1.1.1.1

FULFILL

Report on long term effects of sufficiency lifestyles and governance approaches for diffusion

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Fundamental decarbonisation
through sufficiency by lifestyle changes

FULFILL

Fundamental decarbonisation through sufficiency by lifestyle changes

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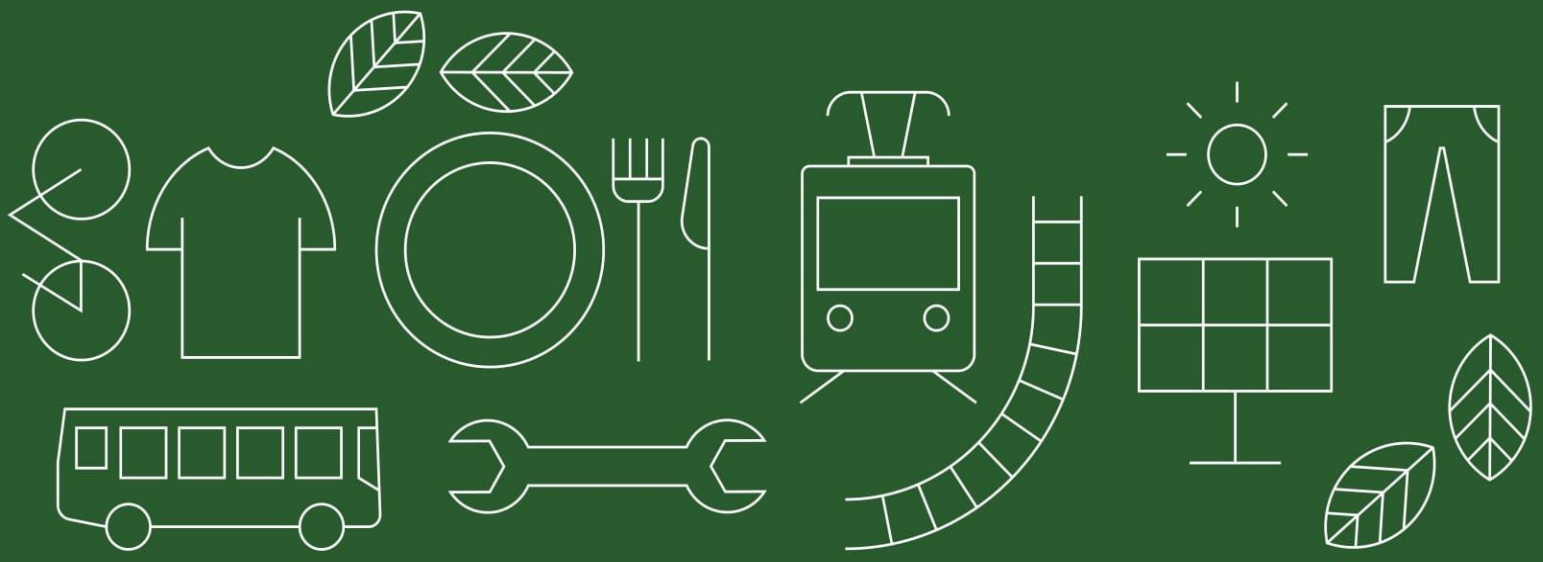

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List of Abbreviations

AME	Average Marginal Effects
AC	Air Conditioner
CF	Carbon Footprint
CG	Control Group
CO_{2eq}	Carbon dioxide equivalent or CO_2 equivalent
EU	European Union
kWh	Kilowatt-hour
LPG	Liquefied Petroleum Gas
MS	Microsoft
NDC	Nationally Determined Contributions
OECD	Organisation for Economic Co-operation and Development
OLS	Linear Regression Analysis
RAA	Reasoned Action Approach
SSH	Social Sciences and Humanities
WHO	World Health Organization

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Abstract/Summary

This deliverable outlines the second round of representative citizen surveys in the FULFILL project, focusing on sufficiency lifestyles at the micro level in five European countries and in Mumbai and Delhi representing urban India. The objectives include understanding the persistence of sufficiency lifestyles, exploring the acceptability of policy measures and investigating potential diffusion pathways. The study includes a second survey wave, interviewing the same respondents as in a previous deliverable (D3.1), and three experimental surveys in the areas of housing and diet in the European countries and policy evaluations for several domains in the study in India. All of the experiments use framing effects, in which participants are randomly provided with different information. Statistical analysis is used to test whether the different types of information affect the acceptability of the policies. The experimental surveys also include components that explore the diffusion pathways of sufficiency lifestyles. The longitudinal study in Europe reveals stability in lifestyles between 2021 and 2022, despite the ongoing energy crisis in Europe, with overall higher carbon footprints in 2022, making transitions to lower carbon footprints challenging. In India, comparing 2022 and 2023, the volatility seems higher, however, constraints regarding the sample need to be considered. The housing experiment reveals low acceptability of strict sufficiency policies, such as banning the construction of new single-family homes or taxing above-average living space. When the policy was presented as a means of 'overcoming' rather than 'punishing' unsustainable housing choices, acceptability ratings were higher. The dietary experiments show generally high acceptability for climate labelling and a meat-free day in canteens, and generally low acceptability for a meat tax. A combined climate risk and health framing showed little effect, while an effectiveness and acceptance framing had an impact on policy acceptability. Acceptability for the meat tax was higher when combined with information on effectiveness and acceptance, but lower for climate labelling and meat-free days. The study in India with samples from Delhi and Mumbai revealed more support for sufficiency policies than in Europe; however, also respondents from India prefer soft policy measures like labelling over stricter ones like taxes. The analysis of diffusion pathways which was only conducted in the European countries suggests that sustainable diets enjoy more widespread awareness and discussion compared to sustainable housing. Overall, respondents with more favourable attitudes towards sustainable diets or sustainable housing and higher environmental concern report a greater likelihood of engaging in discussions about the topic. Limitations of all surveys and experimental studies include the possible influence of crises, limited familiarity of respondents with the issues studied and variations in sample size and also in composition, especially for the longitudinal part in India. The exploration of gender difference has unearthed various patterns that merit further investigation. In conclusion, despite challenges and country differences, the findings provide valuable insights for promoting sufficiency lifestyles.

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1 Introduction and overview

The overall aim of Work Package (WP) 3 is to translate the concept of sufficiency lifestyles to the micro level for empirical research. The WP uses a mixed method design with two longitudinal surveys (Tasks 1 and 3) and an interview study (Task 2), which are methodologically and conceptually linked. It is conducted in five European countries, including Denmark, France, Germany, Italy and Latvia, as well as in two megacities in India as an additional non-European country. As a result, we will gain insights into the current prevalence of sufficiency lifestyles among citizens in five European and Indian societies. The emergence of these lifestyles will be analysed according to contextual and structural factors as well as across the life course, leading to the identification of enablers and barriers. As outlined in previous deliverables (D2.1 Pagliano and Erba 2022; D2.3 Tröger et al. 2022), in the context of FULFILL, ***sufficiency is defined as the creation of the social, infrastructural and regulatory conditions for changing individual and collective lifestyles in a way that reduces energy demand and greenhouse gas emissions to an extent that they are within planetary boundaries, while simultaneously contributing to societal well-being***.

The first task in WP3, a first round of surveys, identified and extensively described sufficiency lifestyles in households in Europe and India (see D3.1 Alexander-Haw et al. 2023). A cross-sectional survey was conducted in five European countries (Denmark, France, Germany, Italy, Latvia) and two major Indian cities (Mumbai, Delhi). To operationalise sufficiency lifestyles, the survey included a carbon footprint (CF) calculator and measures of well-being. Results show variations in CO_{2eq}-emissions, with European countries on a higher level than India (between 3.2 t in France and 4.9 t in Denmark and 1.5-1.6 t in the Indian cities). Respondents were further categorised based on emissions and well-being, revealing five groups with (1) very sufficient, (2) sufficient, (3) low CF but low well-being, (4) average, and (5) high CF. In European countries, around 3-4% have very sufficient lifestyles, 7-8% are sufficient, and 13-15% have low CF but low well-being. Descriptive analyses revealed tendencies that women are more frequently part of groups 1-3 and that group 3 is also associated with lower incomes and signs of deprivation - in line with the lower well-being levels. A deeper analysis of these characterisations based on multivariate models is part of D5.1 (Flipo et al. 2023). While the share of (very) sufficient lifestyles in Mumbai was similar to the European countries, it is much smaller in Delhi, where over 90% of those low on emissions compared to the overall society exhibit also low levels of well-being. Mumbai had more (very) sufficient households than Delhi. For the Indian cities, differences between Mumbai and Delhi were noted, such as walking habits, ownership of technical devices, diet types and reported governmental support.

The current deliverable now presents the second round of surveys which are implemented as task 3.3 of WP3. The objectives of task 3.3 are:

- Provide insights into the persistence of sufficiency lifestyles over time.
- Explore the potential incentives and acceptability of policies to promote sufficiency lifestyles using experimental survey designs taking a psychological framing approach into account.
- Investigate potential diffusion pathways. These are defined as the spread of about sufficiency lifestyles information in society.

To address the first objective, a longitudinal survey is conducted (see chapter 2 for European countries

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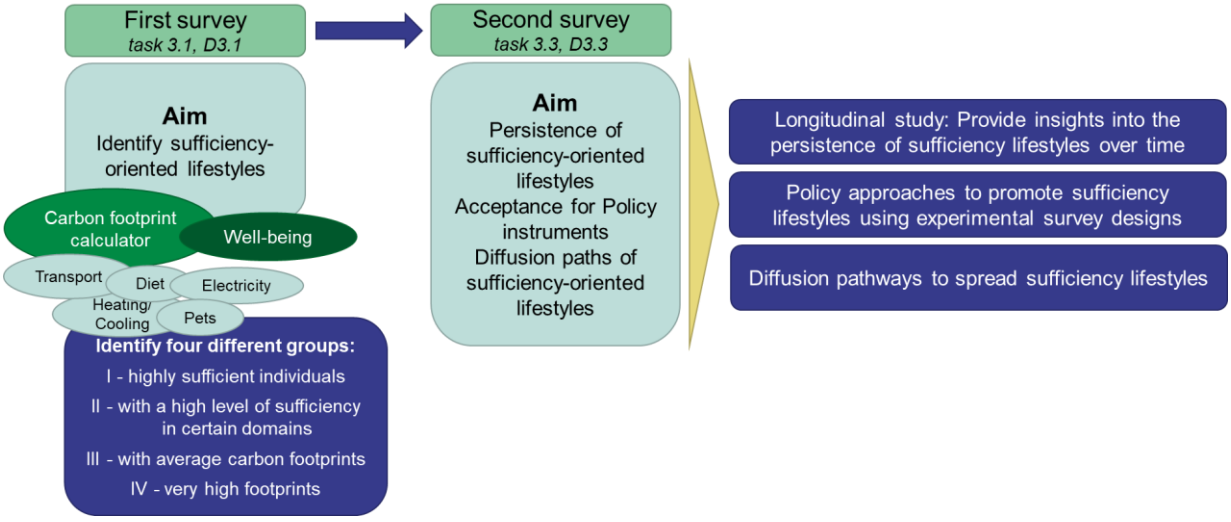
and 5 for India). It repeats the measurement of the CF and analyse the extent to which people are still in the same lifestyle group, using participants who have already responded to the first survey. The second objective is examined using separate surveys and, in line with research undertaken in WP5, looks into policy approaches in the field of housing (chapter 0) and diet (chapter 3). These two fields for policy areas have been chosen because of their high relevance to sufficiency lifestyles and in line with other analyses in FULFILL (D5.2 Breucker and Defard 2023). In these studies we use (attribute) framing in the sense of presenting the same information content in a slightly different way or adding certain information and test how these changes may affect evaluations. By experimenting with different framings we can understand the impact of different communication approaches and how they influence the perception and acceptability of the selected sufficiency policy instruments. In India, policy evaluations are also studied, however, without using an experimental design (see chapter 5).

The methodology and the findings on the diffusion pathways are presented as part of chapter 4. As the gender dimension is of particular importance to the project, all analyses will also discuss findings on gender. To increase readability, we include summary highlights at the end of each chapter.

Figure 1 provides an overview on the survey studies in WP3 in FULFILL.

Figure 1: Overview on the surveys in WP3



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2 Longitudinal study in Europe: persistence of sufficiency lifestyles

2.1 Aims of this study

This chapter focuses on presenting our findings from our analyses into the persistence of sufficiency lifestyles. The research question behind this is to find out to what extent the respondents who were identified as leading a sufficient lifestyle according to our analyses in the first round of surveys, still do so. The two surveys which are both conducted as online surveys were implemented from August to October 2022 and between April and May 2023, thus with a time lag of 5-8 months. The years of reference for the lifestyles were 2021 and 2022 for lifestyle questions. Thus, we inquire whether lifestyles change over this period of time.

With regard to framework conditions, it is noteworthy that 2021 was still impacted by the Corona virus pandemic, while in 2022, the war in Ukraine started, followed by a crisis on the energy market. Therefore, both years of reference are shaped by special conditions.

As described in Deliverable 3.1, we operationalised a sufficient lifestyle using the climate impact of the individual lifestyle quantified by CO_{2eq}-emissions and the individual's well-being. To evaluate whether sufficiency lifestyles persist over time, we calculated the lifestyle group of respondents in 2021 and 2022, and then compared whether the respondents are in the same group for both years.

2.2 Methods

The following section presents the methodology used to evaluate sufficiency lifestyles, followed by an overview of the survey and data preparation. In principal the methodology follows closely the approach developed in D3.1 (Alexander-Haw et al. 2023) to measure sufficiency lifestyles.

2.2.1 Measuring sufficiency lifestyles

This section is dedicated to depict our strategy for operationalising sufficiency lifestyles to assess their persistence. This necessitates a simplification of the concept into its core elements. Building upon the sufficiency definition referred to in the introduction, the operationalisation of this concept involves two crucial aspects:

- One essential aspect consists of evaluating the environmental impact of an individual's lifestyle. Specifically, our project sets a focal point on the climate impact, which is indicated by the estimation of CO_{2eq}-emissions for quantitative assessments based on a CF approach.
- Concurrently, the concept places significant emphasis on well-being. It is integral to our endeavour to promote lifestyles that do not compromise physical, psychological, or social well-being. Well-being is measured by an established scale from the literature, developed by the WHO.

2.2.1.1 Carbon footprint

The CF calculator estimated annual per-capita greenhouse gas emissions related to space and hot water heating, transport, and diet based on input data for 2021 and 2022. Therefore, each respondent received a CF value for each activity and for each year.

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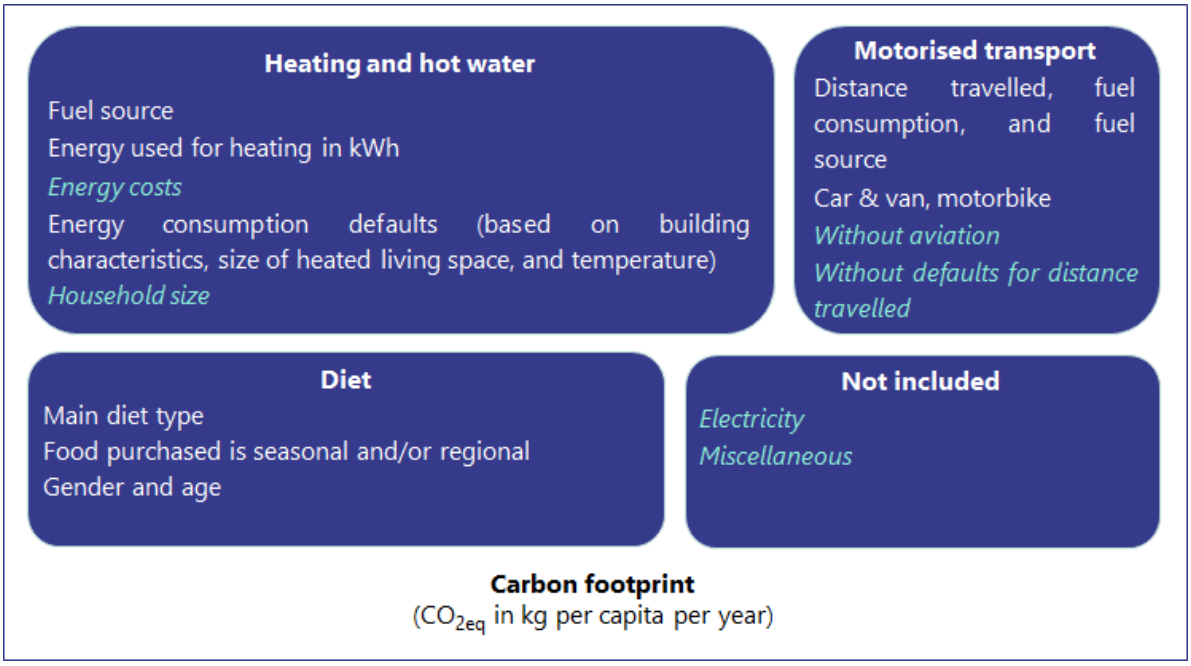
As described in D3.1, a varying approach is taken on system definition. Within our survey, we requested information regarding individuals' methods of space heating, hot water generation, transport practices, and dietary choices. For heating and transport, we took into account direct CO_{2eq}-emissions (i.e. from burning fossil fuel at the site or by the internal combustion engine vehicles) and indirect emissions when relevant (such as from electricity or for district heating), in line with typical approaches in the CF literature. For diet, the footprint calculator takes into account greenhouse gas emissions associated with livestock, i.e. methane emissions. Standard global warming factors were used to make CO_2 and methane emissions comparable, expressing emissions in terms of CO_{2eq}. In situations where respondents either did not provide specific information or their responses appeared implausible, we resorted to standard values that we had at our disposal. For an in-depth description of the calculation methods employed for each activity, additional information can be found in D3.1.

In order to guarantee that the CF calculated in 2021 and 2022 are comparable, we applied various adjustments to the CF calculator as it was used in the first survey. Figure 2 summarises the adapted CF calculator with adjustments written in turquoise italics. The adjustments are outlined in the following sections.

Figure 2: CF sectors and overview of relevant variables



Space and water heating

As described in D3.1, we estimated the CF associated with space and water heating based on the primary fuel source used for space heating (natural gas, LPG, biogas, heating oil, electric heat pumps, electricity (excluding heat pumps), district heating, wood/biomass, or solar thermal) and the estimated energy consumption related to heating purposes in 2021 and 2022. To this end, we used the respondents' direct energy consumption for space heating in kWh, if this data was available for both years. If this was not available, we used respondents' heating expenditures but only if the per unit heating costs were the same as the year before, and if expenditure data was provided for both years.

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If this was not the case, we used default energy consumption based on the size of the heated living space in square meters (m^2). Default values for final energy demand per square meter are applied, taking into account various building factors such as building type, age, retrofitting measures, and timing of retrofitting. The energy consumption was adjusted depending on the temperature of the living room, whether hot water was included in the heating system, and the presence of a secondary heating system including a solar thermal heating system.

Three respondents in Italy explicitly reported not using any heating in 2021 and were assigned zero emissions for heating.

Estimated emissions are divided by the number of household members. To increase comparability between the years, we used OECD weights.[1]

Electricity consumption

We collected data relating to electricity consumption but did not calculate the electricity-related CF. This is due to the way we calculated the electricity-related CF in the first survey wave, where we first used electricity consumption provided in kWh by the respondents. If this data is not available, we used the electricity costs. Finally, if none of the previous data was available, we used country-specific defaults adjusted by the presence of high consumption appliances. However, less than half of all respondents in each country provided their electricity consumption in kWh as depicted in Table 1. The remaining respondents provided their costs associated with their electricity consumption. However, the energy markets were severely disturbed in 2022 due to the energy crises following the beginning of the war in Ukraine. This implied volatile prices and, depending on the individual contract for electricity, households were more or less affected by the market situation. Therefore, the applied estimation strategy would not have led to valid results. This is also illustrated in Table 2, which shows feedback from the survey.

Table 1: Number and percentage of respondents who provided their electricity consumption in kWh

	Denmark	France	Germany	Italy	Latvia
Provided electricity consumption in kWh	173 (38.5%)	103 (21.4%)	213 (46.6%)	65 (15.3%)	182 (41.4%)
Did not provide electricity consumption in kWh	276 (61.5%)	378 (78.6%)	244 (53.4%)	359 (84.7%)	258 (58.6%)

[1] We use a factor of 1 for the first adult, 0.5 for each additional adult, and 0.3 for each child (cf. https://www.oecd.org/els/soc/OECD-Note-EquivalenceScales.pdf).

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Table 2: Response in number and percentage of respondents to the question: how did your electricity costs per kWh change between 2021 and 2022?

	Denmark	France	Germany	Italy	Latvia
Significantly decreased	28 (6.2%)	14 (2.9%)	12 (2.6%)	11 (2.6%)	7 (1.6%)
Slightly decreased	43 (9.6%)	81 (16.8%)	42 (9.2%)	32 (7.5%)	35 (8.0%)
More or less unchanged	68 (15.1%)	127 (26.4%)	135 (29.5%)	99 (23.3%)	84 (19.1%)
Slightly increased	99 (22.0%)	137 (28.5%)	119 (26.0%)	106 (25.0%)	86 (19.5%)
Significantly increased	169 (37.6%)	91 (18.9%)	123 (26.9%)	143 (33.7%)	192 (43.6%)
I do not know	42 (9.4 %)	31 (6.4 %)	26 (5.7 %)	33 (7.8 %)	36 (8.2 %)

Motorised transport

For the calculation of the CF associated with transport in 2021 and 2022, we use the method described in D3.1, which took into account the distance travelled by car or van and by motorbike along with the fuel consumption. The only difference is that we exclude respondents who did not provide the distance travelled, since using the same defaults in 2021 and in 2022 would be nonsensical for the purpose of the comparison.

Since aviation patterns in 2021 were strongly influenced by the COVID-19 pandemic and travel restrictions, these are not part of the comparison of the CF from the two years.

Diet

We estimate the CF associated with diet in exactly the same manner in 2021 and 2022 as described in D3.1, using the respondents' typical diet (distinguishing between meat-based, balanced/mixed, low-meat, vegetarian, pescetarian, and vegan), the frequency that they purchased regional and seasonal food, and the respondents' age and gender.

Miscellaneous

Due to space limitations in the questionnaire and challenges with the data in the first round, we did not collect again data related to the miscellaneous CF (including pets and clothing).

Total carbon footprint

The total CF is estimated by adding up the CF related to space and water heating, transport (not including aviation), and diet.

2.2.1.2 Well-being

To quantify well-being, we adapted the World Health Organization's (WHO) quality of life scale, which defines quality of life as individuals' subjective perceptions of their life situation within their cultural and value context. It has been validated across different countries and cultural settings and thus, presents a valid way to assess personal goals, expectations, standards, and concerns, emphasising the individual's perception rather than objective measures. We used a shortened and adapted version of the original WHO-Quality of Life Scale (WHOQOL-BREF) as described in the

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earlier deliverable D3.1 (Alexander-Haw et al. 2023). This adjustment maintains relevance to the sufficiency research objectives while avoiding participant burden. Questions were framed such as to refer to quality of life in 2022 in line with the reference year for the inputs for the CF. Based on respondents' answers to all questions, a well-being index was calculated (Barbas and Breucker 2024).

2.2.1.3 Identification of sufficiency lifestyles

In the preceding sections, we have presented our methodologies for assessing both the environmental impact of individual lifestyles, as measured through the CF, and the evaluation of physical, psychological, and social well-being via the well-being index.

We define a sufficiency lifestyle as one characterised by a minimal environmental impact, specifically a low CF, across the following three key activities: space and water heating, motorised transport, and diet. Additionally, this lifestyle is associated with a high well-being index score.

A comprehensive account of the process by which individuals embodying a sufficiency lifestyle were identified can be found in D3.1. In essence, our approach is relative; individuals are categorised as having a low environmental impact if their emissions are lower than those of the other respondents within the same country. This same relative categorisation applies to the assessment of well-being.

Our methodology for identifying the groups is summarised in Figure 2. For each country:

1) We utilise CF and well-being to categorise respondents.
2) We distinguish quartiles of CF for total CF and individual activities (heating, transport, and diet).
3) We distinguish above and below median-well-being.

Based on the previous steps, we created the following five groups[2]:

Group I - Very Sufficient: above median well-being and CF in the lowest quartile for all activities.

Group II - Sufficient: above median well-being, total CF in lowest quartile & above second quartile footprint for at least one activity.

Group III - Low Carbon Footprint, Low Well-Being: total CF in lowest quartile and below the median well-being.

Group IV - Average Carbon Footprint: total CF in second or third quartile.

Group V - High Carbon Footprint: total CF in the fourth quartile.

