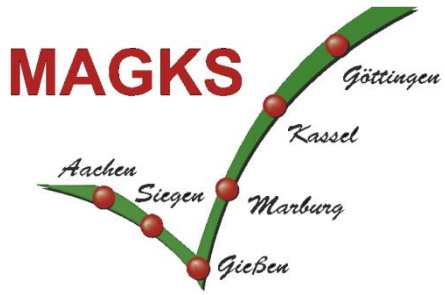

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August 2022

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The causal effect of private and organizational climate-related identity on climate protection activities: Evidence from a framed field experiment in Japan

August 2022

Abstract

Based on data for more than 2,400 citizens in Japan, this paper empirically examines the effect of climate-related identity in private and organizational contexts on revealed climate protection activities, measured through incentivized donations. To identify causal effects, we include the concept of priming in our framed field experiment. In line with previous studies, our econometric analysis reveals that environmental attitudes are strongly positively correlated with climate protection activities. However, we cannot confirm causal effects of climate-related attitudes since the private climate-related treatment has no significant effect. In contrast, the organizational climate-related treatment has a significantly positive effect on donations of employed persons for climate protection. This result is especially driven by a significant effect at the intensive margin. It suggests possible spillovers from organizational environmental and climate protection activities on individual climate protection activities so that climate protection in companies, institutions, or other organizations has the potential to increase private climate protection. Our results thus suggest that the stimulation of organizational climate protection activities by climate policy measures such as taxes or subsidies can lead to a double dividend, i.e. to direct climate protection and to climate protection activities of persons who are employed in these organizations. Our empirical analysis also reveals that the estimated effect of the organizational climate-related treatment is particularly strong in the small subgroup of executive officers, managers of firms, and self-employed persons. This result suggests that higher individual responsibility and decision-making authority as well as competences, also in terms of climate-related decisions, lead to stronger causal effects of organizational on private climate protection activities.

JEL classification: Q54, Q58, D91, C93

Keywords: Climate protection activities, climate-related identity, private and organizational contexts, priming, non-state actors, framed field experiment

1. Introduction

To limit climate change and its strongly negative human, social, and economic consequences, it is widely accepted that the reduction of greenhouse gas emissions is the only viable strategy (e.g. Nordhaus, 2019). The insight that climate protection is a global public good that requires globally coordinated climate policy has led to the Paris Agreement of COP21 in 2015 comprising ambitious long-term emission reduction goals. While a key component of the agreement is that each country sets its own greenhouse gas emission target, most countries fail to meet their pledges due to insufficient climate policy measures (e.g. Victor et al., 2017; Sognnaes et al., 2021). However, even if a country is willing to achieve ambitious emission reduction targets, the implementation of the targets is certainly a huge challenge and requires integrated activities at all societal levels. While the key challenge for state actors (i.e. governments) is the translation of targets into national regulations, it is widely accepted that regulations alone are insufficient, but should be supplemented by additional voluntary climate protection activities, for example, by firms, but also by individuals. Therefore, it is useful to systematically analyze explanatory factors for individual climate protection activities since knowledge about these factors is an appropriate basis to increase the effectiveness of common climate policy measures like subsidies, carbon taxes, or emission trading systems and to design complementary policy approaches (e.g. Falk et al., 2021).

Based on survey data for more than 2,400 adults, this paper empirically examines the determinants of individual climate protection activities in Japan. We consider a wide range of variables that have been shown to be correlated with climate protection activities in previous studies for different countries (e.g. Kotchen and Moore, 2007; Diederich and Goeschl, 2017, 2018; Kawamura et al., 2018; Bartels et al., 2021; Bernard et al., 2022; Fornwagner and Hauser, 2022). Besides common socio-demographics, we especially consider environmental attitudes (e.g. Dastrup et al., 2012; Arimura et al., 2016; Schwirplies and Ziegler, 2016; Lange et al., 2017) as well as policy identification (e.g. Ziegler, 2017) and economic preferences, i.e. time, risk, and social preferences. Economic preferences are often examined in behavioral economics (e.g. Falk et al., 2016, 2018) and play an important role for individual behavior like occupational choice, housing ownership, or stock purchases (see e.g. the overview in Dohmen et al., 2012), but also for climate protection activities (e.g. Qiu et al., 2014; Newell and Siikamäki, 2015; Ziegler, 2020, 2021; Falk et al., 2021; Fischbacher et al., 2021). For employed persons, we additionally examine the relevance of environmental management systems in the organization at which they work and thus possible spillovers from organizational to individual climate protection activities (e.g. Arimura et al., 2021).

Instead of simply including explanatory variables like environmental attitudes in a common econometric (correlation) analysis, however, we experimentally examine whether individual climate protection activities can be encouraged by specific interventions, which might be used by climate policy. Many experimental interventions in previous studies refer to different types of information. An example is information about (descriptive or injunctive) social norms (e.g. Cialdini et al., 1990, 1991) and thus about climate protection activities of other people or about what other people think about the need for climate protection activities (e.g. Falk et al., 2021). In our field experiment, we follow an alternative approach and adopt a method from social psychology, called priming, which is increasingly used in economics (for an overview see e.g. Cohn and Maréchal, 2016). Specifically, we prime climate-related identity, whereby we differentiate between private and organizational contexts. In our interventions, the individuals were asked to describe own climate protection activities and/or climate protection activities of the company, institution, or organization at which they work (or have previously worked). The participants of the experiment were therefore reminded of previous climate protection activities so that the salience of climate-related identity was increased. This approach thus allows us to examine the causal effect of environment- and especially climate-related identity on climate protection activities.

Many previous empirical (also including few experimental) studies on the determinants of climate protection activities consider stated activities (e.g. Qiu et al., 2014; Newell and Siikamäki, 2014, 2015; Schwirplies and Ziegler, 2016; Arimura et al., 2016, 2021; Lange et al., 2017; Ziegler, 2017, 2020; Fischbacher et al., 2021; Bernard et al., 2022). We instead examine more reliable and meaningful interpersonally comparable revealed climate protection activities, which are measured with an incentivized donation scheme. Such incentive-compatible schemes are common in experimental and behavioral economics to measure contributions to public goods like climate protection and are, for example, used in Diederich and Goeschl (2014, 2017, 2018), Kawamura et al. (2018), Bartels et al. (2021), Falk et al. (2021), Ziegler (2021), Panzone et al. (2021), or Fornwagner and Hauser (2022). Specifically, the participants of our experiment were asked to divide 10,000 Japanese Yen (JPY) between the own account and a donation for climate protection.

For the donations, we consider the purchase of offset credits in the J-Credit Scheme, which is a Japanese governmental program to promote reductions of greenhouse gas emissions by activities like energy savings, renewable energy investments, or forest management. In our field experiment, we specifically consider the purchase of offset credits from energy efficiency projects. The respondents were informed that they have the opportunity to buy J-Credits and

that in April 2019 the costs for the reduction of one ton CO_2 through the adoption of energy efficiency projects in the J-Credit Scheme were 1,506 JPY so that an amount of 1,000 JPY would lead to an emission reduction by about 0.663 tons if the prices would not change. The participants of the experiment were also informed that the total amount donated for climate protection in the J-Credit Scheme and the corresponding total greenhouse gas emission reductions would be announced within a few months after the survey. In our econometric analysis, the individually donated amount for the J-Credit Scheme (that can vary between zero and 10,000 JPY) is used as an indicator for climate protection activities.

Our empirical analysis is based on data from a large-scale computer-assisted survey among overall 2,452 citizens in Japan, which comprised this experiment. Due to the focus of the underlying project, only adults who are solely responsible for the purchase of major household items or services (e.g. vehicles, home appliances, electricity contracts) or responsible together with a partner were included. The sample was stratified according to age groups, gender, and regions so that it is widely representative in terms of these characteristics. In line with previous studies as discussed above, our econometric analysis reveals that environmental attitudes, i.e. environmental awareness that is measured with the New Ecological Paradigm (NEP) scale according to Dunlap et al. (2000) and ecological policy identification, are strongly significantly positively correlated with climate protection activities. Furthermore, with respect to economic preferences, trust and positive reciprocity are significantly positively and negative reciprocity is significantly negatively correlated with donations for climate protection. In contrast to this result and also unlike Arimura et al. (2021), however, environmental management systems in the organization of employed persons are not significantly correlated with climate protection activities.

As discussed below, these estimation results, especially for environmental attitudes and environmental management systems, cannot be interpreted as estimated causal effects, but only as estimated correlations since confounding effects by unobserved variables or reverse causality problems are possible. In fact, based on our framed field experiment, we cannot confirm causal effects of environment- and especially climate-related attitudes since the private climate-related treatment has no significant effect on donations for climate protection, in spite of the aforementioned significant correlations for environmental attitudes. In contrast, our econometric analysis shows that the organizational climate-related treatment has a significantly positive effect on climate protection activities of employed persons. This result, which is especially driven by a significant effect at the intensive margin, suggests possible spillovers from organizational environmental and climate protection activities to individual climate protection

activities so that climate protection in companies, institutions, or other organizations has the potential to increase private climate protection of employed persons. Our empirical analysis also reveals that the estimated treatment effect is particularly strong in the small subgroup of managers. This result suggests that higher individual responsibility and decision-making authority, also in terms of climate-related decisions, leads to stronger causal effects of organizational climate-related priming. Interestingly, the combined private and organizational climate-related treatment has no significant effect on donations for climate protection, which suggests that the rather ineffective private context dominates in the corresponding priming task.

Our empirical analysis contributes to several strands of the literature. We contribute to previous studies on the causal effects of experimental interventions on individual climate protection activities. In several treatments, Diederich and Goeschl (2018), for example, examine whether incentivized climate protection activities (measured by the purchase and decommissioning of an emissions allowance under the European Union Emissions Trading System or a "Gold Standard" Certified Emissions Reduction based on the Clean Development Mechanism of the Kyoto Protocol) are affected by making the location of these activities (in the European Union or in a developing country) salient. As aforementioned, many previous studies specifically focus on information treatments (see e.g. the overview in Haaland et al., 2021). Considering the stated choice among water heaters as an indicator for climate protection activities, Newell and Siikamäki (2014), for example, examine the effect of multiple treatments that refer to different types of information including economic information about annual operating costs, physical information about energy use, information about the range of energy costs of other similar appliances in the market, and information about CO_2 emissions. With respect to the style of presenting the information, they additionally examine different designs of an energy label for water heaters.

By considering the stated willingness to pay for offsetting greenhouse gas emissions caused by own continental and intercontinental flights as an indicator for climate protection activities, Bernard et al. (2022) analyze the effect of differently framed information about possible reductions of individual greenhouse gas emissions through less meat consumption, lower numbers of flights, and a decreased use of vehicles in their survey experiment. In addition, they examine the effect of descriptive social norms interventions (e.g. Cialdini et al., 1990, 1991), i.e. information about the intention of other people in general or people in the same age cohort to reduce their greenhouse gas emissions. Indeed, our field experiment is slightly more related to Falk et al. (2021), who also consider incentivized instead of stated climate protection activities, measured by donations for atmosfair, i.e. a provider for carbon offsetting. Similar to

Bernard et al. (2022), they also address descriptive social norms by analyzing true information about previous climate protection activities in the population. In their additional injunctive social norm intervention, they consider true information about the share of people who state that other people should contribute to climate protection.

