Dynamic Information Provision for Household Water Consumption*

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Abstract

Evidence on the effectiveness of social norms information in increasing pro-social and pro-environmental behavior has been widely reported in the literature and by policy-makers. Static information on social norms has proved effective in influencing marginalized individuals in the areas of water, energy, and others. In this study, I developed a field experiment on household water consumption by implementing a new information policy based on the literature on dynamic norms to influence average individuals, who represent the majority. Dynamic information exploits the spread of pro-social or pro-environmental behaviors in order to promote them. Results show a significant effect of dynamic information on below-average households, with a reduction of over 20% of water consumption. Yet their effectiveness disappears over time, suggesting their potential is fully exploited on specific occasions, such as a temporary drought. Finally, I explore explanations for the effectiveness or ineffectiveness of the different information provided by cognitive and psychological processes.

Keywords: information-based policy, information provision, dynamic information, social norms, norm nudge, water consumption, field experiment.

JEL Classification: C93, D04, D12, D63, D83.

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1 Introduction

Essential to the emergence and maintenance of life, water is our most precious resource, but also the most threatened. Although 71% of the Earth's surface is covered by water, only 3% is fresh water, of which an even smaller percentage is available for human use (Feldman, 2013). The restricted water supply is threatened by climate change and increasing water pollution (Konapala et al., 2020). In parallel, water demand is increasing every year due to population growth, rising consumption of goods due to the water needed for the construction process, and improved access to water and goods in developing countries (Jorgensen et al., 2009; Klemeš, 2012). The small amount of water remaining is then shared by sectors with divergent interests, such as agriculture, industry, and domestic consumption. Since it is not possible to increase the amount of water available, it is necessary to reduce demand.

Water-related concerns have been mainly focused on developing countries since the population from these countries did not have access to enough drinking water (Gadgil, 1998; World Health Organization, 2015). However, climate change alters this trend, making water concern a worldwide priority due to its adverse effects on water supply and demand. On the one hand, climate change is increasing water demand for both domestic and agricultural sectors (Goodchild, 2003; Wada et al., 2013). On the other hand, climate change decreases water supply with rainfall reduction, water pollution, and acidity (Singh and Agrawal, 2008; Amarasinghe et al., 2016). As a consequence, serious water scarcity problems have spread in developed countries, becoming a global concern (UNEP, 2023; Shukla et al., 2022; Spencer and Altman, 2010). These problems are especially pronounced in mountainous regions, where they significantly alter precipitation patterns, hydrological dynamics, and hydrogeological conditions, thereby increasing the variability of these interconnected processes (Intergovernmental Panel On Climate Change, 2019, 2023; Milano et al., 2015; Buchs et al., 2023).

The current study aims to propose a new tool for reducing water demand for domestic consumption. Given the 600% increase in domestic water demand between 1960 and 2014 (Otto and Schleifer, 2020) and the forecast of a further 30% increase by 2050 (Kitamori et al., 2012), urgent actions are needed to regulate consumption. This increase has proved the inadequacy of traditional policies alongside a historically low price of water, which has accustomed households to wasting water (Nauges and Thomas, 2003). Nonetheless, due to the low price elasticity for water (Howe and Linaweaver Jr., 1967; Scheierling et al., 2006), the limited short-term reaction of households (Nauges and Thomas, 2003), and the vital nature of water (Agthe and Billings, 1987), it is essential to explore policy options that are not price-based.

The provision of information makes it possible to influence behavior through targeted, low-cost policies that do not constrain behavior (Haaland et al., 2023; Lange

and Dewitte, 2023). While information policies involving only best practices and their consequences have little effect on individual behaviors (Kollmuss and Agyeman, 2002; Owens and Driffill, 2008; Han et al., 2010), recent literature has introduced a promising new type of information provision through the components of social norms (Allcott, 2011; Ahn et al., 2020; Borg et al., 2020). Social norms are implicit rules emerging from endogenous interactions among agents and differing across populations and cultures that lead individuals to adopt a specific type of behavior (Bicchieri, 2005, 2016; Teyssier and Wieczorek, 2025). They are constituted of descriptive beliefs, which refer to beliefs about the behaviors adopted by a reference group, and normative beliefs, which refer to beliefs about the social appropriateness of behaviors by a reference group. Several studies have focused on the use of so-called static information on social norms, revealing the realized behaviors and/or the social appropriateness of behaviors of a reference group at a given point in time, to influence pro-environmental behaviors (Engel and Kurschilgen, 2020; Kandul and Lanz, 2021; Cialdini, 2003; Schultz et al., 2007; Allcott, 2011; Ayres et al., 2013; Bolton et al., 2021; Bicchieri and Dimant, 2023). Regarding the water sector, Ferraro et al. (2011); Bernedo et al. (2014); Brent et al. (2015); Otaki et al. (2017); Landon et al. (2018) have succeeded in reducing overall domestic water consumption by providing information on efficient and average household consumption both in the short and long term. Similarly, Tiefenbeck et al. (2018); Andor et al. (2023); Fang et al. (2023) find a strong effect of real-time feedback on water consumption from showering with the implementation of a specific device. Despite their effectiveness in reducing overall water consumption, these policies have only significantly affected high-water users, with little or no effect on average consumers (Landon et al., 2018; Bhanot, 2021). As average consumers represent the majority of actors (for example of the Gaussian form of the distribution of water consumption, see Otaki et al. (2017) in Japan, Bergel et al. (2016) in Poland, and Hussien et al. (2016) in Iraq), an improvement in their behavior would substantially affect the average. In addition to having a major impact, this will influence high-water users all the more.

To target average consumers, I have developed an intervention based on the use of so-called dynamic information on social norms, revealing the spread of pro-social or pro-environmental behavior of a reference group at a given period of time. The underlying assumption behind this mechanism is that people tend to assume that a change in one direction will continue in the future (Markman and Guenther, 2007; Hubbard, 2015). Therefore, in order to conform to new trends, individuals may be willing to adopt these pro-social and pro-environmental behaviors.

Sparkman and Walton (2017) and Mortensen et al. (2019) are the only studies, to the best of my knowledge, that have proven the effectiveness of dynamic information through experiments in the psychological literature. Sparkman and Walton (2017) conducted information provision experiments, changing the semantics of the information

from static to dynamic. Results show that dynamic information about social norms has a greater impact than static messages on the intention to consume less meat, the choice of a meatless meal in a cafe, and the use of full-load washing machines in a university residence. Likewise, Mortensen et al. (2019) show the greater impact of dynamic information over static information on the water used in a toothbrushing task in the laboratory, and on time-donation to help an environmental organization by completing an additional survey.

In this study, I test the implementation of information provision using dynamic social norms information with a framed field experiment (Harrison and List, 2004) to reduce the domestic water consumption of average households. The advantages of this application of dynamic information on domestic water consumption are twofold. First, application to real behavior in its natural environment over a long period reduces concerns regarding the experimenter's demand effect and increases the robustness and external validity of the results. Second, the private nature of domestic water consumption reduces the observability of realized behaviors, which attenuates the effect and pressure of social norms (Nyborg et al., 2016), turning the results of this study into a lower bound on the potential effect of dynamic information provision.

I recruited 171 similar households of the Auvergne-Rhône Alpes region (France) for a 7-week experiment, eliciting water consumption through weekly measures of their water meter. After categorizing households into four categories of water consumption, the baseline group received a static information-based intervention, and the treatment group received a dynamic information-based intervention. I focus on Medium households divided into two categories, below and above average, by a discontinuity relative to average consumption.

The results show that the dynamic information-based intervention induces an immediate significant reduction in water consumption for Medium households below the average that did not respond to the initial static information-based intervention (27.7% per household on average, i.e., 205.2 liters per week). By contrast, Medium households above the average did not react significantly, either immediately or persistently. In addition to the main results, I have also explored explanations for the effectiveness of information provision with cognitive and psychological processes. I implemented a normative assessment of water-related behavior (Krupka and Weber, 2013) to observe if social norms information impacts behavior through a revision of social norms' beliefs. An emotional assessment of the information provision ("PANAS - Positive and Negative Affect Schedule" (Watson et al., 1988)) has been implemented to observe how reactive and nonreactive households perceive information provision. The components of the theory of planned behavior (Ajzen, 1991) have been investigated to observe which components are the most affected by the information provision and thus should be targeted in order to favor behavioral changes. On one side, results

show that effective dynamic information-based intervention involved more positive emotional reactions and induced an appropriate belief revision of elements motivating behavior related to the theory of planned behavior. On the other side, information-based interventions do not alter normative perceptions of water-related behavior.

The remainder of this paper is structured as follows. Section 2 describes the design and methodology of the experiment. The results are presented in section 3. In section 4, I discuss the implications of the findings and conclude.

2 Experimental procedures and design

2.1 Procedures

The framed field experiment took place in the Auvergne-Rhône Alpes region of France between May 30 and July 18, 2023. I recruited 201 households for the study, of which 171 completed the experiment, from the laboratory panel of "true consumers" of GAEL laboratory. Households who completed the survey were all living in an apartment with a washing machine and 74.27% with a dishwasher. Households were divided into 4.68% single-person households, 40.35% 2-person households, 23.98% 3-person households, 25.73% 4-person households and 5.26% 5-8-person households. Participants earned 20€ for correctly sending their water meter every week and completing the end-of-experiment survey. Moreover, they could earn an additional 5€ in the end-of-experiment survey. The timeline of the study, as well as the incentives, were common knowledge. At the time of the study, participants only knew that they were participating in a study on water consumption in the region. Personal data conformity with GDPR has been registered in INRAE's registries, and the study was preregistered at AsPredicted (Preregistration 131119 accessible at https://aspredicted.org/PCG_B1P).

2.2 Design

The task. The water consumption of participating households was measured using weekly photos of their water meters for 7 weeks (8 photos). Every Tuesday morning, participants received an email telling them to add their water meter to their personal cloud storage space. If participants forgot to send a photo of their water meter, they received a first reminder at noon and a second one in the evening (see the Online Appendix subsection S5.1 for details). Participants who did not upload their photos were progressively excluded from the study each week.

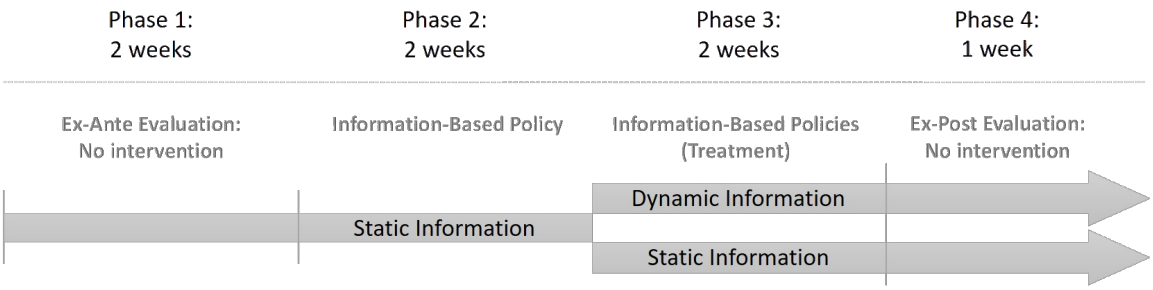

Figure 1: Different phases of the design.