[2] Due to an error in the survey, we were not able to calculate the well-being index for respondents from France in 2021. Therefore, we calculated the following low carbon groups for France in 2021:
Group A - Low CF in all activities: CF in the lowest quartile for all activities.
Group B - Low CF: total CF in lowest quartile & above second quartile footprint for at least one activity.

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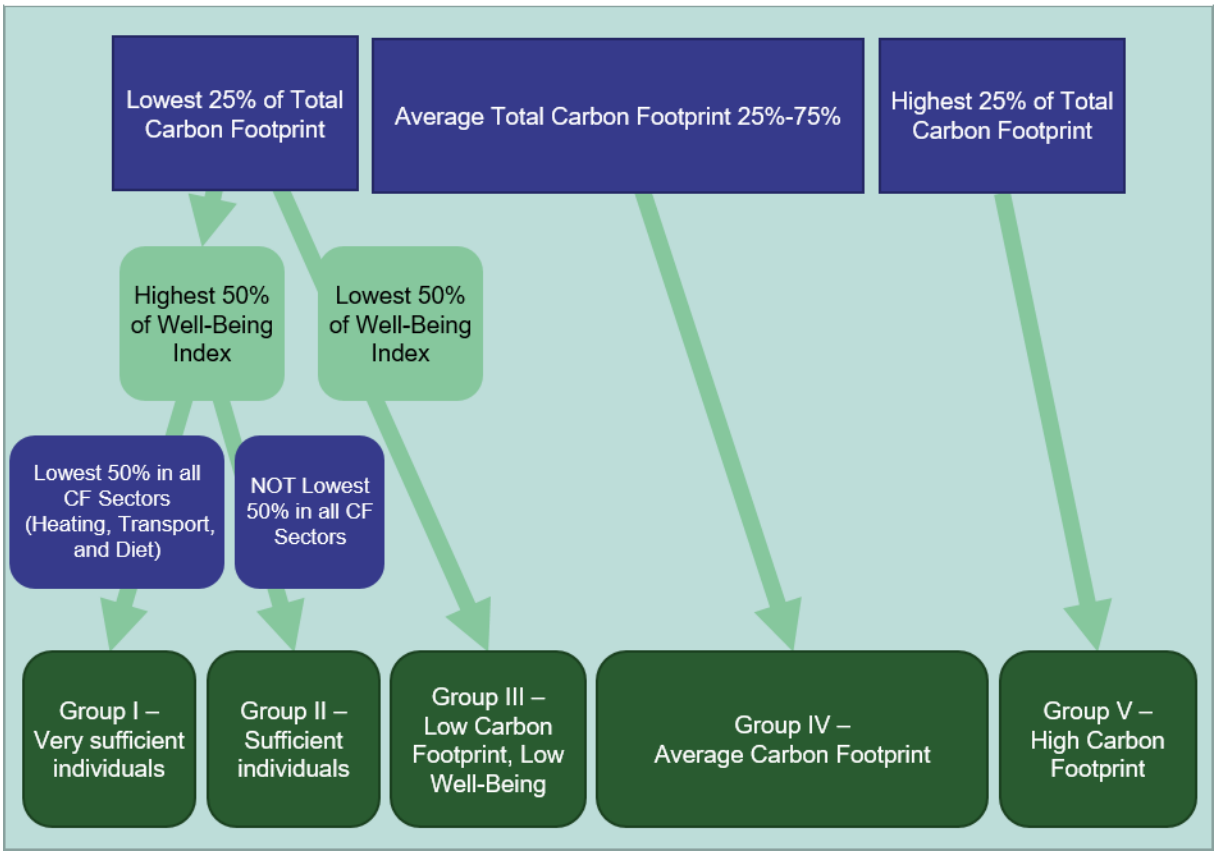
Figure 3: Group identification operationalisation for each country



Respondents who failed to provide a response to at least one question on the well-being index (n=74) were removed.

2.2.2 Survey implementation

The data collection consisted of re-implementing the citizen survey as described in D3.1 with a subset of approximately 500 respondents from each country who also participated in the first wave.[3] Respondents from this first survey round were contacted and asked to participate in the survey in a manner that ensured the samples maintained representativeness, considering the distribution of the target population across gender, age, income, and region. The survey took place between April and May 2023 and was implemented via the EFS software as online surveys. The recruitment was implemented by Norstat as a subcontracted market research institute.

The survey was very similar in design to the first wave and started with screening questions to ensure that quota requirements were met and that only qualified participants (i.e. being 18 years or older and not living in a dorm or similar) participated in the survey. This was followed by an introduction informing participants about survey procedures, anonymity, privacy and data protection, as well as their right to withdraw at any time.

[3] Due to budget constraints, a subset of respondents was utilized in the second panel survey, preventing inclusion of all participants. Furthermore, the inherent non-100% response rate made it impractical to obtain responses from all first-wave participants in the second wave.

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The survey questions differed slightly from the first survey. First, we asked respondents whether they have moved. In order to avoid respondents having to provide the same information as in the first round, we removed questions relating to responses that were unlikely to change, such as the postcode of respondents who did not move. Secondly, in order to shorten the survey, we removed items that were not essential to our analysis, such as those related to clothing and pets. Thirdly, we had to take into account the impact of the energy crisis, such as whether the per unit energy costs increased, stayed the same, or decreased between 2021 and 2022.

The survey ended up with the following five parts:

- general questions: socio-economic items and standard items eliciting citizens' values and attitudes, socio-cultural characteristics (incl. gender) and socio-political opinions
- CF calculator: questions relating to living conditions and electricity, heating, transport, and diet
- health and well-being
- deprivation of transport, heating/energy, diet, and at the aggregate level
- attitudinal variables: environmental identity, political orientation.

The full questionnaire is available upon request. As all questionnaires presented in this deliverable, it was developed in English and then translated into national languages by a professional translation agency. The translations were checked by the respective partners from the countries.

The survey contained two quality control questions. In the first question, respondents were asked to provide the result of a simple mathematical problem (the sum of 3 and 5). For the second attention check, respondents were asked to tick a particular answer option among all options available in a matrix question. Zero respondents failed both control questions and, therefore, none were excluded from the survey. A small number of participants answered the survey twice, as could be seen from identical respondent IDs. To ensure data quality and, since we could not determine which of the two answer sets per participant were "correct", we decided to exclude all datasets from participants who answered twice. This concerned four datasets in Denmark, two in France, six in Germany, ten in Italy, and 14 in Latvia.

Based on the results from the pre-tests[4], we gathered that average participation across countries in our survey lasted around 20 minutes, with a standard deviation of about 16 minutes. As another measure to ensure data quality, we implemented a filter in the online survey to screen out participants who took less than 3.33 minutes in France, Germany, and Italy, 3.9 minutes in Denmark, and 5 minutes in Latvia[5] (mean minus 1.5 standard deviations) to complete the survey.

2.2.3 Data preparation

As in the previous survey, some plausibility checks were implemented in the questionnaire directly to reduce the number of unrealistic values, further implausible variables were treated during data preparation. We first removed respondents for whom we could not calculate a CF in 2022[6]. This included respondents who moved or were away from home for 13 weeks or more in 2022 (N=219), respondents who did not provide the distance travelled by car or motorbike (N=4), respondents

[4] Pre-tests were carried out with around 100 respondents from each country to verify that the questions were understood correctly and to identify coding errors before launching the survey.

[5] The average duration of the survey varied between the countries, we therefore adjusted the speeder criterion accordingly.

[6] Respondents for whom we could not calculate a CF in 2021 were not given the possibility to participate in the second survey round.

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who did not provide a housing type (i.e. flat or house), and where the type of heating data differed between in 2021 and 2022 (N=2).

Secondly, we removed respondents whose responses changed in such a way that we were no longer able to use them in the analysis. This included respondents who reported a different gender in the first and second wave (N=16), an incompatible age (i.e. the age provided in 2022 is smaller than the age provided in 2021 or the age in 2022 is over 2 years higher than the age provided in 2021) (N=53), or whose household size increased or decreased by 5 or more people (N=9).

Finally, we removed respondents who provided unrealistic responses, such as where the distance travelled by car or van was above 100,000km for either years (N=4), and finally where the per person heating area was over 5 times larger or smaller than the year before (N=40).

We ended up with a final sample size of 2,251, with 449 respondents from Denmark, 481 from France, 457 from Germany, 424 from Italy and 440 from Latvia. A sample description and comparison to national statistics can be found in Annex 1, Table A1.

As in D3.1, when participants entered manual responses these responses were subject to manual recoding to align with the relevant predefined categories, for example, if a respondent stated that they heated using "pellets", this response was recorded as "wood/biomass".

2.3 Results

The upcoming sections present our findings for all five countries in 2021 and 2022. We start by presenting the estimated CF, followed by a section on well-being. We then present our results pertaining to the respondent's sufficiency orientation. Finally, we present the results regarding the persistence of lifestyle groups over both years. Unless otherwise specified, responses from respondents who did not answer the specific questions were omitted from the figures. Consequently, the sample size for particular results may be less than the overall sample size in each country.

2.3.1 Carbon footprint

This section presents summary statistics of various input variables utilised to calculate the CF for the various activities and summary statistics of the CF related with space and water heating, motorised transport and diet. Additionally it provides some background statistics on the specificities from the calculation.

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Table 3: Summary statistics of various CF input variables across all five countries comparing the two survey waves of 2021 and 2022

	Mean 2021	Mean 2022	SD 2021	SD 2022	Min 2021	Min 2022	Max 2021	Max 2022	N 2021	N 2022	p value
Household size	2.32	2.32	1.17	1.15	1	1	9	10	2251	2251	0.98
Room temperature (°C)	20.61	20.20	1.72	1.85	10	10	30	30	2251	2251	0.000***
Heated living area (m^2)	80.47	83.34	48.58	49.62	1	1	740	740	2251	2251	0.050*
Household heating energy consumption (kWh)	10243.48	10233.25	8036.09	8026.86	0	0	56700	40000	192	183	0.99
Household heating costs (€)	957.70	1109.44	772.41	931.37	0	0	13424	10000	2192	2179	0.000***
Presence of secondary heating system	0.16	0.18	0.36	0.38	0	0	1.0	1	2251	2251	0.129
Distance travelled by car (km)	8539.53	8605.87	10315.87	9923.40	0	0	100000	100000	2251	2251	0.826

*Note: p-value calculated using t-tests; p<0.01:***; p<0.05:**, p<0.1:**

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Table 3 depicts summary statistics of seven variables that were used to calculate the CF related to space and water heating and motorised transport in 2021 and 2022 across all five EU countries. We find a significant decrease in the average room temperature of the main living area between 2021 and 2022 and a significant increase in the average heated living area. We also find a significant increase in the average household heating costs between 2021 and 2022. We do not find a significant change in the average household size, average household heating energy consumption, whether respondents possess a secondary heating system, nor in the average distance travelled by car between 2021 and 2022.

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Table 4: Summary statistics of the activity-related CF in each EU country in kg CO_{2eq}

	Mean 2021	Mean 2022	SD 2021	SD 2022	Min 2021	Min 2022	Max 2021	Max 2022	N 2021	N 2022	p value
Denmark											
Space and water heating CF	1225	1175	1298	1256	0	0	11282	13942	449	449	0.559
Motorised transport CF	1760	2449	2492	8594	0	0	15118	110769	449	449	0.104
Diet CF	1636	1636	274	283	738	719	2358	2477	449	449	0.991
France											
Space and water heating CF	1169	1047	1748	1422	0	0	16467	13680	481	481	0.232
Motorised transport CF	714	846	881	2219	0	0	6193	45000	481	481	0.224
Diet CF	1568	1556	259	260	837	817	2358	2358	481	481	0.503
Germany											
Space and water heating CF	1853	1749	1855	1798	0	0	16443	15343	457	457	0.388
Motorised transport CF	888	916	1075	1122	0	0	8969	9359	457	457	0.701
Diet CF	1543	1544	290	292	738	738	2359	2302	457	457	0.982
Italy											
Space and water heating CF	1308	1162	1678	1288	0	0	19987	19987	424	424	0.154
Motorised transport CF	1836	2110	2574	3574	0	0	23333	36074	424	424	0.201
Diet CF	1523	1522	252	254	817	966	2299	2302	424	424	0.943
Latvia											
Space and water heating CF	994	860	1271	868	9	0	12119	6717	440	440	0.067*
Motorised transport CF	687	748	983	1105	0	0	9968	8620	440	440	0.383
Diet CF	1598	1598	274	271	817	816	2358	2359	440	440	0.971

Note: p<0.01:***; p<0.05:**, p<0.1:*

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Table 4 displays summary statistics of the activity-related CF in kg of CO_{2eq} associated with space and water heating, motorised transport and diet in 2021 and 2022, distinguishing by country. Our findings reveal interesting insights into inter-country differences. Regarding the space and water heating, the associated CF decreased descriptively in each of the five countries between 2021 and 2022, but significantly only in Latvia. Respondents from Germany consistently exhibit the highest mean space and water heating CF, whereas respondents from Latvia exhibit the lowest mean space and heating CF for both years. For motorised transport CF, we observe an increase in the associated CF in each of the five countries from 2021 to 2022, but the increase is not significant in any country at $p<0.1$. Respondents in Italy have the highest mean motorised transport CF in 2021, whereas respondents in Denmark have the highest mean motorised transport CF in 2022. Respondents in Latvia consistently have the lowest average motorised transport CF for both years. Regarding the CF associated with diet, the average remained stable across the five countries between 2021 and 2022. Respondents in Denmark consistently reported the highest mean values for diet-related CF in both years, whereas respondents in Italy consistently reported the lowest mean values for this category. Overall, within each country, there were no significant changes in the CF for space and water heating, motorised transport or diet between 2021 and 2022. Only in Latvia, there was a significant decrease in space and water heating.

Regarding the calculation of the CF for heating, it is relevant to note that, as shown in Table 5, defaults were used to calculate the CF for heating for the majority of cases in each country.[7] Therefore, variations for most of the samples are either due to a difference in the reported room temperatures or the amount of space heated.

Table 5: Data source for heating in number and percentage of respondents

	kWh	expenditures	defaults
Denmark	29 (6.5 %)	7 (1.6 %)	413 (92.0 %)
France	17 (3.5 %)	70 (14.6 %)	394 (81.9 %)
Germany	29 (6.3 %)	52 (11.4 %)	376 (82.3 %)
Italy	11 (2.6 %)	56 (13.2 %)	357 (84.2 %)
Latvia	11 (2.5 %)	2 (0.5 %)	427 (97.0 %)

Figure 4 portrays the primary diet types of respondents in each country for the years 2021 and 2022. The dietary patterns remain relatively consistent between these two years within each country. Mixed is by far the most frequent type. Most alterations involve shifts between mixed and flexitarian diet types in Denmark, France, Germany, and Italy, as well as changes between high-meat and mixed diets in Latvia. There are relatively few respondents who transitioned between high-meat and flexitarian/vegetarian/pescetarian or vegan diet types.

[7] On average, estimates using expenditures or kWh to calculate space heating and hot water CO_{2eq}-emissions were 11% higher in 2021 and 25% higher in 2022 than if we were to have used defaults. It is important to note that this concerns only small numbers of participants and, therefore, the reasons for this difference are difficult to interpret.

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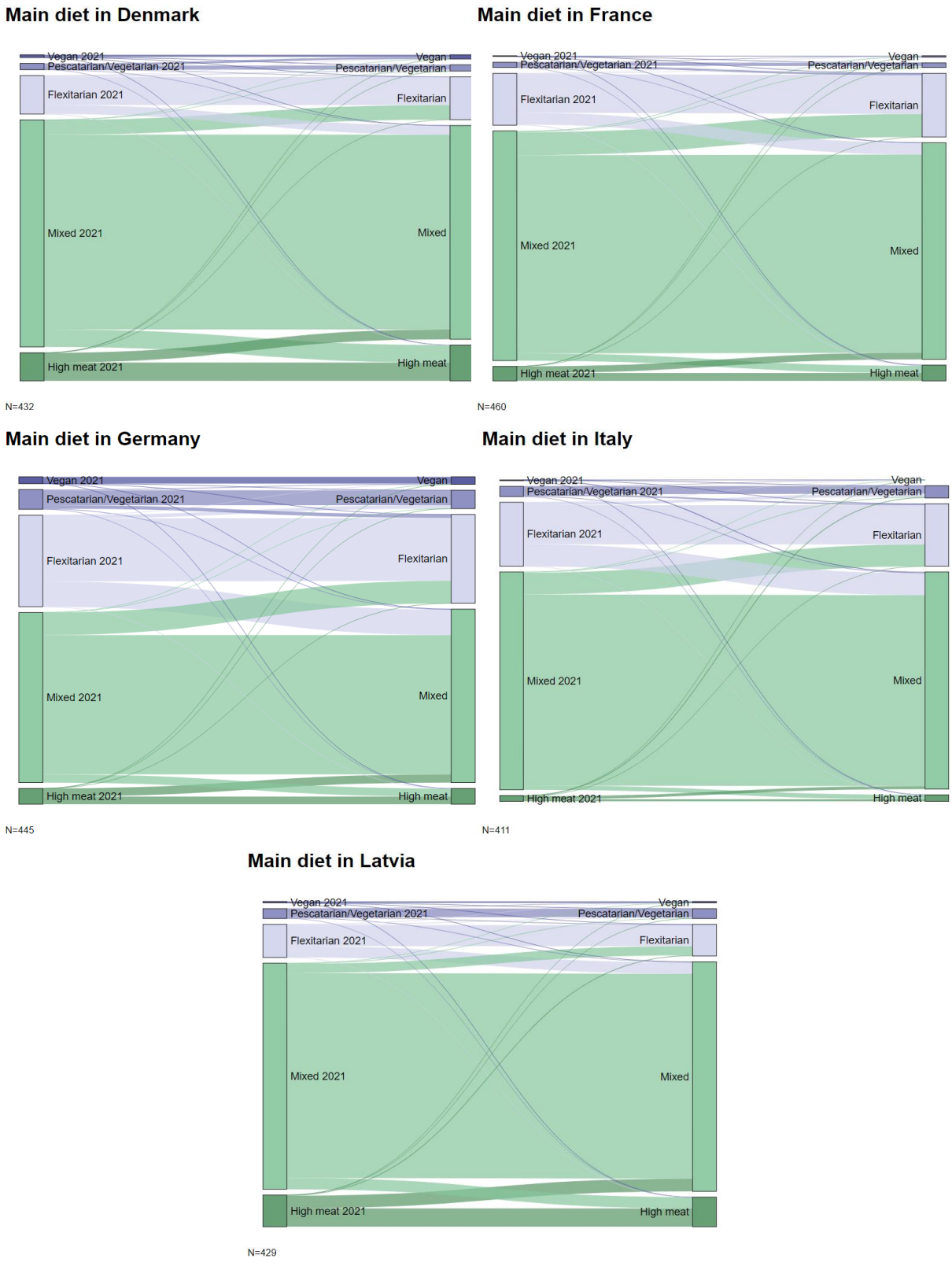
Figure 4: Respondents' main diet type in 2021 and 2022



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2.3.2 Well-being

Figure 5: Well-being index comparison between 2021 and 2022

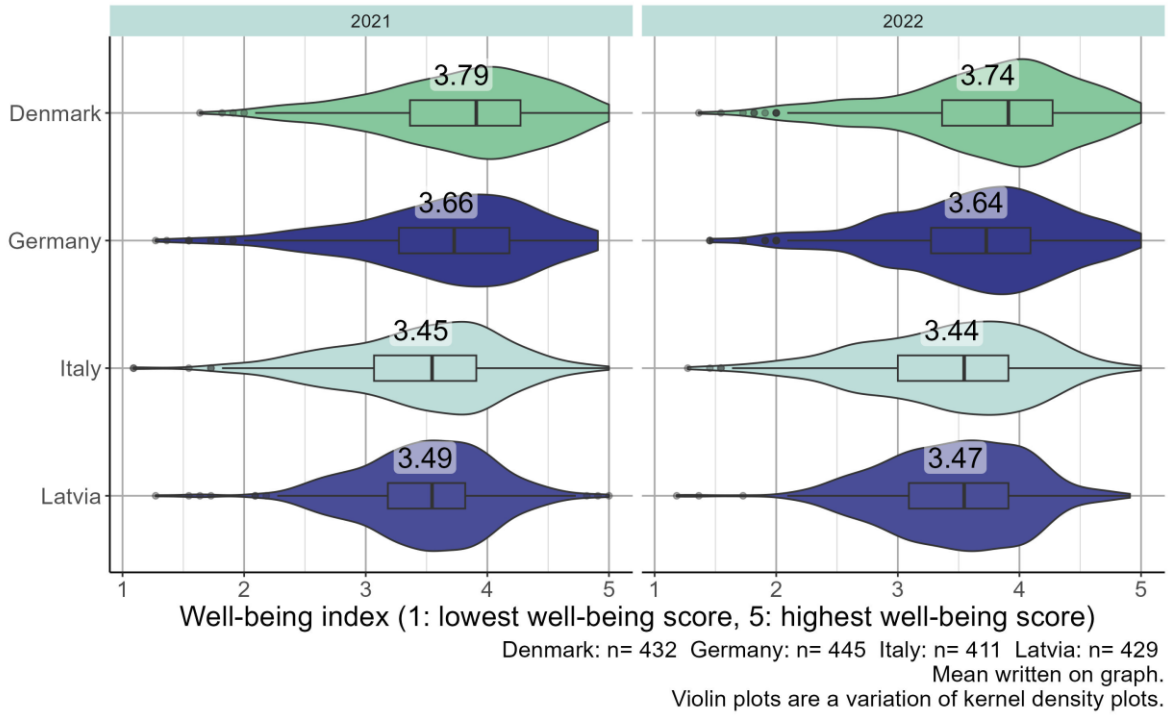

Figure 5 depicts the distribution of respondents' well-being scores in Denmark, Germany, Italy, and Latvia[8] for the years 2021 and 2022. The average well-being scores are consistent between these two years in all countries, with t-tests indicating no statistically significant changes at a significance level of $p<0.1$. Notably, Denmark consistently records the highest well-being scores for both years, while Italy consistently reports the lowest well-being scores. Hence, the country order from the highest to the lowest well-being score did not change between 2021 and 2022.

[8] As mentioned above, due to a coding error in the survey, we are not able to calculate the well-being index in France for 2021. . Thus, no comparison between 2021 and 2022 is possible for France.

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2.3.3 Sufficiency orientation

Figure 6: Sufficiency orientation index comparison between 2021 and 2022 across countries

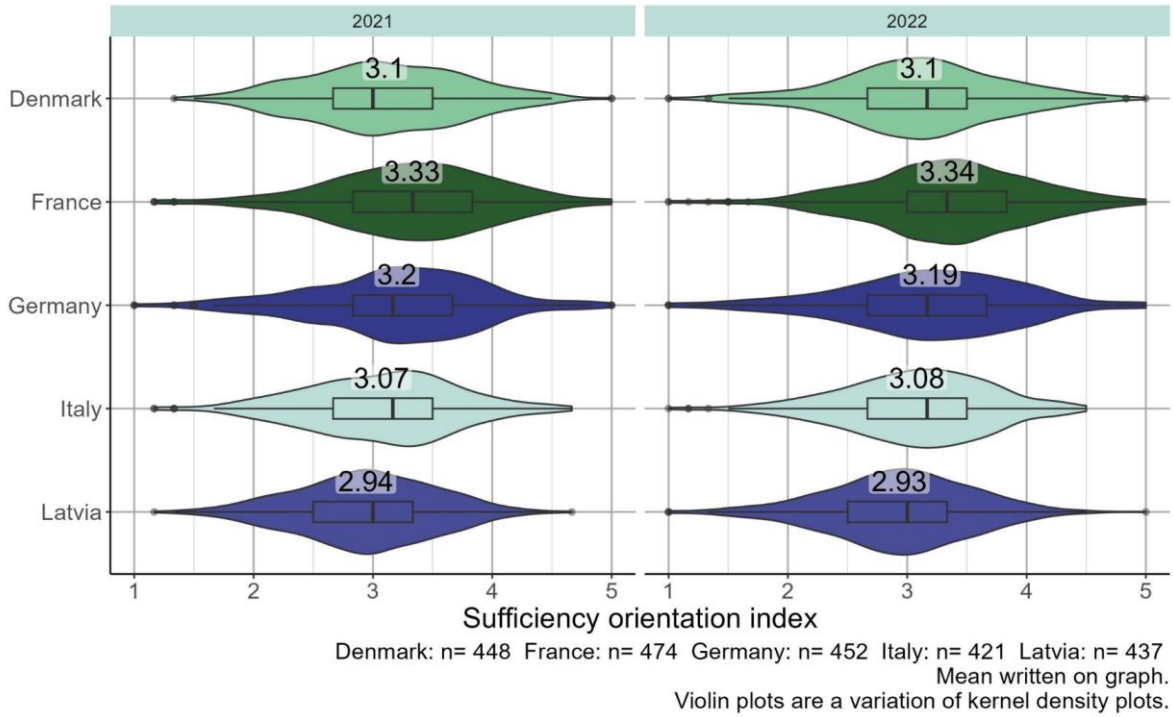

Figure 6 displays the distribution of the sufficiency orientation score[9] of respondents in each country in 2021 and 2022. The average sufficiency orientation score is similar between 2021 and 2022 within each country and t-tests did not reveal any significant changes at $p<0.1$. The sufficiency orientation score is highest in France for both years and lowest in Latvia, also for both years.