Our field experiment is specifically related to previous studies in Japan, i.e. the country with the fifth-largest CO_2 emissions worldwide. In line with, for example, Allcott (2011) or Allcott and Rogers (2014) for the USA, many previous Japanese field-experimental studies consider usage data on residential electricity consumption or electricity conservation. For example, Ida et al. (2016) examine the effect of different dynamic pricing interventions for the specific case of photovoltaic-generating households. Furthermore, Ito et al. (2018) consider the effects of moral suasion and economic incentive treatments on electricity consumption, while Murakami et al. (2020) analyze a social comparison nudge for energy conservation in addition to economic incentives. More closely related to our study is the field experiment of Kawamura et al. (2018), who consider donations for photovoltaic power generation research and development. While one treatment also refers to descriptive social norms, they additionally consider the effect of a treatment where the donation is matched as well as a combined treatment. However, it is unclear whether the donation decision in Kawamura et al. (2018) was completely individually motivated by climate protection since it is possible that their donation scheme is influenced by other climate-unrelated motives. In particular, neither these Japanese studies nor the previously discussed studies for other countries analyze interventions based on identity priming in their experimental approaches.

Therefore, our study especially contributes to the corresponding identity priming literature. As aforementioned, the concept of priming has been developed in social psychology. It aims at examining the effect of an identity (i.e. an individual self-image) and its associated social categories on individual behavior as conceptualized and formalized by Akerlof and Kranton (2000). In general, it is assumed that individuals have multiple temporally more or less salient identities (e.g. gender identity, religious identity, professional identity) that are associated with norms, which prescribe behavior in specific situations. It is further assumed that deviating from the prescribed behavior is psychologically costly. However, as aforementioned, the empirical identification of causal identity effects is difficult with common econometric techniques since the association with a specific social category and the corresponding norms can be confounded by reversed causality or unobserved factors (e.g. Benjamin et al., 2010). The concept of priming raises (at least temporarily) the salience of an identity by activating mental concepts through subtle situational cues (e.g. Cohn et al., 2017). By comparing individual

behavior between a randomly selected identity priming group and a corresponding control group without identity priming, the causal effect of a specific identity including the corresponding social categories and norms on individual behavior can be experimentally identified.

The identities that are considered in previous studies are very diverse and refer, for example, to religious identity (e.g. Benjamin et al., 2016), caste or hukou identity (e.g. Hoff and Pandey, 2006, 2014; Afridi et al., 2015), ethnic or race identity (e.g. Benjamin et al., 2010; Chen et al., 2014), age identity (e.g. Israel et al., 2014), gender identity (e.g. Boschini et al., 2012; Cadsby et al., 2013; Cubel and Sanchez-Pages, 2017), or professional identity (e.g. Cohn et al., 2015, 2017; Drupp et al. 2020). Our priming study is methodologically related to Kessler and Milkman (2018), who examine donors for the American Red Cross in their field experiment. They specifically primed the donor (and thus the general generosity) identity by reminding donors of their most recent donations to the American Red Cross. They empirically examine whether this donor identity causally affects donations for this national charity. However, while Kessler and Milkman (2018) analyze the voluntary provision to a specific public good (i.e. charity), they do not specifically address environmental or even climate protection as a global public good. To the best of our knowledge, such climate-related priming studies are very limited so far.

One of the few analyses in this field can be found in Panzone et al. (2021), who reminded individuals of their previous stated climate protection activities in their priming approach. However, they specifically consider the carbon footprint of food and drink products in their rather artificial incentivized student-based lab experiment referring to an online supermarket. Our priming study is most closely related to the recent field experiment of Flörchinger et al. (2021), which examines the effect of priming climate-related identity by reminding individuals of their previously stated attitudes towards the movement“ Fridays for Future” on incentivized climate protection activities. The indicator for climate protection activities refers to the choice of a voucher for a train ride instead of one for a flight. In contrast, we consider a more direct indicator for climate protection activities since it is not clear whether the choice of a train ride is completely individually motivated by climate or even only environmental protection, i.e. it is possible that the choice is influenced by other non-environmental motives. Furthermore, our priming of climate-related identity by describing own climate protection activities is broader and not restricted to attitudes towards a movement. In particular, however, we do not only consider private climate-related identity, but additionally also climate-related identity in an organizational context.

In this respect, our study also contributes to the literature on the relevance of so-called non-state actors for individual climate protection activities. As discussed above, it is widely accepted that voluntary climate protection activities are necessary to limit climate change, whereby not only individuals, but also non-state actors play an increasingly important role (e.g. Rogelj et al., 2016; UNEP, 2016). Non-state actors comprise civil society groups (e.g. churches), sub-national and local actors (e.g. cities and municipalities), or economic actors. For climate protection, they can directly decrease own greenhouse gas emissions, but also increase climate protection activities of individual actors through leadership by example and norm-shaping. With respect to economic actors, previous studies already examine direct organizational environmental and climate protection activities (e.g. Arimura et al., 2008, 2011; Ziegler and Seijas Nogareda, 2009; Engler et al., 2021). In our field experiment, we instead focus on companies, institutions, or other organizations in their role as employers. A first econometric analysis in this direction can be found in Arimura et al. (2021), who examine whether environmental management systems in the organization of employed persons can encourage own individual climate protection activities. We extend this correlation analysis of organizational leadership by example by examining the causal effect of organizational on individual climate protection activities in a field-experimental intervention approach.

The remainder of the paper is as follows: Section 2 presents the data, the experimental approach, and the variables in the econometric analysis. Section 3 discusses the empirical results and Section 4 provides conclusions and a few policy implications.

2. Data, experiment, and variables

2.1. Sample and survey design

The data for our empirical analysis were collected in a large-scale computer-assisted survey among citizens in Japan. The survey was carried out by the Japanese professional market research company MyVoice Communications Inc. from March 3, 2020, to March 11, 2020. Since the interviews were conducted before the beginning of the COVID-19 pandemic and corresponding lockdown measures in Japan, the answers should not strongly be influenced by the Corona Crisis. Due to the focus of the survey, the target population comprised adults, who are solely responsible or responsible together with a partner for decisions on the purchase of major household items or services (e.g. vehicles, home appliances, electricity contracts). The sample was stratified according to age groups, gender, and regions so that it is widely representative of the adult population in Japan in terms of these characteristics. The market research company conducted quality checks throughout the survey so that low-quality interviews were

excluded from the sample. These quality checks especially referred to three control questions in different item batteries. If one of the required answers was not correctly indicated, the respondents were excluded from our sample since we assume that they did not read the questions carefully, which would lead to low quality interviews. In the end, overall 2,452 respondents are included in our empirical analysis.

The survey consisted of overall three parts. In the first part, the participants of the survey answered initial questions on attitudes and preferences. In the second part, the respondents participated in the framed field experiment that is focused on in this paper and answered questions on their working life as well as on their environmental attitudes and economic preferences. The third part of the survey referred to socio-demographic and socio-economic characteristics. Across all respondents, the median time to complete the survey was about 13 minutes. The questions on environmental attitudes and economic preferences were asked before the framed field experiment to avoid that the answers were influenced by the experimental treatments.

2.2. Experimental design

Our framed field experiment with all 2,452 respondents is based on a standard dictator game, where climate protection is costly. The participants of the experiment were informed that 20 of them and thus about 1% of all respondents would receive an endowment of 10,000 JPY and that they could either keep the money completely to themselves, use it completely for climate protection, or split it between these two options. This probabilistic approach is in line with, for example, Diederich and Goeschl (2017), who randomly chose 2% out of 2,440 respondents or Falk et al. (2021), who randomly chose 25 out of about 6,000 respondents. Due to the completely random selection process, it was pointed out that the respondents should make a decision as in the case that they would be definitely selected. The participants of the experiment were informed that they have the opportunity to buy offset credits and that in April 2019 the costs for the reduction of one ton CO_2 through the adoption of energy efficiency projects in the J-Credit Scheme were 1,506 JPY so that an amount of 1,000 JPY would lead to an emission reduction by about 0.663 tons if the prices would not change. We additionally informed the respondents that they would be notified one month after the survey by e-mail and that their allocation decisions about the JPY amounts for themselves and the donations for climate protection by buying J-Credits would be certainly realized.

The J-Credit Scheme is a Japanese governmental offset program to promote voluntary greenhouse gas emission reductions through energy savings, renewable energy investments, or forest management. It started in 2013 by integrating two offset schemes in Japan, i.e. the J-VER Scheme and the Domestic Credit Scheme. If organizations such as firms, municipal governments, or local non-governmental organizations engage in activities to reduce greenhouse gas emissions, they can earn offset credits if their projects are officially approved by the J-Credit office. After approving the projects, the organizations can list the generated credits on the website of the J-Credits Scheme for sale.[1] In our framed field experiment, we consider the purchase of J-Credits from energy efficiency projects. We contacted an entity that sold offset credits from an energy efficiency project under the J-Credit Scheme and purchased the amount of J-Credits according to the "donations" of the respondents. Finally, we surrendered the purchased credits to the J-Credit office. Therefore, these purchased J-Credits cannot be used anymore so that greenhouse gas emissions are reduced according to the amount of credits we purchased and thus according to the donations of the respondents.

In their allocation decision, the participants of the experiment determined if and how much of their endowment they give for the purchase of J-Credits. The respondents had to enter both the amounts for themselves and for climate protection, whereby the sum of the amounts had to add up to 10,000 JPY to proceed with the survey. In addition, the respondents had to confirm their allocations afterwards. In our econometric analysis, the individually donated amount for the J-Credit Scheme is used as dependent variable. Due to the nature of the experiment, the dependent variable can vary between zero JPY and 10,000 JPY. Figure 1 reports the distribution of the donations for climate protection across all respondents. It shows that the respondents donated about 3,439 JPY on average, which corresponds to about 34% of their initial endowment.[2] The median amount is 3,000 JPY. About 18.6% of the participants of the experiment decided not to donate so that the share of positive donations is about 81.4%.[3] While about 35% of the respondents donated a positive amount smaller than 5,000 JPY, about 33.3% of them donated 5,000 JPY and thus exactly 50% of their endowment. About 7.5% of

[1] Until June 2022, 979 projects have been registered, and 8.06 million tons of CO_2 emission reduction credits have been officially issued (see e.g. information from the Japanese Ministry of Economy, Trade and Industry, https://japancredit.go.jp/data/pdf/credit_002.pdf).

[2] This average value is considerably lower than in the field experiment of Kawamura et al. (2018) in Japan, where the average donations among all respondents varied between about 41% and 49% of the endowment across four experimental groups, and especially in the field experiment of Falk et al. (2021) in the USA, where the average donations were about 50% of the endowment of $450.

[3] While Falk et al. (2021) show an even higher share of positive donations (i.e. about 94%) in the USA, Bartels et al. (2021) report a clearly lower share of positive donations (i.e. about 65%) in their field experiment on donations for a local carbon sink in Germany.

the respondents donated an amount larger than 5,000 JPY, but smaller than 10,000 JPY and about 5.7% of them donated the full amount of 10,000 JPY.[4]

Based on a common 2x2 factorial design (e.g. Andreoni et al., 2017, Blattman et al., 2017), the respondents were randomly assigned to four experimental groups, i.e. one control and three treatment groups (see Table 1). In the treatment groups, we used the priming method to increase the salience of climate-related identity before the decision on possible donations for climate protection. Previous studies differ in terms of the used priming techniques. Examples are sentence unscrambling (e.g. Benjamin et al., 2016), presenting a picture or video (e.g. Israel et al., 2014), or including questions and writing tasks in the experiment (e.g. Benjamin et al., 2010, Cadsby et al., 2013, Chen at al., 2014, Cohn et al., 2014, 2015, 2017). As we embedded our experiment in a large-scale survey, we also used a writing task. The respondents in the control group (C) were asked to describe some activities they are doing in their leisure time. While the respondents in the private priming treatment group (T1) were asked to describe some climate protection activities they are doing, the respondents in the organizational priming treatment group (T2) were asked to describe some climate protection activities of the company, institution, or organization, at which they work. In line with our 2x2 design, the respondents in the combined private and organizational priming treatment group (T3) were asked to describe both, own climate protection activities and climate protection activities of their company, institution, or organization.[5]

Overall, we thus designed the instructions for the tasks across the four experimental groups as equivalent as possible.[6] However, in T2 and T3, we have 8 and 16 full-time students, respectively. To adapt their specific situation, they were asked to describe climate protection activities of their university. Furthermore, 135 respondents in T2 and 144 respondents in T3 were not employed at the time of the survey, but had an employment before. These respondents were asked to describe climate protection activities of their previous company, institution, or other organization. Among the unemployed respondents, 19 respondents in T2 and 22 respondents in T3 were never employed. They were asked to describe climate protection activities of the company, institution, or other organization of their closest employed relative. Our main explanatory variables in the econometric analysis refer to these three treatments. In line

[4] The latter share is again clearly lower than in the field experiment of Falk et al. (2021) in the USA, where about 12% donated the full amount of $450.
[5] Interestingly, the most popular answers in the three treatment groups referred to no climate protection activities. The most popular indications for climate protection activities referred to energy-saving behavior and waste reduction.
[6] The detailed wording of the instructions is reported in the online appendix.

with Muralidharan et al. (2019), we do not simply consider two aggregated dummy variables for private and organizational priming across the three treatments, but construct four dummy variables, i.e. 'no treatment', 'private climate-related treatment', 'organizational climate-related treatment', and 'private and organizational climate-related treatment' that take the value of one if the respondent was assigned to the corresponding experimental group. The dummy variable 'no treatment' is used as base category in our econometric analysis.