The study is divided into 4 phases over 7 weeks in a between-subject design. During the first four weeks, all participants followed the same script, composed of two phases: phase 1, with no intervention, and phase 2, with a static intervention based on water consumption relative to household size (see Figure 2). At the end of week 4 (phase 2), participants were divided into treatments through a stratified random sampling technique, taking into account the information provision of phase 2, the reference household size, the availability of a dishwasher, and whether or not they had reduced their consumption by at least 5% during the second phase (see details in Table S2 in the Online Appendix). During the last 3 weeks (phases 3 and 4), 47.37% (81) households were in the baseline group, and 52.63% (90) households were in the treatment group.

Phase 1 - Classification into water consumption categories. During the first two weeks, water consumption is evaluated without any intervention to segregate households into 4 consumption categories: Efficient households, Medium-Low households, Medium-High households, and High households. The dissociation between the two medium categories was carried out to observe the impact of dynamic information on the discontinuity regarding the overall mean. This discontinuity is justified by the different households' reactions that depend on their consumption compared to the average. Indeed, Landon et al. (2018) and Bhanot (2021) found a reducing effect of information provision with closeness to the representative average household until no effect for households below the average. The thresholds dividing households into the 4 categories are 200, 448, and 770 liters per person on average for phase 1. Household segregation thresholds between categories were chosen to exclude outliers from Medium categories while maintaining the highest possible proportion of households in the Medium categories (see Figure S1 in the Online Appendix). Accordingly, 8.19% (14) households were classified as Efficient, 38.60% (66) households as Medium-Low, 38.01% (65) households as Medium-High, and 15.20% (26) households as High (average household characteristics for each category are available in Table S1 in the Online Appendix).

Phase 2 - Construction of Dynamic information condition. On Wednesday of the first week of this phase, static information-based interventions were delivered by email to all participants according to their consumption level (see Figure 2). These interventions have been introduced to induce an initial reduction in consumption to build the dynamic information-based intervention for phase 3. In addition, participants received a personal link to a web page containing their information-based intervention as well as information on water conservation practices (see subsection S5.2 of the Online Appendix). During the second week, participants received emails with reminders to visit their web page. After the second phase, participants were assigned to treatment groups.

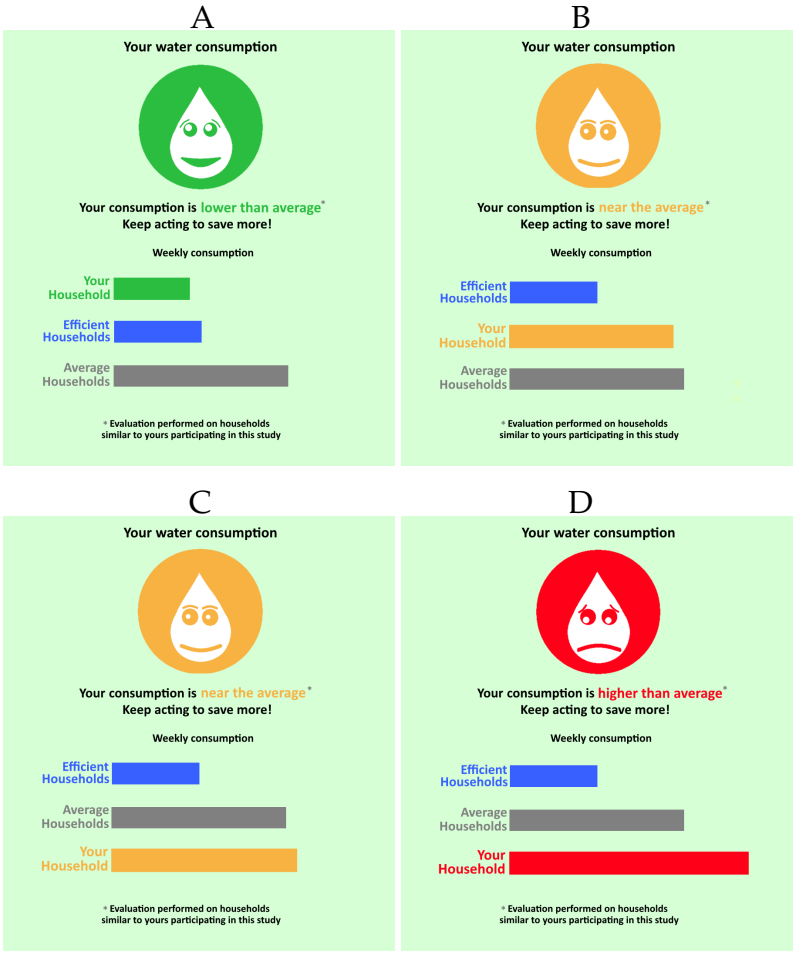

Figure 2: Static information-based interventions for Efficient households (panel A), for Medium-Low households (panel B), for Medium-High households (panel C), for High households (panel D).

Static information-based interventions have been inspired by those of Bhanot (2021). They are made of two components: descriptive and normative information. The descriptive information depicts the relative water consumption of the household with that of "Efficient Households" (in blue) and that of "Average households" (in grey). The normative information depicts the social appropriateness of the consumption of

the household with an emoji and a color (red, yellow, or green) associated with the emoji, as well as the household consumption description.

Phase 3 - Provision of Dynamic information vs. Static information. On Wednesday of the first week of this phase, participants in the treatment group received a dynamic information-based intervention (see Figure 3), while participants in the baseline group received the same static information-based intervention as in phase 2. In addition, participants received a personal link to a web page identical to phase 2, with the updated information intervention. During the second week, participants received emails with reminders to visit their web page.

Figure 3: Dynamic information-base intervention.

Dynamic information-based intervention is made of two components: descriptive and normative information. The descriptive information depicts a spread toward reduced water consumption by at least 30% of the households in the study. The normative information depicts the social appropriateness of this behavioral change with a pictogram evoking the gathering, as well as the color green. Between the second and the first phase, 45.61% of households effectively reduced their consumption by at least 10% (64.28%, 33.33%, 49.29%, and 57.69% respectively, for Efficient, Medium-Low, Medium-High, and High categories). Consequently, the dynamic information-based intervention announced (the highest threshold possible with respect to these reductions) that at least 30% of the participants in the experiment had reduced their water consumption during the second phase.

Phase 4 - Observation of persistent effects. For the last week, water consumption has been evaluated without any intervention.

2.3 Survey

At the end of the seventh week, I controlled various cognitive and psychological processes to assess better how information-based interventions lead to behavior change. These assessments respond to the gap in the literature highlighted by Bicchieri (2023) (see the Online Appendix subsection S5.3 for details).

First, I assessed the appropriateness of water-related behavior to observe if the information provision impacts behavior through a revision of social norms' beliefs. As the information provision is based on social norms information, it may be that the information changes the perception of the norms of the households, which results in a change of behavior. To this end, I implemented the Krupka and Weber (2013) methodology framed on water conservation behavior as well as water wasting behavior. The Krupka and Weber (2013) methodology consists of a coordination game where participants must determine the level of social appropriation of 12 water-related behaviors, in our case, provided by the largest number of participants. The correct answers on a randomly selected component earn participants an additional 5€. For example, participants were asked to identify the modal answer on how socially (in)appropriate it is to "take showers lasting less than 5 minutes" as well as to "not take showers lasting less than 5 minutes". The incorporation of both positive and negative narratives ensures a reliable estimation of the prevailing injunctive norm.

Second, I elicited the emotional response to each information-based intervention to determine whether the information provision's effectiveness could be associated with the affect they generate in the households. While emotions are often under-exploited in economic literature, research has shown their importance and mitigating effect on direct and indirect behavior (Vasileiou et al., 2024; Elster, 1998; Loewenstein, 2000; Drouvelis and Grosskopf, 2016; Jin and Atkinson, 2021). As a consequence, I implemented a "PANAS - Positive and Negative Affect Schedule" (Watson et al. (1988); French version by Caci and Baylé (2007)) on each information-based intervention to measure the affect they generate in receptive households. The Watson et al. (1988) methodology consists of asking participants about their emotional response to the provided interventions, using 10 positive and 10 negative descriptors on a 4-point Likert scale ranging from "strongly disagree" to "strongly agree". For example, participants were asked if they (dis)agree the specific information provided generated feelings of "Interest" or "Pride".

Third, I measured components of the Theory of Planned Behavior (Ajzen, 1991) to see which components are the most affected by the information provision and thus should be targeted in order to favor a behavioral change. To this end, I implemented several questions assessing *Perceived Behavioral control* (i.e., implementing water conservation practices is "possible"/"easy"/"under control" ...), *Attitude toward conservation* (i.e., water conservation practices are associated to "change in daily live"/"extra time or

effort"), and *Personal norms* (i.e., the environment is "important and fragile"/"increasing natural disasters"/"legitimately shaped by humans"). Moreover, *Expected results*, *Past/Current water conservation Behaviors/Equipment* were elicited as additional components correlated with water conservation behavior (Chaudhary et al., 2017; Clark and Finley, 2007; Lam, 2006) (see subsection S5.3 of the Online Appendix for the list of questions).

Lastly, I collected household socio-demographic information, including residential characteristics and the number of inhabitants in the household for each week of the study.

3 Results

In this study, I focus on the water consumption of the Medium-Low and Medium-High categories, which are the targeted population of the intervention. Household characteristics across categories are presented in Table S1 in the Online Appendix, the affectation across strata is represented in Table S2 in the Online Appendix, and the attrition is represented in Table S3 in the Online Appendix. I present the aggregated data for all categories, including Efficient and High categories. However, these latter categories are excluded from statistical analysis due to the insufficient statistical power resulting from their limited sample sizes. The required sample size per group was determined using a power analysis. The calculation was based on an expected average weekly water consumption of 2,072 liters for a household of two inhabitants (from the average water use of a French resident at 148 liters per day), assuming a 15% variance within each group. With a statistical power of 0.90 and a one-sided test, the analysis indicated that 39 participants per group are needed to detect a meaningful difference (alleged effect size of 10%). The lower-than-expected number of participants did not alter the focus on average consumers (see Preregistration at https://aspredicted.org/PCG_B1P).

3.1 Water evaluation and treatment effect

Regarding the discontinuity implemented in the Medium categories, I began by studying the variation in consumption before treatment induced by the first static information in phase 2.

Although water consumption was reduced by at least 10% for 33.33% of households in the Medium-Low category and for 49.29% of households in the Medium-High category between phases 1 and 2, Wilcoxon signed-rank comparing water consumption between phase 1 and phase 2 found no significant difference for Medium-Low nor Medium-High categories. This may be explained by the heterogeneous reactions within categories, leading to an average increase of 16.08% (i.e., 123.71 liters per week) for the Medium-Low category and an average reduction of 6.98% (i.e., 92.43 liters

per week) for the Medium-High category. The significant variation across categories (Wilcoxon ranksum test comparing variation of water consumption of Medium-Low with Medium-High categories between phase 1 and phase 2, *z=2.49*, *p=0.012*) led them to be studied separately for the study. In addition, the implemented regression will be analyzed separately in order to maintain a clean control group before the treatment effect.

These results are consistent with Landon et al. (2018) and Bhanot (2021), which find little to no effect of static information on average consumers, with a stronger effect for the above-average consumers than under-average consumers.

