	3,16	3,15
	N	19	55	53
	Std. Deviation	4,60041	1,032	1,008
50-70	Mean	4,6000	3,02	3,21
	N	45	115	117
	Std. Deviation	4,21793	0,848	0,849
70-90	Mean	3,2923	3,05	3,28
	N	65	191	185
	Std. Deviation	3,78204	0,835	0,929
90-110	Mean	3,9874	3,02	3,13
	N	159	371	364
	Std. Deviation	4,08918	0,862	0,899
110-130	Mean	3,6859	3,05	3,18
	N	191	442	452
	Std. Deviation	3,83691	0,815	0,877
130-150	Mean	4,0221	3,02	3,07
	N	226	497	497
	Std. Deviation	4,05895	0,817	0,883
More than 150	Mean	4,2613	2,99	3,13
	N	375	806	805
	Std. Deviation	4,34119	0,898	1,000
Total	Mean	4,0389	3,02	3,14
	N	1080	2477	2473
	Std. Deviation	4,12798	0,858	0,929

Education level

What is the highest educational level among the household members?		In case you measure your energy use, how much did you save compared with before you became customer of ECOPOWER?	I have the intention to lower my energy consumption patterns intensively	I have the intention to only use energy that has been produced locally
elementary school	Mean	4,0714	2,90	3,14
	N	14	29	28
	Std. Deviation	4,53133	0,557	0,651
high school	Mean	3,6481	3,09	3,22
	N	216	441	440
	Std. Deviation	4,01002	0,846	0,872
secondary vocational school	Mean	3,4138	3,34	3,28
	N	58	116	118
	Std. Deviation	3,47944	0,803	0,783
university of applied sciences BA	Mean	3,3947	3,10	3,22
	N	190	412	407
	Std. Deviation	3,84859	0,834	0,916
university BA	Mean	4,6351	3,06	3,18
	N	222	526	522
	Std. Deviation	4,29429	0,840	0,921
university MA	Mean	4,4702	2,91	3,05
	N	336	845	851
	Std. Deviation	4,29915	0,893	0,987
postdoctoral study	Mean	5,7059	2,84	3,04
	N	17	80	82
	Std. Deviation	4,70059	0,803	0,999
Total	Mean	4,0988	3,02	3,15
	N	1053	2450	2449
	Std. Deviation	4,15408	0,860	0,932

5.14 *Appendix M. T-tests REScoop membership*

Energy savings

Ecopower

Group Statistics

Are you a customer of Ecopower for electricitysupply?		N	Mean	Std. Deviation	Std. Error Mean
I have the intention to only use energy that has been produced locally	Yes	2324	3,15	0,929	0,019
	No, only cooperationmember	155	2,94	0,884	0,071

a. t cannot be computed because at least one of the groups is empty.

Independent Samples Test

		Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Interval of the Lower	Interval of the Upper
I have the intention to only use energy that has been produced locally	Equal variances assumed	2,805	0,094	2,700	2477	0,007	0,207	0,077	0,057	0,358
	Equal variances not assumed			2,817	177,412	0,005	0,207	0,074	0,062	0,353

Are you a customer of Ecopower for electricitysupply?		N	Mean	Std. Deviation	Std. Error Mean
I have the intention to lower my energy consumption patterns intensively	No, only cooperationmember	158	3,10	0,831	0,066
	No, neither customer nor cooperationmember	41	3,63	0,767	0,120
I have the intention to only use energy that has been produced locally	No, only cooperationmember	155	2,94	0,884	0,071
	No, neither customer nor cooperationmember	42	3,45	0,968	0,149

a. t cannot be computed because at least one of the groups is empty.

Independent Samples Test

		Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Interval of the Lower	Interval of the Upper
I have the intention to lower my energy consumption patterns intensively	Equal variances assumed	0,126	0,723	-3,716	197	0,000	-0,533	0,143	-0,816	-0,250
	Equal variances not assumed			-3,896	66,521	0,000	-0,533	0,137	-0,806	-0,260
I have the intention to only use energy that has been produced locally	Equal variances assumed	1,438	0,232	-3,251	195	0,001	-0,510	0,157	-0,820	-0,201
	Equal variances not assumed			-3,087	60,828	0,003	-0,510	0,165	-0,841	-0,180

Energy savings
Enercoop

Are you		N	Mean	Std. Deviation	Std. Error Mean
I have the intention to only use energy that has been produced locally.	A member of Enercoop	116	3,92	0,886	0,082
	Neither a consumer nor a member of Enercoop	36	3,08	0,906	0,151

a. t cannot be computed because at least one of the groups is empty.

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
I have the intention to only use energy that has been produced locally.	Equal variances assumed	0,009	0,923	4,937	150	0,000	0,839	0,170	0,503	1,175
	Equal variances not assumed			4,878	57,312	0,000	0,839	0,172	0,495	1,183

Are you		N	Mean	Std. Deviation	Std. Error Mean
I have the intention to only use energy that has been produced locally.	Both a consumer and a member of Enercoop	303	3,78	0,908	0,052
	Neither a consumer nor a member of Enercoop	36	3,08	0,906	0,151

a. t cannot be computed because at least one of the groups is empty.

Independent Samples Test

		Equality of Variances		t-test for Equality of Means						
									Interval of the	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
I have the intention to only use energy that has been produced locally.	Equal variances assumed	0,018	0,892	4,327	337	0,000	0,692	0,160	0,378	1,007
	Equal variances not assumed			4,332	43,764	0,000	0,692	0,160	0,370	1,014

Investment

SOM Energia

Group Statistics

Are you member of Som Energia?		N	Mean	Std. Deviation	Std. Error Mean
How much do you intend to invest in collective renewable energy generation projects in the near future?	Yes, I'm a member and also a client	685	1,3270	1,04905	0,04008
	No, I'm only a client	98	0,9286	1,08647	0,10975

Independent Samples Test

		Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Interval of the Lower	Interval of the Upper
How much do you intend to invest in collective renewable energy generation projects in the near future?	Equal variances assumed	3,459	0,063	3,501	781	0,000	0,39844	0,11381	0,17503	0,62184
	Equal variances not assumed			3,410	124,288	0,001	0,39844	0,11684	0,16718	0,62969