2.3. Individual characteristics

As further explanatory variables, we consider several individual characteristics. Due to the strong relevance of environmental attitudes for climate protection activities in previous studies (e.g. Dastrup et al., 2012, Arimura et al., 2016, Schwirplies and Ziegler, 2016, Lange et al., 2017, Ziegler, 2017, Bernard et al., 2022), as discussed above, we consider environmental awareness and ecological policy identification. We capture environmental awareness by the NEP scale according to Dunlap et al. (2000). This instrument is standard in social and behavioral sciences and increasingly common in economics (e.g. Kotchen and Moore, 2007; Delmas and Lessem, 2014, Lange et al., 2017). It is based on 15 statements, whereby eight of them are environmentally positively worded (e.g. "we are approaching the limit of the number of people the earth can support") and seven of them are environmentally negatively worded (e.g. "humans have the right to modify the natural environment to suit their needs").[7] The respondents were asked to indicate their agreement on a symmetric scale with the five ordered response categories "totally disagree", "rather disagree", "undecided", "rather agree", and "totally agree". By assigning increasing integers from one to five for the environmentally positively worded statements and decreasing integers from five to one for the environmentally negatively worded statements, we construct the variable 'environmental awareness' by adding up the corresponding single values for the 15 items. The variable can thus vary between 15 and 75, whereby higher values indicate higher environmental awareness.

Environmental attitudes are not only addressed by environmental awareness, measured with the NEP scale, but also by ecological policy identification. However, due to the possible interrelations between different policy orientations (e.g. Groh and Ziegler, 2022), we do not restrict our analysis to ecological policy identification only or simple one-dimensional indicators for a left/right-wing policy identification. Instead, we examine three additional directions of policy orientation besides ecological policy identification. Specifically, the respond-

[7] The other statements can be found in the online appendix, which comprise all survey questions that are considered in this paper.

ents were asked to indicate their agreement with the following statements, again on a symmetric scale with five ordered response categories, ranging from "totally disagree" to "totally agree": "I identify myself with ecologically oriented policy", "I identify myself with socially oriented policy", "I identify myself with liberally oriented policy", and "I identify myself with conservatively oriented policy". The corresponding four dummy variables 'ecological policy orientation', 'social policy orientation', 'liberal policy orientation', and 'conservative policy orientation' take the value of one if the respondent agreed with the statement rather or totally, respectively. In line with previous studies, we expect that environmental attitudes (i.e. 'environmental awareness' and 'ecological policy identification') and possibly also 'social policy orientation' (as a left-wing orientation) are positively correlated with donations for climate protection, whereas the correlations with 'liberal policy identification' and 'conservative policy identification' can rather be expected to be negative.

Economic preferences are often examined in behavioral economics (e.g. Falk et al., 2016, 2018) and have been shown to play an important role not only for individual behavior like stock purchases, occupational choice, or housing ownership (see e.g. the overview in Dohmen et al., 2012), but specifically also for environmental protection activities (e.g. Kotchen and Moore, 2007; Qiu et al., 2014; Newell and Siikamäki, 2015; Ziegler, 2020; Falk et al., 2021; Fischbacher et al., 2021). In line with Ziegler (2021), we argue that omitting economic preferences in econometric analyses of the relationship between environmental attitudes (especially environmental awareness according to the NEP) and climate protection activities can lead to biased estimation results. To the best of our knowledge, our empirical analysis is the first that examines the relevance of economic preferences for climate protection activities in Japan. For our econometric analyses we specifically differentiate between time and risk preferences, generosity, trust, as well as positive and negative reciprocity according to Falk et al. (2018, 2021).

Our variable for time preferences is based on a survey question on general patience. Vischer et al. (2013) experimentally validated the self-assessment that we adapted to our survey. The respondents were thus asked to indicate how patient they are in general on a symmetric scale with the five ordered response categories "very impatient", "rather impatient", "undecided", "rather patient" and "very patient". The dummy variable 'patience' takes the value of one if the respondent indicated to be rather or very patient. Our variable for risk preferences is based on a validated survey question (e.g. Dohmen et al., 2011; Vieider et al., 2015; Falk et al., 2016, 2018) according to the German Socio-Economic Panel (SOEP). The respondents were thus asked to indicate how willing they are generally to take risks on a symmetric scale with the

five ordered response categories “not at all willing to take risks”, “rather not willing to take risks”, “undecided”, “rather willing to take risks”, and “very willing to take risks”. The dummy variable ‘risk-taking preferences’ takes the value of one if the respondent is rather or very willing to take risks.

To capture generosity, the respondents were asked to indicate how generous they are in general on a symmetric scale with the five ordered response categories “not at all generous”, “rather not generous”, “undecided”, “rather generous”, and “very generous”. The dummy variable ‘generosity’ takes the value of one if the respondent indicated one of the latter two categories. In line with, for example, Dohmen et al. (2012), our variable for trust is based on the following three statements from the SOEP: “In general, one can trust people”, “these days you cannot rely on anybody else”, and “when dealing with strangers, it is better to be careful before you trust them”. The respondents were asked to indicate their agreement again on a symmetric scale with five ordered response categories, ranging from “totally disagree” to “totally agree”. We assign increasing integers from one to five for the first statement and decreasing integers from five to one for the latter two statements. The variable ‘trust’ is the sum of the single values for the three items and can thus vary between three and 15, whereby higher values indicate higher levels of trust.

Our variables for positive and negative reciprocity are in line with, for example, Dohmen et al. (2008, 2009) or Caliendo et al. (2012) and thus with survey questions from the SOEP. The variable for positive reciprocity is based on the following three statements: “If someone does me a favor, I am prepared to return it”, “I go out of my way to help somebody who has been kind to me before”, and “I am ready to undergo personal costs to help somebody who helped me before”. The variable for negative reciprocity is based on the following three statements: “If I suffer a serious wrong, I will take revenge as soon as possible, no matter what the cost”, “if someone puts me in a difficult position, I will do the same to him/her”, and “if somebody insults me, I will insult him/her back”. The respondents were again asked to indicate their agreement on a symmetric scale with five ordered response categories, ranging from “totally disagree”, to “totally agree”. Again, we assign increasing integers from one to five for all six items. The variables ‘positive reciprocity’ and ‘negative reciprocity’ are the sums of the single values for the three items, respectively, so that both variables can vary between three and 15, whereby higher values indicate higher positive or negative reciprocal preferences.

Finally, we control for several socio-economic and socio-demographic variables. With respect to income, the participants of the survey were asked for their annual net household income in

JPY among overall 12 income classes. For each income class, we consider the mean values in million JPY.[8] Specifically, we consider the concept of equivalized income to account for scale effects in the household (e.g. Groh and Ziegler, 2022). Our approach refers to a modified OECD equivalence scale (e.g. Horsfield, 2015), which weights the first adult in the household with the factor one, children up to the age of 13 years with the factor 0.3, and other older household members with the factor 0.5. The corresponding variable is termed 'equivalized income'. Furthermore, the dummy variable 'employment' takes the value of one if the respondent is employed. The dummy variable 'high education' takes the value of one if the respondent has a Bachelor or a higher degree. In addition, the variable 'age' indicates the age of the respondent in years and the dummy variable 'female' takes the value of one if the respondent is a woman. The dummy variable 'married' takes the value of one if the respondent is married and the dummy variable 'kids' takes the value of one if the respondent has own children. Finally, the dummy variable 'metropolitan area' takes the value of one if the respondent lives in one of the metropolitan areas of Japan, i.e. Tokyo, Osaka, or Nagoya.

Table 2 reports the means and standard deviations of all explanatory variables. While the first column comprises the values for the full sample with 2,452 respondents, the other columns refer to the four experimental groups separately. With respect to environmental attitudes, the table especially reveals relatively high average values for environmental awareness and ecological policy identification.[9] With respect to economic preferences, the respondents have relatively low risk-taking preferences on average. Furthermore, while the mean for positive reciprocity is higher than the mean for negative reciprocity, the difference between these means for Japan is considerably lower than in other countries such as Germany (e.g. Ziegler, 2021). The means for age and gender suggest that the stratification according to age groups, gender, and regions was successful (e.g. the shares of males and females are almost equal). However, the main result in the table refers to the overall relatively stable means and standard deviations across all four experimental groups. Only in a very few cases the means are moderately different if different experimental groups are compared. This result suggests a successful randomization for the assignment of the respondents to the four experimental groups.

To analyze this formally, we consider the differences in the means for each explanatory variable and for each of the six comparisons among the four experimental groups. Furthermore,

[8] In line with Feldman (2010), we consider one and a half times of the lower bound of the open top class and thus assign 22.5 million JPY to all respondents who indicated this income class.
[9] The high share of respondents who identify themselves with ecologically oriented policy should not be compared with the share of voters for a Japanese Green Party since many voters of other parties and non-voters obviously also have an ecological policy identification.

we examine pairwise mean comparison z-tests. Table 3 reports the corresponding results. Based on overall 114 comparisons, we would expect about one difference to be different from zero at the 1% significance level (i.e. 1% of 114), about six differences to be different from zero at the 5% significance level, and about eleven differences to be different from zero at the 10% significance level. In fact, the table shows that exactly one of the differences is different from zero at the 1% significance level, only two differences are different from zero at the 5% significance level, and only seven differences are different from zero at the 10% significance level. Therefore, the number of significant differences is lower than statistically expected, which suggests that our randomization process was widely successful. In addition, we have also estimated six binary probit models for the six comparisons, whereby the dummy variables on the assignment to a specific experimental group were regressed on the explanatory variables, respectively. Table 3 reveals that we can never reject the null hypotheses that none of the explanatory variable has any effect on the assignment to the experimental groups at common significance levels, which strongly supports a widely successful randomization.

3. Empirical results

3.1. Manipulation check

Before we empirically analyze the treatment effects on donations for climate protection, we consider a manipulation check that we embedded in the field experiment to examine whether our priming tasks increased the salience of climate-related identity. In line with previous priming studies, we used a word-completion task (e.g. Cohn et al., 2014; Drupp et al., 2020). Therefore, the participants of the experiment were asked to complete six word fragments after the experimental interventions. The word fragments could be completed in different ways. Three of the six word fragments could be completed as climate-related words such as "flood" or "temperature", but also with words unrelated to climate change.[10] The remaining word fragments without climate-related meaning are included to hide the purpose of the task. For each respondent we count the number of completed words related to climate change, which thus can vary between zero and three. The idea of the manipulation check is to compare the average numbers of climate-related words. If the priming tasks were successful, the means in the three treatment groups T1 T2, and T3 should be higher than the corresponding means in the control group C.