[9] The sufficiency orientation score consists of the average score respondents provided to the following questions with responses on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree): "Through my lifestyle I want to use as little re-sources as possible (e.g. water, energy, wood).", "I find it desirable to possess only few things.", "All the new things that are sold all the time are a big waste of resources to me.", "I think it is unnecessary to have this affluence of different products in our supermarkets.".

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2.3.4 Persistence of lifestyle groups

Figure 7: Number and percentage of respondents in each lifestyle group in 2021 and 2022 per country

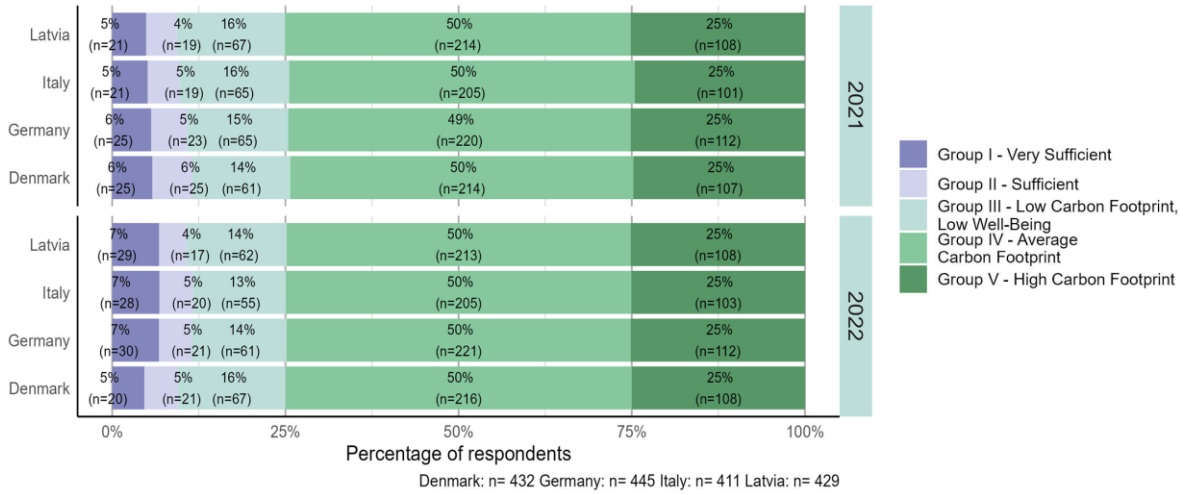

Table 6: Number and percentage of respondents by whether they changed lifestyle group between 2021 and 2022

Country	Denmark		Germany		Italy		Latvia	
Lifestyle group in 2021	Same lifestyle group	Different lifestyle group	Same lifestyle group	Different lifestyle group	Same lifestyle group	Different lifestyle group	Same lifestyle group	Different lifestyle group
Very Sufficient	10 (40.0%)	15 (60.0%)	17 (68.0%)	8 (32.0%)	8 (38.1%)	13 (61.9%)	10 (47.6%)	11 (52.4%)
Sufficient	10 (40.0%)	15 (60.0%)	11 (47.8%)	12 (52.2%)	4 (21.1%)	15 (78.9%)	3 (15.8%)	16 (84.2%)
Low CF, Low Well-Being	39 (63.9%)	22 (36.1%)	39 (60.0%)	26 (40.0%)	32 (49.2%)	33 (50.8%)	38 (56.7%)	29 (43.3%)
Average CF	151 (70.6%)	63 (29.4%)	147 (66.8%)	73 (33.2%)	128 (62.4%)	77 (37.6%)	148 (69.2%)	66 (30.8%)
High CF	65 (60.7%)	42 (39.3%)	67 (59.8%)	45 (40.2%)	53 (52.5%)	48 (47.5%)	72 (66.7%)	36 (33.3%)

Table 6 depicts the distribution of respondents by lifestyle group and country in 2021 and 2022[10]. As defined, half of the respondents are in Group IV - Average CF, and a quarter are in Group V - High CF. The distribution of respondents in the low CF groups (Groups I to III) is similar between countries and years, with between 5% and 7% of respondents in Group I - Very Sufficient, 4% to

[10] Respondents whose well-being index is equal to the median are included in the very sufficient and sufficient groups. Respondents whose CF is equal to the 1st (or 3rd) quartile are included in the lower (or high) CF groups. Thus, not exactly 25% of respondents are in the lower CF groups.

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6% in Group II - Sufficient, and 13% to 16% in Group III - Low CF, Low Well-Being. Therefore, few changes in the lifestyle groups are visible on this aggregated level.

Table 6 presents the number and percentage of respondents categorised by whether they changed lifestyle group between 2021 and 2022 in Germany, Italy, Denmark, and Latvia. Notably, there is a range of stability and change in different groups. The Very Sufficient group (Group I) exhibits relatively low persistence across the years, with between 38% (Italy) and 68% (Germany) remaining in this category. The Sufficient group (Group II) has the lowest persistence with between 16% (Latvia) and 48% (Germany) of respondents remaining in this group. In contrast, the Group III - Low CF, Low Well-Being - displays some consistency, with between 49% (Italy) and 64% (Germany) staying within this category. The Group IV - Average CF -demonstrates even greater continuity, with between 62% (Italy) and 71% (Latvia) remaining within this classification. Lastly, Group V - High CF - shows moderate stability, with between 53% (Italy) and 67% (Latvia) maintaining staying in this group. It has to be noted, that the groups differ in size and in descriptors defining them (e.g. the level of well-being is irrelevant for the categorisation to the high CF groups).

Table 7: Number and percentage of respondents from the low CF lifestyle groups in 2021 and their lifestyle group in 2022

	Denmark	Germany	Italy	Latvia
Stayed in a low CF group (Group I to III)	78 (70.3%)	75 (66.4%)	59 (56.2%)	68 (63.6%)
Moved to *Group IV - Average CF*	25 (22.5%)	31 (27.4%)	35 (33.3%)	34 (31.8%)
Moved to *Group V - High CF*	8 (7.2%)	7 (6.2%)	11 (10.5%)	5 (4.7%)
Total	111 (100%)	113 (100%)	105 (100%)	107 (100%)

Table 7, therefore, depicts the number and percentage of respondents from the three low CF lifestyle groups (i.e. Groups I to III) in 2021 based on their lifestyle group transitions in 2022 in Denmark, Germany, Italy, and Latvia. Overall, between 56% (Italy) and 70% (Denmark) stayed in a low CF group in 2021. Between 23% (Denmark) and 33% (Latvia) moved to Group IV - Average CF. Between 5% (Latvia) and 11% (Italy) shifted to Group V - High CF. Overall, most respondents stayed in a low CF group, and those who did move majoritarily moved to the average CF group.

Table 8: Number and percentage of respondents from the sufficiency groups in 2021 by lifestyle group in 2022

	Denmark	Germany	Italy	Latvia
Stayed in a sufficiency group (Groups I and II)	27 (54.0%)	33 (68.8%)	15 (37.5%)	17 (42.5%)
Moved to *Group III - Low CF, Low Well-Being*	7 (14.0%)	1 (2.1%)	6 (15.0%)	6 (15.0%)
Moved to *Group IV - Average CF*	12 (24.0%)	10 (20.8%)	16 (40.0%)	15 (37.5%)
Moved to *Group V - High CF*	4 (8.0%)	4 (8.3%)	3 (7.5%)	2 (5.0%)
Total	50 (100.0%)	48 (100.0%)	40 (100.0%)	40 (100.0%)

Table 8 displays the number and percentage of respondents from the sufficiency groups (i.e. Groups I and II) in 2021 based on their lifestyle group transitions in 2022 in all four countries. Overall, between 38% (Italy) and 69% (Germany) stayed in a sufficiency group in 2021. Between 2% (Germany) and 15% (Italy and Latvia) moved to the Group III - Low CF, Low Well-Being in 2022.

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Between 21% (Germany) and 40% (Italy) moved to Group IV - Average CF. Between 5% (Latvia) and 8% (Germany and Italy) shifted to Group V - High CF in 2022.

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Figure 8: Persistence of lifestyle groups between 2021 and 2022

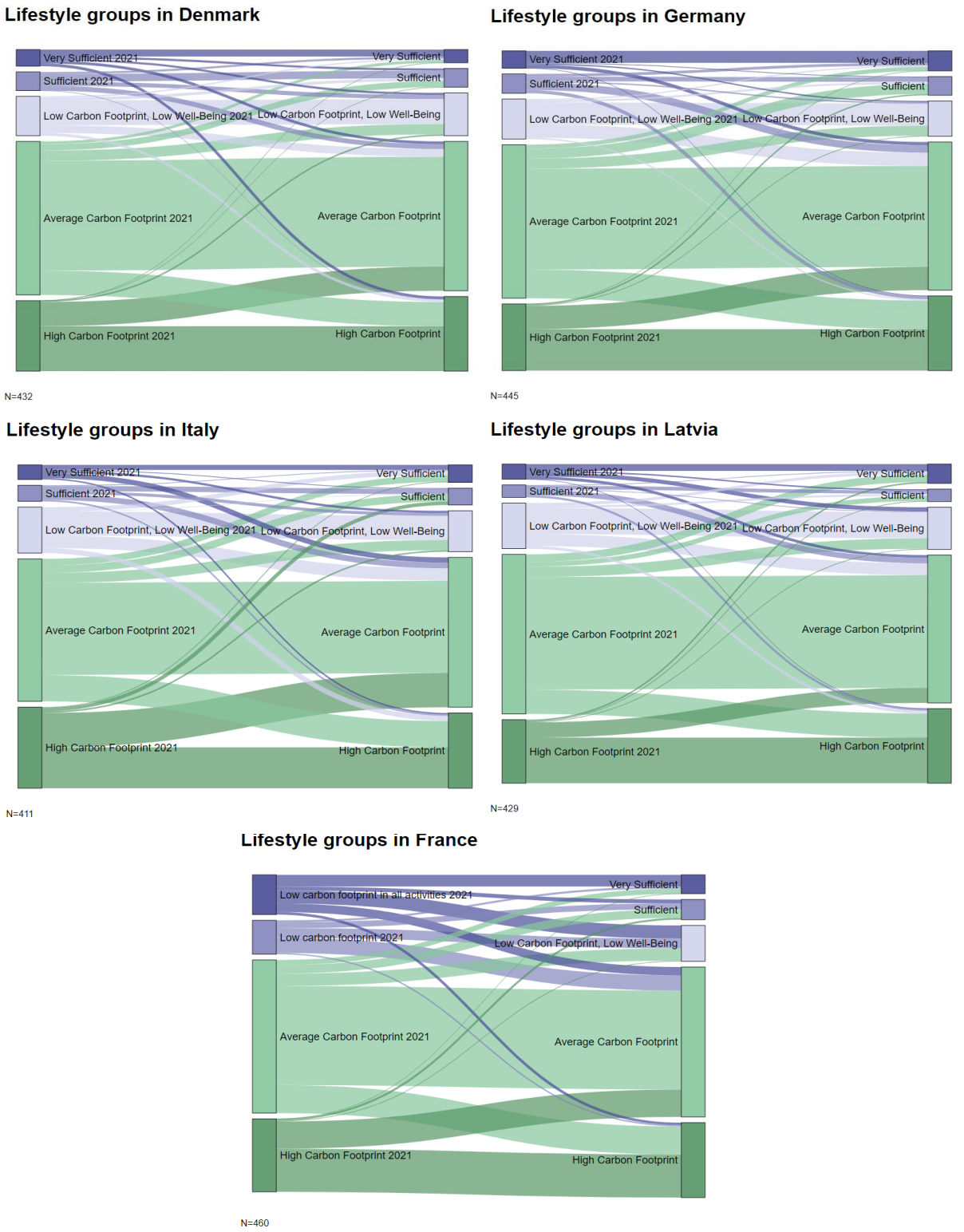

Figure 8 displays the lifestyle group of the respondents in 2021 and 2022 in all five countries[11]. The data reveal that the majority of transitions occur between adjacent lifestyle categories (e.g. between high and average CF groups), indicating a degree of continuity in respondents' choices. Notably,

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there are few instances of respondents from the high CF group in 2021 transitioning to the lower CF groups, (Groups I to III) in 2022, and vice versa. These observations underscore the persistence of lifestyle choices within similar sustainability and well-being profiles, with limited movement between contrasting categories.

Table 9: Persistence of lifestyle groups between 2021 and 2022 - statistical significance of the transitions between the groups

Lifestyle group in 2021 \ Lifestyle group in 2022	I Very Sufficient	II Sufficient	III Low CF, Low Well-Being	IV Average CF	V High CF
Denmark					
I Very Sufficient	8.7***	1.8	0.1	-2.7	-2.6
II Sufficient	2.7	8.4***	-0.6	-2.4	-2.7
III Low CF, Low Well-Being	-1.6	1.2	11.3***	-3.8***	-4.5***
IV Average CF	-2.7	-2.7	-4.8***	8.5***	-3.0*
V High CF	-1.1	-3.0*	-3.6***	-4.1***	9.8***
Germany					
I Very Sufficient	12.6***	2.1	-1.3	-3.0*	-3.3**
II Sufficient	-0.2	10.0***	-1.9	-1.1	-2.2
III Low CF, Low Well-Being	-1.5	-2.0	11.7***	-2.8	-4.6***
IV Average CF	-2.6	-3.2**	-3.0*	7.2***	-2.8
V High CF	-3.0*	-0.9	-4.1***	-3.8***	9.8***
Italy					
I Very Sufficient	5.8***	1.6	0.8	-1.6	-2.7
II Sufficient	-1.1	3.4**	-2.0	1.4	-1.0
III Low CF, Low Well-Being	0.1	0.3	9.3***	-3.6***	-3.9***
IV Average CF	-1.1	-0.7	-3.6***	5.1***	-1.9
V High CF	-1.7	-2.0	-2.6	-2.8	7.3***
Latvia					
I Very Sufficient	7.6***	1.6	-0.3	-1.7	-2.3
II Sufficient	0.2	2.7	0.2	0.3	-1.9
III Low CF, Low Well-Being	-0.0	0.2	10.7***	-4.1***	-4.3***
IV Average CF	-1.5	-0.7	-3.8***	8.1***	-5.0***
V High CF	-2.7	-1.5	-4.2***	-5.1***	11.5***

*Note: p<0.01:***; p<0.05:**, p<0.1:**

[11] In France, the lifestyle group is calculated only using the CF in 2021 due to a coding error in the well-being index.

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Table 9 offers insights into the persistence of lifestyle groups from 2021 to 2022 in four different countries - Denmark, Germany, Italy, and Latvia. Chi-square tests of independence with a Bernoulli correction were employed to analyse the relationships between the lifestyle groups in these two years. The table displays the standardised residuals, which correspond to the difference between the observed and expected frequencies in each cell. A positive (negative) significant standardised residual indicates the respondent is more (less) likely than not to be in the specified lifestyle group in 2022 if they were in the corresponding lifestyle group in 2021. The table's diagonal elements in turquoise represent the respondents who remained in the same lifestyle group from one year to the next. Further cells containing significant values are marked in yellow.

Overall, respondents in a specific lifestyle group in 2021 are significantly more likely to be in the same lifestyle group in 2022 than in another. This is the case for all lifestyle groups in all four countries, except for Group II - Sufficient in Latvia.

In addition, we observe the following patterns:

- Respondents in Group I - Very Sufficient in 2021:
  - are less likely to be in *Group IV - Average CF* in 2022 in Germany,
  - are less likely to be in *Group V - High CF* in 2022 in Germany.
- Respondents in Group II - Sufficient in 2021:
  - no significant deviations in 2022.
- Respondents in Group III - Low CF, Low Well-Being in 2021:
  - are less likely to be in *Group IV - Average CF* in Denmark, Italy, and Latvia in 2022,
  - are less likely to be in *Group V - High CF* in all four countries in 2022.
- Respondents in Group IV - Average CF in 2021:
  - are less likely to be in *Group II - Sufficient* in Germany in 2022,
  - are less likely to be in *Group III - Low CF, Low Well-Being* in all four countries in 2022,
  - are less likely to be in *Group V - High CF* in Denmark and Latvia in 2022.
- Respondents in the high CF group in 2021
  - are less likely to be in *Group I - Very Sufficient* in Germany in 2022,
  - are less likely to be in *Group II - Sufficient* in Denmark in 2022,
  - are less likely to be in *Group III - Low CF, Low Well-Being* in Denmark, Germany, and Latvia in 2022,
  - are less likely to be in *Group IV - Average CF* in Denmark, Germany, and Latvia in 2022.

2.3.5 Gender-related effects

We carried out logistic regression analysis to examine whether gender is associated with a higher likelihood of changing lifestyle and CF group. We find that women are more likely to be in a different lifestyle group in 2021 and 2022 compared to men. This pattern may be attributed, at least in part, to the fact that women are more likely to initially belong to low CF groups (Groups I to III). However, we also find that women demonstrate a greater tendency to transition between CF groups than men (i.e. between low CF groups (Groups I to III), Group IV - Average CF in 2022, and Group V - High CF). However, the underlying reasons for these observed differences remain unclear at this stage of the analysis, requiring further investigation to better understand the factors contributing to the varying rates of lifestyle group changes between men and women.

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2.4 Summary and discussion

The aim of this study is to analyse the extent to which lifestyles, in particular, sufficiency lifestyles, remain stable over a longer period of time, i.e. several months. The results show a remarkable stability of well-being scores between 2021 and 2022, as well as the persistence of respondents' CF. The majority of respondents (62%) remain within their respective lifestyle groups, with transitions mainly taking place between neighbouring CF groups (92%).

A number of methodological changes were made to the first survey to address shortcomings in the questionnaire, to avoid overburdening respondents, and due to external events such as the volatile energy market in 2022. As a result, some of the results differ from those presented in D3.1. The CF measure in the current result focuses on food, heating and transport.

In terms of the input variables to the CF, we find some significant changes in the data on heating. Overall, respondents report having a lower room temperature in 2022 compared to the previous year by an average of 0.41° Celsius. However, the number of m^2 heated, as reported by participants, increases by almost 3 m^2. We estimate that heating costs will increase by an average of €152 per household. On average, this did not lead to any changes in the overall CF or in specific activities - despite the energy crisis. There is only one exception: in Latvia, the footprint for heating decreased slightly.

While most respondents stayed in the same lifestyle group, respondents with higher CF in 2021 were less likely to move to lower CF categories in 2022. This finding highlights the challenges associated with motivating individuals to adopt greener behaviours, even in the face of an energy crisis. The observed differences between countries underline the importance of contextual factors in shaping lifestyle changes.

Regarding the *gender dimension*, a first analysis of gender differences shows that women's group membership seems to be more volatile than men's.

Highlights

- **Lifestyle Stability**: With a longitudinal study explores lifestyle stability, revealing consistent patterns of well-being and CF from 2021 to 2022.
- **Transition Trends**: 62% of respondents remain in the same lifestyle group; transitions between adjacent CF categories are most common (92%).
- **Carbon Footprint Trends**: Compared to 2021, the space and water heating CF decreased slightly, the transport CF increased and diet CF remained stable in 2022.
- **Gender Dynamics**: Women tend to be more likely to change lifestyle groups.

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3 Europe: Experiments on sufficiency policies in the housing sector

3.1 Aims of this study

This chapter focuses on the surveys containing the experiments on sufficiency policies in the housing sector. The aim of the surveys was to analyse citizens' evaluations of a variety of sufficiency policy measures, including questions on acceptability and effectiveness of policy measures, as well as the impact of certain framings of these policies.

Housing was chosen as a specific policy area because housing decisions are often associated with larger investments and path dependencies. Furthermore, reducing the environmental impact of housing while ensuring well-being is a challenge in many countries. Sufficiency strategies such as the reduction of living space have rarely been employed. Additionally, housing decisions can be particularly long-term, such as buying a dwelling, and connected to high investments, such as refurbishments. Therefore, the impact of everyday behaviours is usually limited, e.g. optimised settings of heating systems. For this reason, policies are particularly important in this sector to enable and incentivise more sustainable housing choices, for instance policies aiming at the reduction of living space. However, for such policies to be implemented effectively, societal support is needed. Therefore, the study on housing investigates evaluations of selected housing policies as well as their combination with further policies. Assessing housing policies is also a focus of other analyses in FULFILL (D5.2 Breucker and Defard 2023).

Additionally, a framing experiment was conducted to explore the potential impact of different ways of communicating policies. By employing framing in experiments, researchers can understand how different framings influence attitudes, opinions and policy acceptability. This knowledge helps policymakers optimise communication strategies, emphasising benefits and aligning with societal values. Framing experiments offer a systematic approach to grasp how language and presentation shape public perceptions of policies in diverse contexts. To this end, respondents were presented with different wordings of the aim of the political measures to investigate whether a more positive framing of the aim leads to a more favourable evaluation of the policy measure. ("The aim of this policy is to *overcome* unsustainable housing choices" vs. "The aim of this policy is to *punish* unsustainable housing choices.").

3.2 Methods

In the following sections, the method will be described in-depth, including the design of the experiment and the framing, an explanation of the variables under examination, followed by an overview of the survey implementation and data preparation.

3.2.1 Design of the experiment

The experiment was embedded in an online survey that contained additional questions (framework survey). For the policy framing experiment we decided to loosely follow an approach used by (Schnepf et al. 2023). While Schnepf et al. (2023) studied a vacancy tax in the German context, we decided to focus on two sufficiency housing policies that aim at a reduction of living space: 1) a ban on the construction of new single-family homes that are standard-sized or larger and 2) an annual financial fee for dwellings with an above-average living area. These policy measures were

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chosen because they have been discussed in the context of sufficiency policies in the housing sector in Europe and because they can be considered as rather hard or coercive policy measures. Before making the final selection, we asked for feedback on our chosen policy measures and suggestions from the project consortium. Similarly to Schnepf et al. (2023) we provided the participants with different wordings of the aim of the policy measures that were proposed (linguistic frame). The aim of the policy measures were either to "overcome" unsustainable housing choices or to "punish" unsustainable housing choices. A control group did not obtain any information on the aim of the measures.

The experimental part was embedded in the overall online survey (see Figure 9), with most of the questions (framework questionnaire) following the experiment. For the experiment itself, respondents were shown the two different hard policy measures after each other (see Table 10). Whether the respondents saw the information and questions on the ban or fee first (measure A), was decided randomly (see Figure 9). For each policy measure (A and B), the respondents were first shown the policy itself including a small explanation of the measure (see Table 10).

Table 10: Hard policy measures

Hard policy measure	Short description included in the questionnaire[12]
A ban on the construction of new single-family homes that are standard-sized or larger	This ban refers to a legal restriction prohibiting the construction of conventional detached homes for single families or individuals.
An annual financial fee for dwellings with an above-average living area	Under this policy, people with above-average living space will have to pay higher fees than people with living spaces equal or below the average. This fee applies to all forms of living: owner-occupied or rented housing, as well as, single- and multi-family dwellings.

Following this, the respondents were randomly assigned to either of the two experimental groups for the framing (experimental group 1: overcome; experimental group 2: punish) or the control group. After the framing, the respondents were asked to answer different questions to evaluate the hard policy measure and to indicate their preference on a policy programme including the proposed hard policy measure and additional other measures. After finishing the part for the first policy measure (A), the respondents were presented with the remaining policy measure (ban or fee). Besides including the other policy measure (B), the part was exactly like the previous part (same evaluation questions). This also holds true for the experimental group, as respondents stayed in the same group throughout the experiment.

[12] Available upon request.