Group Statistics

Are you member of Som Energia?		N	Mean	Std. Deviation	Std. Error Mean
How much do you intend to invest in collective renewable energy generation projects in the near future?	Yes. I'm a member	339	1,3215	1,13047	0,06140
	No, I'm only a client	98	0,9286	1,08647	0,10975

Independent Samples Test

		Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Interval of the Lower	Interval of the Upper
How much do you intend to invest in collective renewable energy generation projects in the near future?	Equal variances assumed	0,333	0,564	3,057	435	0,002	0,39296	0,12855	0,14031	0,64561
	Equal variances not assumed			3,125	162,647	0,002	0,39296	0,12576	0,14464	0,64129

5.15 *Appendix N. Bivariate correlations motivational items x energy saving intention and behaviour [Enercoop]*

Correlations

		In case you measured your energy consumption yourself, or received information on energy consumption by your energy supp	I have the intention to lower my energy consumption intensively	I have the intention to only use energy that has been produced locally.
In case you measured your energy consumption yourself, or received information on energy consumption by your energy supp	Pearson Correlation	1	,253**	0,002
	Sig. (1-tailed)		0,000	0,491
	N	206	206	206
I have the intention to lower my energy consumption intensively	Pearson Correlation	,253**	1	,319**
	Sig. (1-tailed)	0,000		0,000
	N	206	486	485
I have the intention to only use energy that has been produced locally.	Pearson Correlation	0,002	,319**	1
	Sig. (1-tailed)	0,491	0,000	
	N	206	485	486
Production of renewable energy is important	Pearson Correlation	-0,048	0,042	,124**
	Sig. (1-tailed)	0,247	0,178	0,003
	N	205	485	485
A lower energy price is more important to me than if it is sustainable energy	Pearson Correlation	-0,101	-0,065	-,147**
	Sig. (1-tailed)	0,076	0,075	0,001
	N	205	485	485
Environmental issues matter to me	Pearson Correlation	0,070	0,058	,131**
	Sig. (1-tailed)	0,161	0,102	0,002
	N	204	483	483
I do not like the use of nuclear energy	Pearson Correlation	-0,054	,096*	,237**
	Sig. (1-tailed)	0,221	0,018	0,000
	N	206	485	485
Global climate change is important. It needs to be prevented.	Pearson Correlation	0,041	,121**	,142**
	Sig. (1-tailed)	0,280	0,004	0,001
	N	206	486	486
To reach societal goals we can organize ourelves best in local communities	Pearson Correlation	0,023	,144**	,331**
	Sig. (1-tailed)	0,374	0,001	0,000
	N	206	486	486
I distrust large-scale traditional energy companies	Pearson Correlation	,122*	0,053	,238**
	Sig. (1-tailed)	0,040	0,121	0,000
	N	206	485	485
National government policy mainly supports traditional (centralized) energy systems	Pearson Correlation	-0,013	,140**	,280**
	Sig. (1-tailed)	0,425	0,001	0,000
	N	206	486	485

**. Correlation is significant at the 0.01 level (1-tailed).

*. Correlation is significant at the 0.05 level (1-tailed).

Bivariate correlations motivational items x energy saving intention and behaviour [Ecopower]

		In case you measure your energy use, how much did you save compared with before you became customer of ECOPOWER?	I have the intention to lower my energy consumption patterns intensively	I have the intention to only use energy that has been produced locally
In case you measure your energy use, how much did you save compared with before you became customer of ECOPOWER?	Pearson Correlation	1	,265**	,104**
	Sig. (1-tailed)		0,000	0,000
	N	1239	1026	1019
I have the intention to lower my energy consumption patterns intensively	Pearson Correlation	,265**	1	,344**
	Sig. (1-tailed)	0,000		0,000
	N	1026	2549	2466
I have the intention to only use energy that has been produced locally	Pearson Correlation	,104**	,344**	1
	Sig. (1-tailed)	0,000	0,000	
	N	1019	2466	2543
Production of renewable energy is important	Pearson Correlation	0,034	-0,008	,036*
	Sig. (1-tailed)	0,131	0,338	0,037
	N	1097	2536	2530
A lower energy price is more important to me than if it is sustainable energy	Pearson Correlation	-,119**	0,011	-,184**
	Sig. (1-tailed)	0,000	0,294	0,000
	N	1096	2537	2532
Environmental issues matter to me	Pearson Correlation	0,044	,066**	,142**
	Sig. (1-tailed)	0,073	0,000	0,000
	N	1097	2534	2528
I do not like the use of nuclear energy	Pearson Correlation	,058*	,066**	,240**
	Sig. (1-tailed)	0,028	0,000	0,000
	N	1090	2527	2523
Global climate change is important. It needs to be prevented.	Pearson Correlation	0,042	,075**	,143**
	Sig. (1-tailed)	0,085	0,000	0,000
	N	1090	2517	2513
To reach societal goals we can organize ourselves best in local communities	Pearson Correlation	0,045	,142**	,325**
	Sig. (1-tailed)	0,070	0,000	0,000
	N	1072	2510	2505
I distrust large-scale traditional energy companies	Pearson Correlation	,059*	,110**	,261**
	Sig. (1-tailed)	0,025	0,000	0,000
	N	1084	2517	2511
National government policy mainly supports traditional (centralized) energy systems	Pearson Correlation	0,047	,104**	,237**
	Sig. (1-tailed)	0,061	0,000	0,000
	N	1076	2480	2475

**. Correlation is significant at the 0.01 level (1-tailed).

*. Correlation is significant at the 0.05 level (1-tailed).