[10] The original six word fragments in Japanese can be found in the online appendix.

Table 4 reports the results of the manipulation check. While the upper part of the table shows the average numbers of climate-related words in all four experimental groups (besides the corresponding numbers of observations), the lower part reports the six differences in the means of climate-related words among the groups. In addition, the lower part of the table also reports the results of pairwise mean comparison z-tests. The table reveals clearly higher means of climate-related words in the three treatment groups than in the control group (the differences in the average values vary between 0.31 words for T3, i.e. the combined private and organizational priming treatment group, and 0.34 words for T2, i.e. the organizational priming treatment group, compared to the control group, respectively). In particular, these three differences are strongly different from zero at all common significance levels. Our manipulation check thus provides evidence that all three priming tasks increased the salience of climate-related identity. As a consequence, possible estimated null effects of the experimental interventions on donations for climate protection should not be masked or distorted by an ineffective priming of climate-related identity.

3.2. Average treatment effects

In contrast to the private climate-related priming treatment, which potentially affects all respondents, the other two treatments including organizational climate-related priming are only relevant for employed persons by definition. For unemployed respondents the texts for the priming tasks in the organizational climate-related treatment as well as in the combined private and organizational climate-related treatment were therefore adapted to their specific situation as explained above. Nevertheless, unemployed persons are only weakly and indirectly affected by these modified interventions. Therefore, we do not only analyze the full sample of all participants of the experiment, but also two subsamples, i.e. employed persons and managers. Table 5 reports the frequencies of the different employment status groups in our sample. It shows that about 30.6% of all respondents are not employed or belong to an unspecified employment type. With respect to employed persons, more than 61% of all respondents are employees (i.e. full-time employees, part-time employees, public officers), while about 8.3% are managers (i.e. executive officers or managers of firms or self-employed persons). In our empirical analysis we compare the estimated treatment effects for the full sample of 2,452 respondents, the subsample of 1,702 employed respondents (including employees and managers), and the small subsample of 204 managers among the employed respondents. In line with previous empirical studies showing that priming interventions are especially effective for individuals with a minimum of identity that is stimulated by the priming task (e.g. Benjamin

et al., 2010, 2016; Cohn et al., 2014, 2015, 2017; Shariff et al., 2016), we expect that the effects of the two treatments with organizational climate-related priming are stronger for the two subsamples of employed persons and managers.

To analyze the effects of our treatments, we first compare the average donations for climate protection across the four experimental groups, separately for the full sample and the two subsamples. Figure 2 reports the corresponding results and, for example, shows that the average donations in the control group C are slightly lower for managers (3034.62 JPY) than in the full sample (3283.73 JPY) and the subsample of employed persons (3203.81 JPY). The means are overall slightly higher in the private priming treatment group T1. However, the corresponding pairwise mean comparison z-tests show no significant differences between the average donations in C and T1. Similarly, the slightly higher average donations for climate protection in the combined private and organizational priming treatment group T3 for the full sample and both subsamples as well as the average donations in the organizational priming treatment group T2 for the full sample are not significantly different from the corresponding means in the control group C. In contrast, the average values in T2 are significantly higher than in C for the group of employed persons (z-statistic = 1.80) and especially for managers (z-statistic = 2.07). In particular, the very high average donations for climate protection of managers (4332.56 JPY) and the corresponding difference to the mean in the control group C (4332.56 - 3034.62 = 1297.94 JPY) are considerable.[11] Due to the widely successful randomization as discussed above, the latter two results imply significantly positive causal effects of the organizational climate-related treatment on climate protection activities for the group of employed persons and especially for managers.

Our econometric analysis widely confirms the results in Figure 2. Due to the quantitative nature of the dependent variable, the ordinary least squares (OLS) estimation of linear regression models is generally possible. However, our dependent variable has a restricted range since it is censored (or bounded) at the values of zero JPY and 10,000 JPY. Therefore, we also examine Tobit models, which is in line with, for example, Fornwagner and Hauser (2022). Based on the assumption of normally distributed error terms in the underlying latent variables, Tobit models are commonly estimated with the maximum likelihood (ML) method. Instead of the estimated parameters for the underlying unobservable latent variables, we consider the estimated effects of the explanatory variables on the unconditional expected values of the censored dependent variables, which allows the direct comparison with the estimated parameters

[11] The still relatively low z-statistic is due to the small subsample size, i.e. the low number of 95 managers as basis for the test.

(and thus estimated effects) in the linear regression models. In line with the statistical analysis before, we separately consider the full sample and the two subsamples of employed persons and managers. In addition to the three treatment dummy variables, environmental attitudes, policy identifications, and economic preferences are included as explanatory variables besides the other individual characteristics. For the econometric analysis of the two subsamples, we additionally include the dummy variable 'environmental management system' that takes the value of one if an employed person works for a company, an institution, or another organization with an environmental management system.[12][13]

Table 6 reports the corresponding estimated parameters (besides heteroskedasticity robust z-statistics) in the linear regression models and the estimated marginal and discrete effects (besides robust z-statistics) in the Tobit models, separately for the full sample (see the first two columns of the table) and the two subsamples (see the last four columns of the table).[14] In line with the results in Figure 2, the table reveals that the estimated effects of all three treatments on climate protection activities are positive across the different models in the full sample and both subsamples. However, all estimated effects of the private climate-related treatment and of the combined private and organizational climate-related treatment are insignificant. While the estimated positive effect of the organizational climate-related treatment is also not significant in the full sample, it is significant in the two subsamples of employed persons and especially managers. The estimation results reveal that for employed persons, the estimated donations for climate protection are more than 340 JPY higher in the organizational climate-related treatment group T2 than in the control group C. For managers, the estimated difference of more than 1,360 JPY is considerably higher.

As discussed above, the latter results are not surprising since the corresponding priming task is stronger and more direct for the specific subgroup of employed persons. The even much stronger estimated effects for the subgroup of managers imply that the priming for organizational climate-related identity is most effective for the group of employed persons with a strong relationship to their organizations. This result thus suggests that higher individual res-

[12] Among all 1,702 employed respondents, 337 and thus about 19.8% work in an organization with an environmental management system. It should be noted that we also included the response category "I don't know" for the corresponding survey question, whereby we assigned the value of zero if a respondent indicated this category since a lack of knowledge should not affect the individual climate protection activities. The exception are self-employed persons for whom we did not include this response category since they should clearly have knowledge about environmental management systems in their organization.

[13] In these two subsamples, the dummy variable 'employment' cannot be included in the econometric analysis since all respondents are employed.

[14] All estimations (and also the generation of all descriptive statistics including the corresponding test) were conducted with the statistical software package Stata.

ponsibility and decision-making authority, also in terms of climate-related decisions, lead to stronger causal effects of organizational on private climate protection activities. Instead, the insignificant effects of the private climate-related treatment and of the combined private and organizational climate-related treatment suggest that private climate-related identity has no causal effect on donations for climate protection. This result is in contrast to Engler et al. (2019), who use a similar priming task and show that the corresponding treatment has a significantly positive effect on the stated choice of green electricity mixes in Germany. As discussed above, it should be noted that our estimated effects are obviously not distorted through an ineffective priming task since the manipulation check reveals a strong increase of climate-related identity. While such estimated non-results might generally be statistically criticized as a basis for further conclusions, it is important to mention that our analysis of the full sample is based on more than 2,450 observations so that statistical power problems should at least be limited.[15]

With respect to the environment-related variables, Table 6 shows that the estimated climate protection activities are not significantly higher for individuals who work for an organization with an environmental management system.[16] This result is not only in contrast to Arimura et al. (2021), but also to the significantly positive effect of the organizational climate-related treatment on donations for climate protection. These results thus point to the superiority of examining effects with our experimental priming approach due to the differences in the pure estimation of correlations (with respect to environmental management systems in the organization of employed persons) and causal effects of the organizational climate-related treatment. In spite of the insignificant correlation between 'environmental management systems' and climate protection activities, the latter result thus suggests spillovers from organizational (environmental and) climate protection activities on individual climate protection activities. Our results thus suggest that companies, institutions, and other organizations cannot only directly contribute to environmental and climate protection by their organizational activities, but additionally also increase private climate protection activities of employed persons in these organizations through leadership by example.

The superiority of the application of our experimental priming approach for the differentiation between correlations and causal effects is even strengthened in our analysis of environmental attitudes. In line with previous studies as discussed above, Table 6 clearly reveals their strong

[15] In contrast, it is ambiguous whether the insignificant, but relatively strong estimated effect of the private climate-related treatment for the group of managers might be influenced by the small subsample size.
[16] However, it should be noted that the relatively strong estimated, but insignificant correlation for the group of managers might be influenced by the small subsample size.

relevance for climate protection activities. With the exception of the Tobit model for the small group of managers, environmental awareness is significantly positively correlated with donations for climate protection. Furthermore, the estimated positive correlation with ecological policy identification is even more robust and significant. In particular, the intensity of the estimated correlation is considerable. Table 6 reveals that the estimated donations for climate protection are between about 672 JPY in the full sample and more than 1,158 JPY among managers higher for individuals with a strong ecological policy identification. In combination with the insignificant effects of the private climate-related treatment and of the combined private and organizational climate-related treatment as discussed above, these results imply strong positive correlations between environmental attitudes and climate protection activities, but no causal effects, at least when looking at the channel of stimulating climate-related identity.

With respect to further indicators for policy orientation, Table 6 shows a significantly negative correlation between a conservative policy identification and climate protection activities, which is in line with previous studies in other countries as discussed above. Also in line with some previous studies (e.g. Ziegler, 2021; Falk et al., 2021), social preferences (with the exception of generosity) are highly relevant. While trust is strongly significantly positively correlated with donations for climate protection (with the exception of the group of managers, probably due to the small subsample size), positive reciprocity is significantly positively correlated and negative reciprocity is significantly negatively correlated with climate protection activities, at least for the full sample and the subsample of employed persons. For the full sample, Table 6 further shows significantly positive effects of age and having children as well as significantly higher donations for climate protection by females. In the subsample of employed persons, the latter two estimated effects remain significant. In addition, the estimated climate protection activities of employed persons are significantly lower in metropolitan areas.

3.3. Heterogeneity in treatment effects

To confirm that the estimated effects of the organizational climate-related treatment on donations for climate protection are in fact heterogeneous among employment status groups, it is useful to not only examine the full sample and the two subsamples of employed persons and managers separately, but also to jointly consider all respondents in the econometric analysis together and to include interaction terms between different employment statuses and the treatment dummy variable. Table 7 reports the corresponding estimation results in linear regres-

sion models.[17] While the first model refers to the comparison between employed and non-employed persons by including an interaction term between 'organizational climate-related treatment' and 'employment', the second model addresses the comparison between managers and (employed or non-employed) non-managers by including the dummy variable 'managers' that takes the value of one if the respondent is a manager. The third model additionally includes the dummy variable 'employed non-managers' that takes the value of one if the respondent is employed, but not a manager (non-employed persons are here considered as base category), as well as the two interaction terms with 'organizational climate-related treatment'. In sum, Table 7 confirms the previous main results and reveals a strong heterogeneity in the estimated organizational climate-related treatment effects, which are significantly stronger for employed persons and especially much stronger for managers, particularly compared to non-employed persons. In addition, the estimation results for the other explanatory variables are qualitatively very similar to the corresponding results in Table 6 for the full sample.