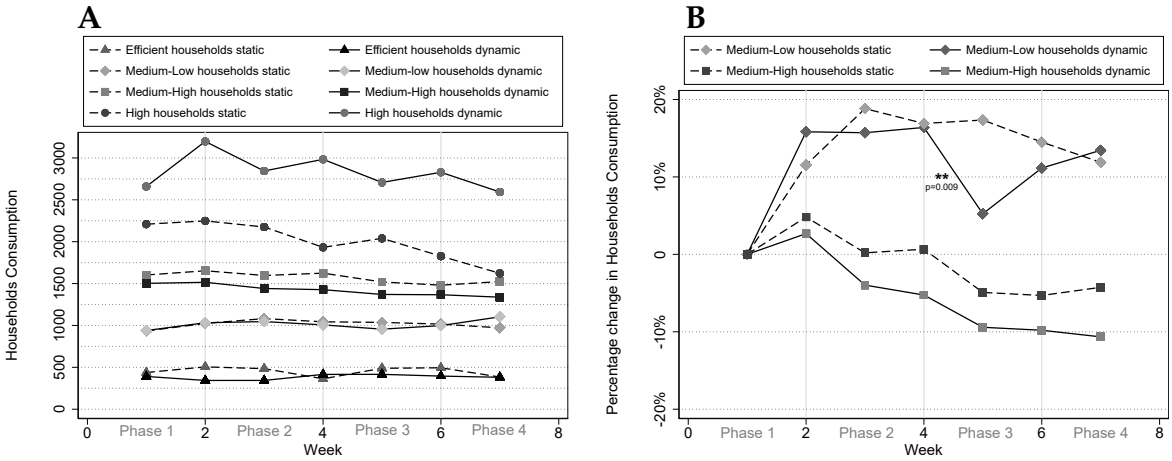

Figure 4: Evolution of consumption over weeks by category and treatment. Panel A represents the average weekly water consumption. Panel B represents the average percentage change in water consumption compared to the first week. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

The effect of the treatment compares the impact of dynamic information provision with that of repeated static information provision (phase 3). Figure 4 depicts the average household consumption by category and treatment (Panel A), and household percentage change in water consumption compared to week 1 by category and treatment (Panel B). The fragmentation of the high category in Figure 4, Panel A, is induced by its low number of households combined with a high standard deviation (1251) due to the presence of outliers. In comparison, the Medium-Low and Medium-High categories have similar standard deviations of 518 and 585, respectively.

As illustrated in Figure 4, Panel B, the Medium-Low category has reduced significantly more their consumption with the dynamic information (average reduction of 10.76%) than with the static information (average increase of 11.43%) in phase 3 (Wilcoxon ranksum test comparing variation in consumption of dynamic and static information in the Medium-Low category between phase 3 and phase 2, *z=2.61*, *p=0.009*). In contrast, the Medium-High category responded in the same way to both information (average reduction of 8.81% and 6.30%, respectively, for dynamic and static infor-

mation, Wilcoxon ranksum test comparing variation in consumption of dynamic and static information in the Medium-High category between phase 3 and phase 2, *z=1.36*, *p=0.17*). Statistical tests indicate that dynamic information leads to a significant and large reduction in water consumption in the Medium-Low category.

Delving into heterogeneity effects within a category, I investigated the treatment effect according to the reduction of water consumption in Phase 2. The reduction of water consumption in Phase 2 is represented by a dummy taking value 1 if a household has reduced its water consumption in Phase 2 by at least 5%. This characteristic has been included in the stratified random sampling technique assigning households into treatment and control groups, balancing their existence across treatments. The segregation of households according to their reduction in phase 2 shows a stronger significant effect of the dynamic information in the Medium-Low category for households that have not reduced their consumption in phase 2 for an average reduction of 26.81% (Wilcoxon ranksum test comparing variation in consumption of dynamic and static information of households that has not reduced their consumption in phase 2 in the Medium-Low category between phase 3 and phase 2, *z=3.14*, *p=0.001*), and no effect from those that have reduced their consumption in phase 2 (Wilcoxon ranksum test, *z=1.02*, *p=0.311*). Regarding the Medium-High category, no significant reduction from the treatment has been found in phase 3, whatever the reduction of water in phase 2. As represented in Figure 5, the dynamic information only leads to a significant and large reduction in water consumption in the Medium-Low category for households that have not reduced their water consumption in phase 2.

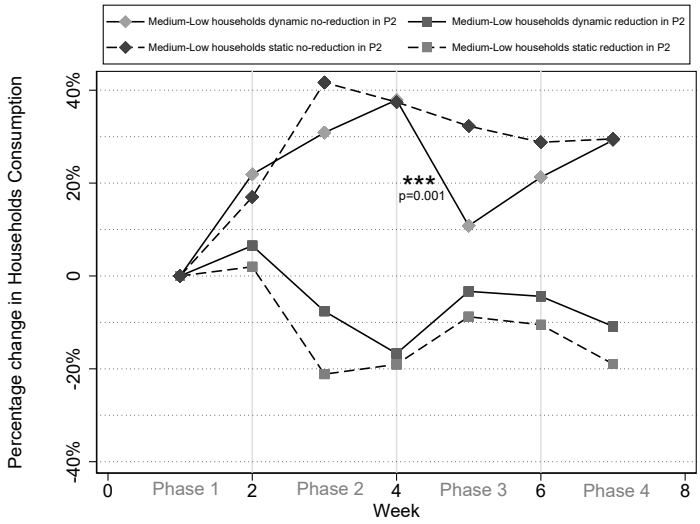

Figure 5: Evolution of water consumption. Percentage change compared to the first week for Medium-Low category segregated according to reduction in phase 2. The reduction dummy is attributed to households that have reduced their consumption by at least 5% in phase 2. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

I used ordinary least squares regression clustered at the household level to model the difference in difference of water consumption with control for household characteristics. The results confirm the significant decrease in water consumption following the dynamic information on the Medium-Low category. Modeling until week 5 to measure the immediate effect of the dynamic information, I find a significant average treatment effect with a reduction in water consumption of 22% (i.e., 133.8 liters, see Table S4 in the Online Appendix) for the Medium-Low category (model (1) in Table 1). The integration of cross-variables controlling for the reduction in water consumption in phase 2 (following the first static information – model (2)) enables us to identify that the dynamic information only affected households who did not reduce their consumption in phase 2, for an average reduction of 27.7% (i.e., 205.2 liters, see Table S4 in the Online Appendix). However, the effect of the dynamic information does not persist over time (see models (1) and (2) in Table 2 and Table 3, as well as in Table S5 and Table S6 in the Online Appendix). Modeling until week 6, the treatment effect decreased to 14.9% on all Medium-Low households and to 20.1% on Medium-Low households that have not reduced water consumption by at least 5% in phase 2. Modeling until week 7 for the ex-post evaluation phase without intervention, the treatment effect became not significant. Regarding the Medium-High category, I do not find immediate nor persistent effects of the dynamic information (models (3) and (4) in Table 1, Table 2, and Table 3, as well as in Table S4, Table S5 and Table S6 in the Online Appendix).

These results emphasize the large and significant immediate impact of dynamic information on Medium-Low households for households that have not reduced their consumption in phase 2, with no persistent difference between the dynamic information and the repetition of static information. Meanwhile, Medium-High households did not respond differently to dynamic information, either immediately or persistently, compared to the repetition of static information.

Table 1: Average treatment effects on Water consumption until week 5.

Week 1 to 5 **Ln(Consumption)**	Medium-Low (1)	Medium-Low (2)	Medium-High (3)	Medium-High (4)
Treatment x Post	-0.220*	-0.277**	0.007	0.051
	(0.088)	(0.093)	(0.079)	(0.091)
Treatment	-0.033	-0.030	0.011	0.021
	(0.073)	(0.069)	(0.065)	(0.060)
Post	0.050	0.050	-0.111	-0.113
	(0.049)	(0.049)	(0.067)	(0.067)
Living area size (m^2)	0.0009	0.001	0.003	0.003
	(0.002)	(0.002)	(0.002)	(0.002)
Dishwasher	0.055	0.061	0.032	-0.005
	(0.115)	(0.106)	(0.076)	(0.075)
Paying for water	-0.137	-0.140	-0.187	-0.140
	(0.120)	(0.114)	(0.108)	(0.112)
Nb. Men	0.167**	0.163**	0.196***	0.192**
	(0.055)	(0.049)	(0.053)	(0.056)
Nb. Women	0.244***	0.225***	0.109	0.135*
	(0.050)	(0.052)	(0.064)	(0.063)
Nb. Son	0.316***	0.292***	0.106	0.075
	(0.045)	(0.047)	(0.076)	(0.076)
Nb. Daughter	0.254***	0.217***	0.166**	0.193**
	(0.064)	(0.053)	(0.058)	(0.058)
Income	0.041	0.036	-0.002	0.011
	(0.033)	(0.030)	(0.026)	(0.028)
Owner	-0.102	-0.052	-0.075	-0.102
	(0.103)	(0.101)	(0.101)	(0.098)
Reduction		-0.219**		-0.149*
		(0.077)		(0.067)
Treatment x Post x Reduction		0.157		-0.069
		(0.189)		(0.104)
Observations	330	330	325	325
Clusters	66	66	65	65
R^2	0.37	0.41	0.35	0.38

Notes: Average marginal effects of Ordinary Least Squares models. Regression was conducted on weeks 1-5, clustered at the household level, with standard errors in parentheses. Men and Women are over 13 years old, while Son and Daughter are under 13 years old. Reduction represents a dummy variable taking value 1 for a reduction of water consumption of at least 5% during Phase 2.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 2: Average treatment effects on Water consumption until week 6.

Week 1 to 6 **Ln(Consumption)**	Medium-Low (1)	Medium-Low (2)	Medium-High (3)	Medium-High (4)
Treatment x Post	-0.149*	-0.201*	0.005	0.052
	(0.074)	(0.080)	(0.064)	(0.083)
Treatment	-0.033	-0.030	0.013	0.023
	(0.075)	(0.072)	(0.067)	(0.061)
Post	0.038	0.038	-0.099	-0.099
	(0.043)	(0.043)	(0.052)	(0.052)
Living area size (m^2)	0.0003	0.0004	0.003	0.003
	(0.003)	(0.003)	(0.002)	(0.002)
Dishwasher	0.051	0.062	0.047	-0.002
	(0.114)	(0.104)	(0.085)	(0.082)
Paying for water	-0.116	-0.118	-0.201*	-0.151
	(0.112)	(0.104)	(0.112)	(0.116)
Nb. Men	0.159**	0.155**	0.178**	0.175**
	(0.055)	(0.049)	(0.053)	(0.056)
Nb. Women	0.244***	0.225***	0.104	0.133*
	(0.050)	(0.052)	(0.064)	(0.063)
Nb. Son	0.317***	0.294***	0.120	0.088
	(0.046)	(0.048)	(0.077)	(0.077)
Nb. Daughter	0.244***	0.206***	0.159**	0.189**
	(0.068)	(0.056)	(0.056)	(0.057)
Income	0.038	0.033	0.002	0.017
	(0.035)	(0.032)	(0.028)	(0.030)
Owner	-0.110	-0.0624	-0.088	-0.117
	(0.100)	(0.099)	(0.104)	(0.099)
Reduction		-0.223**		-0.153*
		(0.077)		(0.070)
Treatment x Post x Reduction		0.137		-0.096
		(0.164)		(0.107)
Observations	396	396	390	390
Clusters	66	66	65	65
R^2	0.36	0.40	0.33	0.36

Notes: Average marginal effects of Ordinary Least Squares models. Regression was conducted on weeks 1-6, clustered at the household level, with standard errors in parentheses. Men and Women are over 13 years old, while Son and Daughter are under 13 years old. Reduction represents a dummy variable taking value 1 for a reduction of water consumption of at least 5% during Phase 2.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 3: Average treatment effects on Water consumption until week 7.