Bivariate correlations motivational items x energy saving intention and behaviour [SOM Energia]

		In case you measure your energy use. How much did you save compared with 3 years ago?	In case you measure your energy use, how much did you save compared with before you became member of Som Energia?	I have the intention to lower my energy consumption intensively
In case you measure your energy use. How much did you save compared with 3 years ago?	Pearson Correlation	1	,845**	,253**
	Sig. (1-tailed)		0,000	0,000
	N	823	630	819
In case you measure your energy use, how much did you save compared with before you became member of Som Energia?	Pearson Correlation	,845**	1	,265**
	Sig. (1-tailed)	0,000		0,000
	N	630	679	677
I have the intention to lower my energy consumption intensively	Pearson Correlation	,253**	,265**	1
	Sig. (1-tailed)	0,000	0,000	
	N	819	677	2008
I have the intention to only use energy that has been produced locally	Pearson Correlation	,131**	,110**	,431**
	Sig. (1-tailed)	0,000	0,002	0,000
	N	796	656	1908
Production of renewable energy is important	Pearson Correlation	0,007	-0,026	0,029
	Sig. (1-tailed)	0,422	0,248	0,094
	N	819	677	2003
A lower energy price is more important to me than if it is sustainable energy	Pearson Correlation	0,028	0,052	-,047*
	Sig. (1-tailed)	0,214	0,089	0,019
	N	817	677	1988
Environmental issues matter to me	Pearson Correlation	0,036	,075*	,150**
	Sig. (1-tailed)	0,154	0,025	0,000
	N	820	678	2002
I do not like the use of nuclear energy	Pearson Correlation	0,003	0,009	,086**
	Sig. (1-tailed)	0,463	0,408	0,000
	N	815	675	1983
Global climate change is important. It needs to be prevented.	Pearson Correlation	,074*	,076*	,106**
	Sig. (1-tailed)	0,018	0,024	0,000
	N	816	675	1993
To reach societal goals we can organize ourselves best in local communities	Pearson Correlation	0,047	0,025	,205**
	Sig. (1-tailed)	0,091	0,259	0,000
	N	817	674	1985
I distrust large-scale traditional energy companies	Pearson Correlation	0,009	-0,014	,091**
	Sig. (1-tailed)	0,397	0,355	0,000
	N	817	675	1996
National government policy mainly supports traditional (centralized) energy systems	Pearson Correlation	0,032	0,039	-0,011
	Sig. (1-tailed)	0,184	0,160	0,313
	N	812	671	1977
Som Energia gives answer to my environmental concerns	Pearson Correlation	0,043	,091**	,183**
	Sig. (1-tailed)	0,110	0,009	0,000
	N	815	675	1990

**. Correlation is significant at the 0.01 level (1-tailed).

*. Correlation is significant at the 0.05 level (1-tailed).

Bivariate correlations social items x energy saving intention and behaviour [Enercoop]

		In case you measured your energy consumption yourself, or received information on energy consumption by your energy supp	I have the intention to lower my energy consumption intensively	I have the intention to only use energy that has been produced locally.
In case you measured your energy consumption yourself, or received information on energy consumption by your energy supp	Pearson Correlation	1	,253**	0,002
	Sig. (1-tailed)		0,000	0,491
	N	206	206	206
I have the intention to lower my energy consumption intensively	Pearson Correlation	,253**	1	,319**
	Sig. (1-tailed)	0,000		0,000
	N	206	486	485
I have the intention to only use energy that has been produced locally.	Pearson Correlation	0,002	,319**	1
	Sig. (1-tailed)	0,491	0,000	
	N	206	485	486
I experience a high level of interpersonal trust between members of Enercoop	Pearson Correlation	0,016	,171**	,268**
	Sig. (1-tailed)	0,410	0,000	0,000
	N	206	485	485
I like to identify myself with a green energy supplier	Pearson Correlation	,157*	,209**	,240**
	Sig. (1-tailed)	0,012	0,000	0,000
	N	206	485	485
I like to be seen as a person who buys ecological groceries instead of conventinal ones at the	Pearson Correlation	,128*	,149**	,179**
	Sig. (1-tailed)	0,034	0,001	0,000
	N	205	484	484
I like to be seen as a person who uses renewable energy	Pearson Correlation	,140*	,189**	,285**
	Sig. (1-tailed)	0,022	0,000	0,000
	N	206	485	485
I like to be seen as a person who uses energy efficiently.	Pearson Correlation	,158*	,183**	,200**
	Sig. (1-tailed)	0,012	0,000	0,000
	N	206	484	484
Saving energy is considered an important value among my friends and family	Pearson Correlation	0,025	,084*	,139**
	Sig. (1-tailed)	0,362	0,032	0,001
	N	205	484	484
Generating one's own energy locally is considered important among my friends and family	Pearson Correlation	0,029	,086*	,238**
	Sig. (1-tailed)	0,337	0,029	0,000
	N	206	486	486
Many of my friends and/or family members are Enercoop members	Pearson Correlation	0,065	,104*	,109**
	Sig. (1-tailed)	0,175	0,011	0,008
	N	206	486	486

**. Correlation is significant at the 0.01 level (1-tailed).

*. Correlation is significant at the 0.05 level (1-tailed).

Bivariate correlations social items x energy saving intention and behaviour [Ecopower]

		In case you measure your energy use, how much did you save compared with before you became customer of ECOPOWER?	I have the intention to lower my energy consumption patterns intensively	I have the intention to only use energy that has been produced locally
In case you measure your energy use, how much did you save compared with before you became customer of ECOPOWER?	Pearson Correlation	1	,265**	,104**
	Sig. (1-tailed)		0,000	0,000
	N	1239	1026	1019
I have the intention to lower my energy consumption patterns intensively	Pearson Correlation	,265**	1	,344**
	Sig. (1-tailed)	0,000		0,000
	N	1026	2549	2466
I have the intention to only use energy that has been produced locally	Pearson Correlation	,104**	,344**	1
	Sig. (1-tailed)	0,000	0,000	
	N	1019	2466	2543
I experience a high level of interpersonal trust between members of Ecopower	Pearson Correlation	,108**	,125**	,258**
	Sig. (1-tailed)	0,000	0,000	0,000
	N	1026	2367	2371
I like to identify myself with a green energy supplier	Pearson Correlation	,134**	,107**	,289**
	Sig. (1-tailed)	0,000	0,000	0,000
	N	1065	2506	2504
I like to be seen as a person who buys elogical grovceries instead of conventional ones at the supermarket	Pearson Correlation	0,036	,169**	,287**
	Sig. (1-tailed)	0,124	0,000	0,000
	N	1052	2470	2463
REScoops and the persons who run them have a very high reputation locally	Pearson Correlation	,157**	,104**	,292**
	Sig. (1-tailed)	0,000	0,000	0,000
	N	818	1857	1865
I like to be seen as a person who uses renewable energy	Pearson Correlation	,145**	,183**	,304**
	Sig. (1-tailed)	0,000	0,000	0,000
	N	1050	2488	2484
I like to be seen as a person who uses energy efficiently	Pearson Correlation	,127**	,190**	,212**
	Sig. (1-tailed)	0,000	0,000	0,000
	N	1069	2498	2495
Saving energy is considered an important value among my friends and family	Pearson Correlation	,111**	,152**	,141**
	Sig. (1-tailed)	0,000	0,000	0,000
	N	1061	2504	2500
Generating one's own energy locally is considered important among my friends and family	Pearson Correlation	,083**	,201**	,269**
	Sig. (1-tailed)	0,004	0,000	0,000
	N	1033	2437	2446
I like to be the first one among my friends who adopts a technological innovation	Pearson Correlation	,064*	,247**	,248**
	Sig. (1-tailed)	0,020	0,000	0,000
	N	1027	2442	2445
Many of my friends and/or family members are members of an energy cooperative.	Pearson Correlation	,061*	,142**	,174**
	Sig. (1-tailed)	0,029	0,000	0,000
	N	982	2301	2320
I experience social pressure to save energy (reduce energy use).	Pearson Correlation	0,002	,165**	,095**
	Sig. (1-tailed)	0,469	0,000	0,000
	N	1046	2480	2487