In the next step, we decompose the previously estimated average treatment effects into an extensive margin (i.e. for the propensity to donate for climate protection) and an intensive margin (i.e. for the amount of donations when the individual has donated for climate protection), again separately for the full sample and the two subsamples of employed persons and managers. For the analysis at the extensive margin, we consider the dependent dummy variable 'positive donations for climate protection' that takes the value of one if the respondent donated at least one JPY for climate protection.[18] On this basis, we consider binary probit models that are estimated by the ML method. Table 8 reports the corresponding estimates of average marginal and discrete probability effects (besides robust z-statistics). For the analysis at the intensive margin, we consider the dependent variable 'donations for climate protection conditional on positive donations' which is the JPY amount that was donated to the J-Credit Scheme when the respondent has donated at least one JPY.[19] Therefore, this variable can take values (i.e. integers) between one and 10,000 JPY. On this basis, we consider linear regression models that are estimated by the OLS method.[20] Table 9 reports the corresponding estimated parameters (besides heteroskedasticity robust z-statistics).

[17] In line with the previous results, the estimation results in the corresponding Tobit models are again qualitatively very similar. Therefore, we do not report these results due to brevity. However, they are available upon request.
[18] In line with Figure 1, the share of positive donations among all 2,452 participants in the survey was about 81.4%.
[19] Among the 1,996 respondents with positive donations, the average donations were about 4,224 JPY.
[20] The estimation results in the corresponding Tobit models are again qualitatively very similar. While we do not report these results due to brevity, they are available upon request.

Table 8 reveals that only the organizational climate-related treatment for the subsample of managers has a significantly positive effect on the probability to donate for climate protection.[21] The dimension of the estimated effect is considerable and implies an estimated increase of the probability to donate for climate protection by about 12 percentage points. In all other cases, the estimated treatment effects are insignificant, whereby especially the insignificant effect of the organizational climate-related treatment for the subsample of managers is in contrast to its significant effect on donations for climate protection according to Table 6. In contrast, for both subsamples of employed persons and managers, the organizational climate-related treatment has a significantly positive effect at the intensive margin. i.e. on the amount of donations when the individual has donated for climate protection.[22] For the whole group of employed persons (i.e. not specifically for the subgroup of managers), the estimation results thus suggest that the significantly positive effect of the organizational climate-related treatment on donations for climate protection according to Table 6 is particularly induced by the estimated effect at the intensive margin, i.e. by the increase of the donation amounts when the individual has donated, and less by the stimulation of any donation.

With respect to the other explanatory variables beyond the treatment dummy variables, Table 8 and Table 9 show that the estimated donations for climate protection are higher for strong environmental attitudes, whereby the positive correlations are now not consistently significant. Furthermore, a conservative policy identification is specifically weakly significantly negatively correlated with the amount of donations for individuals who have donated for climate protection. While the strong significantly positive correlation between trust and climate protection activities in the full sample and the subsample of employed persons according to Table 6 is induced by both the extensive and intensive margins, positive reciprocity is only significantly positively correlated with the probability to donate for climate protection and negative reciprocity is only significantly negatively correlated with the amount of donations for individuals who have donated for climate protection. Furthermore, in contrast to previous studies, generosity is surprisingly significantly negatively correlated with the probability to donate for climate protection. Interestingly, the significantly higher climate protection activi-

[21] It should be noted that we have to exclude the variable 'environmental management system' for this subsample due to perfect prediction for the dependent variable, i.e. all seven managers who work in an organization with an environmental management system donated at least one JPY.

[22] The estimation results reveal that for employed persons, the estimated donations for climate protection are more than 360 JPY higher in the organizational priming treatment group T2 than in the control group C. For managers, the estimated difference is again considerably higher with about 1,153 JPY.

ties by females in the full sample and the subsample of employed persons according to Table 6 are also induced by both the extensive and intensive margins.

4. Conclusions

Based on data from a framed field experiment among more than 2,400 citizens in Japan, this paper empirically examines the causal effect of climate-related identity in private and organizational contexts on revealed climate protection activities, measured with an incentivized donation scheme. For the group of employed persons, our econometric analysis reveals significantly positive effects of the organizational climate-related treatment on donations for climate protection. This result suggests possible spillovers from organizational environmental and climate protection activities on individual climate protection activities so that climate protection in companies, institutions, or other organizations has the potential to increase private climate protection, at least if employed persons are reminded of corresponding organizational activities. The estimated effects are particularly strong for the subgroup of managers, which implies that the priming for organizational climate-related identity is most effective for the group of employed persons with a strong relationship to their organizations. This result thus suggests that higher individual responsibility and decision-making authority as well as competences, also in terms of climate-related decisions, lead to stronger causal effects of organizational on private climate protection activities.

Our results contribute to the discussion on the relevance of non-state actors (i.e. society groups like churches, sub-national and local actors, or economic actors like companies) for climate protection. While non-state actors can directly decrease own greenhouse gas emissions by their climate protection activities, they can possibly also stimulate climate protection of individual actors through leadership by example and norm-shaping (for the case of climate protection activities of the Catholic Church see e.g. Feldhaus et al., 2022). Our estimation results support this channel for the example of companies, institutions, or other organizations in their role as employers. In line with Arimura et al. (2021), these results thus suggest that completely voluntary organizational climate protection activities or especially the stimulation of organizational climate protection activities by climate policy measures such as taxes, subsidies, or softer interventions like information transfer (especially for managers) can lead to a double dividend, i.e. to direct climate protection and to climate protection activities of the persons who are employed in these organizations.

By decomposing the estimated average treatment effects into an extensive and an intensive margin, we additionally find that the significantly positive effect of the organizational climate-

related treatment on donations of employed persons is particularly induced by a higher amount of donations for climate protection when the individual has donated and less by a higher propensity to donate for climate protection. Therefore, with the exception of the small subgroup of managers, our estimation results suggest a rather restricted effectiveness of organizational climate protection activities for the general stimulation of the private willingness for climate protection, i.e. organizational climate protection activities seem to be less relevant for private low-cost or even non-monetary climate protection activities like the participation in climate projects. Instead, organizational climate protection seem to be more helpful for already climate-active employed persons to increase their intensity of climate protection activities, at least in monetary terms. To test the robustness of these conclusions, further field experiments examining the causal effects of priming organizational climate-related identity (or other interventions like information about organizational climate protection activities) on monetary and non-monetary climate protection activities would certainly be an interesting direction for future research. Furthermore, future comparative field-experimental analyses with different priming approaches in different countries would also be very interesting.

The overall significantly positive effect of the organizational climate-related treatment is all the more remarkable as, in contrast to Arimura et al. (2021), the estimated climate protection activities are not significantly higher for individuals who work for an organization with an environmental management system. These results might point to the problem of only estimating correlations (with respect to the variable of environmental management systems), which might be confounded by unobserved variables or reverse causality problems. Instead, our experimental priming approach is generally able to identify causal effects of the organizational climate-related treatment. The superiority of the application of our priming approach for the differentiation between correlations and causal effects is even strengthened in our analysis of environmental attitudes. In line with many previous studies, environmental attitudes are significantly positively correlated with donations for climate protection. However, the private climate-related treatment has no significant causal effect on climate protection activities. Possibly based on this dominating insignificant effect, also the combined private and organizational climate-related treatment has no significant causal effect on donations for climate protection. In sum, these results imply strong positive correlations between environmental attitudes and climate protection activities, but no causal effects, at least when looking at the channel of stimulating climate-related identity.

We assume that our insignificant causal effects are not distorted through an ineffective priming task since the manipulation check reveals a strong increase of climate-related identity.

However, such estimated non-results might naturally be statistically criticized as a basis for further conclusions, although it is important to mention that our analysis of the full sample is based on more than 2,400 observations so that statistical power problems should at least be limited. Nevertheless, further field-experimental analyses on the causal effect of private climate-related identity on different types of stated and revealed climate protection activities and especially the differentiation from pure correlations with environmental attitudes would certainly be very interesting. Such future studies might also give some insights about the differences between our estimation results and the estimation results in Engler et al. (2019), who use a similar priming task and show that the corresponding treatment has a significantly positive effect on the stated choice of green electricity mixes in Germany. In this respect, it might, for example, be examined whether different estimation results are due to the consideration of stated or incentivized climate protection activities.

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Tables

Table 1: Experimental groups

	No organizational climate-related treatment	Organizational climate-related treatment
No private climate-related treatment	Control group (C)	Organizational climate-related treatment group (T2)
Private climate-related treatment	Private climate-related treatment group (T1)	Private and organizational climate-related treatment group (T3)

Table 2: Descriptive statistics for the explanatory variables

Explanatory variables	Mean (standard deviation)				
	Full sample	Control group (C)	Private climate-related treatment group (T1)	Organizational climate-related treatment group (T2)	Private and organizational climate-related treatment group (T3)
Environmental awareness	53.60 (7.55)	53.26 (7.34)	53.48 (7.39)	53.99 (7.90)	53.71 (7.54)
Ecological policy identification	0.30 (0.46)	0.30 (0.46)	0.32 (0.47)	0.29 (0.45)	0.28 (0.45)
Social policy identification	0.10 (0.30)	0.10 (0.30)	0.13 (0.33)	0.10 (0.30)	0.08 (0.27)
Liberal policy identification	0.20 (0.40)	0.18 (0.39)	0.20 (0.40)	0.21 (0.41)	0.20 (0.40)
Conservative policy identification	0.26 (0.44)	0.29 (0.45)	0.25 (0.44)	0.28 (0.45)	0.23 (0.42)
Patience	0.52 (0.50)	0.52 (0.50)	0.51 (0.50)	0.53 (0.50)	0.51 (0.50)
Risk-taking preferences	0.14 (0.35)	0.13 (0.34)	0.15 (0.36)	0.14 (0.35)	0.15 (0.36)
Generosity	0.46 (0.50)	0.46 (0.50)	0.45 (0.50)	0.45 (0.50)	0.46 (0.50)
Trust	7.87 (2.08)	7.84 (2.09)	7.90 (2.15)	7.87 (2.09)	7.87 (2.02)
Positive reciprocity	11.16 (1.91)	11.17 (1.87)	11.10 (1.95)	11.19 (1.95)	11.19 (1.88)
Negative reciprocity	8.53 (2.51)	8.42 (2.64)	8.43 (2.45)	8.58 (2.56)	8.69 (2.37)
Equivalized income	3.41 (2.43)	3.38 (2.33)	3.35 (2.72)	3.48 (2.32)	3.42 (2.36)
Employment	0.69 (0.46)	0.70 (0.46)	0.68 (0.47)	0.72 (0.45)	0.68 (0.47)
High education	0.53 (0.50)	0.52 (0.50)	0.55 (0.50)	0.55 (0.50)	0.52 (0.50)
Age	45.17 (13.69)	44.97 (13.78)	45.59 (13.61)	45.09 (13.67)	45.04 (13.72)
Female	0.50 (0.50)	0.49 (0.50)	0.50 (0.50)	0.50 (0.50)	0.50 (0.50)
Married	0.58 (0.49)	0.56 (0.50)	0.61 (0.49)	0.58 (0.49)	0.59 (0.49)
Kids	0.49 (0.50)	0.48 (0.50)	0.50 (0.50)	0.49 (0.50)	0.51 (0.50)
Metropolitan area	0.54 (0.50)	0.53 (0.50)	0.54 (0.50)	0.56 (0.50)	0.54 (0.50)
Number of respondents	2,452	638	609	611	594