Week 1 to 7 **Ln(Consumption)**	Medium-Low (1)	Medium-Low (2)	Medium-High (3)	Medium-High (4)
Treatment x Post	-0.070	-0.136	-0.006	0.061
	(0.077)	(0.074)	(0.066)	(0.060)
Treatment	-0.018	-0.014	0.020	0.028
	(0.077)	(0.074)	(0.066)	(0.060)
Post	0.011	0.009	-0.087*	-0.087*
	(0.050)	(0.050)	(0.036)	(0.036)
Living area size (m^2)	0.0005	0.0004	0.003	0.003
	(0.003)	(0.003)	(0.002)	(0.002)
Dishwasher	0.024	0.042	0.056	0.012
	(0.117)	(0.107)	(0.090)	(0.086)
Paying for water	-0.138	-0.137	-0.194	-0.149
	(0.119)	(0.107)	(0.116)	(0.118)
Nb. Men	0.163**	0.159**	0.184**	0.183**
	(0.059)	(0.052)	(0.055)	(0.058)
Nb. Women	0.229***	0.212***	0.115	0.143*
	(0.050)	(0.052)	(0.064)	(0.063)
Nb. Son	0.339***	0.315***	0.140	0.111
	(0.047)	(0.049)	(0.078)	(0.078)
Nb. Daughter	0.280***	0.242***	0.170**	0.199***
	(0.064)	(0.052)	(0.056)	(0.056)
Income	0.043	0.037	0.003	0.017
	(0.036)	(0.033)	(0.028)	(0.031)
Owner	-0.094	-0.042	-0.101	-0.125
	(0.104)	(0.102)	(0.103)	(0.099)
Reduction		-0.251**		-0.132
		(0.077)		(0.070)
Treatment x Post x Reduction		0.168		-0.112
		(0.151)		(0.106)
Observations	458	458	452	452
Clusters	66	66	65	65
R^2	0.34	0.39	0.33	0.36

Notes: Average marginal effects of Ordinary Least Squares models. Regression was conducted on weeks 1-7, clustered at the household level, with standard errors in parentheses. Men and Women are over 13 years old, while Son and Daughter are under 13 years old. Reduction represents a dummy variable taking value 1 for a reduction of water consumption of at least 5% during Phase 2.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

3.2 Cognitive and psychological processes

In this part, I investigate the role of cognitive and psychological processes on the impact of information-based policies on water consumption. I will now refer to participants instead of households, as only one member of each household took part in the survey.

Normative assessment. Table 4 shows the average normative appropriateness of water conservation and water waste behavior for each treatment and category. The average normative appropriateness score represents the average of 12 items (for more details, see section S4 and subsection S5.3 of the Online Appendix). Results show no

significant differences between categories or treatments that might have been induced by the different information presented. Whereas Figure S2 in the Online Appendix shows the relatively shared knowledge of the social appropriateness of water conservation behaviors (with a concentration of 87% of participants with a positive score above 0.5), it also shows a broader disparity of the social inappropriateness of water wasting behavior (with only 61% of participants with a negative score under -0.5). These results suggest that it could be more effective to reinforce the social inappropriateness of wasting behaviors, and hence to revise beliefs, rather than highlight the social appropriateness of conservation behaviors, which may not alter the value attached to norms. However, OLS regression of water variation in phase 3 by Cognitive and Psychological processes (see Table S7 in the Online Appendix) find no effect from social appropriateness of water conservation/wasting behavior. The normative assessment of water conservation and wasteful behavior is neither influenced by the provision of information, nor is it responsible for the reduction in water consumption in phase 3.

Table 4: Normative assessment of water-related behaviors.

	Efficient participants	Medium-Low participants	*p-value* of Mediums	Medium-High participants	High participants
Water conservation behavior with DI	0.551	0.677	*0.524*	0.707	0.722
p-value of DI vs SI		*0.344*		*0.551*	
Water conservation behavior with SI	0.725	0.733	*0.710*	0.788	0.712
Water wasting behavior with DI	-0.352	-0.509	*0.952*	-0.521	-0.375
p-value of DI vs SI		*0.594*		*0.558*	
Water wasting behavior with SI	-0.625	-0.473	*0.309*	-0.551	-0.640

Notes: Score between -1 and 1, with -1 referring to low level and 1 to high level. *p-value* given by Wilcoxon ranksum statistical test. DI refers to Dynamic Information, and SI to Static Information.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Emotional assessment. Table 5 shows the average arousal for positive and negative valences in response to each policy implemented in phase 3. The average arousal score represents the average of 10 items (for more details, see section S4 and subsection S5.3 of the Online Appendix). Results show that the dynamic information induced significantly more positive emotion for Medium-Low category (Wilcoxon ranksum test *z=2.16*, *p=0.030* for Medium-Low, and *z=1.95*, *p=0.051* for Medium-High), as well as less negative emotion in the Medium-High category (Wilcoxon ranksum test *z=4.35*, *p<0.001*). However, Table S7 in the Online Appendix finds no link between emotional valence induced by the information provision and the reduction of consumption in phase 3. Dynamic information induces stronger positive emotions than static information in Medium participants and less negative emotion in Medium-High participants, but emotions do not seem to directly contribute to the reduction in water consumption in phase 3.

Table 5: Emotional evaluation of information-based policies.

	Efficient participants	Medium-Low participants	*p-value* of Mediums	Medium-High participants	High participants
Positive emotions with DI	0.144	0.132	*0.356*	0.107	0.13
p-value of DI vs SI		*0.030**		*0.051*	
Positive emotions with SI	0.453	0.004	*0.852*	-0.009	-0.15
Negative emotions with DI	-0.639	-0.654	*0.864*	-0.714	-0.497
p-value of DI vs SI		*0.169*		*0.000****	
Negative emotions with SI	-0.7	-0.488	*0.001****	-0.271	-0.075

Notes: Score between -1 and 1, with -1 referring to low level and 1 to high level. *p-value* given by Wilcoxon statistical test. DI refers to Dynamic Information, and SI to Static Information.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Theory of planned behavior assessment. Table S8 in the Online Appendix shows the average score for components related to the theory of planned behavior by category and treatment (information on the construction of each component is available in section S4 and subsection S5.3 of the Online Appendix). Results show that participants provided with the dynamic information exhibited significantly more *Personal norms* in the Medium-Low category (Wilcoxon ranksum test *z=2.04*, *p=0.041*), as well as significantly more Perceived control and significantly less *Expected results* in the Medium-High category (Wilcoxon ranksum *z=3.05*, *p=0.002* for perceived control, and *z=2.06*, *p=0.040* for expected result). In addition, Table S7 in the Online Appendix shows that *Personal norms* significantly explain a part of the reduction in per capita water consumption during phase 3 for the Medium-Low category, while *Expected results* significantly explain a part of the reduction in per capita water consumption during phase 3 for the Medium-High category. Whereas the increase in *Personal norms* exhibited with dynamic information in the Medium-Low category favors the reduction of water consumption, the decrease in *Expected results* exhibited with the dynamic information in the Medium-High category disfavors the reduction of water consumption.

Cognitive and psychological processes. In this section, we have seen that dynamic information is correlated with several elements linked to cognitive and psychological processes, suggesting that information impacts these components. While the provision of information does not appear to impact behavior through perceived social norms, its effectiveness and ineffectiveness appear to be mediated by emotional responses and some components of the theory of planned behavior. In the Medium-Low category, individuals who have received the dynamic information feature greater arousal of positive emotions and *Personal norms*. *Personal norms* had a significant impact on reducing water consumption in phase 3, which may explain the effectiveness of the information policy in this category. In the Medium-High category, individuals who have received the dynamic information feature lower *Expected results*. However, as this element is linked to the reduction of water consumption, this may explain the ineffectiveness of

the information policy in this category.

4 Discussion

This work examines the efficacy of information provision in the field of water consumption in influencing average consumers, who represent the majority of the population. I implemented a new type of information, using dynamic information about the social norms, in face to traditional static information about the social norms.

By creating a discontinuity in the information provided between below- and above-average households, the dynamic information revealed an immediate significant average treatment effect only on below-average consumers who had not responded to the first static information (average decrease of 27.7%, i.e., 205 liters per household per week). This reduction can be partly explained by the increased *Personal norms*, which positively correlate with the provision of dynamic information. Meanwhile, above-average households have not reacted to the policy, either immediately or persistently. The policy's ineffectiveness on above-average households can be partly explained by a reduction in *Expected results*, which negatively correlated with the provision of dynamic information. The difference in reactions between the two Medium categories to the information provision may be explained by households' social preferences. Although the participating households are all very similar and located in the same area, their initial water consumption was the sole factor determining their category assignment. Given their overall similarity, it can be assumed that there is an initial difference in their sensitivity to water consumption. This sensitivity may explain the differing reactions to the same information. Households that are sensitive to water issues are more likely to emphasize the information provided, while households insensitive to water issues may find it irrelevant (Petty and Cacioppo, 1986; Frewer et al., 1998; Pavey and Sparks, 2009). Concordant information is better received and more effective than conflicting information (Akerlof and Dickens, 1982; Frey, 1982). Additionally, since the information provision relies on components of social norms, the effectiveness of the information is influenced by the household's connection to the reference group (Bicchieri, 2005; Bicchieri and Mercier, 2013; Bicchieri and Dimant, 2022), a criterion that non-water-sensitive households may not meet.

The effect of providing information based on social norms on below-average consumers is promising. Firstly, it shows that it is possible to use information on social norms to influence average behavior. Secondly, since it concerns a large proportion of individuals, this change could have a considerable impact on the evolution of the average. It could, therefore, contribute to creating new norms that will eventually impact personal preferences. Thirdly, it reminds us of the effect of information provision, which can be used to increase the pro-social and pro-environmental behavior of most

individuals at low cost without changing the incentives (unlike other approaches that rely on incentive changes, as in Catola et al. (2023, 2025)).

The results of this paper have implications for public policy on water management. I show how low-cost information provision can induce an average reduction of over 27.7% (i.e., 205 liters) of domestic water consumption for below-average households per week, which represents a considerable quantity on a city scale. For example, in a city of 500,000 inhabitants with around 30-40% below-average households (our study, as well as Otaki et al. (2017), Bergel et al. (2016), and Hussien et al. (2016), found a distribution of water consumption of households following a Gaussian), the water saved in one week is equivalent to the amount of water needed to produce 60,000-80,000 kilograms of potatoes (Pimentel et al. (1997) estimated that 1 kilogram of potatoes required 500 liters of water). However, as I have only observed an immediate effect from the implemented policy, it should be used on specific occasions, such as during a period of drought. In addition, since the design does not allow for the isolation of the dynamic information's effect alone, it is possible that this effect essentially serves to counteract a backfire triggered by the preceding static information. This suggests that, in the context of public policy implementation without targeted households, the conventional reliance on static information may be more effective when complemented by dynamic information. These results are especially important as domestic water-related behaviors are private behaviors that are less subject to social pressure (Nyborg et al., 2016). Consequently, the use of dynamic information on visible behaviors could have greater and long-lasting effects.