**. Correlation is significant at the 0.01 level (1-tailed).

*. Correlation is significant at the 0.05 level (1-tailed).

Bivariate correlations social items x energy saving intention and behaviour [SOM Energia]

		In case you measure your energy use. How much did you save compared with 3 years ago?	In case you measure your energy use, how much did you save compared with before you became member of Som Energia?	I have the intention to lower my energy consumption intensively
In case you measure your energy use. How much did you save compared with 3 years ago?	Pearson Correlation	1	,845**	,253**
	Sig. (1-tailed)		0,000	0,000
	N	823	630	819
In case you measure your energy use, how much did you save compared with before you became member of Som Energia?	Pearson Correlation	,845**	1	,265**
	Sig. (1-tailed)	0,000		0,000
	N	630	679	677
I have the intention to lower my energy consumption intensively	Pearson Correlation	,253**	,265**	1
	Sig. (1-tailed)	0,000	0,000	
	N	819	677	2008
I have the intention to only use energy that has been produced locally	Pearson Correlation	,131**	,110**	,431**
	Sig. (1-tailed)	0,000	0,002	0,000
	N	796	656	1908
I experience a high level of interpersonal trust between members of enostra	Pearson Correlation	0,045	,128**	,222**
	Sig. (1-tailed)	0,107	0,001	0,000
	N	758	630	1761
I like to identify myself with Som Energia	Pearson Correlation	,114**	,148**	,209**
	Sig. (1-tailed)	0,001	0,000	0,000
	N	815	673	1975
I like to be seen as a person who buys ecological groceries instead of conventional ones at the supermarket	Pearson Correlation	0,046	,078*	,280**
	Sig. (1-tailed)	0,095	0,022	0,000
	N	819	676	1987
I like/I'd like to be seen as a person who is appreciated for using renewable energy	Pearson Correlation	,058*	,099**	,234**
	Sig. (1-tailed)	0,050	0,005	0,000
	N	819	675	1994
I like to be seen as a person who uses energy efficiently	Pearson Correlation	,077*	,116**	,265**
	Sig. (1-tailed)	0,014	0,001	0,000
	N	820	676	1989
Saving energy is considered an important value among my friends and family	Pearson Correlation	,074*	,074*	,163**
	Sig. (1-tailed)	0,017	0,028	0,000
	N	814	669	1982
Generating one's own energy locally is considered important among my friends and family	Pearson Correlation	0,020	0,046	,223**
	Sig. (1-tailed)	0,286	0,116	0,000
	N	805	664	1948

**. Correlation is significant at the 0.01 level (1-tailed).

*. Correlation is significant at the 0.05 level (1-tailed).

5.16 *Appendix P. Bivariate correlations motivational items x investment [Coopernico]*

			approximately invest in renewable energy generation appliances (individually applied to your home) afte	intend to invest in renewable energy generation appliances (individually applied to your home) in the	intend to invest in collective renewable energy generation projects in the near future?
Spearman's rho	How much did you approximately invest in renewable energy generation appliances	Correlation Coefficient	1,000	0,194	,441**
		Sig. (1-tailed)		0,152	0,009
		N	31	30	28
	How much do you intend to invest in renewable energy generation appliances (individually applied to your	Correlation Coefficient	0,194	1,000	,364*
		Sig. (1-tailed)	0,152		0,031
		N	30	30	27
	How much do you intend to invest in collective renewable energy generation projects in the	Correlation Coefficient	,441**	,364*	1,000
		Sig. (1-tailed)	0,009	0,031	
		N	28	27	28
	Production of renewable energy is important	Correlation Coefficient	0,166		0,087
		Sig. (1-tailed)	0,186		0,330
		N	31	30	28
	A lower energy price is more important to me than if it is sustainable energy	Correlation Coefficient	-0,081	0,011	-0,172
		Sig. (1-tailed)	0,332	0,476	0,191
		N	31	30	28
	Environmental issues matter to me	Correlation Coefficient	-0,017	0,000	0,013
		Sig. (1-tailed)	0,463	0,500	0,474
		N	31	30	28
	I do not like the use of nuclear energy	Correlation Coefficient	0,099	0,194	0,052
		Sig. (1-tailed)	0,302	0,157	0,398
		N	30	29	27
	Global climate change is important. It needs to be prevented.	Correlation Coefficient	0,297	0,183	0,149
		Sig. (1-tailed)	0,052	0,167	0,225
		N	31	30	28
	To reach societal goals we can organize ourelves best in local communities	Correlation Coefficient	0,031	-0,011	0,076
		Sig. (1-tailed)	0,436	0,478	0,356
		N	29	29	26
	I distrust large-scale traditional energy companies	Correlation Coefficient	0,006	,350*	0,029
		Sig. (1-tailed)	0,487	0,029	0,442
		N	31	30	28
	National government policy mainly supports traditional (centralized) energy systems	Correlation Coefficient	-0,025	-0,132	-0,086
		Sig. (1-tailed)	0,449	0,252	0,339
		N	29	28	26

**. Correlation is significant at the 0.01 level (1-tailed).

*. Correlation is significant at the 0.05 level (1-tailed).