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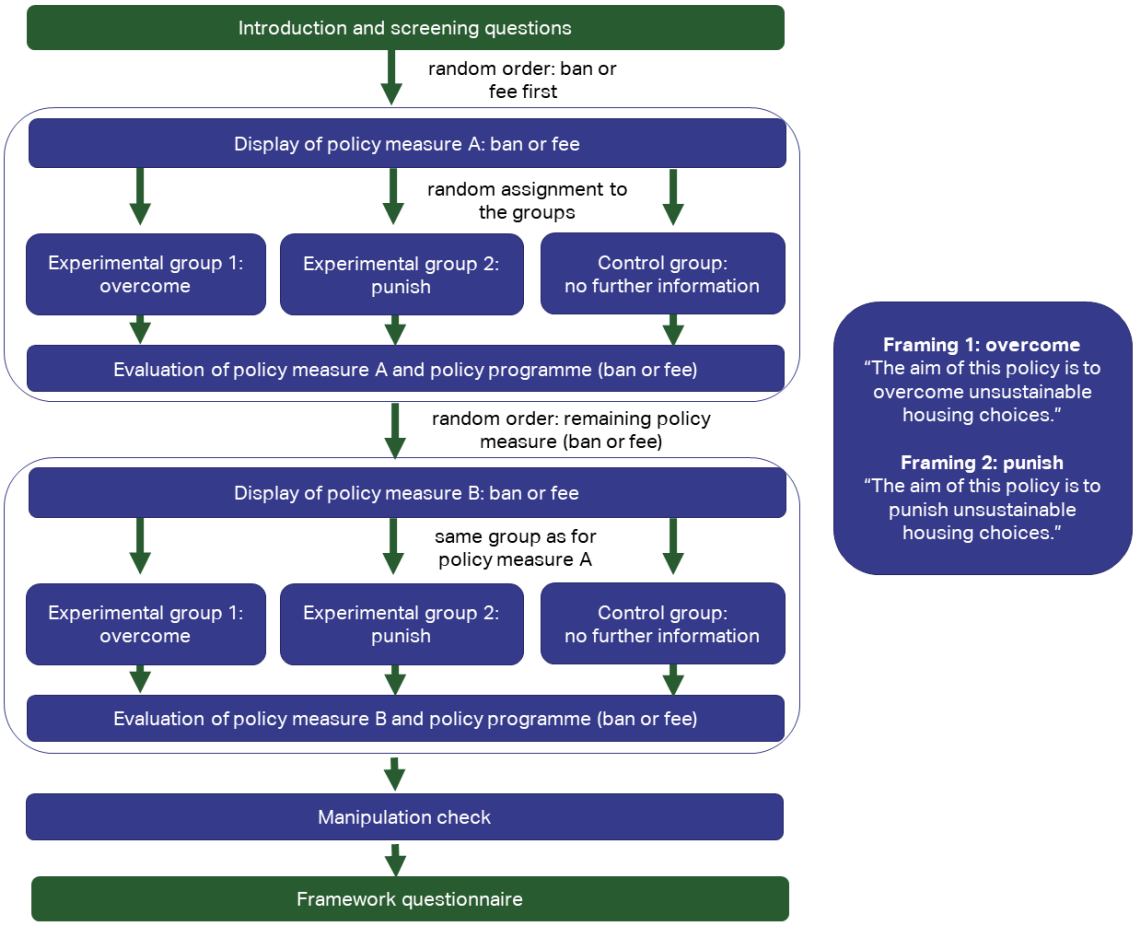
Figure 9: Structure of the housing experiment



In order to assess whether the treatment (the framing) took place, we included a manipulation check after the experiment. For the manipulation check, respondents were asked to select the aim of the two main policy measures presented to them. The response options corresponded to the two framing conditions and the control group: to overcome unsustainable housing choices, to punish unsustainable housing choices, no aim was mentioned.

3.2.2 Variables under examination

Evaluation of policy measures

Following the framing, respondents were asked several questions regarding the policies. To begin with, respondents were asked if they had heard of the policy before the survey to measure *familiarity*. Next, several evaluation questions were asked, all designed as questions with response options on a five-point Likert scale.

- Firstly, to obtain information on *perceived justice or fairness*, respondents were asked to what extent they agreed with the statement that the policy measure is fair from a societal perspective on a scale ranging from (1) strongly disagree to (5) strongly agree.
- Secondly, for the *perceived effectiveness* of the policy, we asked respondents to rate the policies on four dimensions of effectiveness: whether the policy is effective in (a) reducing the CF, (b)

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reducing housing shortages, (c) making housing more affordable, and (d) improving the well-being of society. To this end, respondents were asked to indicate in how far they agree with the statement that the policy measure is effective in regard to the above-mentioned aspects (a to d) on a scale ranging from (1) strongly disagree to (5) strongly agree.

- Thirdly, *overall policy acceptability* was measured by asking the respondents whether they support or oppose this policy measure with the scale ranging from strongly oppose to strongly support.
- Finally, respondents were asked to indicate whether they think they would be *affected by the policy measure* personally positively or negatively on a scale ranging from (1) very negatively to (5) very positively

Table 11: Soft policy measures

Soft policy measure (part of the policy programme)	Short description included in the questionnaire[13]
(1) Financial incentives for accommodating an additional household in an existing dwelling.	Financial benefits such as grants or loans are provided by public bodies to encourage splitting an existing house or apartment into two or more separate units or to encourage renting out rooms in an existing dwelling e.g., to students.
(2) Participation of citizens in defining the policy design in more detail.	Involving a group of representative citizens in the decision-making process when creating policies to ensure their perspectives, opinions, and needs are considered.
(3) Financial incentive to move to a smaller place.	Financial benefits are offered by public bodies to households who reduce their space of living by moving to another dwelling.
(4) Regulation that multi-family buildings include common rooms.	Common rooms encompass shared amenities, for instance guest rooms or washing facilities in order to reduce the space required per person or per household.
(5) (Additional) financial incentives for renovating old houses or flats for people that are willing to buy an already existing dwelling.	Monetary benefits provided by public bodies to encourage refurbishments instead of building new houses.
(6) Free assistance such as advice on how to find a smaller flat / house.	The assistance services are provided by the government (e.g. through governmental agencies or social services) to help individuals or families to find and to move to smaller dwellings.

After these questions on the evaluation of the hard policy measures, respondents were asked to evaluate a policy programme surrounding these hard policy measures. To this end, respondents should imagine that the government decided on the policy measure proposed above (either the (1) ban on the construction of new single-family homes that are standard-sized or larger or (2) an annual financial fee for dwellings with an above-average living area). Further, the government

[13] Available upon request.

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wanted to combine this measure with *other soft policy measures in a policy programme*. Then, the respondents were given six potential additional soft policy measures, including short descriptions of the measures (see Table 11). Participants were then asked to distribute 60 points between these six soft policy measures to indicate how much they would like the measures to be part of the policy programme: Giving a soft policy measure more points indicated a higher preference for this measure. They could give each policy measure between zero and 60 points, the total of points could not exceed 60 points. If they thought all six measures equally important, they could give ten points to each. The six soft policy measures and their descriptions are presented in Table 11.

After the respondents answered all questions regarding the evaluation of the policy presented first (hard policy measure A, ban or fee) and distributed the points to the other soft policy measures for the policy programme, the second hard policy measure was proposed (hard policy measure B, ban or fee). The respondents were then asked to answer all questions again for the other policy measure (B).

Housing situation and preferences

Sufficiency-oriented choices in the housing sector can be constrained by the structural conditions. Also, the extent to which behaviour can be changed may be related to the current housing situation. Furthermore, people may feel more or less affected by a policy measure depending on their current situation. Therefore, respondents were asked whether their household owns or rents the building in which they live. Additionally, they were asked about their housing preferences (regardless of whether they currently live in that housing type), for instance whether they would like to live in a detached single-family home or whether they would prefer another type of housing.

Attitudinal variables

The attitudinal variables include sufficiency orientation (Loy et al. 2021), political orientation (Schleich et al. 2024) and environmental identity (Whitmarsh and O'Neill 2010), these have already been included in the previous questionnaires (see chapter 2) and are described in Deliverable D3.1 (Alexander-Haw et al. 2023). Moreover, further variables that are related to the evaluation of policies and the relationship towards policymaking were added to the survey experiment. For instance, respondents were asked whether they think that the provision of sustainable housing is a serious problem on a five-point Likert scale ranging from (1) no serious problem at all to (5) a very serious problem. Further, respondents were asked to indicate in how far they trust national politicians and in how far they have a say in what the federal government does. Respondents could choose between five response options. Lastly, respondents were asked whether they voted in the last election.

Socio-demographic variables

As in the other questionnaires, sociodemographic-variables were included (e.g. gender, age, household income, level of education, employment situation, number of household members). For further descriptions of these variables, see D3.1 (Alexander-Haw et al. 2023) or the questionnaire which is available upon request.

Belonging to sufficient group

In order to determine whether a person could be classified as being sufficient, questions to calculate the CF related to housing and questions to measure well-being were asked. This approach

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was very similar to the approach in D3.1 and in chapter 2, with the exception that for this survey only the CF related to housing was calculated, specifically the CF for heating.

3.2.3 Survey implementation

For the experiments on sufficiency policies in the housing field a second survey was set up, in addition to the survey for the longitudinal study presented in section 2, resulting in a different sample. Approximately 750 to 800 respondents in Denmark, France, Germany and Italy, and around 550 respondents from Latvia were recruited using a professional market research institute as subcontractor (Norstat). The online survey was implemented using the software EFS and data collection took place between May and August 2023. Quota sampling was used to ensure representativeness regarding gender, age (>=18), income and the region in each country[14]. The quotas corresponded to the distribution of the quota characteristics of the target country.

The survey started with screening questions that were used to control that quota requirements and eligibility to participate (being at least 18 years old and not living in a hostel or dormitory) were fulfilled. This section was followed by an introduction that provided details on the survey's topic and structure along with a privacy statement that outlined anonymity, and the right to withdraw at any time. Next, the participants were asked whether they will read the survey attentively and answer honestly. After the introduction, the first part was the framing experiment, followed by the framework survey (see also Figure 9).

Therefore, the overall structure of the questionnaire was organised as follows:

- Experimental design: framing experiment, questions on the evaluation of the hard policy measures and on the evaluation of soft measures in a policy programme surrounding the hard policy measures
- Socio-demographic questions(above the quota-relevant variables) and questions on the household and living situation in 2022, including questions necessary to calculate the CO_{2eq}-footprint for heating
- Well-being (adapted version of the WHO quality of life scale) and deprivation
- Adoption of measures in response to the energy crisis
- Attitudinal variables: questions on personal attitudes, values, beliefs
- Questions on diffusion pathways and further behavioural effects.

The full questionnaire is available upon request. The questionnaire was created in English and the translations of the surveys were carried out by professional translators. After translation, the surveys were checked by project members from the respective countries and necessary adjustments to the translations were made.

Several measures were taken to ensure data quality. Firstly, the survey contained two quality control questions aiming to identify respondents not reading attentively. The first question asked the respondents to solve a mathematical problem (4 + 3). For the second question, respondents had to select a specific response option in a matrix question. Respondents who failed to answer both attention checks correctly were excluded from the analysis. Hence, in total nine respondents were

[14] With small exceptions, the sample can be considered to be representative regarding gender, age groups, income and the region within the country. Due to an error in Germany, the number of respondents in some regions differs from the overall population (e.g. higher share from Berlin and Bremen and lower share from Hesse and North Rhine-Westphalia in our sample compared to the overall population in Germany). For Denmark, the age composition differs slightly from the overall population, as more respondents are in the age group from 46 to 60 than in the overall population.

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excluded from the analysis: one in Denmark, one in France, two in Germany, two in Italy and three in Latvia.

Next, cases were excluded, when we identified more than one data set for the same respondent. For this purpose, we used the ID of the respondent, which is a unique value making it possible to distinguish the different respondents. We decided to exclude all cases with the same ID. In total, 30 cases were excluded because their corresponding ID appeared more than once in the data set: six cases in Denmark, eight in France, ten in Germany, six in Italy, zero in Latvia.

In addition, cases were excluded when respondents took less than one-third of the median duration of the respondents in the pre-test to complete the survey (Denmark: 7 min, France: 6.67 min, Germany: 7 min, Italy: 7 min and Latvia: 9 min). For all five countries, eleven participants were excluded due to a very low response time indicating low data quality: zero in Denmark, one in France, four in Germany, three in Italy and three in Latvia.

Lastly, cases were excluded when respondents stated to not read carefully and to not give honest answers - a confirmation they were expected to give at the beginning of the survey. This led to the exclusion of nine respondents from the analysis: five in Denmark, zero in France, zero in Germany, two in Italy and two in Latvia.

After applying these exclusion criteria ensuring high data quality a total sample size of 3642 respondents remained: 786 in Denmark, 784 in France, 763 in Germany, 774 in Italy and 535 in Latvia.

3.2.4 Data preparation

The aim of the data preparation was to exclude cases from the analysis that were likely to contain non-reliable data. Besides the data quality adjustments described above, some plausibility checks were integrated in the survey, further limiting the amount of implausible answers. However, some responses still had to be considered as outliers. Cases with outliers were not completely excluded from the analysis, instead outliers were excluded only if the respective variable was relevant for the analysis.

Data preparation for the CF for heating followed the approach used in chapter 2. Hence, no CF was calculated for the respondents that moved in 2022 (349 excluded in total: 90 in Denmark, 94 in France, 55 in Germany, 67 in Italy and 43 in Latvia) or were on vacation for 13 weeks or more (96 excluded in total: 14 in Denmark, 19 in France, 20 in Germany, 25 in Italy, and 18 in Latvia). In addition, no heating footprint was calculated for the 28 respondents who did not indicate a housing type while also not indicating the exact amount of gas consumed in 2022 (five in Denmark, ten in France, three in Germany, seven in Italy and three in Latvia). Last, respondents who stated that their heating space is larger than their total living space were also excluded from the calculation of the CO_{2eq}-footprint (41 cases excluded: nine in Denmark, ten in France, seven in Germany, ten in Italy and five in Latvia).

This left us with a total of 3128 respondents for whom a CO_{2eq}-footprint for heating could be calculated: 678 in Germany, 651 in France, 665 in Italy, 668 in Denmark and 466 in Latvia. Whenever we include the CF as relevant variable in our analysis, we worked with this reduced sample size.

3.3 Results

In the following section, the results for all five European countries will be presented. First, descriptive findings will be presented for the hard measures and soft measures, followed by

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findings from the experiment and finally, results from the multivariate models aiming to understand predictors for policy acceptability will be presented.

3.3.1 Descriptive findings

An overview of the distribution of the socio-demographic variables in the sample in comparison with the distribution in the population can be found in Annex 1, Table A2.

Descriptive results for the evaluation of the hard measures and the policy programmes will be presented more in depth in the following.

3.3.2 Hard measures

In this section, we present the descriptive findings for the evaluation of the two hard policy measures: (1) the ban on the construction of new single-family homes that are standard-sized or larger and (2) the annual financial fee for dwellings with an above-average living area. In the following, we will present the results on these two hard policy measures more in depth. We start with the overall evaluation of the policy measures, followed by responses to the other evaluation questions.

Figure 10: Overall evaluation of the hard policy measures

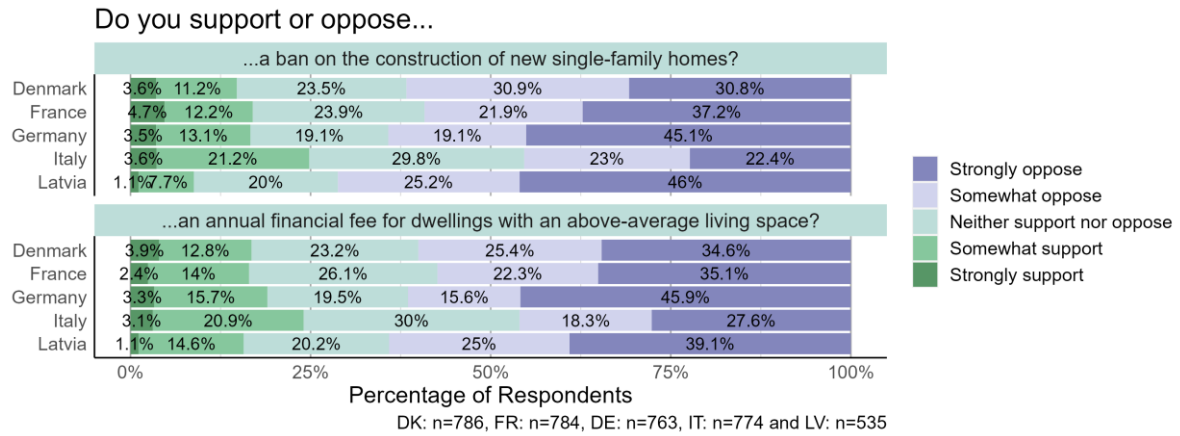

Figure 10 depicts the frequencies of the responses in percent for both hard policy measures. In general, the ban on the construction of new-single family homes (that are standard-sized or larger) and the fee for dwellings with above-average living space are evaluated in a similar way in all five countries: In all countries except in Italy and for both policy measures, more than 50% of the respondents indicated to strongly or somewhat oppose the proposed policy measures. The largest share of respondents opposing (incl. somewhat and strongly opposing) both measures can be found in Latvia (over 60%). In Italy, the share of the respondents somewhat or strongly opposing is slightly smaller than in the other countries with around 45% for each of the policy measures. In most countries (Denmark, France and Germany), the share of respondents somewhat or strongly supporting each hard policy measure is between 15% and 20%. For Latvia, the share of respondents supporting the ban is smaller than in the other countries, while in Italy, the share of support is larger for both policy measures (around 25%).

In addition to this overall evaluation of the policy measures, we were interested in a more detailed understanding of this evaluation. Therefore, we included questions that asked for more specific

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evaluations, including perceived fairness (see Figure 11), affectedness (whether respondents think that they will be positively or negatively influenced by the measure, see Figure 12) and perceived effectiveness of the measure (see Figure 13).

Figure 11: Perceived fairness of the hard policy measures

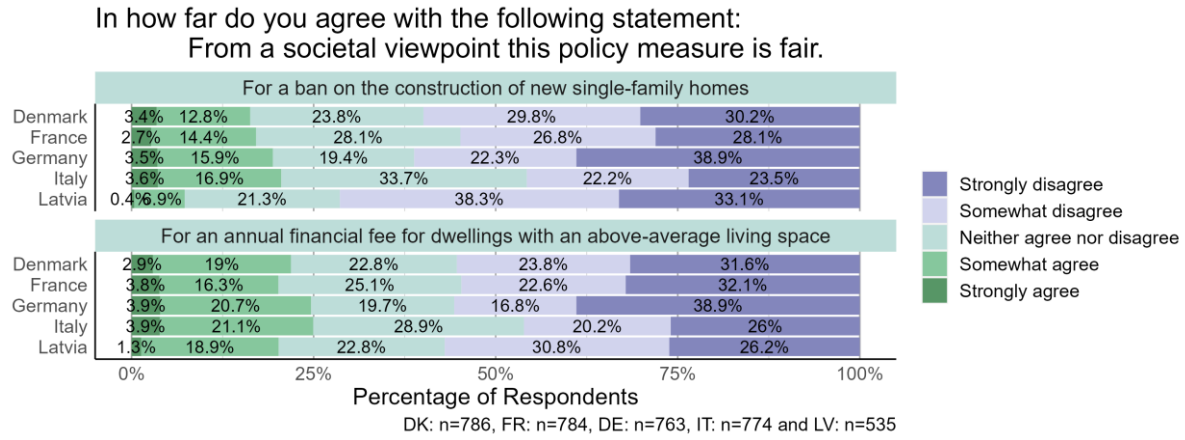

Figure 11 displays the distribution of frequencies for the evaluation of fairness of the policy measures in percent. The overall pattern shows similarities with the responses given for the overall evaluation of the measure (see Figure 10). In all countries except for Italy, more than 50% of the respondents somewhat or strongly disagree with the statement that the policy measures are fair, while the ban is perceived as slightly more unfair as the fee. The largest share of respondents disagreeing (somewhat or strongly) can be found in Latvia for both measures, while the share of respondents strongly disagreeing is the largest in Germany. Fewer respondents in Italy disagree than respondents of the other countries for both policy measures. However, even in Italy, the share of respondents perceiving each hard policy measure as unjust is high with around 45%.

Figure 12: Perceived affectedness of the hard policy measures

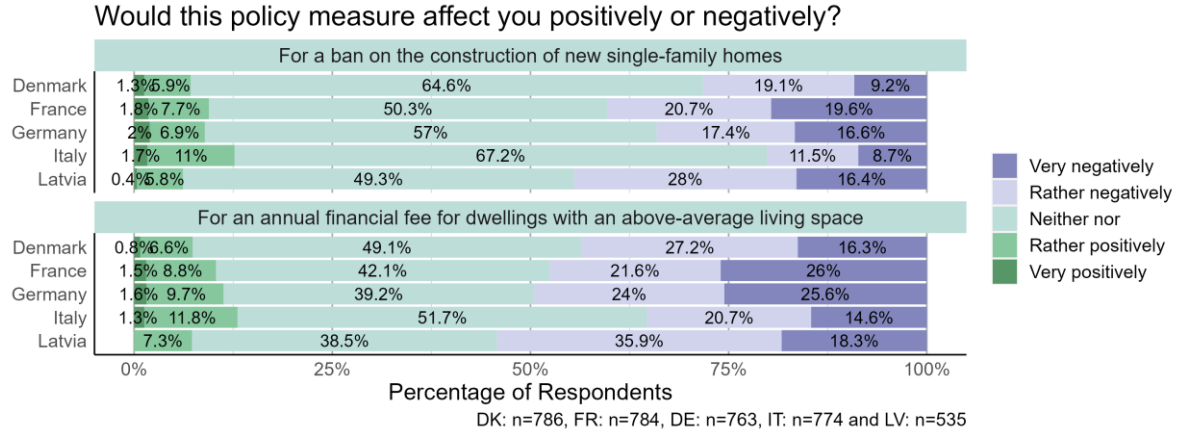

Figure 12 shows the distribution of frequencies of the responses in percent for the question whether the policy measure would affect the respondents positively or negatively. In comparison to the evaluation questions presented before, for the perceived affectedness, a large share of respondents indicated the middle category, meaning that they think they will neither be affected negatively nor positively by the measures (ranging from 39% to 67%). Across countries, this share of respondents stating neither nor is larger for the ban than for the fee. For the fee, more

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respondents think that they will be rather or strongly negatively affected. Overall, the share of respondents stating that they will be positively affected is smaller than the share of respondents indicating to be negatively affected (between 6% and 13% for each hard policy measure). Again, especially negative evaluations regarding the perceived affectedness can be found in Latvia and less negative evaluations in Italy for both measures.

Figure 13: Effectiveness of the hard policy measures

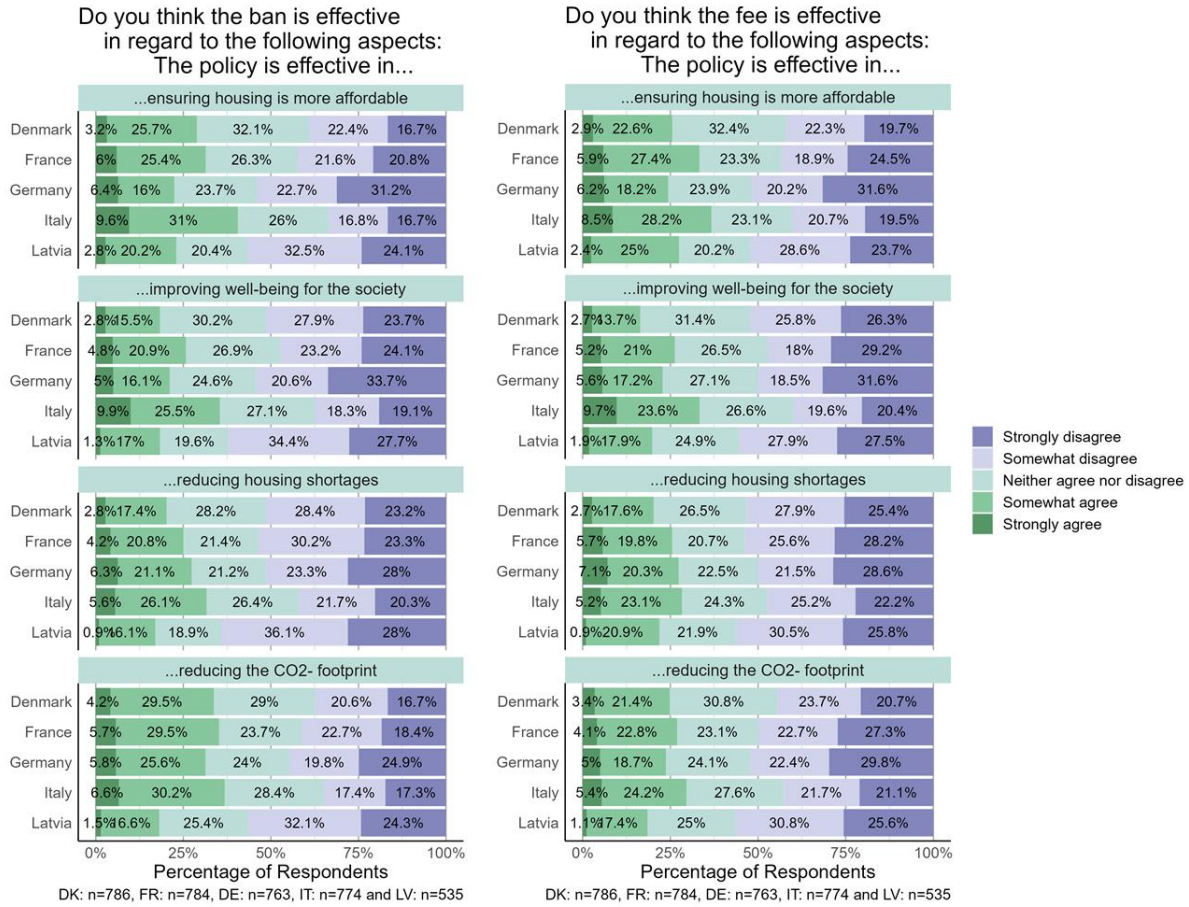

Figure 13 depicts the frequencies of the responses for the variables measuring perceived effectiveness in percent. The respondents were asked to evaluate the effectiveness of the policy measures with regard to different potential positive outcomes. Overall, the patterns are similar for the ban on the left- and the fee on the right-hand side of the figure. For most countries and most dimensions, the evaluations of the effectiveness are more negative than positive. However, overall the effectiveness is evaluated more positively compared to the overall evaluation, fairness and affectedness. Across dimensions, the positive evaluations range from 17% in Latvia to 41% in Italy. For some cases, the share of positive evaluations (somewhat or strongly agreeing with the statements) is larger than the negative evaluations. For example, for the ban in Italy, respondents tend to agree with the statement that the policy is effective in ensuring housing to be more affordable (41% somewhat or strongly agree) and in reducing the CO_{2eq}-footprint (37% somewhat or strongly agree). Again, evaluations in Latvia and Germany are more negative and in Italy more positive compared to the other countries.