Nevertheless, due to the limitations of the sample in this experiment, neither the implementation of a additional control group nor a comprehensive analysis of the impact of dynamic information on overconsumers was feasible. Future research endeavors would be instrumental in reinforcing these findings, enhancing their validity, and broadening their applicability. First, it would enable us to test the provision of dynamic information on different samples. On the one hand, this will allow us to apply the policy to a larger number of households and eliminate any link with potential field specificity. On the other hand, it will enable us to test cross-cultural implications. Cultural differences could imply different attitudes to social norms, as well as different appreciations towards the water. Secondly, it would enable the isolated implementation of dynamic information provision, in contrast to the current approach, which is preceded by an initial static information provision. The inclusion of a control group receiving no information would allow for a precise assessment of the standalone effect of dynamic information, thereby determining whether its impact stems from an independent influence on behavior or essentially serves to mitigate an initial adverse reaction to static information. Lastly, further research is needed to clarify the relationship between information policy, behavior, and psycho-cognitive processes for the

development of more effective policies. For instance, the levels of spread of behavior, as well as the number of provisions of information, should be investigated in order to observe these implications and optimize the effectiveness of information-based policies. Similarly, the role of beliefs in the decision-making process could be investigated more; for example, Fuhrmann-Riebel et al. (2024) find an effect of dynamic information only for individuals who underestimate the trend.

As the urgency of climate change grows, it is essential to encourage the widespread adoption of prosocial and pro-environmental behavior (Zhang et al., 2007; Shukla et al., 2022; Pörtner et al., 2022). Information-based policies can play a crucial role in accelerating this shift by reinforcing feedback and amplifying social contagion (Lenton et al., 2022; d'Adda et al., 2020). Implementing such policies during tipping points towards green behaviors might enable reaching optimal levels of sustainability in our systems (Lenton et al., 2023; Pizziol and Tavoni, 2024).

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Data availability

Data will be made publicly available after acceptance for publication.

Declaration of competing interest

The author declares no conflict of interest.

Dynamic Information Provision for Household Water Consumption

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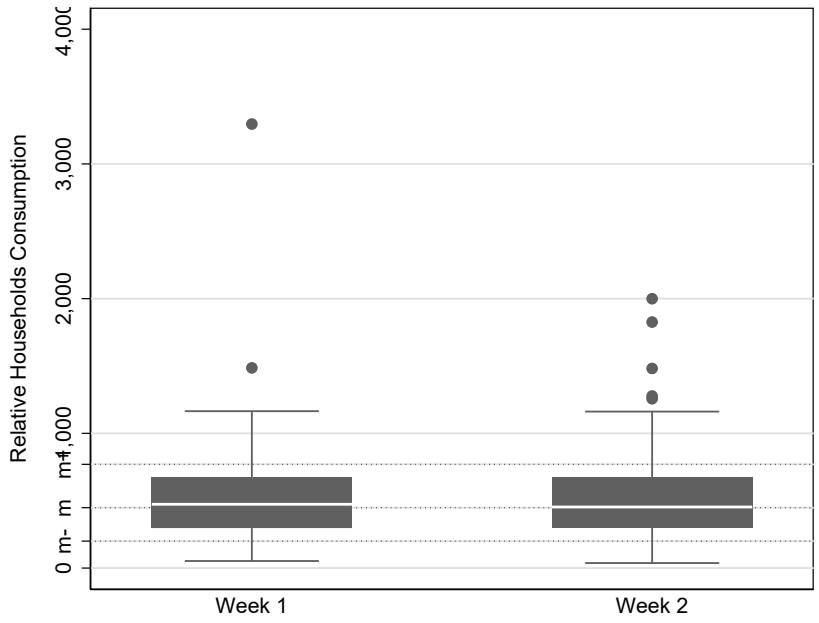
Online Appendix

S1 Households' classification

Figure S1: Distribution of households' consumption per capita for the first two weeks.



Notes: m- (200), m (448), and m+ (770) represent the boundaries implemented to create categories.

Table S1: Average household characteristics by categories.

	Efficient households	Medium-Low households	Medium-High households	High households
Nb. households	14	66	65	26
Households size	3.28	2.95	2.77	2.92
Living area size (m^2)	77.43	75.18	73.34	72.23
Dishwasher (%)	78.57	78.79	75.38	57.69
Paying for Water (%)	78.57	87.88	90.77	76.92
Nb. Men	0.86	1.12	1.14	0.96
Nb. Women	1.43	1.18	1.21	1.23
Nb. Son	0.64	0.41	0.2	0.38
Nb. Daughter	0.36	0.24	0.21	0.35
Income	2.21	2.14	2	1.61
Owner (%)	64.28	66.66	47.69	26.92
Phase 1 consumption	404.61	982.77	1567.42	2632.35
Phase 2 consumption	395.5	1044.629	1521.21	2550.46
Phase 3 consumption	436.61	1001.788	1433.41	2415.17
Phase 4 consumption	382	1037	1429	2182

Notes: Paying for Water is a dummy variable taking value 1 if the household pays directly for its water consumption (as opposed to households whose water charges are included in their rent). Income score thresholds 1=less than 30,000€, 2=between 30,000 and 40,000€, 3=between 40,000 and 50,000€, 4=between 50,000 and 60,000€, 5=more than 60,000€. Men and Women are over 13 years old, while Son and Daughter are under 13 years old. Water consumption in liters per week.

Table S2: Stratified random sampling composition by categories and treatment for Medium categories.

	Medium-Low dynamic	Medium-Low static	Medium-High dynamic	Medium-High static
Nb. households	33	33	33	32
Nb. with Dishwasher	27 (81.81%)	25 (75.75%)	23 (69.70%)	26 (81.25%)
Nb. size 1	-	3 (9.09%)	3 (9.09%)	1 (3.12%)
Nb. size 2	12 (36.36%)	12 (36.36%)	15 (45.45%)	14 (43.75%)
Nb. size 3	8 (24.24%)	6 (18.18%)	11 (33.33%)	6 (18.75%)
Nb. size 4	11 (33.33%)	12 (23.36%)	3 (9.09%)	8 (25%)
Nb. size 5	2 (6.06%)	-	1 (3.03%)	1 (3.12%)
Nb. size 6	-	-	-	1 (3.12%)
Nb. size 7	-	-	-	1 (3.12%)
Nb. Men	1.24	1	1.03	1.25
Nb. Women	1.24	1.12	1.12	1.31
Nb. Son	0.48	0.33	0.15	0.25
Nb. Daughter	0.12	0.36	0.21	0.21
Nb. with reduction of 5% in Phase 2	13 (36.36%)	12 (39.39%)	20 (60.60%)	16 (50%)

Notes: Nb. size n, count the number of households of size n in the category. Men and Women are over 13 years old, while Son and Daughter are under 13 years old. Water consumption in liters per week.

S2 Attrition

Table S3: Attrition by categories and treatment for Medium categories.

	Without categories	Medium-Low without treatment	Medium-High without treatment	Medium-Low dynamic	Medium-Low static	Medium-High dynamic	Medium-High static	Total	Phase
Week 1	10							10	Phase 1
Week 2	7							7	
Week 3									Phase 2
Week 4		2	4					6	
Week 5									Phase 3
Week 6					1			1	
Week 7							1	1	Phase 4
Total	17	2	4		1		1	25	

Notes: Without Categories refers to phase 1, where households did not have any assignment. Without treatment refers to phase 2, where there is no difference between the two Medium categories. Dynamic refers to households receiving dynamic information, while static refers to households receiving static information.

On the 14.92% attrition (30 households), 56.67% (17 households) of the attrition happened during Phase 1 (before any intervention), 26.67% (8 households) during Phase 2 (after the first static intervention), 13.33% (4 households) during Phase 3 (after the treatment intervention), 3.33% (1 household) at the end-of-experiment survey.

S3 Average treatment effects on Water consumption

Table S4: Average treatment effects on Water consumption until week 5

Week 1 to 5	Medium-Low	Medium-Low	Medium-High	Medium-High
Consumption	(1)	(2)	(3)	(4)
Treatment x Post	-133.8	-205.2*	8.80	49.79
	(72.10)	(85.71)	(94.94)	(113.2)
Treatment	-66.05	-63.83	18.42	31.46
	(63.86)	(62.06)	(98.50)	(91.00)
Post	21.41	21.14	-117.1	-119.2
	(51.80)	(51.94)	(83.37)	(83.60)
Living area size (m^2)	0.56	0.67	4.53	4.31
	(2.24)	(2.17)	(3.38)	(3.27)
Dishwasher	68.93	76.83	46.34	-3.43
	(108.2)	(102.2)	(100.1)	(99.71)
Paying for water	-56.92	-57.38	-327.0*	-265.2
	(105.2)	(102.5)	(152.2)	(159.8)
Nb. Men	148.8**	146.2**	311.1***	305.1**
	(53.52)	(49.22)	(84.43)	(88.88)
Nb. Women	235.5***	220.1***	146.7	181.0*
	(40.78)	(42.18)	(95.69)	(95.30)
Nb. Son	293.6***	275.2***	173.4	132.7
	(45.76)	(47.16)	(111.5)	(113.1)
Nb. Daughter	232.9***	202.4***	256.5**	291.8***
	(61.10)	(54.74)	(85.98)	(84.16)
Income	52.62*	48.39	-4.44	13.99
	(27.36)	(25.21)	(39.63)	(42.23)
Owner	-118.5	-79.90	-47.71	-84.09
	(103.8)	(99.41)	(147.6)	(143.0)
Reduction		-182.0**		-199.3*
		(64.22)		(96.83)
Treatment x Post x Reduction		191.1		-63.97
		(124.6)		(132.7)
Observations	330	330	325	325
Clusters	66	66	65	65
R^2	0.41	0.44	0.39	0.42

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Average marginal effects of Ordinary Least Squares models. Regression was conducted on weeks 1-5, clustered at the household level, with standard errors in parentheses. Men and Women are over 13 years old, while Son and Daughter are under 13 years old. Reduction represents a dummy variable taking value 1 for a reduction of water consumption of at least 5% during Phase 2.

Table S5: Average treatment effects on Water consumption until week 6

Week 1 to 6	Medium-Low	Medium-Low	Medium-High	Medium-High
Consumption	(1)	(2)	(3)	(4)
Treatment x Post	-58.94	-102.9	22.62	94.89
	(62.38)	(76.35)	(77.55)	(108.1)
Treatment	-67.69	-65.18	18.21	30.71
	(65.48)	(63.76)	(99.45)	(91.29)
Post	6.70	6.52	-123.5	-123.4
	(40.73)	(40.83)	(68.94)	(68.93)
Living area size	0.34	0.46	4.30	4.02
	(2.33)	(2.24)	(3.32)	(3.20)
Dishwasher	74.99	83.77	50.33	-7.35
	(106.2)	(99.96)	(105.5)	(104.0)
Paying for water	-40.31	-41.55	-350.6*	-285.4
	(102.2)	(97.89)	(161.3)	(167.7)
Nb. Men	136.1*	132.6**	292.4***	288.1**
	(53.27)	(48.69)	(82.81)	(86.75)
Nb. Women	230***	214.9***	142.9	180.2
	(40.89)	(40.97)	(96.98)	(94.54)
Nb. Son	299***	279.7***	179.8	137.2
	(47.37)	(48.69)	(109.8)	(110.9)
Nb. Daughter	218.1***	187.0**	240**	279.1***
	(62.03)	(54.47)	(79.85)	(78.55)
Income	48.11	43.92	-3.93	16.17
	(27.97)	(26.08)	(40.55)	(43.20)
Owner	-128.7	-89.20	-53.84	-90.95
	(103.3)	(99.73)	(148.2)	(141.9)
Reduction		-185.0**		-199.8*
		(64.78)		(97.49)
Treatment x Post x Reduction		115.6		-119.4
		(118.5)		(133.9)
Observations	396	396	390	390
Cluster	66	66	65	65
R^2	0.38	0.41	0.37	0.40

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Average marginal effects of Ordinary Least Squares models. Regression was conducted on weeks 1-6, clustered at the household level, with standard errors in parentheses. Men and Women are over 13 years old, while Son and Daughter are under 13 years old. Reduction represents a dummy variable taking value 1 for a reduction of water consumption of at least 5% during Phase 2.