Bivariate correlations motivational items x investment [EBO]

			Are you a shareholder of Hvidovre Fjernvarme?	How much have you invested in energy efficient products in your household after you converted into	How much do you intend to invest in energy efficient products (individually applied to your
Spearman's rho	Are you a shareholder of Hvidovre Fjernvarme?	Correlation Coefficient	1,000	,176*	,217*
		Sig. (1-tailed)		0,042	0,020
		N	120	97	91
	How much have you invested in energy efficient products in your household after you converted into district heating?	Correlation Coefficient	,176*	1,000	,387**
		Sig. (1-tailed)	0,042		0,000
		N	97	118	96
	How much do you intend to invest in energy efficient products (individually applied to your home) in the near future?	Correlation Coefficient	,217*	,387**	1,000
		Sig. (1-tailed)	0,020	0,000	
		N	91	96	106
	Production of renewable energy is important	Correlation Coefficient	-0,142	-0,076	-0,014
		Sig. (1-tailed)	0,061	0,208	0,444
		N	120	118	106
	A lower energy price is more important to me than if it is sustainable energy	Correlation Coefficient	-,159*	0,105	0,116
		Sig. (1-tailed)	0,043	0,132	0,120
		N	117	116	104
	Environmental issues matter to me	Correlation Coefficient	-0,068	0,030	0,137
		Sig. (1-tailed)	0,231	0,375	0,081
		N	120	118	106
	Global climate change is important. It needs to be prevented.	Correlation Coefficient	-,154*	0,056	0,038
		Sig. (1-tailed)	0,047	0,276	0,352
		N	119	117	105
	To reach societal goals we can organize ourelves best in local communities	Correlation Coefficient	,263**	0,123	0,041
		Sig. (1-tailed)	0,003	0,103	0,344
		N	111	107	97

*. Correlation is significant at the 0.05 level (1-tailed).

**. Correlation is significant at the 0.01 level (1-tailed).

Bivariate correlations motivational items x investment [Enostra]

		How much did you approximately invest in renewable energy generation appliances?	How much do you intend to invest in renewable energy generation appliances in the near future?
How much did you approximately invest in renewable energy generation appliances?	Pearson Correlation	1	,265**
	Sig. (1-tailed)		0,004
	N	127	99
How much do you intend to invest in renewable energy generation appliances in the near future?	Pearson Correlation	,265**	1
	Sig. (1-tailed)	0,004	
	N	99	103
Production of renewable energy is important	Pearson Correlation	0,037	,231**
	Sig. (1-tailed)	0,338	0,010
	N	127	103
A lower energy price is more important to me than if it is sustainable energy	Pearson Correlation	-0,083	-0,119
	Sig. (1-tailed)	0,179	0,118
	N	125	102
Environmental issues matter to me	Pearson Correlation	-0,045	,267**
	Sig. (1-tailed)	0,307	0,003
	N	127	103
I do not like the use of nuclear energy	Pearson Correlation	-0,032	0,102
	Sig. (1-tailed)	0,363	0,153
	N	127	103
Global climate change is important. It needs to be prevented.	Pearson Correlation	0,026	-0,024
	Sig. (1-tailed)	0,386	0,406
	N	127	103
To reach societal goals we can organize ourselves best in local communities	Pearson Correlation	-,226**	-0,034
	Sig. (1-tailed)	0,005	0,365
	N	127	103
I distrust large-scale traditional energy companies	Pearson Correlation	0,009	,175*
	Sig. (1-tailed)	0,460	0,039
	N	126	103
National government policy mainly supports traditional (centralized) energy systems	Pearson Correlation	-0,002	0,091
	Sig. (1-tailed)	0,492	0,188
	N	118	97

Bivariate correlations motivational items x investment [SOM Energia]

			How much did you approximately invest in renewable energy generation appliances (individually applied to your home) afte	How much do you intend to invest in renewable energy generation appliances (individually applied to your home) in the	How much do you intend to invest in collective renewable energy generation projects in the near future?
Spearman's rho	How much did you approximately invest in renewable energy generation appliances (individually applied to your home) afte	Correlation Coefficient	1,000	,234**	,086**
		Sig. (1-tailed)		0,000	0,003
		N	1711	1113	1031
	How much do you intend to invest in renewable energy generation appliances (individually applied to your home) in the ne	Correlation Coefficient	,234**	1,000	,284**
		Sig. (1-tailed)	0,000		0,000
		N	1113	1171	907
	How much do you intend to invest in collective renewable energy generation projects in the near future?	Correlation Coefficient	,086**	,284**	1,000
		Sig. (1-tailed)	0,003	0,000	
		N	1031	907	1131
	Production of renewable energy is important	Correlation Coefficient	-0,035	0,024	0,032
		Sig. (1-tailed)	0,074	0,210	0,142
		N	1706	1168	1130
	A lower energy price is more important to me than if it is sustainable energy	Correlation Coefficient	-0,027	-0,016	-0,043
		Sig. (1-tailed)	0,134	0,298	0,076
		N	1693	1164	1122
	Environmental issues matter to me	Correlation Coefficient	0,028	,108**	,082**
		Sig. (1-tailed)	0,125	0,000	0,003
		N	1706	1168	1127
	I do not like the use of nuclear energy	Correlation Coefficient	0,019	,087**	0,037
		Sig. (1-tailed)	0,213	0,002	0,108
		N	1694	1161	1121
	Global climate change is important. It needs to be prevented.	Correlation Coefficient	0,004	,059*	0,026
		Sig. (1-tailed)	0,431	0,023	0,195
		N	1699	1165	1123
	To reach societal goals we can organize ourselves best in local communities	Correlation Coefficient	0,026	,049*	0,012
		Sig. (1-tailed)	0,141	0,048	0,338
		N	1691	1160	1123
	I distrust large-scale traditional energy companies	Correlation Coefficient	0,000	0,041	0,020
		Sig. (1-tailed)	0,492	0,081	0,252
		N	1702	1167	1124
	National government policy mainly supports traditional (centralized) energy systems	Correlation Coefficient	0,012	0,029	0,023
		Sig. (1-tailed)	0,310	0,160	0,220
		N	1686	1157	1118
	Som Energia gives answer to my environmental concerns	Correlation Coefficient	0,022	0,044	0,017
		Sig. (1-tailed)	0,187	0,068	0,283
		N	1696	1160	1124