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To investigate whether the different questions on the evaluation of the policy measures assess distinct concepts or rather measure one underlying construct, we calculated the reliability of all evaluation items using Cronbach's alpha (see Table 12).

Table 12: Cronbach's alpha for the evaluation items

	Denmark	France	Germany	Italy	Latvia
Ban	0.91	0.92	0.92	0.93	0.90
Fee	0.92	0.93	0.93	0.93	0.91

For all countries and both hard measures, Cronbach's alpha is a least 0.9, suggesting that the items can be understood as one scale with excellent reliability (above the threshold of 0.7). Therefore, we constructed an index based on the evaluation items for the ban and another evaluation index for the fee. The indices were formed by adding up all values for the seven evaluation items for the hard measure and dividing them by the sum of the items. Hence, we obtained two index variables, one for the evaluation of the ban and one for the evaluation of the fee, ranging from 1 to 5. These indices enabled us to compare the average evaluation of the policy measures per country.

Figure 14: Distribution of the indices measuring evaluation of the hard measures

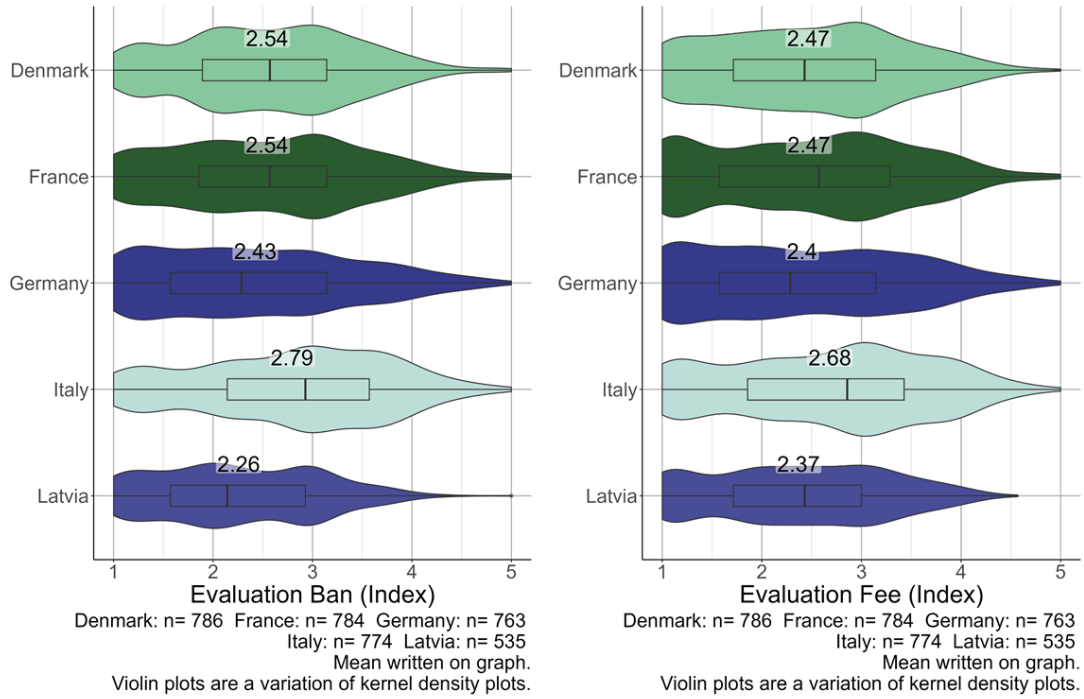

Figure 14 depicts the distribution of the indices that measure the overall evaluation of the two hard policy measures, namely (1) the ban on the construction of new single-family homes that are standard-sized or larger on the left-hand side and (2) the annual financial fee for dwellings with an above-average living area on the right hand-side. Higher values indicate more positive evaluations. Corresponding to the findings from the single items, we can see that the results for the ban and fee seem to be very similar. In addition, especially the results in Denmark, France and Germany seem to

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be alike (except for Germany and the fee), while Italy has slightly higher means (more positive evaluation of the measures) and Latvia slightly lower means (more negative evaluation of the measures).

3.3.2.1 Soft measures

In addition to exploring the evaluation of the two hard policy measures alone, we asked respondents to indicate in how far they want six different soft policy measures to be part of a policy programme surrounding the hard measures ban and fee. In the following, the results for the evaluation of the soft measures are presented.

Table 13: Names and description of the soft policy measures

Name in the following figure	Soft policy measure
(1) Incentive additional household	Financial incentives for accommodating an additional household in an existing dwelling.
(2) Participation of citizens	Participation of citizens in defining the policy design in more detail.
(3) Financial incentive to move	Financial incentive to move to a smaller place.
(4) Regulation common rooms	Regulation that multi-family buildings include common rooms.
(5) Incentives for renovating	(Additional) financial incentives for renovating old houses or flats for people that are willing to buy an already existing dwelling.
(6) Free assistance to move	Free assistance such as advice on how to find a smaller flat/ house.

Table 13 lists and explains the shortened names for the soft policy measures which will be used in the following figures.

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Figure 15: Average number of points assigned to the soft measures

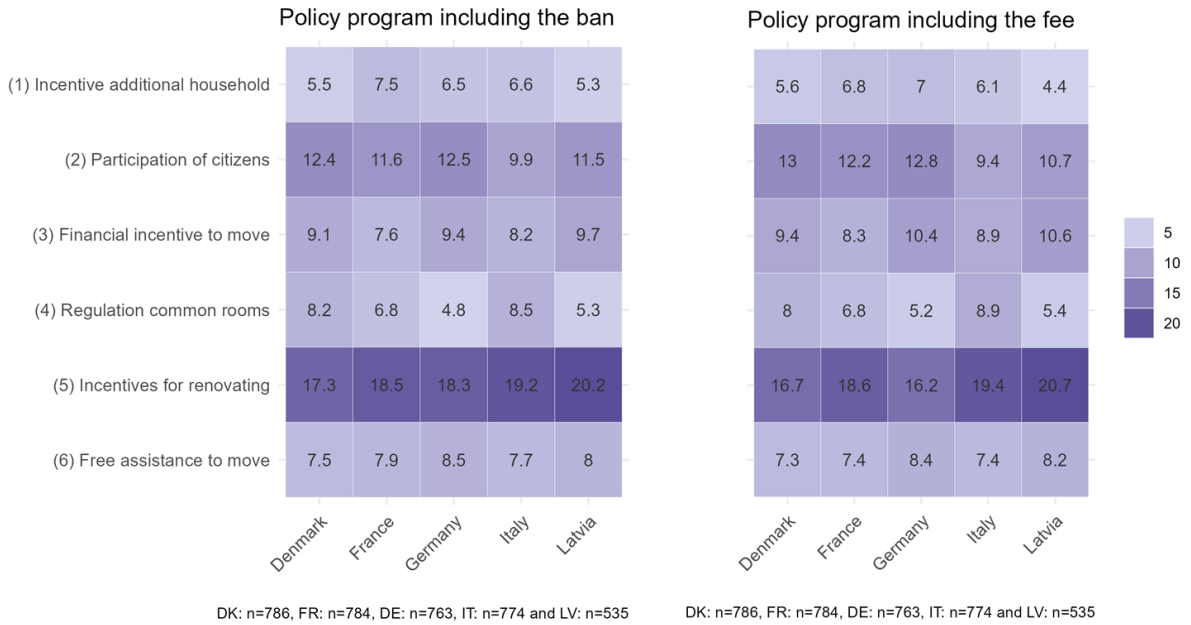

Figure 15 depicts the means of the assigned points to the six different soft measures for the five different countries. On the left-hand side, the results for the policy programme surrounding the ban are depicted and on the right-hand side for the policy programme surrounding the fee. For both policy programmes and in all countries, the results are fairly similar. Most points were assigned to the incentives for renovation of old houses or flats, followed by the participation of citizens in designing the policy, then financial incentives to move to a smaller place, followed by free assistance to move. In general, the remaining two soft policy measures were assigned the least points (regulation that multi-family homes should include common rooms and financial incentives for accommodating an additional household in an existing dwelling).

In order to understand the distribution of points more thoroughly, Figure 16 presents how often a policy measure was assigned more than zero points, and Figure 17 shows the number of measures the respondents assigned points to (e.g. assigning all 60 points to one measure or distributing the points between six different measures).

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Figure 16: Share of respondents assigning more than zero points to the soft policy measures

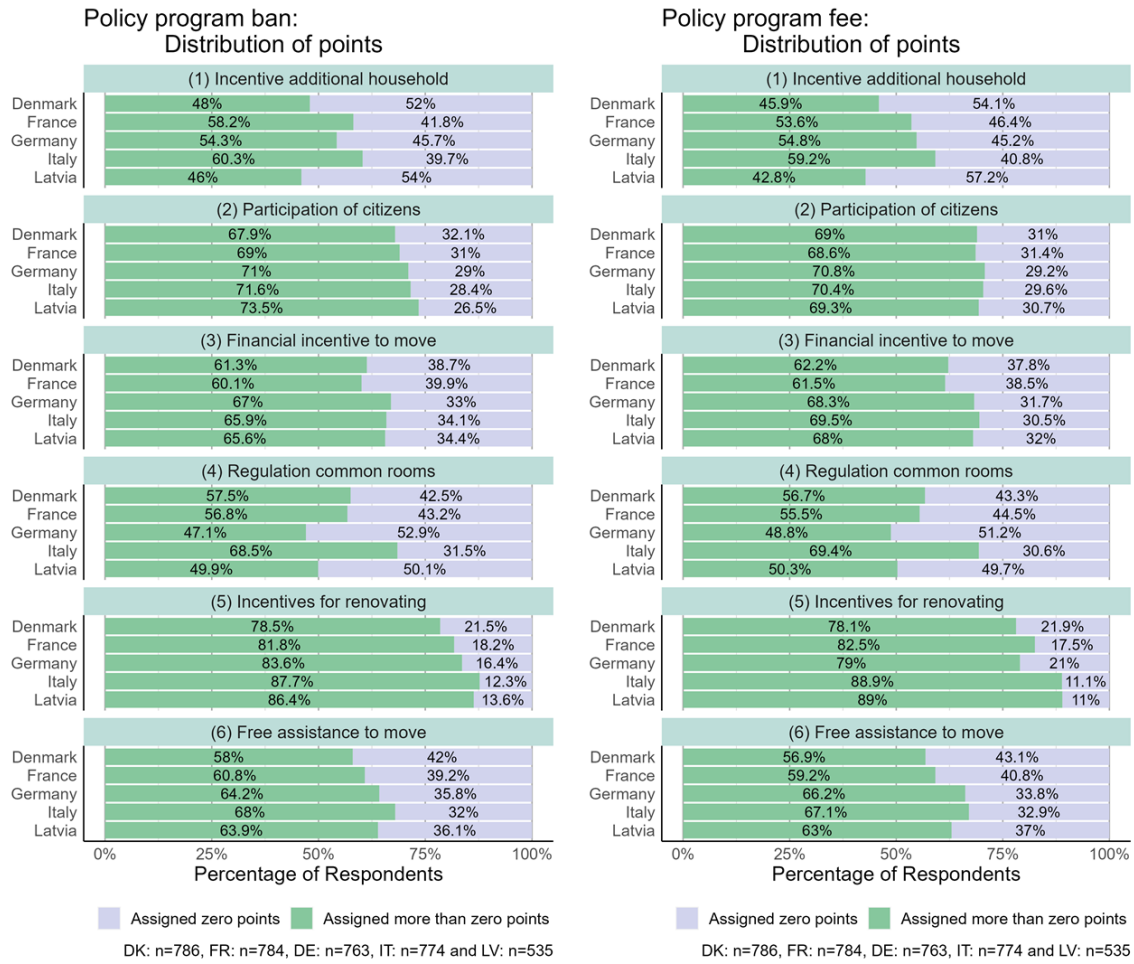

Figure 16 depicts the share of respondents who assigned zero points to the soft measures - again on the left-hand side for the policy programme surrounding the ban and on the right-hand side for the policy programme surrounding the fee. The respondents had to assign 60 points in total, but they could choose freely whether they wanted to assign the points to all measures or just to some of them (and thus assign zero points to the remaining measure(s)). The overall pattern for the two potential policy programmes including either the ban or fee for the five countries is again similar. The measure of "(additional) financial incentives for renovating old houses or flats" has the highest share of respondents assigning more than zero points, meaning that between 78% and 89% of the respondents liked the measure enough to assign at least one point. Next, the measure of "participation of citizens in defining the policy design in more detail" has the second-highest share of respondents assigning at least one point (68% to 74%). These findings correspond to the high mean values we have seen in Figure 15 for these two soft measures. For both policy programmes, in Italy the share of respondents who assigned more than zero points to the measures of a "regulation that multi-family buildings include common rooms" is higher with about 69% than in the other countries, which could indicate a tendency of more respondents in Italy being open to this soft policy measure than in other countries. Overall, independent from the hard policy measure, each soft measure has at least 43% of respondents that assigned at least one point for it.

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Figure 17: Distribution of the number of measures with more than zero points

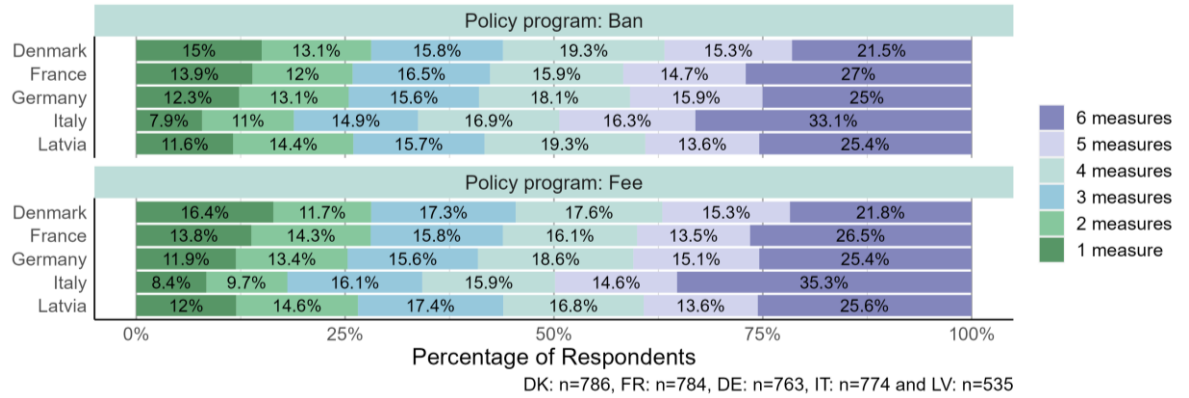

Figure 17 shows the distribution of frequencies for the number of measures a respondent assigned more than zero points to. For instance, in the far left (dark green), we see that between 8% and 16% of the respondents assigned all points to just one measure. Hence, they preferred a single soft measure over a combination of different soft policy measures. Overall, the pattern looks similar for the programmes with the ban (upper half) and fee (lower half) and for the five countries. Most respondents in all countries and for both policy programmes assigned points to all six soft measures (between 22% and 35%), with Italy having the highest share of respondents choosing all six measures (between 33% and 35%).

3.3.3 Experimental findings

In order to test whether the framings had an effect on the evaluation of the policy measures, the means of the evaluation of the hard policy measures were compared between the experimental groups[15]. For that, the index for the general evaluation of the ban and the fee were used.

First, we checked whether the respondents selected the correct answer in the manipulation check. For the manipulation check, respondents were asked for the aim of the policy measures presented to them. The respondents could select one of the following response options 1) to overcome unsustainable housing choices 2) to punish unsustainable housing choices and 3) no aim was mentioned.

[15] Using the Chi-square test of independence we checked whether different socio-demographic variables (gender, age, education, income, living in a urban or rural region) were similarly distributed across the experimental groups of the full same and the subsample of respondents who answered the manipulation check correctly. For the full sample, only in Italy gender ($p<0.1$) and urban region ($p<0.05$) are not distributed equally and for the subsample age ($p<0.1$) in Latvia

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Figure 18: Analysis of the manipulation check question

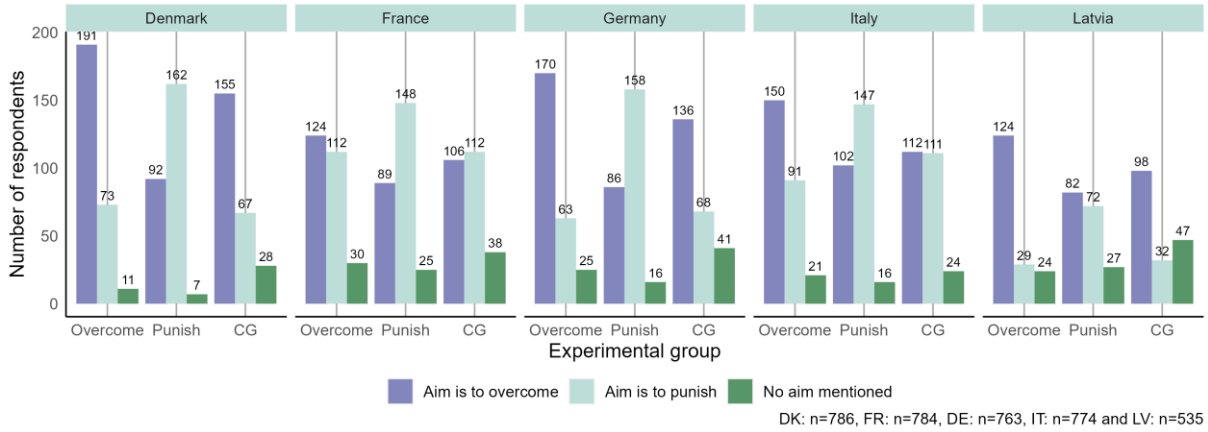

Figure 18 shows one bar plot per country which depicts the distribution of responses for the manipulation check, differentiated by the experimental group (experimental group 1: overcome, experimental group 2: punish and control group (CG)). In the overcome condition, in each country the majority of respondents selected the correct answer in the manipulation check, namely that the aim of the policy measures was to overcome unsustainable housing choices (purple bar). For the punish group, most respondents selected the correct answer ("the aim of the policy measures is to punish unsustainable housing choices", see the light blue bar) in all countries except for Latvia. For the control condition, the correct answer would have been that no aim was mentioned, however, in none of the countries we see that this response option was selected the most frequently.

The manipulation check indicated that most respondents in the two experimental conditions selected the correct answer, however, for the control condition, most respondents did not. Therefore, we decided to only include those respondents into the following analysis (Table 14) who correctly identified the respective experimental condition. As these were few in the control group, this implied that we focused on the two experimental groups (353 respondents in Denmark, 272 in France, 328 in Germany, 297 in Italy and 196 in Latvia) for the comparison of means.

Table 14: Comparison of means for the evaluation both hard policy measures, subsample

	Ban			**Fee**			
	Mean: overcome	Mean: punish	Results ANOVA	Mean: overcome	Mean: punish	Results ANOVA	n
Denmark	2.66	2.33	*** (p< 0.01	2.52	2.28	*** (p< 0.01	353
France	2.71	2.28	***(p< 0.01)	2.57	2.18	***(p< 0.01)	272
Germany	2.56	2.23	***(p< 0.01)	2.61	2.19	***(p< 0.01)	328
Italy	2.88	2.66	* (p < 0.10)	2.83	2.54	**(p< 0.05)[16]	297
Latvia	2.39	2.20	n.s. (p>0.1)	2.44	2.24	n.s. (p>0.1)	196

[16] As the variances have been found to not be homogenous, we calculated a Welch ANOVA for this case.

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Table 14 shows the means for the evaluation of the hard policy measures and the results of the analysis of variance, but only for those respondents in the experimental groups who selected the correct answer in the manipulation check. For this subsample, the differences between the means are statistically significant for all countries for both hard measures except for Latvia. For all countries, the means in the overcome conditions are higher than in the punish condition. This means that respondents who received the information that the policy measures have the aim to overcome unsustainable housing choices instead of punishing unsustainable housing choices indicated higher acceptability of both hard measures. This finding suggests that the framing of the policy measures had an effect on policy acceptability for those respondents who could recall the framing. The country-specific differences (i.e., in Latvia, no statistically significant difference between the evaluation of the hard policy measure due to the framing and the lower significance level in Italy) may be due to the different levels of evaluations: across countries, these were highest in Italy and lowest in Latvia - as demonstrated in the previous analyses.

3.3.4 Multivariate analyses

The aim of the multivariate analysis was to understand the acceptability of the two hard measures more thoroughly and to find determining factors of policy acceptability. Specifically, we wanted to explore in how far sufficiency orientation and sufficient behaviour is related to the evaluation of the policy measures.

In order to investigate which factors are associated with the acceptability of the hard policy measures, we conducted a linear regression analysis (OLS). As dependent variable we used the index formed across the different evaluation items for the policies (see e.g. Figure 14). Thus, the dependent variable can be considered to have a metric scale.[17]

As predictors, in addition to socio-demographic variables (e.g. gender, age, education, income), we included several variables that measure sufficiency orientation and whether a person belongs to the sufficient group in terms of heating. Furthermore, variables describing the current housing situation, such as the size of the dwelling, whether a person rents or owns the dwelling, and whether a person lives in a city compared to a more rural, were included. In addition to these variables, it was included whether respondents indicated to prefer to live in a detached single-family home. Moreover, variables that have been found to be generally related to pro-environmental behaviour, such as environmental identity or political orientation, were included. Finally, variables related to the relationship with the political system were integrated in the model, such as trust in national politicians, whether a person voted in the last election, and whether they feel that people like them have a say in what the government does. Lastly, familiarity with the hard policy measure was also included. The covariates used in the analysis are described in Annex 2, Table A5.

The full sample was used in the following analysis as the main focus was to explore factors that determine policy acceptability besides the framing. However, we included the experimental group as control variable in the analysis.

[17] For both hard policy measures, the assumptions for running an OLS regression were met for all countries except for Germany. Hence, in addition to the linear regressions, binary logit regressions were calculated for Germany. To this end, a binary variable was created from the index by applying median split. As the results of the linear and binary logit regressions for Germany were similar, the results of the linear regressions are presented to ensure country comparison. The results for all regression analyses, including the binary logit regressions for Germany can be found in Annex 3.1, Tables A9 and A10.

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Results for the ban

In the following, the results for the linear regression models for all countries with acceptability of the ban as dependent variable are presented. The sample size is reduced due to missing values in independent variables. We concentrate on summarizing the similarities between the countries. Figure 19 displays all effects, including those that are found only for single countries. The detailed results can be found in Annex 3.1, Table A9.