Table 3: Randomization check

Explanatory variables	Difference in means (z-statistic) for the compared experimental groups					
	C versus T1	C versus T2	C versus T3	T1 versus T2	T1 versus T3	T2 versus T3
Environmental awareness	-0.22 (-0.54)	-0.74* (-1.71)	-0.45 (-1.06)	-0.51 (-1.17)	-0.23 (-0.53)	0.29 (0.64)
Ecological policy identification	-0.01 (-0.55)	0.01 (0.44)	0.02 (0.96)	0.03 (0.97)	0.04 (1.49)	0.01 (0.52)
Social policy identification	-0.03 (-1.54)	-0.00 (-0.16)	0.02 (1.32)	0.02 (1.37)	0.05*** (2.82)	0.02 (1.46)
Liberal policy identification	-0.02 (-0.69)	-0.03 (-1.44)	-0.01 (-0.60)	-0.02 (-0.75)	0.00 (0.08)	0.02 (0.82)
Conservative policy identification	0.03 (1.28)	0.01 (0.40)	0.06** (2.25)	-0.02 (-0.87)	0.02 (0.97)	0.05* (1.83)
Patience	0.01 (0.40)	-0.00 (-0.12)	0.01 (0.47)	-0.01 (-0.51)	0.00 (0.08)	0.02 (0.59)
Risk-taking preferences	-0.02 (-0.98)	-0.01 (-0.38)	-0.02 (-1.08)	0.01 (0.59)	-0.00 (-0.10)	-0.01 (-0.69)
Generosity	0.01 (0.38)	0.02 (0.55)	0.00 (0.04)	0.00 (0.17)	-0.01 (-0.34)	-0.01 (-0.50)
Trust	-0.06 (-0.47)	-0.03 (-0.26)	-0.03 (-0.23)	0.03 (0.21)	0.03 (0.25)	0.00 (0.03)
Positive reciprocity	0.08 (0.70)	-0.02 (-0.19)	-0.01 (-0.14)	-0.10 (-0.86)	-0.09 (-0.82)	0.01 (0.06)
Negative reciprocity	-0.01 -0.04)	-0.15 (-1.05)	-0.26* (-1.84)	-0.15 (-1.04)	-0.26* (-1.85)	-0.11 (-0.76)
Equivalized income	0.03 (0.21)	-0.09 (-0.71)	-0.04 (-0.30)	-0.12 (-0.86)	-0.07 (-0.48)	0.05 (0.39)
Employment	0.01 (0.55)	-0.02 (-0.69)	0.02 (0.66)	-0.03 (-1.22)	0.00 (0.11)	0.04 (1.33)
High education	-0.03 (-0.93)	-0.02 (-0.87)	-0.00 (-0.05)	0.00 (0.06)	0.02 (0.87)	0.02 (0.80)
Age	-0.62 (-0.80)	-0.12 (-0.15)	-0.07 (-0.09)	0.50 (0.64)	0.55 (0.69)	0.05 (0.06)
Female	-0.01 (-0.25)	-0.00 (-0.08)	-0.00 (-0.04)	0.00 (0.17)	0.01 (0.20)	0.00 (0.03)
Married	-0.05* (-1.96)	-0.02 (-0.65)	-0.03 (-0.93)	0.04 (1.29)	0.03 (1.00)	-0.01 (-0.29)
Kids	-0.02 (-0.86)	-0.01 (-0.34)	-0.03 (-1.18)	0.01 (0.51)	-0.01 (-0.32)	-0.02 (-0.83)
Metropolitan area	-0.00 (-0.14)	-0.03 (-0.95)	-0.01 (-0.38)	-0.02 (-0.80)	-0.01 (-0.24)	0.02 (0.56)
P-value of Wald test	0.72	0.91	0.53	0.49	0.24	0.91
Number of respondents	1,247	1,249	1,232	1,220	1,203	1,205

Note: * (**, ***) means that the difference in the means between the experimental groups on the basis of a mean comparison z-test is different from zero at the 10% (5%, 1%) significance level, respectively.

Table 4: Manipulation check

Experimental groups	Average number of climate-related words	Number of respondents
Control group (C)	1.15	638
Private climate-related treatment group (T1)	1.47	609
Organizational climate-related treatment group (T2)	1.49	611
Private and organizational climate-related treatment group (T3)	1.45	594
Compared experimental groups	Difference in means (z-statistic)	Number of respondents
C versus T1	-0.32*** (-6.72)	1,247
C versus T2	-0.34*** (-7.33)	1,249
C versus T3	-0.31*** (-6.44)	1,232
T1 versus T2	-0.02 (-0.42)	1,220
T1 versus T3	0.01 (0.28)	1,203
T2 versus T3	0.03 (0.71)	1,205

Note: * (**, ***) means that the difference in the means between the experimental groups on the basis of a mean comparison z-test is different from zero at the 10% (5%, 1%) significance level, respectively.

Table 5: Absolute and relative frequencies of the employment status, 2452 respondents

Employment status		Absolute (relative) frequency
Not classified		34 (1.39%)
Not employed person	Housewife or houseman	440 (17.94%)
	Retiree or pensioner	70 (2.85%)
	Unemployed person	157 (6.40%)
	Full-time student	49 (2.00%)
Employee	Full-time employee	1,053 (42.94%)
	Part-time employee	344 (14.03%)
	Public officer	101 (4.12%)
Manager	Executive officer or manager of firm	33 (1.35%)
	Self-employed person	171 (6.97%)

Table 6: OLS estimates (heteroscedasticity robust z-statistics) in linear regression models and ML estimates of average marginal and discrete effects (robust z-statistics) in Tobit models, dependent variable: donations for climate protection

Explanatory variables	Full sample		Employed persons (full-time employees, part-time employees, public officers, managers)		Managers (executive officers, managers of firms, self-employed persons)	
	Linear regression model	Tobit model	Linear regression model	Tobit model	Linear regression model	Tobit model
Private climate-related treatment	114.94 (0.75)	90.80 (0.58)	159.44 (0.85)	155.87 (0.83)	407.55 (0.74)	299.85 (0.57)
Organizational climate-related treatment	238.22 (1.51)	205.07 (1.29)	388.70** (2.05)	341.88* (1.78)	1,365.60** (2.23)	1,374.18** (2.22)
Private and organizational climate-related treatment	217.21 (1.37)	194.22 (1.22)	109.41 (0.56)	77.80 (0.40)	319.89 (0.53)	127.63 (0.22)
Environmental management system	--	--	-75.28 (-0.45)	-85.36 (-0.52)	296.11 (0.23)	493.23 (0.48)
Environmental awareness	37.46*** (4.29)	37.41*** (4.25)	35.22*** (3.29)	33.78*** (3.12)	62.29* (1.83)	54.85 (1.56)
Ecological policy identification	672.38*** (4.71)	709.45*** (5.04)	791.64*** (4.47)	811.67*** (4.68)	1,115.48** (2.02)	1,090.14** (2.05)
Social policy identification	-51.44 (-0.24)	-15.16 (-0.08)	-214.62 (-0.85)	-155.52 (-0.66)	149.96 (0.18)	193.57 (0.26)
Liberal policy identification	238.02 (1.49)	229.73 (1.47)	141.41 (0.77)	150.56 (0.84)	-288.94 (-0.52)	-245.23 (-0.47)
Conservative policy identification	-228.79* (-1.80)	-219.31* (-1.74)	-329.94** (-2.24)	-324.61** (-2.22)	-978.73** (-2.10)	-896.75** (-2.01)
Patience	71.11 (0.57)	60.54 (0.49)	62.93 (0.42)	79.42 (0.52)	523.99 (1.12)	453.42 (1.01)
Risk-taking preferences	-6.73 (-0.04)	5.39 (0.03)	-119.42 (-0.65)	-111.32 (-0.61)	29.90 (0.05)	-57.67 (-0.10)
Generosity	-129.68 (-1.02)	-138.58 (-1.09)	-170.25 (-1.11)	-198.89 (-1.30)	-315.05 (-0.71)	-330.75 (-0.78)
Trust	140.47*** (4.80)	150.33*** (5.01)	124.26*** (3.50)	136.65*** (3.79)	173.11 (1.34)	195.65 (1.51)
Positive reciprocity	114.33*** (3.58)	128.01*** (3.94)	110.59*** (2.85)	122.45*** (3.15)	-2.85 (-0.02)	23.11 (0.19)
Negative reciprocity	-100.47*** (-3.85)	-95.00*** (-3.57)	-100.98*** (-3.21)	-92.80*** (-2.91)	-97.92 (-0.91)	-92.26 (-0.89)
Log equivalized income	80.11 (0.90)	86.03 (0.96)	106.77 (0.88)	88.09 (0.73)	210.46 (0.63)	213.57 (0.66)
Employment	118.19 (0.88)	109.90 (0.83)	--	--	--	--
High education	-145.11 (-1.20)	-175.18 (-1.44)	-169.26 (-1.15)	-194.92 (-1.34)	4.75 (0.01)	-33.30 (-0.07)
Age	10.98** (2.32)	11.91** (2.55)	5.67 (0.92)	7.11 (1.17)	-6.81 (-0.35)	-1.11 (-0.06)
Female	491.89*** (3.85)	502.15*** (3.93)	538.09*** (3.62)	545.42*** (3.70)	509.29 (1.06)	519.06 (1.08)
Married	-161.43 (-1.06)	-127.36 (-0.83)	13.94 (0.08)	37.13 (0.21)	325.27 (0.57)	219.62 (0.40)
Kids	407.50*** (2.70)	396.51*** (2.65)	325.27* (1.75)	301.33* (1.65)	-117.61 (-0.19)	-73.09 (-0.13)
Metropolitan area	-83.13 (-0.73)	-130.88 (-1.16)	-254.34* (-1.83)	-305.06** (-2.22)	-331.52 (-0.77)	-400.26 (-0.96)
Constant	-1278.84* (-1.92)	--	-566.58 (-0.71)	--	-1075.69 (-0.45)	--
Number of respondents	2,452		1,702		204	

Note: * (**, ***) means that the estimated parameter or effect is different from zero at the 10% (5%, 1%) significance level, respectively.

Table 7: OLS estimates (heteroscedasticity robust z-statistics) in linear regression models, inclusion of interaction terms, dependent variable: donations for climate protection, 2,452 respondents

Explanatory variables	(1)	(2)	(3)
Private climate-related treatment	113.32 (0.74)	116.18 (0.76)	114.82 (0.75)
Organizational climate-related treatment	-149.42 (-0.59)	166.67 (1.03)	-148.00 (-0.59)
Employment	-6.13 (-0.04)	--	--
Employed non-manager	--	--	29.56 (0.20)
Manager	--	-253.98 (-1.05)	-229.62 (-0.87)
Organizational climate-related treatment x employment	546.19* (1.94)	--	--
Organizational climate-related treatment x employed non-manager	--	--	453.97 (1.58)
Organizational climate-related treatment x manager	--	999.87** (2.07)	1322.67** (2.54)
Private and organizational climate-related treatment	215.42 (1.36)	218.13 (1.38)	218.92 (1.39)
Environmental awareness	36.91*** (4.23)	37.25*** (4.27)	36.65*** (4.21)
Ecological policy identification	679.48*** (4.77)	667.79*** (4.67)	680.36*** (4.77)
Social policy identification	-56.06 (-0.27)	-49.78 (-0.24)	-54.01 (-0.26)
Liberal policy identification	241.20 (1.51)	244.86 (1.54)	246.07 (1.55)
Conservative policy identification	-227.61* (-1.79)	-232.68* (-1.83)	-232.71 (-1.83)
Patience	71.89 (0.58)	77.58 (0.63)	71.68 (0.58)
Risk-taking preferences	-8.25 (-0.05)	1.06 (0.01)	-4.28 (-0.03)
Generosity	-123.39 (-0.97)	-129.39 (-1.02)	-123.41 (-0.97)
Trust	139.28*** (4.76)	139.51*** (4.77)	138.18*** (472)
Positive reciprocity	115.28*** (3.61)	112.65*** (3.53)	113.76*** (3.56)
Negative reciprocity	-100.25*** (-3.84)	-100.69*** (-3.86)	-100.56*** (-3.85)
Log equivalized income	75.71 (0.85)	99.28 (1.16)	74.37 (0.84)
High education	-147.75 (-1.22)	-139.95 (-1.16)	-148.39 (-1.22)
Age	11.21** (2.38)	10.74** (2.27)	11.75** (2.45)
Female	500.49*** (3.91)	461.28*** (3.74)	499.95*** (3.91)
Married	-163.99 (-1.08)	-166.71 (-1.10)	-157.34 (-1.03)
Kids	410.18*** (2.73)	401.60*** (2.67)	401.15*** (2.67)
Metropolitan area	-88.06 (-0.78)	-88.85 (-0.78)	-91.38 (-0.80)
Constant	-1178.02 (-1.76)	-1127.45 (-1.72)	-1160.40* (-1.74)

Note: * (**, ***) means that the estimated parameter is different from zero at the 10% (5%, 1%) significance level, respectively.