5.17 *Appendix R. Bivariate correlations social items x investment [Coopernico]*

			How much did you approximately invest in renewable energy generation appliances (individually applied to your home) afte	intend to invest in renewable energy generation appliances (individually applied to your home) in the ne	How much do you intend to invest in collective renewable energy generation projects in the near future?
Spearman's rho	How much did you approximately invest in renewable energy generation appliances (individually	Correlation Coefficient	1,000	0,194	,441**
		Sig. (1-tailed)		0,152	0,009
		N	31	30	28
	How much do you intend to invest in renewable energy generation appliances (individually applied to your	Correlation Coefficient	0,194	1,000	,364*
		Sig. (1-tailed)	0,152		0,031
		N	30	30	27
	How much do you intend to invest in collective renewable energy generation projects in the near future?	Correlation Coefficient	,441**	,364*	1,000
		Sig. (1-tailed)	0,009	0,031	
		N	28	27	28
	I experience a high level of interpersonal trust between members of Coopernico	Correlation Coefficient	0,192	-0,109	-,459**
		Sig. (1-tailed)	0,159	0,291	0,009
		N	29	28	26
	I like to identify myself with a green energy supplier	Correlation Coefficient	-0,116	0,002	-,542**
		Sig. (1-tailed)	0,271	0,497	0,002
		N	30	29	27
	I like to be seen as a person who buys ecological groceries instead of conventional ones at the supermarket	Correlation Coefficient	0,128	-0,065	-0,228
		Sig. (1-tailed)	0,246	0,367	0,121
		N	31	30	28
	I like to be seen as a person who uses renewable energy	Correlation Coefficient	0,282	0,244	-0,189
		Sig. (1-tailed)	0,062	0,097	0,167
		N	31	30	28
	I like to be seen as a person who uses energy efficiently	Correlation Coefficient	0,222	0,090	-0,177
		Sig. (1-tailed)	0,115	0,318	0,184
		N	31	30	28
	Saving energy is considered an important value among my friends and family	Correlation Coefficient	0,095	-0,123	0,073
		Sig. (1-tailed)	0,306	0,259	0,356
		N	31	30	28
	Generating one's own energy locally is considered important among my friends and family	Correlation Coefficient	0,147	0,161	0,179
		Sig. (1-tailed)	0,228	0,206	0,195
		N	28	28	25

**. Correlation is significant at the 0.01 level (1-tailed).

*. Correlation is significant at the 0.05 level (1-tailed).

Bivariate correlations social items x investment [EBO]

			Are you a shareholder of Hvidovre Fjernvarme?	How much have you invested in energy efficient products in your household after you converted into district heating?	How much do you intend to invest in energy efficient products (individually applied to your home) in the near future?
Spearman's rho	Are you a shareholder of Hvidovre Fjernvarme?	Correlation Coefficient	1,000	,176*	,217*
		Sig. (1-tailed)		0,042	0,020
		N	120	97	91
	How much have you invested in energy efficient products in your household after you converted into district heating?	Correlation Coefficient	,176*	1,000	,387**
		Sig. (1-tailed)	0,042		0,000
		N	97	118	96
	How much do you intend to invest in energy efficient products (individually applied to your home) in the near future?	Correlation Coefficient	,217*	,387**	1,000
		Sig. (1-tailed)	0,020	0,000	
		N	91	96	106
	I like to identify myself with a green energy supplier	Correlation Coefficient	,252**	0,103	0,109
		Sig. (1-tailed)	0,003	0,136	0,134
		N	118	116	104
	I like to be seen as a person who uses an electrical vehicle instead of a traditional fossil fuel vehicle	Correlation Coefficient	-,196*	-0,002	0,084
		Sig. (1-tailed)	0,016	0,490	0,196
		N	120	118	106
	I like to be seen as a person who uses renewable energy	Correlation Coefficient	0,083	0,084	,274**
		Sig. (1-tailed)	0,184	0,184	0,002
		N	120	118	106
	I like to be seen as a person who saves energy	Correlation Coefficient	0,019	0,045	,231**
		Sig. (1-tailed)	0,418	0,314	0,009
		N	119	117	105
	Saving energy is considered an important value among my friends and family	Correlation Coefficient	-0,147	-0,004	0,009
		Sig. (1-tailed)	0,056	0,484	0,466
		N	118	116	104
	I like to be the first one among my friends who adopts a technological innovation	Correlation Coefficient	-0,011	0,032	,188*
		Sig. (1-tailed)	0,451	0,367	0,027
		N	119	118	106
	Many of my friends and/or family members are members of an energy cooperative	Correlation Coefficient	-,190*	-0,145	-0,047
		Sig. (1-tailed)	0,032	0,082	0,332
		N	95	93	88

*. Correlation is significant at the 0.05 level (1-tailed).

**. Correlation is significant at the 0.01 level (1-tailed).

Bivariate correlations social items x investment [Enostra]

		How much did you approximately invest in renewable energy generation appliances?	How much do you intend to invest in renewable energy generation appliances in the near future?
How much did you approximately invest in renewable energy generation appliances?	Pearson Correlation	1	,265**
	Sig. (1-tailed)		0,004
	N	127	99
How much do you intend to invest in renewable energy generation appliances in the near future?	Pearson Correlation	,265**	1
	Sig. (1-tailed)	0,004	
	N	99	103
I like to be seen as a person who buys ecological groceries instead of conventional ones at the supermarket	Pearson Correlation	0,102	-0,007
	Sig. (1-tailed)	0,131	0,471
	N	123	101
I like/I'd like to be seen as a person who is appreciated for using renewable energy	Pearson Correlation	0,104	-0,067
	Sig. (1-tailed)	0,127	0,255
	N	123	99
I like to be seen as a person who uses energy efficiently	Pearson Correlation	,183*	0,015
	Sig. (1-tailed)	0,020	0,440
	N	125	102
Saving energy is considered an important value among my friends and family	Pearson Correlation	,163*	-0,078
	Sig. (1-tailed)	0,033	0,218
	N	127	103
Generating one's own energy locally is considered important among my friends and family	Pearson Correlation	,261**	,233**
	Sig. (1-tailed)	0,002	0,009
	N	125	102
How often do you visit meetings organized by your REScoop?	Pearson Correlation	-0,058	0,165
	Sig. (1-tailed)	0,327	0,123
	N	61	51

Bivariate correlations social items x investment [SOM Energia]