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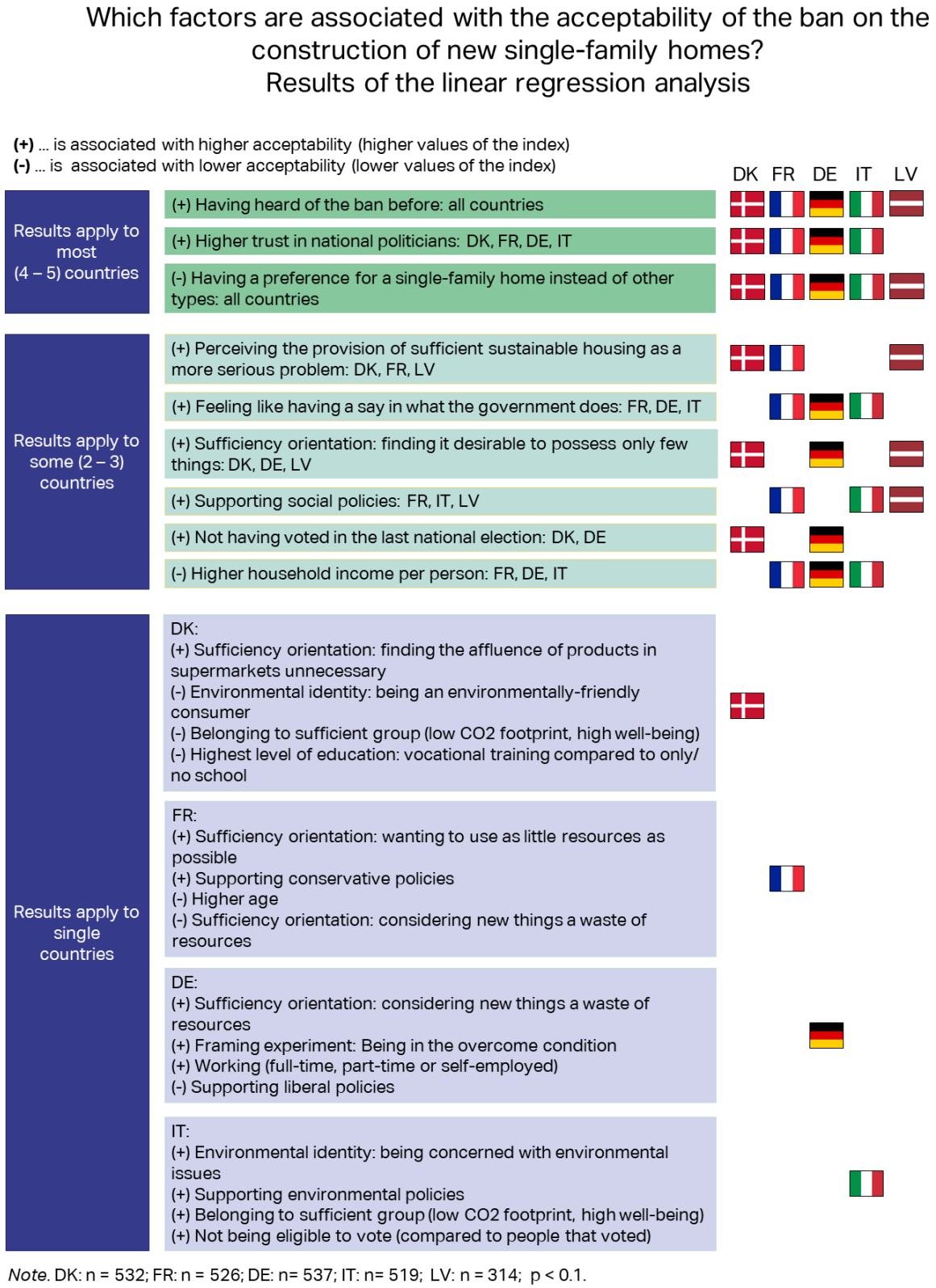
Figure 19: Results of the linear regressions for the acceptability of the ban



Note. DK: n = 532; FR: n = 526; DE: n= 537; IT: n= 519; LV: n = 314; $p < 0.1$.

Figure 19 shows the results for the linear regression models, meaning that these variables are statistically significantly related to policy acceptability of the ban on the construction of new single-

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family homes. For all countries, familiarity with the ban (having heard of the ban before) is associated with higher policy acceptability. In addition, for all countries except for Latvia, higher trust in national politicians is associated with higher acceptability. In contrast, having a preference for a single-family home is related to a lower policy acceptability. Further, various variables are correlated with policy acceptability in two to three countries: an increase in policy acceptability is associated with perceiving the provision of sufficient sustainable housing as a more serious problem (Denmark, France, Latvia), feeling like having a say in what the government does (France, Germany, Italy), finding it desirable to possess only few things (Denmark, Germany and Latvia), and not having voted in the last election (Denmark, Germany). Associated with a lower policy acceptability is having a higher household income per person (France, Germany, Italy). Only for Germany the framing experiment is statistically significantly correlated with policy acceptability: belonging to the overcome conditions is positively related. In addition, some counter-intuitive relationships have been identified. For instance, lower policy acceptability is related to belonging to the sufficient group and having a higher environmental identification in Denmark. In France, lower policy acceptability is associated with considering new things a waste (one dimension of sufficiency orientation). However, other variables measuring sufficiency (finding the affluence of products in supermarkets unnecessary in Denmark and wanting to use as little resources as possible in France) are related to higher policy acceptability. Hence, results regarding the relationship of sufficiency orientation and policy acceptability are inconclusive.

Results for the fee

Just as for the ban, in the following the results from the linear regression models for all countries with policy acceptability of the fee as dependent variable are presented. The sample size is reduced due to missing values in the independent variables. Again, we will concentrate on summarising the similarities between the countries. Figure 20 displays all effects, including those that are found only for single countries. The detailed results can be found in the Annex 3.1, Table A10.

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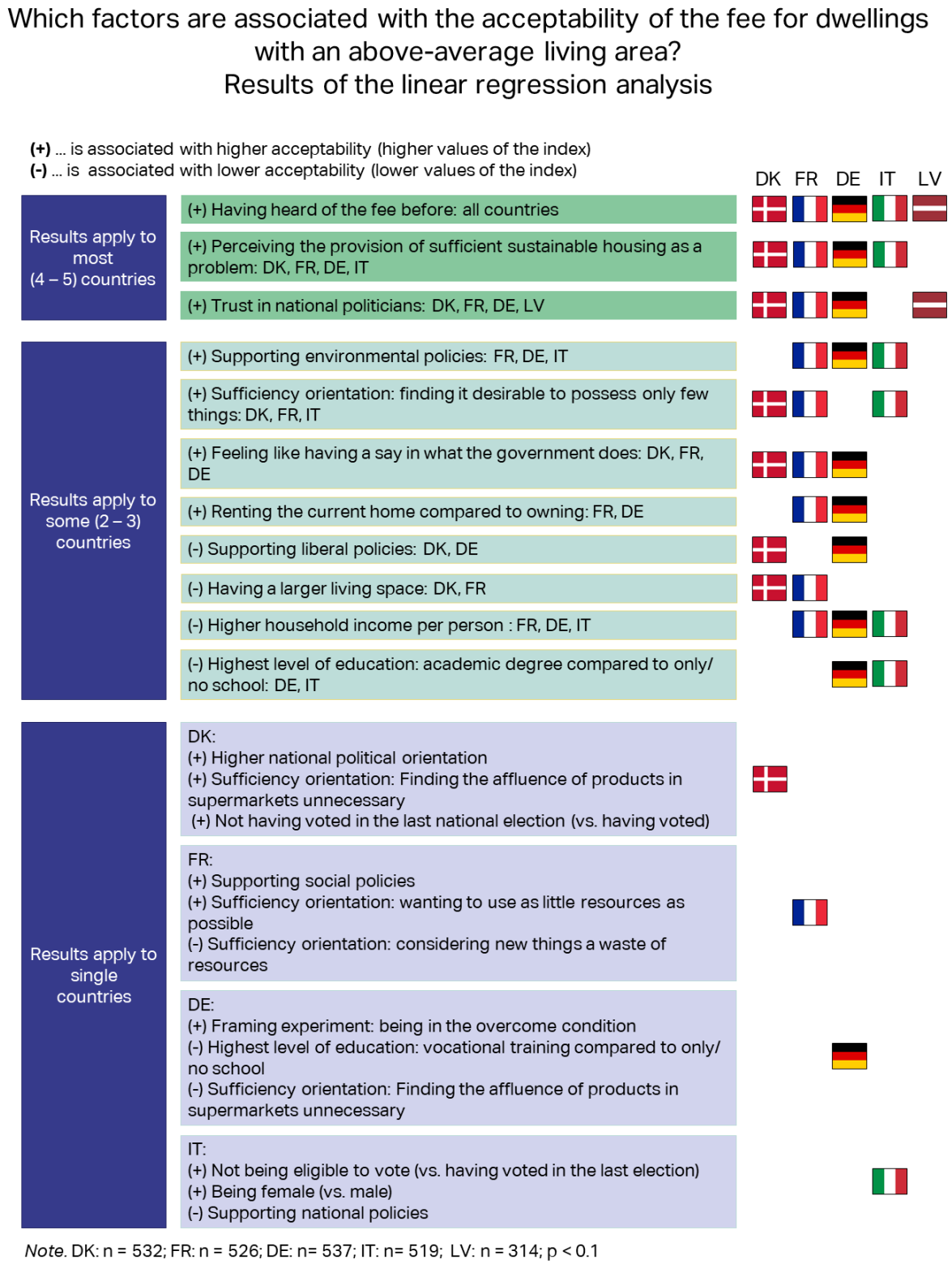
Figure 20: Results of the linear regressions for the acceptability of the fee



Note. DK: n = 532; FR: n = 526; DE: n= 537; IT: n= 519; LV: n = 314; $p < 0.1$

Figure 20 visualises the results from the linear regression analysis, meaning that these variables are statistically significantly related to policy acceptability of the fee for dwellings with an above-average living area. Similarly to the acceptability of the ban, for the fee for all countries indicating

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to having heard of the policy before is associated with higher policy acceptability; this is also the case for higher trust in national politicians in all countries except for Italy. In addition, in four countries (Denmark, France, Germany and Italy) perceiving the provision of sufficient sustainable housing as a more serious problem is related to higher policy acceptability of the fee. Further, several variables are related to policy acceptability for two to three countries. Higher acceptability of the fee is associated with supporting environmental policies (France, Germany, Italy), finding it desirable to possess only few things (Denmark, France, Italy), feeling like having a say in what the government does (Denmark, France and Germany) and renting the current home instead of owning (France and Germany). In contrast, lower acceptability of the fee is related to supporting liberal policies (Denmark and Germany), having a larger living space (Denmark and France), higher household income per person (France, Germany, Italy) and having an academic degree compared to no/only school as highest education (Germany and Italy). Just like for the ban, only in Germany belonging to an experimental group is statistically significantly associated with policy acceptability (belonging to the overcome condition is related to higher policy acceptability). Further, some counter-intuitive associations have been identified. For instance, lower policy acceptability is associated with some dimensions of sufficiency orientation in single countries. Considering new things a waste in France and finding the affluence of products in supermarkets unnecessary is correlated to lower policy acceptability. These findings are neither similar between the countries nor are they stable across the different dimensions of sufficiency orientation (i.e. in France wanting to use as little resources as possible is associated with higher policy acceptability). Similar as for the ban, associations between policy acceptability and sufficiency orientation are inconclusive.

3.4 Summary and discussion

This survey examines the acceptability of two exemplary sufficiency policies in the housing sector, namely (1) the ban on the construction of new single-family homes of standard size or larger, and (2) the annual financial fee for dwellings with above-average living space. We find that both measures are viewed critically by a majority of respondents, with larger proportions opposing the measures than supporting them. In Latvia, the measures were viewed even more negatively, while in Italy fewer respondents were against the measures. Overall, the patterns for fairness, perceived affectedness and effectiveness of the measures were similar and more negative than positive, with effectiveness being the least negative.

In addition, for both policy proposals respondents indicated a preference that the measures be combined with financial incentives to renovate existing homes, and that citizens be involved in defining the policy design in more detail.

In terms of framing, respondents were presented with information that the aim of the policy was "to overcome unsustainable housing choices", "to punish unsustainable housing choices" or no aim was given. We found that, in all countries except Latvia, the framing had an effect on the evaluation of the policies for those respondents who could correctly recall the policy aim presented to them. Respondents who read that the aim of the policy was to overcome unsustainable housing choices rated the policy better than those who read that the aim was to punish unsustainable housing choices. Our results suggest that the wording used to communicate about policies can affect people's evaluation of policies if they consciously pay attention to the communication. More positive wording, such as "overcoming a problem", seems to be a good choice when aiming for a positive evaluation by citizens.

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Other variables found to be associated with policy acceptability in most countries and for both policy measures are: familiarity with the measures (having heard of the measures before the survey), trust in national politicians and problem awareness (perceiving the provision of sufficient sustainable housing as a problem). In addition, whether people prefer to live in a single-family house is relevant for the evaluation of the ban (lower acceptability if a single-family house is preferred), while in the case of the fee in two of the countries (Denmark and France), respondents with a larger living space were more critical. Thus, people with a higher affectedness were more likely to evaluate the proposed measure more negatively. Sufficiency orientation, i.e. the view that it is desirable to own few things, was also found to be relevant for a more positive evaluation of both measures in several countries. It is possible that these people consider a smaller amount of space to be necessary for a good quality of life. However, some dimensions of sufficiency orientation were also related to lower policy acceptability (e.g. considering new things a waste of resources in France for the ban or finding the affluence of products in supermarkets unnecessary in Germany for the fee). Hence, overall the findings for sufficiency orientation are inconclusive. People with higher incomes were more sceptical toward the hard policy measures in several countries. Furthermore, political attitudes beyond trust in national politicians played a role in some countries: respondents who felt they had a say in what the government did were more positive as were those who supported social policies (in the case of the ban) and environmental policies (in the case of the fee), while a higher orientation towards liberal policies is associated with lower levels of policy acceptability (in Germany for the ban and in Denmark and Germany of the fee). Conversely, in the case of the ban, people from Denmark and Germany who did not vote in the last election were also more positive about the ban, while those with a higher education were more sceptical about the fee in Germany and Italy.

It is important to note that the sample in Latvia is smaller than in the other countries. This may help to explain why the framing experiment does not lead to significant differences between the experimental groups' evaluations in Latvia, as this may be due to a lack of statistical power. At the same time, the variance explained in the regression models is also lower in Latvia. Again, this may be due to the smaller sample. However, Latvian respondents were also the most critical towards the proposed policies and it may be that the factors explaining Latvian evaluations are not as well captured by the survey as in other countries. More generally, it is important to note that we only provided little information on top of the policies. Thus, it was probably difficult for people to know for instance whether they would be affected by the tax or not.

Gender was included in our multivariate models to investigate whether it is related to policy acceptability. Based on the regression models, we find that only for Italy, and only for the fee, policy acceptability increases for women compared to men.

Citizen science workshop

Some elements of the survey were incorporated into the FULFILL Citizen Science Workshop held in Paris on 23-24 November. The results of these activities will be reported in more detail in D7.1 later in the project.

Contributing to the workshop allowed us to gain insight into the rationale behind policy and programme evaluation. The group of participants was heterogeneous in terms of age, gender and country of origin, but it was not representative of the population. For example, participants tended to be highly educated and showed an above-average interest in the issues discussed.

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With regard to the ban, participants' opinions in the citizen science workshop were mixed, ranging from support to strong opposition. Some of the arguments discussed were that bans in general are coercive measures which could lead to opposition from citizens. Therefore, different wording would be useful, as well as other strategies aimed at making it more difficult to build a new single-family house, rather than banning it altogether. The fee was seen as more positive than the ban by many participants. For example, it was argued that this measure is seen as fair because it relates to the individual impact of the person (referring to the "polluter pays" principle). This is in contrast to our findings in the survey, where there were no clear differences in the evaluation of fairness between the ban and the fee. Compared to the survey results, the workshop participants seemed to make a clearer distinction between the two measures. A possible reason for this is that the workshop participants were more engaged with the measures and discussed the policy measures in a social situation instead of completing an online survey by themselves.

As in the survey, for the soft measures that are part of the policy programme, the most popular measures were "(additional) financial incentives for renovating old houses or flats for people who are ready to buy an existing dwelling" and "participation of citizens in defining the policy design in more detail". These findings are fully in line with previous findings from the project (Flipo and Rabourdin 2023).

Overall, citizens referred to context in all discussions. They emphasised that the context matters to them (country, region, urban vs. rural) and that policies need to be contextualised and adapted to these contexts. Policies to reduce living space were seen as more important in places where space is limited (e.g. cities rather than rural areas).

Highlights

- **Policy acceptability:** Acceptability of the ban on the construction of new single-family homes and the fee on above-average living space is rather low (almost 50% of the respondents in each of the five countries oppose the policy measures). Policy acceptability is the highest in Italy and the lowest in Latvia.
- **Framing treatment:** Information on the policy measure was combined for some participants with the information that this aims to either “punish” or “overcome” unsustainable choices. For respondents who correctly recalled the framing, policy acceptability in case of the overcoming-framing.
- **Policy programme:** From a set of six softer policy measures that were offered to be combined with the ban and the fee in a policy programme, incentives for renovation and citizen participation in defining the policy design were favoured in all countries.
- **Policy Evaluation:** For both policy measures familiarity with the policy measures, trust in national politicians and high problem awareness are positively related to acceptability**.**
- **Gender Dynamics**: We find that only for Italy, and only for the fee, policy acceptability is higher for women than for men.

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4 Europe: Experiments on diet-related sufficiency policies

4.1 Aim of the studies

This chapter documents the findings of two surveys containing different experiments on the acceptability of diet-related sufficiency policies. The aim of the surveys was to analyse citizens' evaluations of a particular selection of sufficiency policy measures in the field of dietary consumption, i.e. meat tax, climate labelling and meat-free day in canteens, including questions on acceptability, perceived effectiveness, fairness and costliness of policy measures.

Diet was selected as a focal policy area due to the elevated CF linked with dietary practices (IPCC 2022) and in line with other tasks and work packages in FULFILL (D5.2 Breucker and Defard 2023). In particular, meat production is considered as a climate problem due to its significant contribution to greenhouse gas emissions, deforestation, and other environmental impacts as well as severe health risks (see for a current review González et al. 2020). Therefore, reducing meat consumption and transitioning to more sustainable and plant-based diets is seen as a key strategy to mitigate the environmental impact of food production and address climate change and societal well-being which is in line with the sufficiency approach (D2.3 Tröger et al. 2022). Plant-based diets tend to have a lower CF, are generally considered more environmentally sustainable and more healthy (Willett et al. 2019). A shift in dietary patterns towards plant-based diets may be part of broader societal efforts to promote a healthy sustainable living and reduce the overall ecological footprint.

On the one hand, one might argue that dietary behaviour is a domain where individuals possess autonomy, enabling the swift implementation of changes. On the other hand, dietary preferences are intricately intertwined with cultural and social practices, and choice architectures that influence personal habits and societal patterns of dietary consumption (Ensaff 2021). Thus, diet-related policies are currently discussed and investigated to spread and encourage more sustainable and sufficiency-oriented dietary choices (Zell-Ziegler et al. 2023). Accordingly, we experimentally investigated how individual and societal acceptability of these policies may be affected by framings on (i) health-related risks of meat consumption, and (ii) effectiveness and societal acceptance - both compared to climate risk framings alone.

Within the FULFILL projects, five European countries are in the main focus, namely Denmark, France, Germany, Italy and Latvia. Due to restricted resources to be able to implement both experimental approaches on sustainable diet, the countries had to be divided. The health framing was implemented in France, Italy and Latvia while the acceptance framing was conducted in Germany and Denmark.

4.1.1 Policy measures on dietary behaviour

The examination of the three policy instruments - a meat tax, climate labelling on food, and a meat-free day in all canteens - constitutes a meaningful subject for research. These policy instruments represent innovative approaches to address the complex challenges associated with health, environmental protection, and climate change. A meat tax has been proposed as an effective tool to internalise external costs associated with environmental degradation caused by the production of meat. Studies emphasise the potential of a meat tax to reduce meat consumption and mitigate environmental harm. Many studies identify a link between high meat consumption and health issues, such as cardiovascular diseases and certain cancers (for reviews see González et al. 2020;

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Farvid et al. 2021; Papier et al. 2023). A meat tax is seen as a measure to address these health concerns by discouraging the overconsumption of red and processed meats.

Recent research also shows the importance of consumer awareness in driving sustainable food choices. Climate labelling on food provides consumers with information about the environmental impact of their dietary choices, empowering them to make informed decisions. Many studies investigated the potential of labelling to nudge healthier consumer decision making (see for instance Hieke and Taylor 2012; Kiesel et al. 2011). Consumers tend to be open for labelling (De Souza et al.) but the experimental evidence that it actually may encourage environmentally friendly choices is scarce (Lehner et al. 2016; Grunert et al. 2014). Nevertheless, environmental considerations and knowledge play a significant role in informed decision making. Given the role of agriculture, particularly meat production, is a crucial instrument to emphasise individual contributions to reducing greenhouse gas emissions in climate change. Climate-related labelling provides a clear link between food choices and environmental impacts. Research suggests that framing information in a way which highlights the climate impact of food can potentially influence decision making (e.g. Graham and Abrahamse 2017). Thus, climate labelling on food can leverage cognitive biases to guide consumers toward more sustainable food options.

Research on behavioural interventions emphasises also the potential impact of environmental nudges in shaping behaviour (see for a review Hummel and Maedche 2019). Implementing a meat-free day in all canteens is grounded in the idea of influencing behaviour by nudging. Introducing a meat-free day can be considered a form of "nudge." A nudge is a gentle encouragement or steer aimed at promoting behavioural changes without resorting to coercion or prohibitions. A meat-free day acts as a positive incentive or indirect influence, encouraging people to shift their dietary habits towards more sustainable options. The concept behind a meat-free day as a nudge is to motivate individuals to think more consciously about their eating habits and possibly choose plant-based options more frequently. By emphasising these options on a specific day, people are given the opportunity to reconsider their dietary choices without having the option taken completely away from them. Studies already demonstrate the potential for such interventions to drive sustainable dietary choices (Milford and Kildal 2019; Gravert and Kurz 2021; Kurz 2018).

Taken together, the selection of a meat tax, climate labelling on food, and a meat-free day in all canteens is supported by a wealth of research indicating the potential effectiveness of these instruments in addressing environmental, health, and behavioural aspects of meat consumption. Furthermore, discussions surrounding these policies have already been part of broader conversations about sustainability, health, and environmental impact in the European context (D5.2 Breucker and Defard 2023) and also the sufficiency policy debate We argue that this selection of policies is more clearly linked to individual behavioural choices than other policies that are more focused on the production of meat, for instance. Nevertheless, the acceptance and implementation of these policies vary fundamentally and discussions on these topics are dynamic. There is a lot of evidence that people typically prefer less coercive or soft measures such as labels or information campaigns giving people an incentive to change their behaviour. In contrast, restrictive measures such as taxation or portion reductions gather lower support (e.g. Hagmann et al. 2018). However, information provisioning alone and also the use of labels have only limited effects on behavioural changes (see a review by Abrahamse 2020). Nevertheless, they have the potential to change perceived behavioural control, raise awareness and change social norms on the longer run (Aitken et al. 2020; Vermeir et al. 2020). Thus, for the empirical examination, a variety of types of policy measures was selected (see Table 15) with a preference for measures that have been part of the political discourse in Europe (Breucker and Defard 2023).

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Table 15: Selection of policy measures used for diet experiments

Policy measure	Type of measure	Wording in the questionnaires	Short description included in the questionnaires[18]
Meat tax	Financial, pull	Increase in VAT on meat and meat-containing products.	In this measure, VAT on meat and meat-containing products (for example sausages) is increased in such a way that these products will cost 10% more.
Climate labelling	Informational, push	Climate labelling on food	In this measure, food products will be labelled to indicate the amount of greenhouse gases generated during their cultivation, processing, packaging, transportation, and sale.
Meat-free day	Regulatory, pull	Meat-free day in all canteens	In this measure, all corporate and public canteens (such as those in companies, kindergartens, schools, universities) are obliged to offer exclusively meat-free meals, meaning no meals containing meat or fish on one day of the week.

4.1.2 The role of framing to increase acceptability of diet-related sufficiency policies

As dietary habits play a central role in our daily lives, these policy instruments have high societal relevance. However, such policies that relate to our daily lives and impact people's behaviour should be carefully designed and implemented. Therefore, investigating these in light of acceptability aspects is important. Understanding how individuals and communities perceive and accept (already existing or possible) policy measures is integral to fostering support and compliance. Acceptance research provides insights into various factors influencing the reception of policies, including cultural, social, economic, and psychological dimensions.

In the context of investigating a meat tax, climate labelling on food, or meat-free days, acceptance research can illuminate how these measures are perceived in diverse societal contexts. It provides valuable insights into the factors that influence individuals' willingness to embrace and adhere to these policies, guiding policymakers in tailoring communication strategies, addressing potential objections, and designing interventions that resonate with the values and preferences of the target audience which should be highly relevant when addressing meat consumption.