Table 8: ML estimates of average marginal and discrete probability effects (robust z-statistics) in binary probit models, dependent variable: positive donations for climate protection (extensive margin)

Explanatory variables	Full sample	Employed persons (full-time employees, part-time employees, public officers, managers)	Managers (executive officers, managers of firms, self-employed persons)
Private climate-related treatment	0.01 (0.57)	0.03 (1.11)	-0.00 (-0.03)
Organizational climate-related treatment	0.01 (0.58)	0.02 (0.79)	0.12* (1.83)
Private and organizational climate-related treatment	0.02 (0.77)	0.01 (0.29)	-0.07 (-0.87)
Environmental management system	--	0.01 (0.42)	--
Environmental awareness	0.00** (2.29)	0.00 (1.05)	-0.00 (-0.38)
Ecological policy identification	0.09*** (5.10)	0.10*** (4.75)	0.10 (1.64)
Social policy identification	0.00 (0.04)	-0.01 (-0.15)	0.06 (0.68)
Liberal policy identification	0.03 (1.27)	0.02 (0.83)	0.01 (0.21)
Conservative policy identification	-0.01 (-0.60)	-0.02 (-1.10)	-0.08 (-1.19)
Patience	-0.00 (-0.19)	0.02 (1.02)	0.03 (0.53)
Risk-taking preferences	0.01 (0.28)	-0.00 (-0.18)	-0.02 (-0.24)
Generosity	-0.02 (-1.18)	-0.04** (-1.97)	-0.10* (-1.72)
Trust	0.02*** (4.56)	0.02*** (3.33)	0.01 (0.82)
Positive reciprocity	0.02*** (4.22)	0.02*** (3.28)	0.01 (0.85)
Negative reciprocity	-0.01 (-1.44)	-0.01 (-1.34)	-0.02 (-1.39)
Log equivalized income	0.01 (0.60)	-0.00 (-0.03)	0.03 (0.65)
Employment	0.01 (0.27)	--	--
High education	-0.03* (-1.84)	-0.03 (-1.29)	-0.01 (-0.20)
Age	0.00** (2.38)	0.00* (1.71)	0.00 (0.33)
Female	0.06*** (3.74)	0.07*** (3.48)	0.07 (1.07)
Married	0.01 (0.70)	0.02 (0.74)	-0.01 (-0.07)
Kids	0.03 (1.27)	0.02 (0.70)	0.05 (0.72)
Metropolitan area	-0.04*** (-2.95)	-0.07*** (-3.63)	-0.10* (-1.78)
Number of respondents	2,452	1,702	204

Notes: The variable 'environmental management system' for the subsample of managers is excluded due to perfect prediction for the dependent variable, i.e. all seven managers who work in an organization with an environmental management system donated at least one JPY. * (**, ***) means that the estimated effect is different from zero at the 10% (5%, 1%) significance level, respectively.

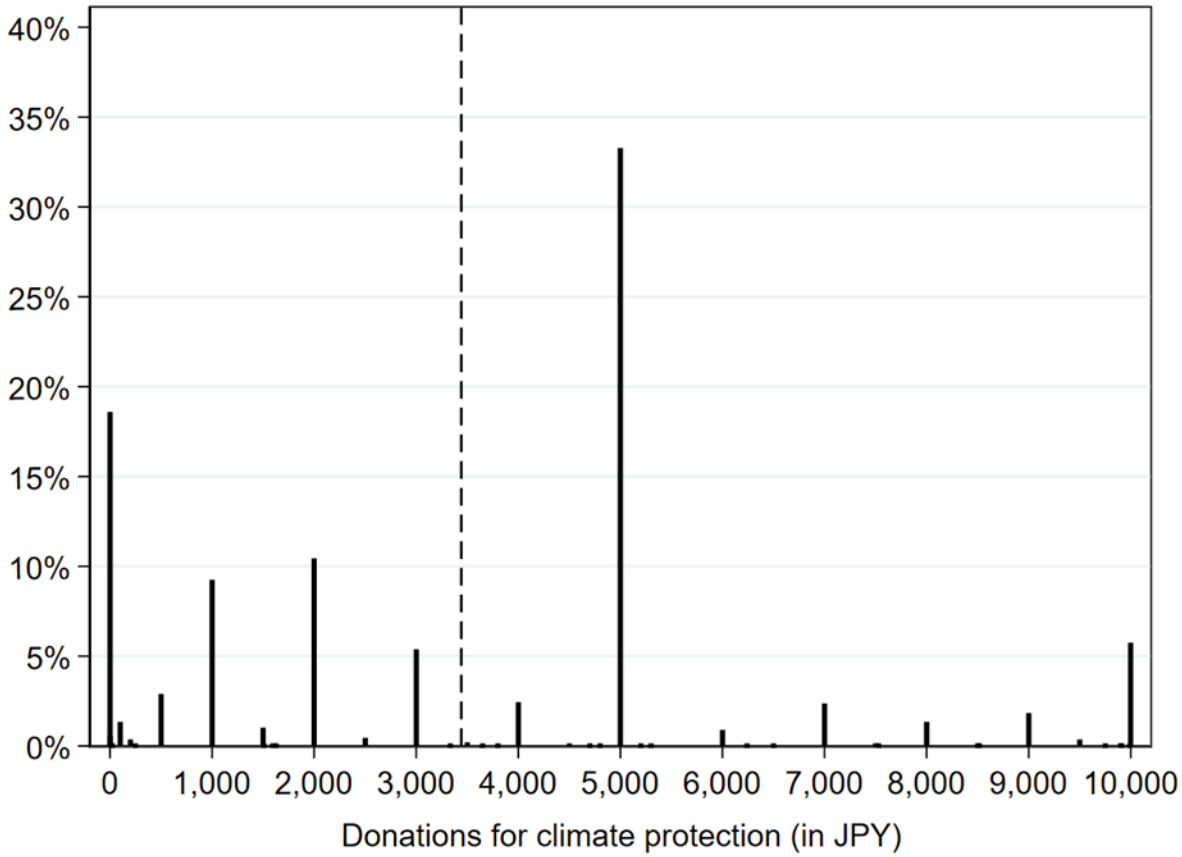
Table 9: OLS estimates (heteroscedasticity robust z-statistics) in linear regression models, dependent variable: donations for climate protection conditional on positive donations (intensive margin)

Explanatory variables	Full sample	Employed persons (full-time employees, part-time employees, public officers, managers)	Managers (executive officers, managers of firms, self-employed persons)
Private climate-related treatment	82.46 (0.51)	61.24 (0.31)	612.72 (1.04)
Organizational climate-related treatment	221.74 (1.36)	360.83* (1.81)	1,152.73* (1.77)
Private and organizational climate-related treatment	195.23 (1.19)	97.60 (0.47)	908.41 (1.35)
Environmental management system	--	-156.40 (-0.90)	-727.26 (-0.58)
Environmental awareness	34.14*** (3.71)	37.03*** (3.23)	93.10** (2.36)
Ecological policy identification	375.25*** (2.64)	460.78** (2.59)	893.71 (1.59)
Social policy identification	-48.59 (-0.23)	-217.26 (-0.85)	107.58 (0.13)
Liberal policy identification	167.67 (1.03)	81.69 (0.43)	-446.63 (-0.81)
Conservative policy identification	-233.81* (-1.76)	-297.94* (-1.92)	-848.36* (-1.67)
Patience	100.59 (0.78)	-40.07 (-0.25)	333.40 (0.62)
Risk-taking preferences	-38.57 (-0.23)	-118.20 (-0.62)	139.68 (0.23)
Generosity	-64.68 (-0.49)	-4.28 (-0.03)	255.21 (0.52)
Trust	83.07*** (2.67)	73.14** (1.97)	110.97 (0.79)
Positive reciprocity	45.93 (1.36)	48.93 (1.20)	-75.49 (-0.56)
Negative reciprocity	-104.52*** (-3.81)	-101.37*** (-3.05)	-37.56 (-0.34)
Log equivalized income	67.24 (0.74)	123.14 (1.00)	211.84 (0.72)
Employment	121.99 (0.89)	--	--
High education	-34.13 (-0.27)	-80.40 (-0.53)	-206.88 (-0.43)
Age	5.98 (1.26)	0.07 (0.01)	-4.65 (-0.22)
Female	284.51** (2.16)	323.52** (2.12)	65.62 (0.14)
Married	-269.22* (-1.73)	-71.63 (-0.40)	563.40 (0.96)
Kids	354.14** (2.33)	294.04 (1.57)	-494.63 (-0.85)
Metropolitan area	115.78 (0.98)	26.94 (0.19)	103.18 (0.22)
Constant	1205.37 (1.69)	1478.99* (1.73)	-1366.71 (-0.50)
Number of observations	1,996	1,363	161

Note: * (**, ***) means that the estimated parameter is different from zero at the 10% (5%, 1%) significance level, respectively.

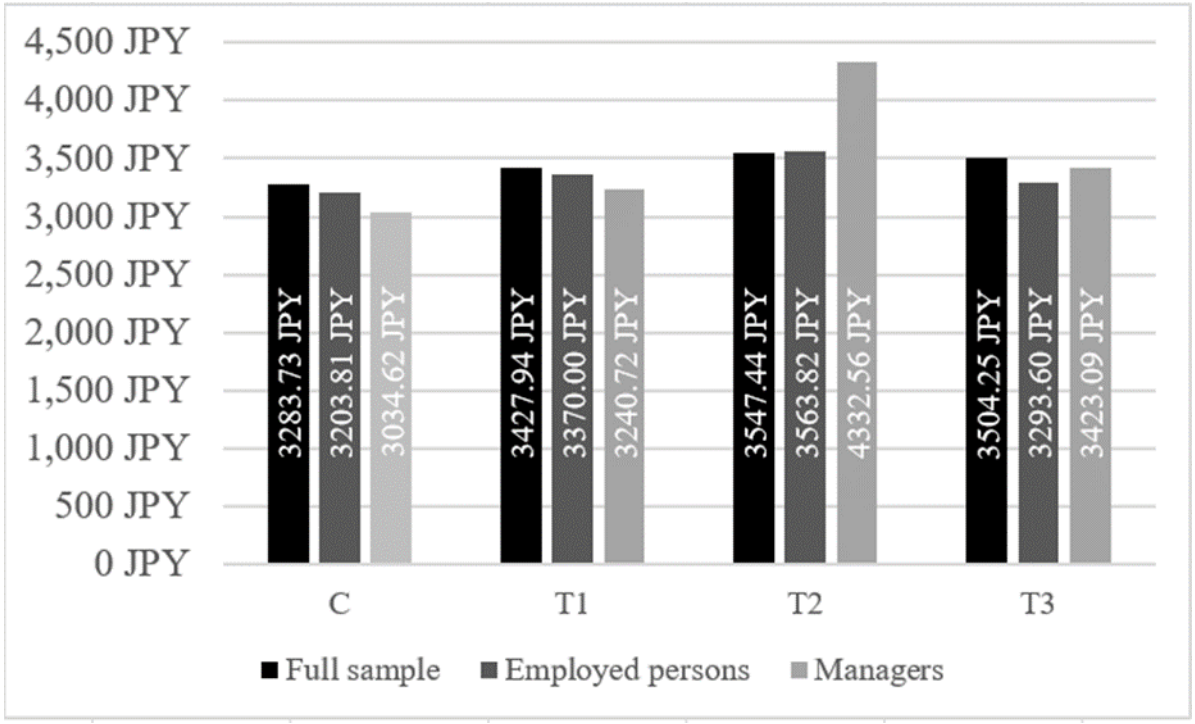
Figures

Figure 1: Relative frequencies of donations for climate protection



Note: The figure shows the relative frequencies (in %) of the donations for climate protection among all 2,452 respondents. The dashed line indicates the mean of about 3,439 JPY.