Table S6: Average treatment effects on Water consumption until week 7

Week 1 to 7	Medium-Low	Medium-Low	Medium-High	Medium-High
Consumption	(1)	(2)	(3)	(4)
Treatment x Post	18.99	8.25	14.25	110.1
	(84.49)	(122.2)	(60.30)	(94.99)
Treatment	-58.90	-54.89	33.38	43.71
	(69.31)	(66.50)	(97.59)	(89.19)
Post	-9.67	-9.58	-106.7*	-106.3*
	(38.38)	(38.33)	(45.10)	(45.06)
Living area size	0.06	0.18	3.24	3.00
	(2.31)	(2.25)	(3.03)	(2.90)
Dishwasher	65.20	68.86	56.48	-4.01
	(108.0)	(100.2)	(106.3)	(102.6)
Paying for water	-43.37	-48.48	-344.9*	-283.2
	(109.9)	(103.0)	(159.0)	(164.5)
Nb. Men	152.9**	150.4**	310.1***	304.8***
	(56.62)	(52.19)	(82.45)	(85.73)
Nb. Women	229.4***	217.7***	181.4	215.2*
	(44.27)	(43.79)	(92.25)	(88.97)
Nb. Son	336.2***	316.7***	203.9	162.1
	(50.50)	(50.77)	(113.2)	(114.0)
Nb. Daughter	276***	250.5***	260.4**	300.0***
	(72.24)	(63.93)	(78.42)	(76.11)
Income	30.10	27.0	-2.20	17.75
	(31.29)	(29.20)	(39.45)	(42.29)
Owner	-101.1	-57.0	-74.68	-109.1
	(106.6)	(102.7)	(144.3)	(137.6)
Reduction		-183.3**		-187.1
		(65.31)		(95.67)
Treatment x Post x Reduction		27.2		-156.3
		(145.1)		(132.6)
Observations	462	462	455	455
Cluster	66	66	65	65
R^2	0.33	0.35	0.39	0.41

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Average marginal effects of Ordinary Least Squares models. Regression was conducted on weeks 1-7, clustered at the household level, with standard errors in parentheses. Men and Women are over 13 years old, while Son and Daughter are under 13 years old. Reduction represents a dummy variable taking value 1 for a reduction of water consumption of at least 5% during Phase 2.

S4 Cognitive and Psychological processes

Table S7 shows the correlation between Cognitive and Psychological processes of respondents with water consumption of households. "Appropriateness of water conservation/wasting behavior" score represents the average of 12 items. "Positive/Negative valence from phase 3 information provision" represents the average of 10 items. "Personal norms" score represents the average of 5 items. "Expected results" score represents the average of 3 items. "Attitude toward water conservation" score represents the average of 5 items. "Perceived behavioral control" score represents the average of 7 items. "Conservation Behaviors" score represents the average of 9 behaviors. "Conservation Equipment" represents the average of 6 equipments. All items are taken from a 5-point Likert scale (see section S5.3 for details).

Table S7: Variation of water consumption in phase 3 vs. phase 2

	Medium-Low	Medium-High
	(1)	(2)
Appropriateness of water conservation behavior	0.038	0.122
	(0.120)	(0.087)
Appropriateness of water wasting behavior	-0.188	-0.014
	(0.153)	(0.187)
Positive valence from phase 3 information provision	-0.034	0.073
	(0.107)	(0.137)
Negative valence from phase 3 information provision	0.086	-0.009
	(0.092)	(0.097)
Personal norms	-0.306*	0.390
	(0.129)	(0.276)
Expected results	0.024	-0.324*
	(0.146)	(0.142)
Attitude toward water conservation	-0.141	-0.037
	(0.283)	(0.369)
Perceived behavioral control	-0.120	-0.033
	(0.113)	(0.107)
Change of conservation behavior	0.158	-0.476
	(0.365)	(0.308)
Change of conservation equipment	-0.583	0.122
	(0.317)	(0.580)
Nb. Men	-0.136*	-0.005
	(0.060)	(0.037)
Nb. Women	-0.089	0.002
	(0.078)	(0.053)
Nb. Son	-0.048	0.033
	(0.050)	(0.073)
Nb. Daughter	-0.167*	-0.040
	(0.075)	(0.059)
Observations	66	65
R^2	0.276	0.256

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Average marginal effects of Ordinary Least Squares models, with standard errors in parentheses. All scores range between -1 and 1.

S4.1 Theory of planned behavior, and related components

Table S8 shows the scores of components from Theory of planned behavior (Ajzen, 1991), Related component (Chaudhary et al., 2017; Clark and Finley, 2007; Lam, 2006), and Additional information (appearing relevant to the author).

Table S8: Direct and related components to the Theory of Planned Behavior.

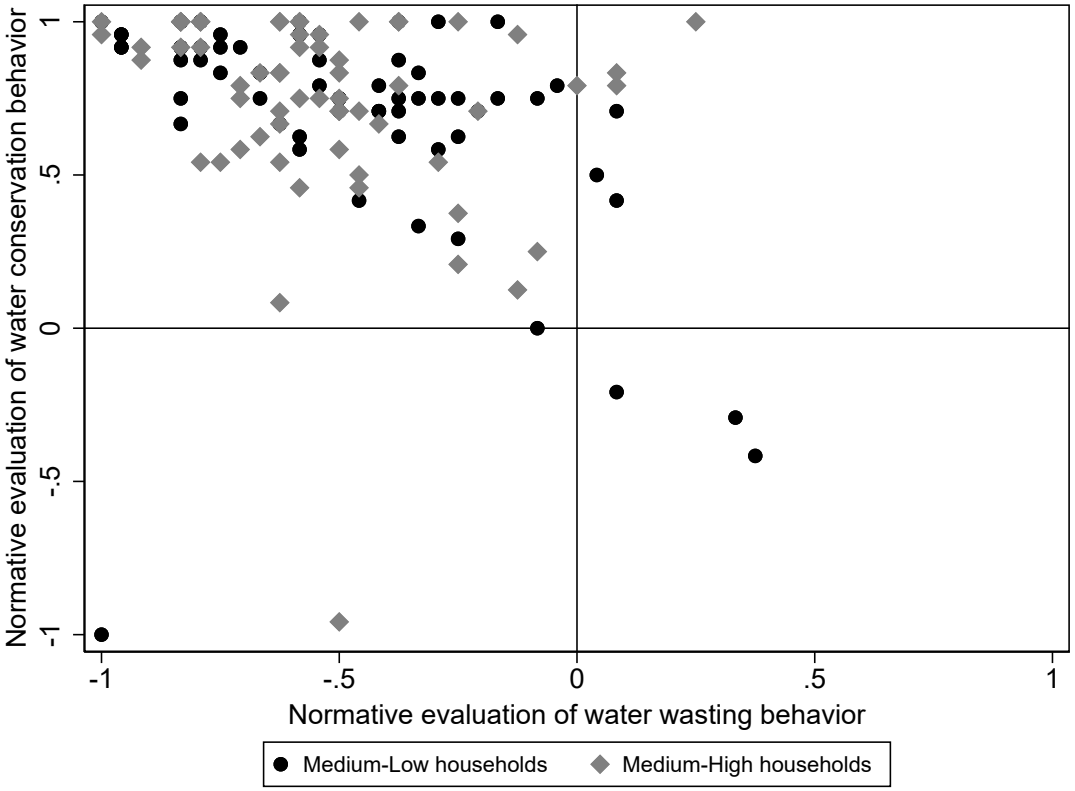
	Efficient participants	Medium-Low participants	*p-value* of Mediums	Medium-High participants	High participants
Theory of planned behavior					
Perceived control with DI	0.325	0.193	*0.247*	0.314	0.028
p-value of DI vs SI		*0.102*		*0.002***	
Perceived control with SI	0.257	0.028	*0.997*	0.027	0.143
Attitude toward water conservation with DI	0.633	0.612	*0.982*	0.615	0.573
p-value of DI vs SI		*0.301*		*0.540*	
Attitude toward water conservation with SI	0.62	0.576	*0.059*	0.641	0.590
Personal norms with DI	0.789	0.685	*0.246*	0.642	0.567
p-value of DI vs SI		*0.041**		*0.379*	
Personal norms with SI	0.84	0.570	*0.058*	0.653	0.554
Related components					
Expected Result with DI	0.630	0.576	*0.196*	0.495	0.544
p-value of DI vs SI		*0.148*		*0.071*	
Expected Result with SI	0.567	0.470	*0.040**	0.614	0.409
Anterior Conservation Behaviors with DI	0.839	0.761	*0.326*	0.731	0.548
p-value of DI vs SI		*0.857*		*0.800*	
Anterior Conservation Behaviors with SI	0.866	0.751	*0.384*	0.719	0.616
Additional information					
Current Conservation Behaviors with DI	0.852	0.882	*0.270*	0.848	0.763
p-value of DI vs SI		*0.042**		*0.755*	
Current Conservation Behaviors with SI	0.911	0.804	*0.623*	0.833	0.747
Anterior Conservation Equipment with DI	0.204	0.253	*0.643*	0.535	0.389
p-value of DI vs SI		*0.932*		*0.804*	
Anterior Conservation Equipment with SI	0.253	0.495	*0.809*	0.521	0.379
Current Conservation Equipment with DI	0.537	0.561	*0.956*	0.566	0.4
p-value of DI vs SI		*0.446*		*0.723*	
Current Conservation Equipment with SI	0.633	0.505	*0.660*	0.542	0.394

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Score between -1 and 1, with -1 referring to low and 1 to high levels. *p-value* given by Wilcoxon statistical test. DI refers to Dynamic Information, and SI refers to Static information.

S4.2 Normative evaluation

Figure S2 regroups answers of both Medium categories. In the Figure, the more a participant is on the top of the ordinate, the more he perceives water conservation behavior as socially appropriate. Similarly, the more a participant is on the left of the abscissa, the more he perceives water-wasting behavior as socially inappropriate. As a consequence, the top-left part represents a perception of a strong norm in favor of water conservation behavior; the bottom-right part represents a perception of a strong norm in favor of water wasting behavior; the middle-center and the top-right represent a perception of an absence of norm; the bottom-left represent nothing logical; the other intermediary parts represent ambiguous norms.

Figure S2: Normative evaluation of water behavior



S5 Instructions (translated from French to English)

S5.1 Weekly-email

In this section, text tags represent variations according to weeks and participants. In addition, the texts in red only concern the second weeks of the phases with information provision (phases 2 and 3).

Beginning of the study

Subject: Water consumption study

Good morning,

Week 1

The water consumption survey you're taking part in starts today. We want to remind you that you must take a photo of your water meter(s) every Tuesday (the photo must not have been taken in advance) and submit it to us via the link provided (available below). If you forget to send a photo or make a mistake in the file you submit, you'll receive a reminder at this email address. You will be compensated 20€ for submitting your photos for the 7-week study period. In addition, the final questionnaire will allow you to earn an extra 5€ depending on your answers to clearly marked questions.