Effective communication is key to gaining public acceptance of policies (Dechezleprêtre et al. 2022). Thus, knowledge from systematic framing experiments can help policymakers to optimise their communication strategies by identifying frames that resonate positively with the target audience. This can involve emphasising certain benefits, addressing potential concerns, or aligning policy goals with societal values. Different groups as in our case people living in different European countries may respond differently to framing. Thus, framing experiments offer a systematic and empirical approach to understand the role of language, presentation, and to emphasis shaping public perceptions of policies in different contexts.

Based on these considerations, the present research investigates two different framings in the European target countries of the FULFILL project. In line with former research that highlight positive effects from health framings (Bertolotti et al. 2020; Rosenblatt et al. 2018; Gallagher and Updegraff

[18] Available upon request.

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2012), we decided to experimentally investigate such an approach as well. In detail, we tested how a combined health risk and climate risk framing affects acceptability of the selected policies compared to a pure climate risk framing. This design presumes that participants are aware of the climate risks associated with meat production, which may explain why empirical research typically finds climate framings alone to be rather ineffective in terms of changing individuals' dietary choices. Therefore, adding a health-related risk information may potentially enhance peoples' risk awareness and, thus, may change intentions to prevent these for their own and also public health. Indeed, in a WP3.2, interviews revealed that health concerns were highly instrumental in determining individual dietary choices (Flipo and Rabourdin 2023).

While the effects of diet risk framings on individuals' dietary choices have previously been analysed (Gallagher and Updegraff 2012), their effects on policy acceptability have - to the best of our knowledge - not been studied in an experimental setting. Thus, the second experiment is more explorative and connects to research on communication norms. We tested the impact of communicating information about the effectiveness of a certain policy measure versus also communicating information about acceptance (i.e. communicating the social norm of how people overall perceive and evaluate a certain policy) on individual acceptability of policy measures compared to communicating climate risk information only.

4.1.3 Investigating *self* versus *others* perspectives on diet-related sufficiency policies

Acceptance for policy measures is a complex construct and consists of more than one indicator (see for instance Dechezleprêtre et al. 2022). Based on current findings we also aimed to investigate this concept in a more complex and explorative way. Additionally to measuring people's overall and general acceptability of the depicted policy measures, which is very common in policy acceptance research, we were interested in a *self* versus *others* perspective. This may add further depth and nuance to the understanding of how individuals perceive and may respond to policies in the field of diet- and sufficiency-related behaviour.

Diet-related policies affect individuals' choices about food and lifestyle. Investigating the self-perspective allows to understand how individuals personally relate to and perceive the policies concerning their own dietary habits. On the other hand, exploring the others perspective provides insights into how individuals view the impact or acceptability of such policies on the wider community and the social contexts they live in. Examining the others-perspective allows to explore the role of empathy, altruism and perceived justice in policy acceptance (Clayton 2018). Individuals may consider the well-being of others, the community, or future generations when evaluating diet-related policies but in contrast may prevent themselves from severe impacts of the measures following a self-centred bias (Lü and Scheve 2016). However, understanding the balance between personal interests and concern for others can inform strategies for framing and communicating these policies more effectively.

Furthermore, people often consider social norms and the behaviours of others when forming their own opinions (Dechezleprêtre et al. 2022). Investigating the others-perspective helps uncover how perceptions of societal norms and the influence of others shape individual attitudes toward diet-related policies. According to former research, norms play a crucial role, in particular, in the field of meat consumption and dietary behaviour (Collier et al. 2021; Fornara et al. 2011; Nguyen and Platow 2021; IPCC 2022; Groot and Schuitema 2012). This insight is valuable for policymakers seeking to leverage social dynamics in promoting policy acceptance. Diet-related policies have

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implications for public health and community well-being. Understanding whether individuals are more willing to accept certain policies when they perceive benefits for others can provide insights into behavioural intentions as well. Policies that align with a collective well-being perspective may be more likely to garner support and compliance (Dechezleprêtre et al. 2022).

However, people need to know or be aware of the collective or the individual advantages of a possible policy measure when evaluating it. Therefore, by testing certain framings, one can explore how different messaging and framing strategies resonate with individuals when considering their own interests versus the interests of others. It is highly valuable for practitioners and policy-making to know which communication strategies may appeal to both personal and collective motivations. Investigating the *self* versus *others* perspective also allows to examine perceptions of fairness in policy implementation and whether individuals believe that the burden and benefits are distributed equitably across the population. Therefore, a more nuanced knowledge can inform the development of more targeted, inclusive, and effective policies that resonate with diverse perspectives within the population and across varying countries, which is a main target of this task within the FULFILL project.

In the following, we present the two framing studies that we conducted in five European countries. We decided to run two framing experiments because of two arguments: first, we wanted to use the resources we had very efficiently. To discover the effectiveness of a framing effect within a sample a country-wise split was justifiable. Statistical power was still high enough to detect the between-group effect of the framing manipulation in each country. Second, we wanted to investigate both a comparatively well-known framing approach (but not yet tested on policy acceptability), i.e. using a health risk frame (see for a review Gallagher and Updegraff 2012) and a less extensively researched approach with high practical relevance, i.e. the acceptance framing that build on norm influences. The selection of countries for every experiment was at random. We present the study design, methods and results for both studies separately, followed by a brief discussion of each experiment and discussion which also refers to limitations.

4.2 Study I: Health framing experiment (France, Italy, and Latvia)

The following section presents the methodology utilised to evaluate the impact of a health framing on the acceptability of the three diet-related sufficiency policies. This includes the design of the experiment and the framing, followed by an overview of the survey implementation and data preparation, and finally we present the results of the health framing experiment descriptively and the results of the multivariate regression analysis.

4.2.1 Methods

4.2.1.1 Design of the experiment

The experiment was integrated into an online survey that included additional inquiries (framework survey). Previous literature typically finds that individuals lower their (intended) consumption of meat once informed about its effects on health, while the findings on their response to information about the effects on the climate is less conclusive (Perino and Schwirplies 2022). Little is known, however, how information about the health effects of meat consumption affects individuals' preferences for policies aiming to reduce meat consumption.

The experimental segment was integrated into the overarching online survey (see Figure 21), with the

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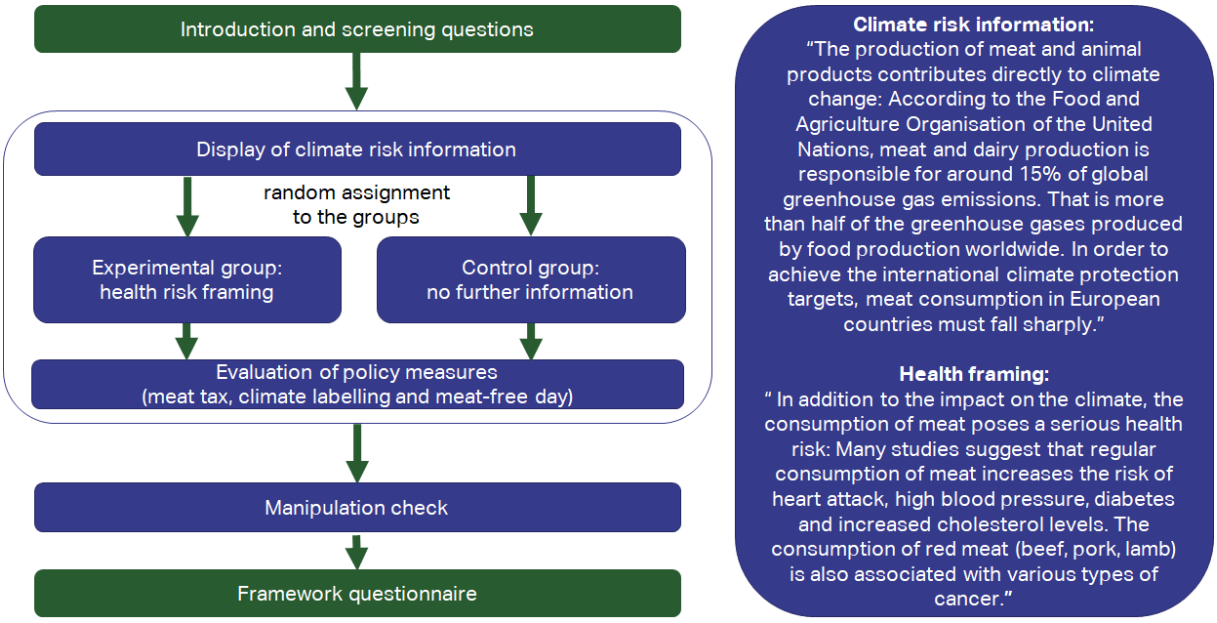
majority of questions (framework questionnaire) following the experiment. Prior to the experiment, participants were presented with information about the climate risks associated with the production of meat and meat products. Participants were then randomly assigned to either the experimental group (health framing treatment) or the control group. After the framing, the respondents were asked to answer different questions to evaluate each of the three policies (meat tax, climate labelling, and meat-free day in all canteens). This involved assessing the acceptability, effectiveness, fairness, and costliness of each policy for themselves and for society overall.

Figure 21: Structure of the health framing diet experiment



Where suitable the survey used questions that were already used in the earlier survey (D3.1 Alexander-Haw et al. 2023) or for the longitudinal study (chapter 2) or the experimental survey on housing (chapter 3).

4.2.1.2 Variables under examination

Evaluation of policy measures

Following the framing, respondents were then asked several questions regarding their evaluation of the policies. In each instance, respondents were asked to provide an answer for each policy i) for themselves and ii) for society overall, i.e. for the inhabitants of the participant's country as a whole. The policies were shown in the following order: meat tax, climate labelling, meat-free day in canteens.

First, respondents were asked how *acceptable* they considered each policy, with response categories ranging from 'not at all acceptable' to 'very acceptable' on a five-point Likert scale.

Next, respondents were asked how *effective* they perceived each policy to be in reducing meat consumption, with response categories ranging from 'very ineffective' to 'very effective' on a five-point Likert scale.

Then, respondents were asked how *fair* they considered each policy to be, with response categories ranging from 'very unfair' to 'very fair' on a five-point Likert scale.

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Finally, respondents were asked to evaluate how *costly* the policy measures would be and thus whether the policy measures would lead to lower or higher expenses, with response categories ranging from 'much lower' to 'much higher' on a five-point Likert scale.

Additional variables

Climate change denial (e.g. 'A man-made climate change does not exist') was measured with three items with response categories ranging from 'strongly disagree' to 'strongly agree' on a five-point Likert scale.

Perception of *social norms* were measured with four items (e.g. 'Most of my family, friends or colleagues appreciate it when I eat little or no meat'), ranging from 'strongly disagree' to 'strongly agree' on a five-point Likert scale.

Manipulation check

We included a manipulation check to test if the treatment worked as expected. Respondents were asked whether the consumption of meat had the following characteristics on a 5-point Likert scale from 'very harmless' to 'very harmful':

- Negative consequences for one's own health
- Negative consequences for the health of society
- Negative consequences for the climate

As we will show in section 4.2.2.1, participants from all country samples passed the manipulation checks.

4.2.1.3 Survey implementation

Regarding the data collection, approximately 750 respondents in France and Italy and around 500 respondents from Latvia were recruited using a professional market research institute as subcontractor (Norstat). The online survey was implemented using the software EFS and data collection took place between August and September 2023. Quota sampling was used to ensure representativeness regarding gender, age (>=18), income and the region in each country[19]. The quotas corresponded to the distribution of the quota characteristics of the target country.

The survey was very similar in design to the survey described in D3.1 and started with an introduction informing participants about survey procedures, anonymity, privacy and data protection, as well as their right to withdraw at any time. The survey started with screening questions that were used to control that quota requirements and eligibility to participate (being at least 18 years old and not living in a hostel or dormitory) were fulfilled.

The survey ended up with the following parts:

- Experimental design: framing experiment and questions on the evaluation of each policy, including its perceived acceptability, effectiveness, fairness, and costliness for oneself and for society overall.
- Questions related to diet: meat consumption, whether respondents eat in a canteen

[19] The quota sampling was employed across all respondents in each country. A posteriori chi square tests revealed that there was no significant correlation between being in the health treatment group and the gender, age, income and region of the respondent. The sapomples in each country are thus representative.

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- General questions: socio-economic items and standard items eliciting citizens' values and attitudes, socio-cultural characteristics (incl. gender), and socio-political opinions
- Attitudinal variables: environmental identity, political orientation, social norms, nutrition knowledge capability, climate change denial, trust in various institutions, along with questions on diffusion pathways
- Adoption of measures in response to the energy crisis and change in per unit energy costs
- Health and well-being
- Deprivation of diet and at the aggregate level

The full questionnaire is available upon request. It was developed in English and then translated into national languages by a professional translation agency. This translation was checked by the respective partners from the countries. The covariates used in the analysis are described in Annex 2, Table A6.

The survey contained three quality control questions. In the first question, respondents were asked to provide the result of a simple mathematical problem (the sum of 3 and 5). For the second and third attention checks, respondents were asked to check a particular answer option among all options available in a matrix question. Participants who failed to correctly answer all three control questions were excluded from the survey. This led to the exclusion of two respondents from France and one from Italy. A small number of participants answered the survey twice and were excluded from the survey. This concerned four datasets in France, 12 in Italy, and two in Latvia.

In addition, we used a so called 'cheap talk' design to limit hypothetical bias and social desirability bias (Bergeron et al. 2019). Respondents were asked to respond to an oath statement by stating whether they would read the questions attentively and respond honestly. Two respondents in France, one in Italy, and two in Latvia stated that they would not read the texts attentively and would not respond honestly to the questions and were therefore removed from the dataset.

We also excluded 'speeders' i.e. respondents who spent less than a third of the median time to read the texts in each country. In the pre-tests the average participant took between 26 minutes in Italy, 29 minutes in France and 36 minutes in Latvia to complete the survey, with a standard deviation of 20 minutes in Italy, 22 minutes in France, and 27 minutes in Latvia. We screened out all participants who took less than 6 minutes in France, 5 minutes in Italy, and 7 minutes in Latvia.

4.2.1.4 Data preparation

Before starting the analysis, the data was prepared. The aim of the data preparation was to exclude cases from the analysis that were likely to contain non-reliable data. In addition, because we use gender in our multivariate analyses, five non-binary respondents could not be included in the final sample. Further, we excluded observations with missing responses on the covariates from the multivariate analyses. We ended up with a final sample size of 2251, with 798 respondents from France, 824 from Italy, and 577 from Latvia. A sample description and comparison to national statistics can be found in Annex 1, Table A3.

4.2.2 Results

In the following section the results for France, Italy, and Latvia will be presented. First, we present descriptive findings from the experiment. Then, results from the multivariate analysis aiming to understand predictors for policy acceptability will be presented.

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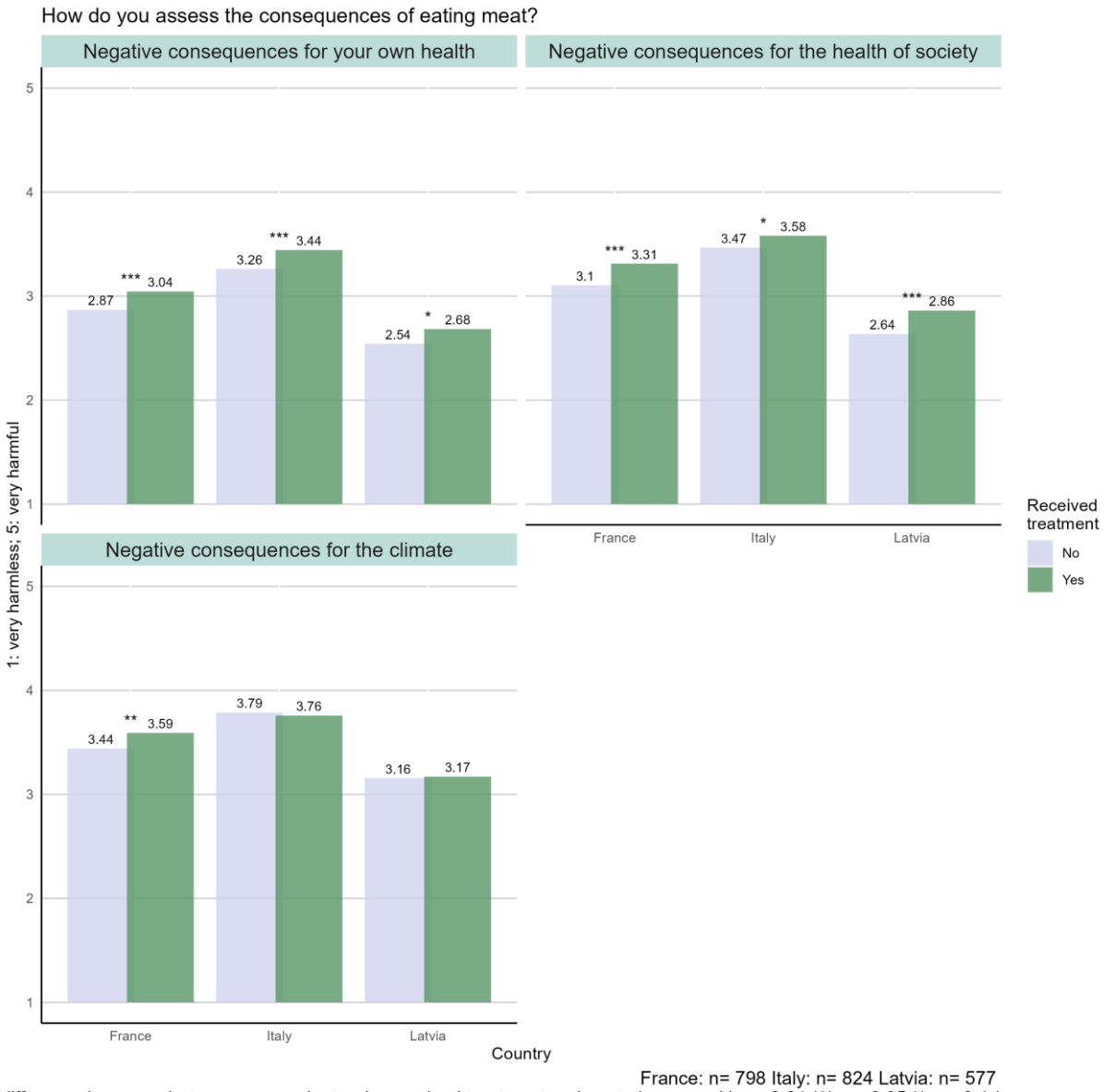
4.2.2.1 Experimental effects

First, we checked whether the health framing treatment was effective. That is, we tested whether on average participants in the group who received the health treatment assessed the consequences of eating meat more negatively than participants in the control group. As a "placebo" test, we also tested whether participants in the health framing treatment group assessed the consequences of eating more meat on the climate differently from the control group. Because both groups received identical information on the consequences of eating meat for the climate, we did not expect a difference between groups.

Figure 22: Manipulation checks



France: n= 798 Italy: n= 824 Latvia: n= 577
difference in means between respondents who received treatment and control group, with p< 0.01:***; p< 0.05:**; p< 0.1:*

Figure 22 depicts the mean evaluation of the repercussions associated with meat consumption among respondents who received the health framing treatment compared to those who did not receive it. Across the samples from all three countries, participants in the treatment group assessed

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the health effects of eating meat more negatively than participants in the control group. These differences are also statistically significant when conducting t-tests. Thus, the samples from all three countries passed the manipulation checks. In addition, and as expected, we failed to find a difference in participants' evaluation of the consequences of eating meat for the climate in the samples from Italy and Latvia. For the sample from France, however, the treatment group assessed the climate effects of eating meat more negatively than participants in the control group.

Figure 23: Comparison of the means of the acceptability of the diet policies between respondents who receive the framing treatment and those from the control group for oneself and for society

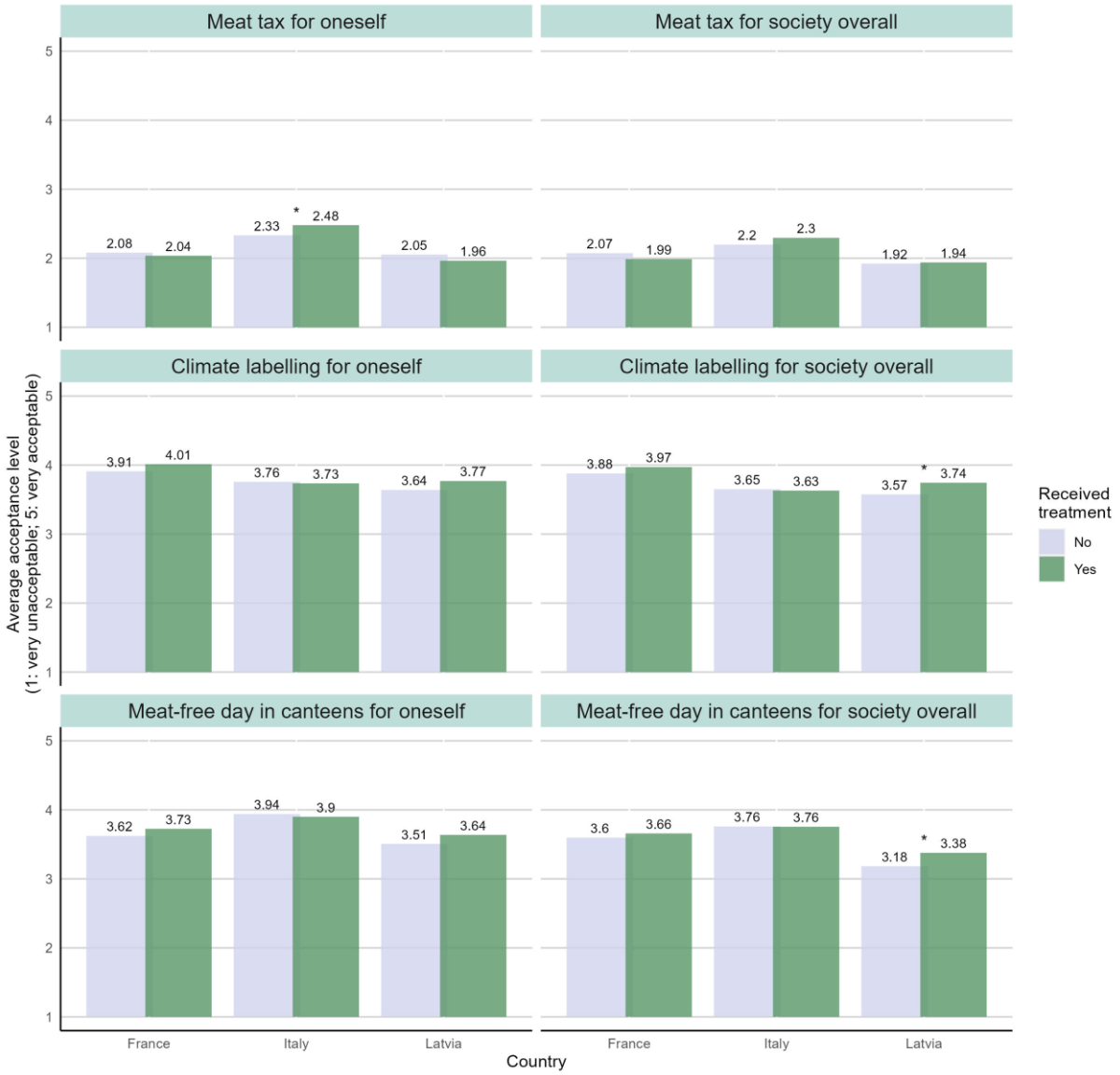

Figure 23 displays the mean acceptability of each policy for oneself and for society overall. Generally, climate labelling and a meat-free day are on average supported and evaluated positively while respondents are more reluctant towards a higher tax on meat. The t-tests of difference in means indicate few differences between the treatment and control groups. In Italy, respondents in

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the treatment group find a meat tax more acceptable for themselves than respondents in the control group. Respondents from Latvia in the treatment group find climate labelling and a meat-free day in canteens more acceptable for society overall than respondents in the control group.

4.2.2.2 Multivariate analysis

4.2.2.2.1 Analytical method

Our primary focus was on investigating whether the framing treatment influenced the acceptability of the three policies. For this analysis, we are interested in whether a respondent is more likely to consider the policy to be acceptable or not. To this end we created - for each policy and country - a binary dependent variable Y, *policy acceptability*, which takes on the value 1 (Y=1) if a participant's response was "very acceptable" or "acceptable", and zero otherwise (Y=0).

For a particular policy and country, we assume that policy acceptability may be represented by a standard logit model.

For each country and each policy, we estimated two models, one on the acceptability for oneself and another on the acceptability for society overall[20]. The regression coefficients of all 18 models are displayed in the results tables in Annex 3.2. Lists of covariates included in the models are in Annex 2, Table A6.

4.2.2.2.2 Results

Figure 24, Figure 25 and Figure 26 display all statistically significant results (at $p<0.1$) of the logit models for the acceptability of the three diet-related sufficiency policies for oneself and for society overall. The figures distinguish between results that are statistically significant in one country (purple), two countries (turquoise), and three countries (green).