			How much did you approximately invest in renewable energy generation appliances (individually applied to your home) afte	How much do you intend to invest in renewable energy generation appliances (individually applied to your home) in the ne	How much do you intend to invest in collective renewable energy generation projects in the near future?
Spearman's rho	How much did you approximately invest in renewable energy generation appliances (individually applied to your home) afte	Correlation Coefficient	1,000	,234**	,086**
		Sig. (1-tailed)		0,000	0,003
		N	1711	1113	1031
	How much do you intend to invest in renewable energy generation appliances (individually applied to your home) in the ne	Correlation Coefficient	,234**	1,000	,284**
		Sig. (1-tailed)	0,000		0,000
		N	1113	1171	907
	How much do you intend to invest in collective renewable energy generation projects in the near future?	Correlation Coefficient	,086**	,284**	1,000
		Sig. (1-tailed)	0,003	0,000	
		N	1031	907	1131
	I experience a high level of interpersonal trust between members of enostra	Correlation Coefficient	,106**	,081**	,104**
		Sig. (1-tailed)	0,000	0,004	0,000
		N	1503	1054	1020
	I like to identify myself with Som Energia	Correlation Coefficient	,071**	,067*	,113**
		Sig. (1-tailed)	0,002	0,012	0,000
		N	1682	1155	1122
	I like to be seen as a person who buys ecological groceries instead of conventional ones at the supermarket	Correlation Coefficient	,111**	,112**	,082**
		Sig. (1-tailed)	0,000	0,000	0,003
		N	1695	1161	1126
	I like/I'd like to be seen as a person who is appreciated for using renewable energy	Correlation Coefficient	,117**	,135**	,104**
		Sig. (1-tailed)	0,000	0,000	0,000
		N	1699	1163	1124
	I like to be seen as a person who uses energy efficiently	Correlation Coefficient	,083**	,093**	,091**
		Sig. (1-tailed)	0,000	0,001	0,001
		N	1692	1161	1123
	Saving energy is considered an important value among my friends and family	Correlation Coefficient	,068**	0,020	-0,036
		Sig. (1-tailed)	0,002	0,250	0,113
		N	1692	1160	1118
	Generating one's own energy locally is considered important among my friends and family	Correlation Coefficient	,108**	,082**	0,017
		Sig. (1-tailed)	0,000	0,003	0,286
		N	1665	1146	1106
	How often do you visit meetings organized by Som Energia or your local group of Som Energia?	Correlation Coefficient	,172**	,179**	,211**
		Sig. (1-tailed)	0,000	0,000	0,000
		N	1653	1146	1109

5.18 *Appendix S. Bivariate correlations REScoop items x investment [SOM Energia]*

			How much did you approximately invest in renewable energy generation appliances (individually applied to your home) afte	How much do you intend to invest in renewable energy generation appliances (individually applied to your home) in the ne	How much do you intend to invest in collective renewable energy generation projects in the near future?
	How long have you been a customer of Som Energia?	Correlation Coefficient	,114**	0,038	,069*
		Sig. (1-tailed)	0,000	0,137	0,027
		N	1206	832	777
	How long have you been a cooperativemember of Som Energia (in number of years)?	Correlation Coefficient	,138**	,074**	,073*
		Sig. (1-tailed)	0,000	0,009	0,010
		N	1477	1018	1011
	Were you part of a Tupper watt meeting?	Correlation Coefficient	0,005	0,028	0,042
		Sig. (1-tailed)	0,416	0,175	0,084
		N	1606	1100	1061
	Did you use Infoenergia recommendations offered by Som Energia?	Correlation Coefficient	,064*	0,002	,091*
		Sig. (1-tailed)	0,043	0,479	0,019
		N	710	504	518
	How often do you visit meetings organized by Som Energia or your local group of Som Energia?	Correlation Coefficient	,172**	,179**	,211**
		Sig. (1-tailed)	0,000	0,000	0,000
		N	1653	1146	1109

**. Correlation is significant at the 0.01 level (1-tailed).

*. Correlation is significant at the 0.05 level (1-tailed).

Bivariate correlations REScoop items x investment [Enostra]

			How much did you approximately invest in renewable energy generation appliances?	How much do you intend to invest in renewable energy generation appliances in the near future?
	How often do you visit meetings organized by your REScoop?	Correlation Coefficient	0,041	0,226
		Sig. (1-tailed)	0,378	0,055
		N	61	51
	How long have you been a member of Enostrar (in number of years)?	Correlation Coefficient	-0,037	0,000
		Sig. (1-tailed)	0,394	0,500
		N	56	49

Bivariate correlations REScoop items x investment [EBO]

			How much have you invested in energy efficient products in your household after you converted into district heating?	How much do you intend to invest in energy efficient products (individually applied to your home) in the near future?
	How long have you been a member of a REScoop (in number of years)?	Correlation Coefficient	0,038	-0,032
		Sig. (1-tailed)	0,340	0,373
		N	117	104
	Do you consume less energy since you are a member of Ecopower?	Correlation Coefficient	,212*	,268*
		Sig. (1-tailed)	0,042	0,016
		N	68	64

Bivariate correlations REScoop items x investment [Coopernico]

			How much did you approximately invest in renewable energy generation appliances (individually applied to your home) afte	How much do you intend to invest in renewable energy generation appliances (individually applied to your home) in the ne	How much do you intend to invest in collective renewable energy generation projects in the near future?
	Estimated value of shares in REScoop?	Correlation Coefficient	,320*	0,272	,377*
		Sig. (1-tailed)	0,040	0,073	0,024
		N	31	30	28
	Measured energy conservation (%)	Correlation Coefficient	0,295	0,332	-0,320
		Sig. (1-tailed)	0,189	0,159	0,184
		N	11	11	10
	Less energy consumption since REScoop membership?	Correlation Coefficient	0,246	0,078	-0,154
		Sig. (1-tailed)	0,148	0,375	0,264
		N	20	19	19
	Energy supplied by REScoop?	Correlation Coefficient	0,039	0,239	-0,242
		Sig. (1-tailed)	0,420	0,106	0,112
		N	30	29	27
	Length of membership (yrs)?	Correlation Coefficient	0,238	,460**	-0,018
		Sig. (1-tailed)	0,099	0,005	0,465
		N	31	30	28

**. Correlation is significant at the 0.01 level (1-tailed).

*. Correlation is significant at the 0.05 level (1-tailed).