We invite you to take a photo of your water meter now and send it to us at https://cloud.univ-grenoble-alpes.fr/s/{{ Code }}. Please do not share this link. Your photo must have been taken today to be eligible for payment.

We thank you in advance for the photo,

If you have any problems, please get in touch with us at the following email address: gael-ecoexp@univ-grenoble-alpes.fr .

Best regards

The Experimental Economics Team

First weekly e-mail

Subject: Water consumption study

Good morning,

Week {{ Week }}

We invite you to take a photo of your water meter and send it to us at https://cloud.univ-grenoble-alpes.fr/s/{{ Code }}. This link is unique to you; please do not share it. Your photo must have been taken today to be eligible for payment.

We also remind you to consult the first results of the study at the following link {{ Link }}. Please do not share this link with others.

We thank you in advance for the photo,

If you have any problems, please get in touch with us at the following email address: gael-ecoexp@univ-grenoble-alpes.fr .

Best regards

The Experimental Economics Team

Second weekly e-mail

Subject: Reminder of water consumption study

Good morning,

Week {{ Week }}

We have not received the photo of your water meter.
Please take a picture of your water meter and send it to us at https://cloud.univ-grenoble-alpes.fr/s/{{ Code }}. This is your own link, so please don't share it. Your photo must have been taken today to be eligible for payment.
We also remind you to consult the first results of the study at the following link {{ Link }}. Please do not share this link with others.
We thank you in advance for the photo,
If you have any problems, please get in touch with us at the following email address: gael-ecoexp@univ-grenoble-alpes.fr .
Best regards
The Experimental Economics Team

Third weekly e-mail
Subject: Latest water consumption study reminder
Good morning,
Week {{ Week }}
This is the last reminder for the water consumption study.
We have not received your water meter photo. You must take a picture of your meter today to be eligible for payment.
If you don't, we'll remove you from the study, and you won't receive any more emails about it.
We invite you to take a photo of your water meter and send it to us using the link https://cloud.univ-grenoble-alpes.fr/s/{{ Code }}. This link is unique to you, so please don't share it. Your photo must have been taken today to be eligible for payment.
We also remind you to consult the first results of the study at the following link {{ Link }}. Please do not share this link with others.
We thank you in advance for the photo,
If you have any problems, please get in touch with us at the following email address: gael-ecoexp@univ-grenoble-alpes.fr .
Best regards
The Experimental Economics Team

Information provision email
Subject: Water consumption study
Good morning,
Week {{ Week }}
After these {{ Week }} weeks of study, we have some results to share with you.
{{ Information_Provision }}
If you don't see an image displayed, you will find it at the link provided below.

We invite you to visit the following page, which includes information on household water consumption {{ Code }}. Please do not share this link with others.
You can visit this page as often as you like over the next two weeks.
Apart from consulting the page provided below, you have no further action to take until next Tuesday.
If you have any problems, please get in touch with us at the following email address: gael-ecoexp@univ-grenoble-alpes.fr .
Best regards
The Experimental Economics Team

S5.2 Web page information

Water is essential, let's save it!

Information about your water consumption

Information about French water consumption

Water consumption in France

- French households consume an average of 220 m3 of water per year. This represents a major source of expenditure, as well as a significant environmental impact.
- Adopting the right habits, combined with the installation of certain inexpensive devices, can save up to 40% of water consumption costs.
- Household water consumption breaks down as follows: 39% for hygiene, 20% for sanitary, 12% for laundry, 10% for washing up, 6% for cooking, 6% for gardening, 6% for miscellaneous, and 1% for drinks.

Environmental issues

- Rising temperatures are reducing river and groundwater flows, drying out soils and making water less available.
- At the same time, water requirements are increasing, whether for agriculture, for the growing number of households, or for increased industrial production.

Best practice

- Turning off water faucets as soon as they are no longer needed prevents unnecessary water loss.
- Watch out for water leaks and dripping taps, to avoid unnecessary water loss.

Reducing water consumption for laundry and dishwashing

- Using machines only when they are full reduces overall water consumption.
- Use "eco" modes or short cycles to reduce water consumption for each machine.
- Using rinse trays for hand-wash dishes rather than leaving the water running for each item, as well as using the rinse water from one group of items as wash water for the next group, saves a significant amount of water.

Water reduction in the bathroom

- Turning off the water when soaping your hands, head or body, as well as when shaving or removing make-up, saves a significant amount of water.
- Using a timer or music to control your showering time from 3 to 5 minutes (i.e. the time of less than two songs), saves a significant amount of water.

Equip yourself with energy-saving appliances

- For laundry and dishwashing. Installing appliances that consume less water (A, A+, A++ energy label) saves water in the long term.
- For sinks and showers. Fitting a mixer tap, thermostatic mixer tap, aerator, economizer, mousseur or eco-showerhead can reduce the flow of water out of the faucet, saving up to 70% water each time you use it.
- For toilets. Fitting a dual-flush system, Eco-WC pads or Eco-WC bags can reduce the amount of water per flush, saving up to 50% water per use.

Envoyer

S5.3 Survey

Assessment of household water consumption

This questionnaire concludes the household consumption survey. You must complete it to the end in order to validate your participation and allow us to pay your compensation for this survey.

During the survey, you will have the opportunity to win an additional 5 euros for questions that are distinctly marked. Please answer all questions honestly.

Suivant

Bonus Questions 1/2

This page is one of two that will allow you to win an extra 5€.

If this page is selected in the random draw, one of the questions below will be randomly selected as the one to win the extra 5€.

To win the extra 5€, you must find the answer most frequently given by participants in this survey.

*On this page, you will read about various decisions facing a person, "individual A".

After reading the description of the situation, you will be asked to evaluate the different choices available to individual A and to decide, for each of the possible actions, whether that action would be "socially appropriate" and "consistent with moral or proper social behavior" or "socially inappropriate" and "inconsistent with moral or proper social behavior". By "socially appropriate", we mean an action that most people would consider "correct" or "ethical". Another way of understanding what we mean is that if individual A were to make a socially inappropriate choice, someone else might be angry with individual A for doing so.

In each of your responses, we would like you to answer as truthfully as possible, based on your opinions of what constitutes socially appropriate or socially inappropriate behavior.

If this page is selected in the random draw, we will also randomly select one of the possible choices that individual A might make. For the selected choice, we will determine which answer was chosen by the greatest number of people among the participants in this study. If you give the same answer as the one chosen most often by other people, you'll receive an extra €5.

Let's assume that Individual A is a well-off person living in an apartment in the Auvergne-Rhône-Alpes region.

The table below lists the possible choices available to Individual A. For each choice, please indicate whether you think this option is very socially inappropriate, somewhat socially inappropriate, somewhat socially appropriate or very socially appropriate. To indicate your answer, select the corresponding box. Don't forget that you'll earn money (€5) if your answer to a randomly chosen question is the same as the most common answer given by participants in this study.

	Very socially inappropriate	Somewhat socially inappropriate	Somewhat socially appropriate	Very socially appropriate
Turn off faucet while brushing teeth or soaping face and hands	○	○	○	○
Hand-wash several kitchen utensils at the same time and use the rinse water from one group of utensils as wash water for the next group.	○	○	○	○
Rinse all your dishes in the same water	○	○	○	○
Turn off tap immediately after use	○	○	○	○
Take showers lasting less than 5 minutes	○	○	○	○

Avoid letting the water run in the shower while he shampoos his hair and soaps his body.	○	○	○	○
Avoid launching under-filled laundry machines	○	○	○	○
Avoid launching under-filled dishwashers	○	○	○	○
Use "eco" modes and short cycles	○	○	○	○
Use energy-saving appliances for laundry and dishes	○	○	○	○
Use energy-saving appliances for sinks and showers	○	○	○	○
Use energy-saving toilet fixtures	○	○	○	○

Suivant

Bonus Questions 2/2

This page is one of two that will allow you to win an extra 5€.

If this page is selected in the random draw, one of the questions below will be randomly selected as the one to win the extra 5€.

To win the extra 5€, you must find the answer most frequently given by participants in this survey.

*On this page, you will read about various decisions facing a person, "individual A".

After reading the description of the situation, you will be asked to evaluate the different choices available to individual A and to decide, for each of the possible actions, whether that action would be "socially appropriate" and "consistent with moral or proper social behavior" or "socially inappropriate" and "inconsistent with moral or proper social behavior". By "socially appropriate", we mean an action that most people would consider "correct" or "ethical". Another way of understanding what we mean is that if individual A were to make a socially inappropriate choice, someone else might be angry with individual A for doing so.

In each of your responses, we would like you to answer as truthfully as possible, based on your opinions of what constitutes socially appropriate or socially inappropriate behavior.

If this page is selected in the random draw, we will also randomly select one of the possible choices that individual A might make. For the selected choice, we will determine which answer was chosen by the greatest number of people among the participants in this study. If you give the same answer as the one chosen most often by other people, you'll receive an extra €5.

Let's assume that Individual A is a well-off person living in an apartment in the Auvergne-Rhône-Alpes region.

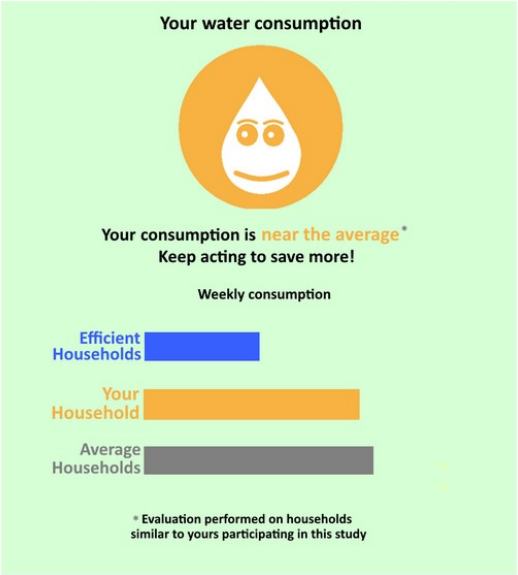
The table below lists the possible choices available to Individual A. For each choice, please indicate whether you think this option is very socially inappropriate, somewhat socially inappropriate, somewhat socially appropriate or very socially appropriate. To indicate your answer, select the corresponding box. Don't forget that you'll earn money (€5) if your answer to a randomly chosen question is the same as the most common answer given by participants in this study.

	Very socially inappropriate	Somewhat socially inappropriate	Somewhat socially appropriate	Very socially appropriate
Do not turn off the tap while brushing teeth or soaping face and hands	○	○	○	○
Do not hand-wash several kitchen utensils at the same time and use the rinse water from one group of utensils as wash water for the next group.	○	○	○	○
Do not rinse all your dishes in the same water	○	○	○	○
Do not close the tap immediately after use	○	○	○	○
Do not take showers lasting less than 5 minutes	○	○	○	○
Let the water run in the shower while he shampoos his hair and soaps his body.	○	○	○	○
Launching underfilled laundry machines	○	○	○	○
Launching shallow dishwashers	○	○	○	○
Do not use "eco" or short-cycle modes	○	○	○	○
Do not use energy-saving appliances for laundry and dishes	○	○	○	○
Do not use energy-saving appliances for sinks and showers	○	○	○	○
Do not use energy-saving toilets	○	○	○	○

Suivant

Visual of the third week of study

You received this visual during the third week of study:



*Which of the following statements best describes your experience?