Figure 2: Average donations for climate protection



Note: The figure shows the average donations for climate protection (in JPY) for the 638, 445, and 52 respondents in the control group (C), the 609, 416, and 54 respondents in the private climate-related treatment group (T1), the 611, 437, and 43 respondents in the organizational climate-related treatment group (T2), and the 594, 404, and 55 respondents in the private and organizational climate-related treatment group (T3), separately for the full sample (black bars) and the subsamples of employed persons (dark grey bars) and managers (light grey bars).

Online appendix: Experimental design and survey questions for the variables in the econometric analysis (translated into English)

Explanation of experiment

After the survey, we will randomly select about 1% of all participants, who receive an amount of 10,000 JPY. If you are one of these selected participants, you can keep the amount completely to yourself and use it for any purpose. If you wish, you can alternatively also use the money to reduce CO_2 emissions to limit climate change. The amount you do not allocate for reducing CO_2 emissions, you obtain as MyVoice Points. We kindly ask you to allocate 10,000 JPY as if you were a person who will receive 10,000 JPY.

For reducing CO_2 emissions, we make use of the J-Credit Scheme. The J-Credit Scheme is a program run by the government to promote CO_2 emission reductions by activities such as energy savings or renewable energy investments. We will decrease CO_2 emissions through the adoption of energy efficiency projects. In April 2019, the costs for the reduction of one ton CO_2 through the adoption of energy efficient technologies in J-Credits amounted to 1,506 JPY so that an amount of 1,000 JPY leads to a CO_2 emission reduction by about 0.663 tons if the prices would not change.

Control group: However, before we ask you to allocate the amount of 10,000 JPY, we would like you to describe some activities of you in your leisure time.

Private climate-related treatment group: However, before we ask you to allocate the amount of 10,000 JPY, we would like you to describe some climate protection activities of you in your leisure time.

Organizational climate-related treatment group:

For employees: However, before we ask you to allocate the amount of 10,000 JPY, we would like you to describe some climate protection activities of the company, institution, or organization at which you work.

For executive officers, managers of firms, and self-employed persons: However, before we ask you to allocate the amount of 10,000 JPY, we would like you to describe some climate protection activities of your company, institution, or organization.

For full-time students: However, before we ask you to allocate the amount of 10,000 JPY, we would like you to describe some climate protection activities of your university.

For housewives or housemen and retirees or pensioners: However, before we ask you to allocate the amount of 10,000 JPY, we would like you to describe some climate protection activities of the company, institution, or organization at which you previously worked.

For persons who never worked: However, before we ask you to allocate the amount of 10,000 JPY, we would like you to describe some climate protection activities of the company, institution, or organization at which your closest related employed person works.

Private and organizational climate-related treatment group:

For employees: However, before we ask you to allocate the amount of 10,000 JPY, we would like you to describe some climate protection activities of you in your leisure time and some climate protection activities of the company, institution, or organization at which you work.

For executive officers, managers of firms, and self-employed persons: However, before we ask you to allocate the amount of 10,000 JPY, we would like you to describe some climate protection activities of you in your leisure time and some climate protection activities of your company, institution, or organization.

For full-time students: However, before we ask you to allocate the amount of 10,000 JPY, we would like you to describe some climate protection activities of you in your leisure time and some climate protection activities of your university.

For housewives or housemen and retirees or pensioners: However, before we ask you to allocate the amount of 10,000 JPY, we would like you to describe some climate protection activities of you in your leisure time and some climate protection activities of the company, institution, or organization at which you previously worked.

For respondents who never worked: However, before we ask you to allocate the amount of 10,000 JPY, we would like you to describe some climate protection activities of you in your leisure time and some climate protection activities of the company, institution, or organization at which your closest related employed person works.

You can describe these activities in full sentences or alternatively also in some words:

Manipulation check

In addition, we would like to ask you for a small word-completion task. Please complete the following two-word idioms by entering a kanji in the blanks.

1. 感__
2. __水
3. 会__
4. __温
5. __営
6. 気__

Construction of dependent variables: 'Donation for climate protection', 'positive donations for climate protection',' donations for climate protection conditional on positive donations'

After the survey, we will randomly select about 1% of all participants, who receive an amount of 10,000 JPY. Now we come to the allocation of the 10,000 JPY as described above.

Please consider the following details in your decision: Since the selection is random, you should make your decision as if you were one of the selected participants. If you are actually selected, we will pay exactly the amounts that you have allocated to you (as MyVoice Points) and to reduce CO_2 emissions by the purchase of J-Credits. Within one month after the survey, the market research institute that conducts the survey will inform you by e-mail indicating whether you have been selected.

If you are selected, the notification will also contain a reminder of your allocation and when you receive the MyVoice points. Furthermore, the total amount for the J-Credit Scheme from this survey and the corresponding CO_2 emission reductions will be announced to all participants with a certification in a few months. Again, the individual answer will never be disclosed.

Now please indicate the allocation of the amount of the 10,000 JPY to you (as MyVoice Points) and to reduce CO_2 emissions by the purchase of J-Credits.

Amount for you (as MyVoice Points): _____ JPY

Amount for reducing CO_2 emissions by the purchase of J-Credits: _____ JPY

Thank you for allocating the amount of 10,000 JPY. Please confirm your entry before we continue with the rest of the questionnaire:

If I win, I would like to keep […] JPY for me (as MyVoice Points) and […] JPY to reduce CO_2 emissions by the purchase of J-Credits.

If the information is correct, please press "next" to proceed with the survey. If the information is wrong, please press "back" to change the allocation.

Questions for further explanatory variables

Question for 'environmental awareness'

Listed below are statements about the relationship between humans and the environment. Please indicate to what extent you agree with the following statements:

Statement	Totally disagree	Rather disagree	Undecided	Rather agree	Totally agree
We are approaching the limit of the number of people the earth can support	☐	☐	☐	☐	☐
Humans have the right to modify the natural environment to suit their needs	☐	☐	☐	☐	☐
When humans interfere with nature it often produces disastrous consequences	☐	☐	☐	☐	☐
Human ingenuity will insure that we do NOT make the earth unlivable	☐	☐	☐	☐	☐
Humans are severely abusing the environment	☐	☐	☐	☐	☐
The earth has plenty of natural resources if we just learn how to develop them	☐	☐	☐	☐	☐
Plants and animals have as much right as humans to exist	☐	☐	☐	☐	☐
The balance of nature is strong enough to cope with the impacts of modern industrial nations	☐	☐	☐	☐	☐
Despite our special abilities humans are still subject to the laws of nature	☐	☐	☐	☐	☐
The so-called "ecological crisis" facing humankind has been greatly exaggerated	☐	☐	☐	☐	☐
The earth is like a spaceship with very limited room and resources.	☐	☐	☐	☐	☐
Humans were meant to rule over the rest of nature	☐	☐	☐	☐	☐
The balance of nature is very delicate and easily upset	☐	☐	☐	☐	☐
Humans will eventually learn enough about how nature works to be able to control it	☐	☐	☐	☐	☐
If things continue on their present course, we will soon experience a major ecological catastrophe	☐	☐	☐	☐	☐

Question for 'ecological policy identification', 'social policy identification', 'liberal policy identification', and 'conservative policy identification'

Please indicate to what extent you agree with the following statements about policy orientation:

Statement	Totally disagree	Rather disagree	Undecided	Rather agree	Totally agree
I identify myself with ecologically oriented policy	☐	☐	☐	☐	☐
I identify myself with socially oriented policy	☐	☐	☐	☐	☐
I identify myself with liberally oriented policy	☐	☐	☐	☐	☐
I identify myself with conservatively oriented policy	☐	☐	☐	☐	☐

Question for 'patience'

How patient are you in general?

Very impatient	Rather impatient	Undecided	Rather patient	Very patient
☐	☐	☐	☐	☐

Question for 'risk-taking preference'

How willing are you generally to take risks?

Not at all willing to take risks	Rather not willing to take risks	Undecided	Rather willing to take risks	Very willing to take risks
☐	☐	☐	☐	☐

Question for 'generosity'

How generous are you in general?

Not at all generous	Rather not generous	Undecided	Rather generous	Very generous
☐	☐	☐	☐	☐

Question for 'trust', 'positive reciprocity', and 'negative reciprocity'

Listed below are statements about the relationship between humans. Please indicate to what extent you agree with the following statements:

Statement	Totally disagree	Rather disagree	Undecided	Rather agree	Totally agree
In general, one can trust people	☐	☐	☐	☐	☐
These days you cannot rely on anybody else	☐	☐	☐	☐	☐
When dealing with strangers, it is better to be careful before you trust them	☐	☐	☐	☐	☐
If someone does me a favor, I am prepared to return it	☐	☐	☐	☐	☐
I am ready to undergo personal costs to help somebody who helped me before	☐	☐	☐	☐	☐
I go out of my way to help somebody who has been kind to me before	☐	☐	☐	☐	☐
If I suffer a serious wrong, I will take revenge as soon as possible, no matter what the cost	☐	☐	☐	☐	☐
If somebody puts me in a difficult position, I will do the same to him/her	☐	☐	☐	☐	☐
If somebody insults me, I will insult him/her back	☐	☐	☐	☐	☐

Question for 'equivalized income' and 'log equivalized income'

What is your annual household income? Please refer to the current annual net income after deduction of taxes. Please make sure to include pensions and child allowance.

- ☐ Less than 1 million JPY
- ☐ 1 million JPY – less than 2 million JPY
- ☐ 2 million JPY – less than 3 million JPY
- ☐ 3 million JPY – less than 4 million JPY
- ☐ 4 million JPY – less than 5 million JPY
- ☐ 5 million JPY – less than 6 million JPY
- ☐ 6 million JPY – less than 7 million JPY
- ☐ 7 million JPY – less than 8 million JPY
- ☐ 8 million JPY – less than 9 million JPY
- ☐ 9 million JPY – less than 10 million JPY
- ☐ 10 million JPY – less than 15 million JPY
- ☐ 15 million JPY and more

Question for 'employment'

What is your current employment status?

If you are currently on leave, please choose "unemployment". Even if you are not a full-time student e.g. part-time student, please choose "full-time student" if you do not work.

If you work while you are a student (not full-time student), please choose among "full-time employment", "part-time worker", "public officer", "executive officer or manager of firms", or "self-employed" according to your employment status.

□ Full-time employment

□ Part-time worker

□ Public officer

□ Executive officer or manager of firms

□ Self-employed

□ Housewife or houseman

□ Retiree (including pensioner)

□ Unemployed

□ Full-time student

□ Other: _____

Question for 'high education'

What is your highest school degree?

□ Junior high school

□ High school

□ Vocational college

□ College (2 years)

□ Technical school

□ Bachelor degree

□ Master or doctoral degree

□ Other degree, namely _____

Question for 'age'

Please enter your age: _____ years

Question for 'female'

Please indicate your gender:

□ Male

□ Female

□ Other

Question for 'married'

Are you married?

□ No (including unmarried, divorced, etc.)

□ Yes

Question for 'kids'

How many own children and grandchildren do you have?

I have____child(ren) and ___ grandchild(ren)

Question for 'metropolitan area'

Please indicate the zip code of your main residence.

If you have more than one residence, please indicate the zip code of your main residence.

Zip code: _____

Question for 'environmental management system'

Does your company, institution, or organization currently have a certified environmental management system such as ISO14001?

□ Yes

□ No

□ I don't know (did not appear for self-employed persons)