5.19 *Appendix T. Correlations REScoop action x Energy savings [EBO]*

		How much heat did you save since you converted into district heating?	I have the intention to lower my energy consumption patterns intensively	I have the intention to only use energy that has been produced locally (Denmark supplied by consumer controlled energy companies)
I often check my consumption	Pearson Correlation	,414**	0,128	0,115
	Sig. (1-	0,004	0,109	0,141
	N	40	94	90
Are you a shareholder of Hvidovre Fjernvarme?	Pearson Correlation	,398**	-0,054	0,125
	Sig. (1-	0,002	0,280	0,091
	N	53	120	116
Did you choose the package approach when installing district heating?	Pearson Correlation	0,007	0,096	-0,010
	Sig. (1-	0,480	0,123	0,451
	N	60	149	142
Have you agreed to receive the technical service offered by Hvidovre Fjernvarme?	Pearson Correlation	-0,079	-0,069	-0,056
	Sig. (1-tailed)	0,279	0,217	0,266
	N	57	131	125
Sagde du ja til at få en pakkeløsning, da du skulle have fjernvarme? Og i hvilket omfang har du været tilfreds med pakk	Pearson Correlation	0,154	0,074	0,085
	Sig. (1-tailed)	0,124	0,188	0,162
	N	58	145	138

**. Correlation is significant at the 0.01 level (1-tailed).

*. Correlation is significant at the 0.05 level (1-tailed).

Correlations REScoop action x Energy savings [Ecopower]

		In case you measure your energy use, how much did you save compared with before you became customer of ECOPOWER?	I have the intention to lower my energy consumption patterns intensively	I have the intention to only use energy that has been produced locally
How long have you been a customer of Ecopower for energy supply (in number of years)?	Pearson Correlation	,236**	-,045*	0,006
	Sig. (1-tailed)	0,000	0,015	0,379
	N	1233	2319	2314
How often do you visit meetingsorganised by your REScoop?	Pearson Correlation	,117**	,097**	,158**
	Sig. (1-tailed)	0,000	0,000	0,000
	N	1056	2472	2467
After starting using EnegergieID, energy savings have become more important to me	Pearson Correlation	,111*	,228**	0,036
	Sig. (1-tailed)	0,020	0,000	0,192
	N	345	594	595
EnergieID has contributed that I save more energy in my household.	Pearson Correlation	,135**	,271**	,088*
	Sig. (1-tailed)	0,006	0,000	0,016
	N	347	595	597
After I started using EnergieID local production of renewable energy has become more important to me.	Pearson Correlation	0,049	,262**	,235**
	Sig. (1-tailed)	0,182	0,000	0,000
	N	339	582	585
EnergyID has contributed to me producing renewable energy at home	Pearson Correlation	0,079	,273**	,239**
	Sig. (1-tailed)	0,080	0,000	0,000
	N	317	539	543

**. Correlation is significant at the 0.01 level (1-tailed).

*. Correlation is significant at the 0.05 level (1-tailed).

Correlations REScoop action x Energy savings [Enercoop]

		In case you measured your energy consumption yourself, or received information on energy consumption by your energy supp	I have the intention to lower my energy consumption intensively	I have the intention to only use energy that has been produced locally.
How long have you been a consumer of Enercoop (in number of years) ?	Pearson Correlation	,192**	-0,066	-0,002
	Sig. (1-tailed)	0,009	0,116	0,483
	N	153	332	333
How long have you been a member of Enercoop (in number of years)?	Pearson Correlation	,196**	-0,058	-0,004
	Sig. (1-tailed)	0,003	0,117	0,468
	N	191	418	417
How often do you visit meetings oganized by your Rescoop?	Pearson Correlation	,309**	0,016	-0,019
	Sig. (1-tailed)	0,000	0,369	0,347
	N	191	419	418
After joining Enercoop, energy savings have become more important to me	Pearson Correlation	,331**	,225**	,114**
	Sig. (1-tailed)	0,000	0,000	0,010
	N	189	417	416
Have you participated in the Dr Watt program offered by Enercoop?	Pearson Correlation	,168**	0,084*	-0,065
	Sig. (1-tailed)	0,009	0,033	0,079
	N	200	472	472
Have you ever been on the Energy Savings Wiki of Enercoop?	Pearson Correlation	0,044	0,072	0,094*
	Sig. (1-tailed)	0,267	0,058	0,020
	N	200	474	473
Do you consider that the energy savings tip of the month has helped you reduce your consumption of electricity?	Pearson Correlation	0,124	,233**	0,102
	Sig. (1-tailed)	0,145	0,003	0,117
	N	75	137	138
I would be ready to participate in meetings to help reduce my energy consumption	Pearson Correlation	0,157	,138*	,177**
	Sig. (1-tailed)	0,054	0,019	0,004
	N	106	225	225

**. Correlation is significant at the 0.01 level (1-tailed).

*. Correlation is significant at the 0.05 level (1-tailed).

Correlations REScoop action x Energy savings [SOM Energia]

		In case you measure your energy use. How much did you save compared with 3 years ago?	In case you measure your energy use, how much did you save compared with before you became member of Som Energia?	I have the intention to lower my energy consumption intensively
I am completely satisfied with the energy services my Som Energia offers me	Pearson Correlation	0,014	,110**	,071**
	Sig. (1-tailed)	0,355	0,002	0,002
	N	707	666	1706
After joining Som Energia, energy savings have become more important to me	Pearson Correlation	,226**	,314**	,325**
	Sig. (1-tailed)	0,000	0,000	0,000
	N	708	661	1704
Infoenergia services is useful to encourage efficiency actions in my household	Pearson Correlation	,136**	,169**	,178**
	Sig. (1-tailed)	0,004	0,001	0,000
	N	389	344	897
Did you use Infoenergia recommendations offered by Som Energia?	Pearson Correlation	,114*	,167**	,183**
	Sig. (1-tailed)	0,014	0,001	0,000
	N	365	324	832
Were you part of a Tupper watt meeting?	Pearson Correlation	0,032	,072*	0,018
	Sig. (1-tailed)	0,185	0,035	0,216
	N	764	634	1858

**. Correlation is significant at the 0.01 level (1-tailed).

*. Correlation is significant at the 0.05 level (1-tailed).