Veuillez sélectionner une réponse ci-dessous

- I remember this visual
- I do not remember this visual
- I am sure I have not seen this visual

*How did you feel about the visual above?

Use the following scale to answer:

• Strongly disagree • Somewhat disagree • Undecided • Somewhat agree • Strongly agree

	Strongly disagree	Somewhat disagree	Undecided	Somewhat agree	Strongly agree
Interested					
Jittery					
Excited					
Distressed					
Strong					
Ashamed					
Scared					
Hostile					
Enthusiastic					
Proud					
Upset					
Alert					
Guilty					
Inspired					

Nervous	○	○	○	○	○
Determined	○	○	○	○	○
Attentive	○	○	○	○	○
Irritable	○	○	○	○	○
Active	○	○	○	○	○
Afraid	○	○	○	○	○

Suivant

Visual of the fifth week of study

You received this visual during the fifth week of study:

*Which of the following sentences best describes your experience?

Veuillez sélectionner une réponse ci-dessous

- ○ I remember this visual
- ○ I do not remember this visual
- ○ I am sure I have not seen this visual

*How did you feel about the visual above?

Use the following scale to answer:

• Strongly disagree • Somewhat disagree • Undecided • Somewhat agree • Strongly agree

	Strongly disagree	Somewhat disagree	Undecided	Somewhat agree	Strongly agree
Interested	○	○	○	○	○
Jittery	○	○	○	○	○
Excited	○	○	○	○	○
Distressed	○	○	○	○	○
Strong	○	○	○	○	○
Ashamed	○	○	○	○	○
Scared	○	○	○	○	○
Hostile	○	○	○	○	○
Enthusiastic	○	○	○	○	○
Proud	○	○	○	○	○
Upset	○	○	○	○	○
Alert	○	○	○	○	○
Guilty	○	○	○	○	○
Inspired	○	○	○	○	○
Nervous	○	○	○	○	○
Determined	○	○	○	○	○
Attentive	○	○	○	○	○
Irritable	○	○	○	○	○
Active	○	○	○	○	○
Afraid	○	○	○	○	○

Suivant

What do you think of water conservation practices?

*Implementing water conservation practices is :

Veuillez sélectionner une réponse ci-dessous

- Not possible for me
- Somewhat not possible for me
- Undecided
- Somewhat possible for me
- Possible for me

*Implementing water conservation practices is :

Veuillez sélectionner une réponse ci-dessous

- Not easy for me
- Somewhat not easy for me
- Undecided
- Somewhat easy for me
- Easy for me

*Implementing water conservation practices is :

Veuillez sélectionner une réponse ci-dessous

- Not under my control
- Somewhat not under my control
- Undecided
- Somewhat under my control
- Under my control

*Implementing water conservation practices is :

Veuillez sélectionner une réponse ci-dessous

- Does not depend on me
- Somewhat does not depend on me
- Undecided
- Somewhat depend on me
- Depends on me

*Implementing water conservation practices is :

Veuillez sélectionner une réponse ci-dessous

- Not practical for me
- Somewhat not practical for me
- Undecided
- Somewhat practical for me
- Practical for me

Suivant

What do you think of water conservation practices?

*Water conservation practices won't change my daily life:

Veuillez sélectionner une réponse ci-dessous

Strongly disagree | Somewhat disagree | Undecided | Agree | Strongly agree

*Water conservation practices do not require extra time or physical effort:

Veuillez sélectionner une réponse ci-dessous

Strongly disagree | Somewhat disagree | Undecided | Somewhat agree | Strongly agree

Suivant

What do you think of the environment?

*The natural environment is very important and fragile:

Veuillez sélectionner une réponse ci-dessous

Strongly disagree | Somewhat disagree | Undecided | Somewhat agree | Strongly agree

*In recent years, natural disasters have become more frequent and more severe:

Veuillez sélectionner une réponse ci-dessous

Strongly disagree | Somewhat disagree | Undecided | Somewhat agree | Strongly agree

*Human beings have the right to modify nature to meet their daily needs:

Veuillez sélectionner une réponse ci-dessous

Strongly disagree | Somewhat disagree | Undecided | Somewhat agree | Strongly agree

*Water is a very important natural resource:

Veuillez sélectionner une réponse ci-dessous

Strongly disagree	Somewhat disagree	Undecided	Somewhat agree	Strongly agree
○	○	○	○	○

*Reducing water consumption is a way of protecting the environment:

Veuillez sélectionner une réponse ci-dessous

Strongly disagree	Somewhat disagree	Undecided	Somewhat agree	Strongly agree
○	○	○	○	○

Suivant

Water-saving behaviors and devices

*Please indicate the water conservation behaviors that you had before starting this study and that you realized during this study:

	Comportements antérieurs à l'étude			Comportements durant l'étude	
	Yes	No		Yes	No
I cook with as little water as possible	○	○		○	○
I used to soak pots and pans instead of letting the water run when I washed the dishes.	○	○		○	○
When I hand-washed several kitchen utensils at the same time, I used the rinse water from one group of utensils as wash water for the next.	○	○		○	○
I turned off the tap while brushing my teeth or soaping my face and hands.	○	○		○	○
I avoided letting the water run in the shower while I shampooed my hair and soaped my body.	○	○		○	○
I filled my washing machine as much as possible	○	○		○	○
I filled my dishwasher as much as possible	○	○		○	○
I was thinking of "eco" modes and short cycles	○	○		○	○
I took showers lasting less than 5 minutes	○	○		○	○

*Please indicate which water conservation devices you had before starting this study and which you purchased during this study:

	Appareils antérieurs à l'étude			Appareils achetés durant l'étude	
	Yes	No		Yes	No
Water-saving washing machines	○	○		○	○
Low-water consumption dishwasher	○	○		○	○
Sink flow-reducing mixer valve	○	○		○	○
Shower head to reduce shower flow	○	○		○	○
Dual-flush system	○	○		○	○
Installation to reduce the amount of water used per flush	○	○		○	○

Suivant

What do you think of water conservation?

*Water conservation practices can solve water scarcity problems:

Veuillez sélectionner une réponse ci-dessous

○ Strongly disagree ○ Somewhat disagree ○ Undecided ○ Somewhat agree ○ Strongly agree

*Water conservation significantly reduces water bills:

Veuillez sélectionner une réponse ci-dessous

○ Strongly disagree ○ Somewhat disagree ○ Undecided ○ Somewhat agree ○ Strongly agree

*Water conservation will considerably transform the environment:

Veuillez sélectionner une réponse ci-dessous

○ Strongly disagree ○ Somewhat disagree ○ Undecided ○ Somewhat agree ○ Strongly agree

What is your position on water resources?

*I personally feel obliged to explore ways of reducing my impact on water resources:

Veuillez sélectionner une réponse ci-dessous

Strongly disagree | Somewhat disagree | Undecided | Somewhat agree | Strongly agree

*I personally feel obliged to minimize my impact on local water resources:

Veuillez sélectionner une réponse ci-dessous

Strongly disagree | Somewhat disagree | Undecided | Somewhat agree | Strongly agree

*It is important to use as little water as possible:

Veuillez sélectionner une réponse ci-dessous

Strongly disagree | Somewhat disagree | Undecided | Somewhat agree | Strongly agree

*It is important to encourage my friends and family to protect our water resources:

Veuillez sélectionner une réponse ci-dessous

Strongly disagree | Somewhat disagree | Undecided | Somewhat agree | Strongly agree

*I should be responsible for doing everything in my power to protect water resources:

Veuillez sélectionner une réponse ci-dessous

Strongly disagree | Somewhat disagree | Undecided | Somewhat agree | Strongly agree

Suivant

Information about you and your household

*Please indicate the status that best corresponds to you?

Veuillez sélectionner une réponse ci-dessous

Veuillez choisir ...

*Please indicate your highest diploma :

Veuillez sélectionner une réponse ci-dessous

Au besoin, veuillez préciser le champ 'Autre :'.

Veuillez choisir ...

*Please indicate the field of study of your highest degree:

Veuillez sélectionner une réponse ci-dessous

Veuillez choisir ...

*Please indicate your approximate annual household income :

Veuillez sélectionner une réponse ci-dessous

- Less than 30 000€
- Between 30 000€ and 40 000€
- Between 40 000€ and 50 000€
- Between 50 000€ and 60 000€
- More than 60 000€

*How do you feel financially :

Veuillez sélectionner une réponse ci-dessous

- Very limited
- Limited
- comfortable
- Very comfortable

*Do you own your home?

Veuillez sélectionner une réponse ci-dessous

- Yes
- No

*On average over the entire study, how many days a week did you stay at home most of the day?

Votre réponse doit être comprise entre 0 et 7

Seul un nombre entier peut être inscrit dans ce champ.

Jour(s)

*On average over the entire study, how many days a week were you completely absent from your home?

Votre réponse doit être comprise entre 0 et 7

Seul un nombre entier peut être inscrit dans ce champ.

Jour(s)

*Please indicate the living area of your home (in square meters)?

Seul un nombre entier peut être inscrit dans ce champ.

m²

*Please enter your postal code :

Seul un nombre entier peut être inscrit dans ce champ.

*Please indicate the type of your accommodation :

Veuillez sélectionner une réponse ci-dessous

- Apartment
- House

*Do you have a swimming pool or Jacuzzi?

Veuillez sélectionner une réponse ci-dessous

- Yes - I have a swimming pool and jacuzzi
- Yes - I have a pool or jacuzzi
- No - I have neither

*Do you have a washing machine?

Veuillez sélectionner une réponse ci-dessous

- Yes
- No

*Do you have a dishwasher?

Veuillez sélectionner une réponse ci-dessous

- Yes
- No

*Has the number of people living in your household changed over the weeks?

Veuillez sélectionner une réponse ci-dessous

- Yes - Some weeks, there were more or fewer residents in my home.
- No - No one stayed at my house for more than 4 days a week during the 7-week study.

Suivant

Composition of your household - including yourself

*How many men over 13 are there in your household?

Seul un nombre entier peut être inscrit dans ce champ.

*How many women over the age of 13 are there in your household?

Seul un nombre entier peut être inscrit dans ce champ.

*How many males under 13 are there in your household?

Seul un nombre entier peut être inscrit dans ce champ.

*How many women under 13 are there in your household?

Seul un nombre entier peut être inscrit dans ce champ.

Suivant

Change in household composition during the first week (May 30 to June 6)

*During the first week, did your household count one or more people more or less than usual? (For at least 4 days of the week)
Veuillez sélectionner une réponse ci-dessous

- [ ] No
- [x] Yes - One or more additional persons
- [ ] Yes - One or more less persons

*How many more or fewer people are affected by the previous question?
Veuillez sélectionner une réponse ci-dessous

2 person

*The first person concerned is :
Veuillez sélectionner une réponse ci-dessous

A man over 13 years old

*The second person concerned is :
Veuillez sélectionner une réponse ci-dessous

A woman under 13

Suivant

Change in household composition during second week (June 6 to June 13)

*During the second week, did your household count one or more people more or less than usual? (For at least 4 days of the week)
Veuillez sélectionner une réponse ci-dessous

- [x] No
- [ ] Yes - One or more additional persons
- [ ] Yes - One or more less persons

Suivant

Thank you for completing this questionnaire. You have completed the household water consumption survey. Your answers to the different phases of the study will soon be studied in order to proceed with your compensation.

You will receive an e-mail and a text message within two weeks, allowing you to receive your compensation.

The Grenoble Applied Economics Laboratory thanks you for your participation.