Results for acceptability of the meat tax for oneself and for society

Figure 24 summarises all significant results (at $p<0.1$) of the logit models for the acceptability of the meat tax for oneself and for society in all three countries.

[20] We removed respondents who stated that they did not read the climate risk or health framing texts attentively and speeders, i.e., respondents who spent less than a third of the median time to read the texts in each country. Overall, our findings are robust to eliminating these observations from the analyses.

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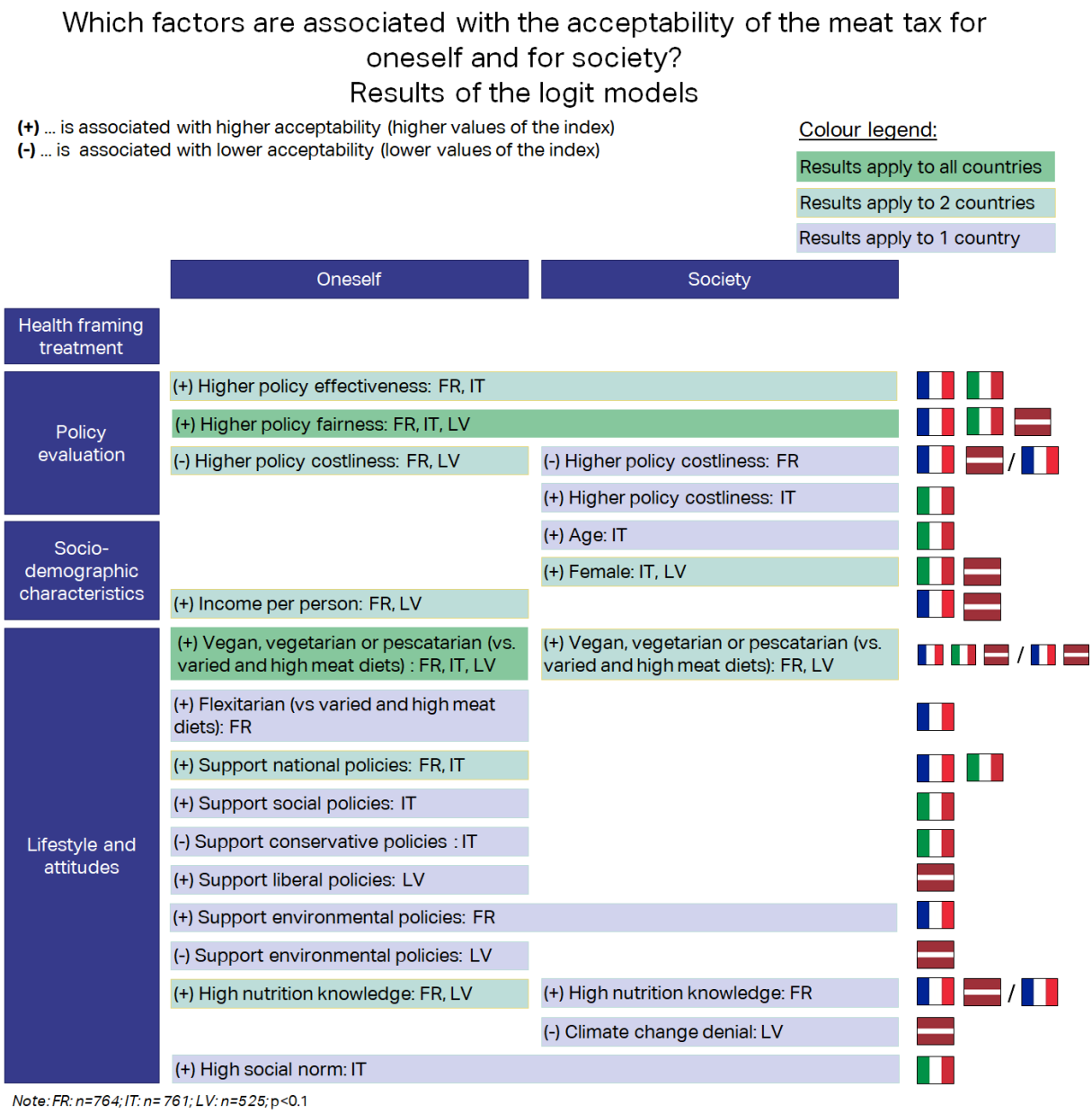
Figure 24: Summary of the results pertaining to the acceptability of the meat tax



In relation to the experiment, we find no evidence that the *health framing treatment* is correlated with the acceptability of the meat tax in any country, neither for oneself, nor for society. These findings are very similar to the results obtained from the t-tests. The only difference pertains to Italy (oneself), where the *health framing treatment* is significant in the t-test but not significant in the logit model. This lack of significance may be due to a lack of statistical power in the logit model.

Regarding the policy evaluation covariates, we find that respondents who consider a meat tax to be *effective* are more likely to consider the meat tax policy to be acceptable in France and Italy, both for oneself and for society, ceteris paribus (all else equal). Perceiving the policy as being *fair* for oneself and for society is positively correlated with the policy acceptability of the meat tax in all three countries. Respondents who expect the meat tax to *increase their costs* are less likely to find this policy acceptable in France and Latvia for oneself and in France for society. Surprisingly,

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respondents who think that the meat tax would increase their *costs* are more likely to find this policy acceptable for society in Italy.

Concerning socio-demographic characteristics, with regards to *age*, we find that older respondents are more likely to find the meat tax acceptable for society in Italy, as are *female* compared to *male* respondents in France and Latvia. Respondents with a higher *per person income* are more likely to find the policies acceptable for themselves in France and Latvia.

As far as respondent's lifestyle and attitudes are concerned, respondents who stated that their main diet type is *vegan, vegetarian or pescetarian* are more likely to find the meat tax acceptable for themselves in all three countries and in France and Latvia for society compared to respondents with a varied or high meat diet, as do *flexitarians* in France for themselves. Respondents who *support national policies* are more likely to find the meat tax acceptable for themselves in France and Italy compared to those who do not. In Italy, respondents who *support social policies* have a higher likelihood of finding the meat tax acceptable for themselves, whereas respondents who *support conservative policies* are less likely to accept the meat tax for themselves. In Latvia, respondents *who support liberal policies* are more likely to find the meat tax acceptable for themselves. With regards to *environmental policies*, respondents who support such policies in France are more likely to find the meat tax acceptable for themselves and for society, whereas, surprisingly, such respondents in Italy are less likely to find the policies acceptable. We find that respondents with above median *nutrition knowledge* are more likely to accept the meat tax for themselves in France and Latvia, and for society in France. In Latvia, respondents with above median *climate change denial* are less likely to accept the meat tax. Respondents with above median *social norm* have a higher propensity to consider the meat tax acceptable for themselves and for society in Italy.

Results for acceptability of climate labelling for oneself and for society

Figure 25 summarises all significant results (at $p<0.1$) of the logit models for the acceptability of the climate labelling for oneself and for society in all three countries.

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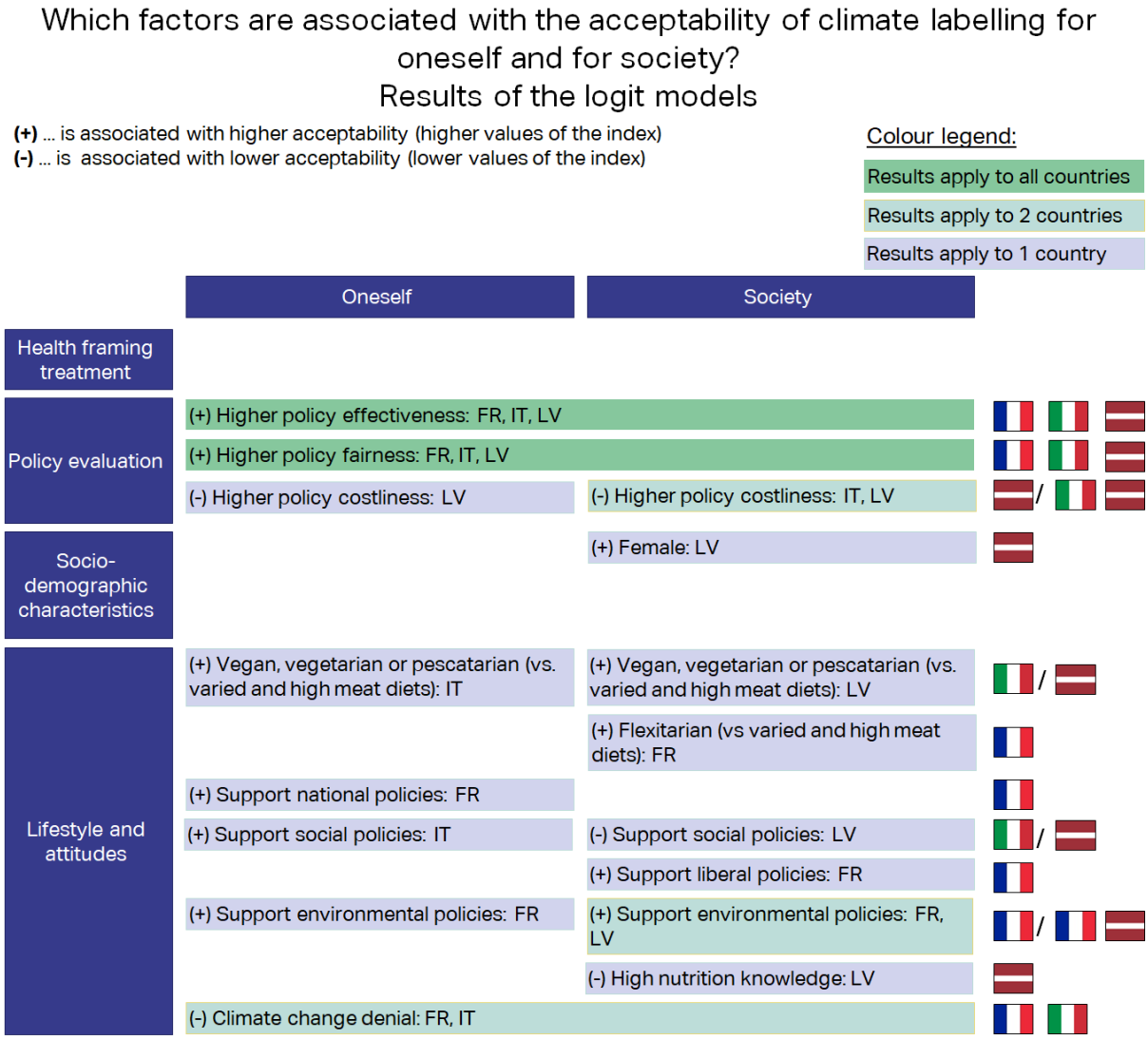
Figure 25: Summary of the results pertaining to the acceptability of climate labelling



Note: FR: n=764; IT: n= 761; LV: n=525; p<0.1

With regards to the experiment, we find no evidence that the *health framing treatment* is correlated with the acceptability of climate labelling in any country, neither for oneself, nor for society. These findings are consistent with the results obtained from the t-tests.

As far as the policy evaluation covariates are concerned, in all three countries, respondents who consider climate labelling to be *effective* are more likely to find the policy to be acceptable for themselves and for society. This is also the case for respondents who consider climate labelling to be *fair*. Respondents who expect that climate labelling would *increase their costs* are less likely to deem climate labelling acceptable for themselves in Latvia and for society in Italy and Latvia.

With regards to socio-demographic covariates, our results indicate that *female* respondents are more likely to find the meat tax acceptable for society in Latvia compared to their male counterparts. Our results indicate that respondents who stated that their main diet type *is vegan, vegetarian or pescetarian* are more likely to consider climate labelling to be acceptable for themselves in Italy and for society in Latvia. *Flexitarians* in France are also more likely to consider

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climate labelling to be acceptable for society compared to respondents with a varied or high meat diet.

In the context of the respondent's lifestyle and attitudes, our findings indicate that respondents who *support national policies* have a higher likelihood of finding climate labelling acceptable for themselves in France. Respondents who *support social policies* have a higher likelihood of finding climate labelling acceptable for themselves in Italy, such respondents have a lower probability of considering climate labelling to be acceptable for society in Latvia. Respondents who *support liberal policies* have a greater probability of considering the climate policy to be acceptable for society in France. With regards to *environmental policies*, respondents who *support environmental policy* are more likely to find the policies acceptable for themselves in France and for society in France and Latvia. We find that respondents with above median *nutrition knowledge* have a higher likelihood of considering climate labelling to be acceptable for society in Latvia. In France and in Italy, respondents with above median *climate change denial* are less likely to accept the meat tax.

Results for acceptability of a meat-free day in canteens for oneself and for society

Figure 26 summarises all significant results (at $p<0.1$) of the logit models for the acceptability of the meat-free day in all canteens for oneself and for society in all three countries.

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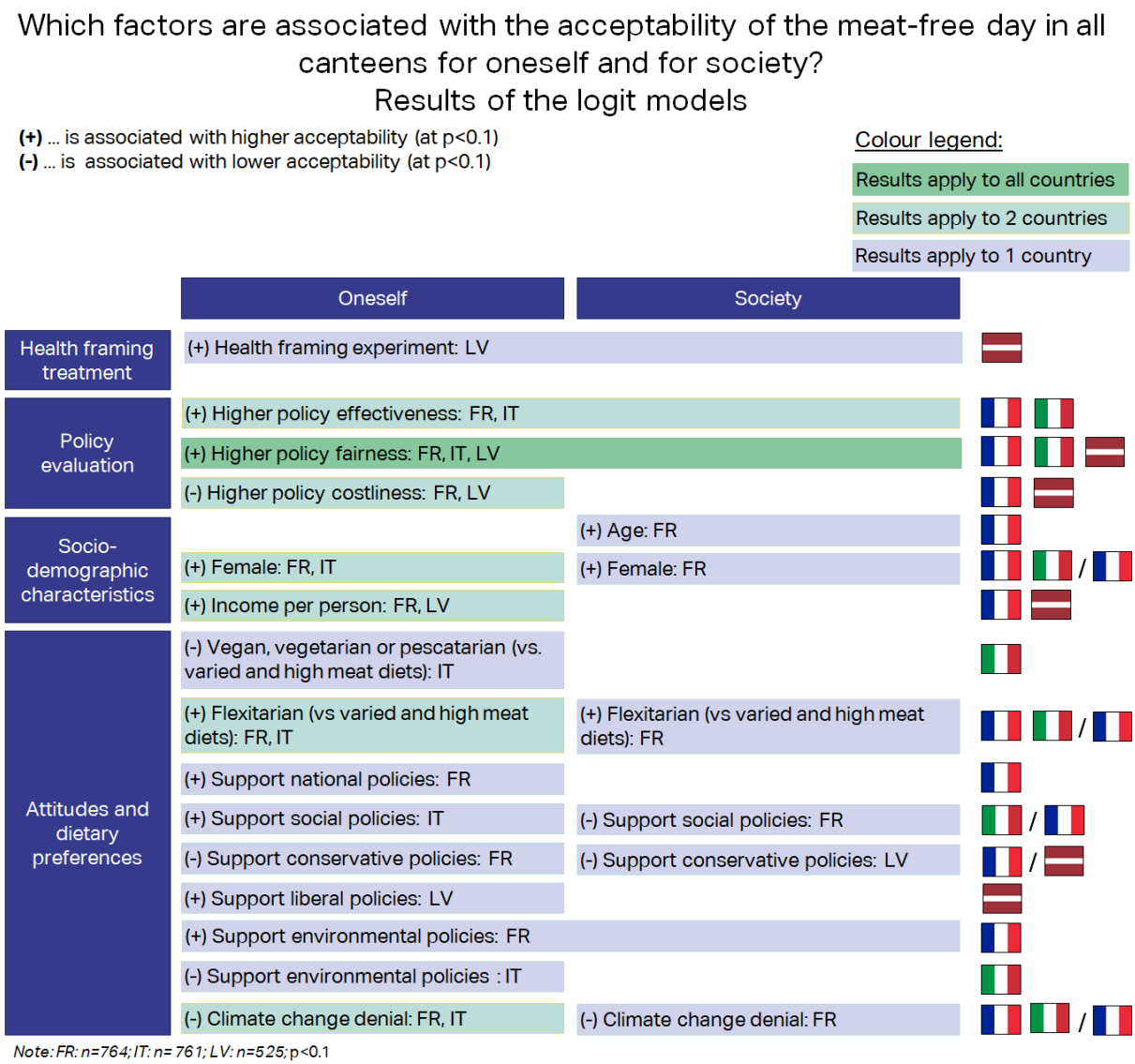
Figure 26: Summary of the results pertaining to the acceptability of the meat-free day in all canteens



In relation to the experiment, we find that respondents in Latvia who received the *health framing treatment* have a higher propensity to consider a meat-free day in all canteens to be acceptable for themselves and for society compared to those who did not receive the treatment. These findings are consistent with the results obtained from the t-tests.

Regarding the policy evaluation covariates, respondents in France and Italy, who perceive a meat-free day in all canteens as *effective* are more likely to find the meat-free day policy to be acceptable for themselves and for society. Perceiving climate labelling as being *fair* is positively correlated with policy acceptability within all three countries. Respondents who expect that a meat-free day in canteens would *increase their costs* have a lower likelihood of considering meat-free days to be acceptable for themselves in France and Latvia.

In relation to socio-demographic attributes, with regards to *age*, older respondents have a higher propensity to consider a meat-free day in all canteens to be acceptable in France. *Female* respondents are more likely to find a meat-free day in all canteens acceptable for themselves in

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France and Italy, and for society in France. In France and Latvia, respondents with a higher *per person income* are more likely to find the policies acceptable for themselves.

With respect to respondent's lifestyle and attitudes, respondents who stated that their main diet type is *vegan, vegetarian or pescetarian* are, surprisingly, less likely to find the policy acceptable for themselves in Italy than respondents with a varied or high meat diet. *Flexitarians* in France and Italy have a higher likelihood of considering a meat-free day acceptable for themselves and in France for society. Respondents who *support national policies* have a higher likelihood of considering the meat-free day acceptable for themselves in France. In Italy respondents who *support social policies* have a higher likelihood of considering the meat-free day acceptable for themselves, whereas such respondents in France have a lower probability of considering the meat-free day acceptable for society. Respondents who *support conservative policies* are less likely to accept the meat-free day for themselves in France and for society in Latvia. In Latvia, respondents who *support liberal policies* are more likely to find the meat-free day in all canteens acceptable for themselves. With regards to *environmental policies*, respondents who support such policies in France are more likely to find the meat tax acceptable for themselves and for society, whereas, surprisingly, such respondents in Italy are less likely to find the meat-free day acceptable for themselves. In France and in Italy, respondents with above median *climate change denial* are less likely to accept the meat-free day in all canteens for themselves, and for society in France.

4.2.3 Summary and discussion of the health framing experiment

In this section, we investigated the impact of a health framing treatment on the acceptability of three diet-related sufficiency policies - a meat tax, climate labelling and a meat-free day in canteens - in France, Italy and Latvia. The aim of the survey experiment was to evaluate the impact of the health framing treatment on each policy and country and determine which policy and respondent characteristics are associated with deeming the policy as being acceptable for oneself and for society overall.

With regards to the experimental design of our study, the t-test of difference in means found limited differences between the treatment and control groups (i.e., respondents who received the health framing treatment or not). In Italy, respondents in the treatment group considered a meat tax to be more acceptable for themselves than respondents in the control group. Respondents from Latvia in the treatment group perceived climate labelling and a meat-free day in canteens as more acceptable for society overall than respondents in the control group. The multivariate analysis found that the health framing resulted in significantly higher acceptability of a meat-free day in all canteens in Latvia, both for themselves and for society overall. We did not find significant evidence of a treatment effect for the other policies or countries in the logit models presented. One plausible explanation for this result is the comparatively lower prevalence of knowledge about the health and climate consequences of meat consumption in Latvia compared to Italy and France. Indeed, as depicted in Figure 22, respondents from Latvia consider on average meat consumption to have a less harmful effect on health and the climate compared to respondents in Italy and France. In contrast to more culturally and socially established conversations about meat-related policies in France and Italy, Latvian participants may have been exposed to this information for the first time during the experiment. This lack of prior exposure could potentially amplify the persuasive effects of the health framing treatment, influencing participants to reassess their attitudes and express greater acceptability toward a meat-free day in canteens.

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In addition to the health experiment, we also took into account the respondent's evaluation of the policies. Respondents who consider the policies under investigation to be effective have a higher propensity to express acceptability of the corresponding policy in Italy and France. While in Latvia, it is significant only for climate labelling. Across all policies and countries, respondents who consider the policies under investigation to be fair have a higher propensity to express acceptability of the corresponding policy.

As expected, across all policies and countries, we either find a negative significant correlation or no significant correlation between acceptability of the policy and its expected impact on costs, except in Italy where respondents who expect the meat tax to increase societal costs are more likely to consider a meat tax acceptable for society. Potential explanations for this anomaly could involve perceptions of societal benefits outweighing the costs, or a heightened sense of collective responsibility. Additional research would be necessary to explain the correlation.

The role of dietary choices emerges as a significant factor, with individuals adhering to vegan, vegetarian, or pescetarian diets showing a higher likelihood of considering meat tax to be acceptable. However, such respondents are less likely to find a meat-free day in all canteens acceptable for themselves in Italy.

Another surprising finding is that respondents who support *environmental policies* in Latvia are less likely to consider a meat tax as acceptable for themselves, and such respondents in Italy are less likely to find a meat-free day in all canteens to be acceptable for themselves.

In terms of gender differences, we find that in Italy and Latvia, female respondents exhibit a higher probability of finding a meat tax acceptable for society compared to their male counterparts. Similarly, in Latvia, female respondents are more likely to find climate labelling acceptable for society. Moreover, across both France and Italy, females demonstrate a greater inclination to find a meat-free day acceptable for themselves, and in France, they are also more likely to find it acceptable for society.

Highlights

- **Policy acceptability**: Both for oneself and for society, climate labelling is the most acceptable policy in France and Latvia, while a meat-free day in canteens is the most acceptable policy in Italy. A meat tax is the least acceptable policy in all three countries.
- **Health framing treatment**: Health framing significantly increases the acceptability of a meat-free day only in Latvia.
- **Policy Evaluation**: In all three countries, respondents who consider the policy to be effective and fair are more likely to express acceptability.
- **Gender Dynamics**: Women in Italy and Latvia indicate higher acceptability of meat tax and climate labelling for society.

4.3 Study II: Acceptance framing experiment (Germany and Denmark)

Different people are motivated by different factors when it comes to policy acceptance. Some may be swayed by evidence of a policy's effectiveness, while others may find general public acceptance more persuasive. Testing both scenarios allows researchers to identify the relative importance of these factors in shaping attitudes. In the area of sufficiency policy acceptability, it is important to

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test the differential influence of information about a policy's effectiveness alone versus information that includes both effectiveness and general acceptance.

Individuals may view the general acceptability of a policy as an indicator of public opinion and support. Testing how this information influences attitudes can help to address concerns about how the public perceives the policy, potentially mitigating reservations or scepticism among individuals who prioritise consensus, which is particularly important when discussing sufficiency policies.

- For tailoring policies and their communication: the relative importance of effectiveness and public acceptability may vary depending on the nature of the policy. Testing these factors in different policy contexts allows policymakers to tailor their communication strategies to the specific characteristics of each policy area.
- The role of social norms: information on general acceptance helps to shape social norms and perceptions of desirability. Testing its influence alongside information on effectiveness helps policymakers understand how to promote positive social norms and position policies as socially desirable, which can be crucial in gaining public support.
- Testing for complementary messages: different segments of the population may respond better to certain types of information. Testing these scenarios helps to identify complementary messaging strategies that can be used in combination to maximise persuasive impact. Policymakers can then design messages that appeal to a wide range of perspectives.

Based on these considerations, we conducted the second framing experiment, which is presented below. We begin with an introduction to the design, including an explanation of the variables studied, particularly those that differ from Study I in the diet context, followed by information on how the survey was conducted and how the data was prepared. We then present the main findings and briefly discuss them.

4.3.1 Methods

4.3.1.1 Design of the experiment

The study employed a three-group between-subject experimental design, wherein participants were randomly assigned to one of three distinct conditions. This design facilitated the examination of unique interventions or treatments across independent groups, allowing for the assessment of between-group differences in the observed outcomes. It was conducted online and the experimental part was integrated into the overarching online survey (see Figure 27 for an overview).

At the beginning of the online survey, people received screening questions from the market research institute followed by questions on meat related eating habits and general meat enjoyment. Then, participants read information about the climate risks associated with meat production and consumption. This was the same information given to people in Study 1 and constituted the control group in Study 2. Then, people were randomly assigned to either the experimental group I (EG I, efficacy framing) or the experimental group II (EG II, efficacy framing + acceptance framing) or the control group.

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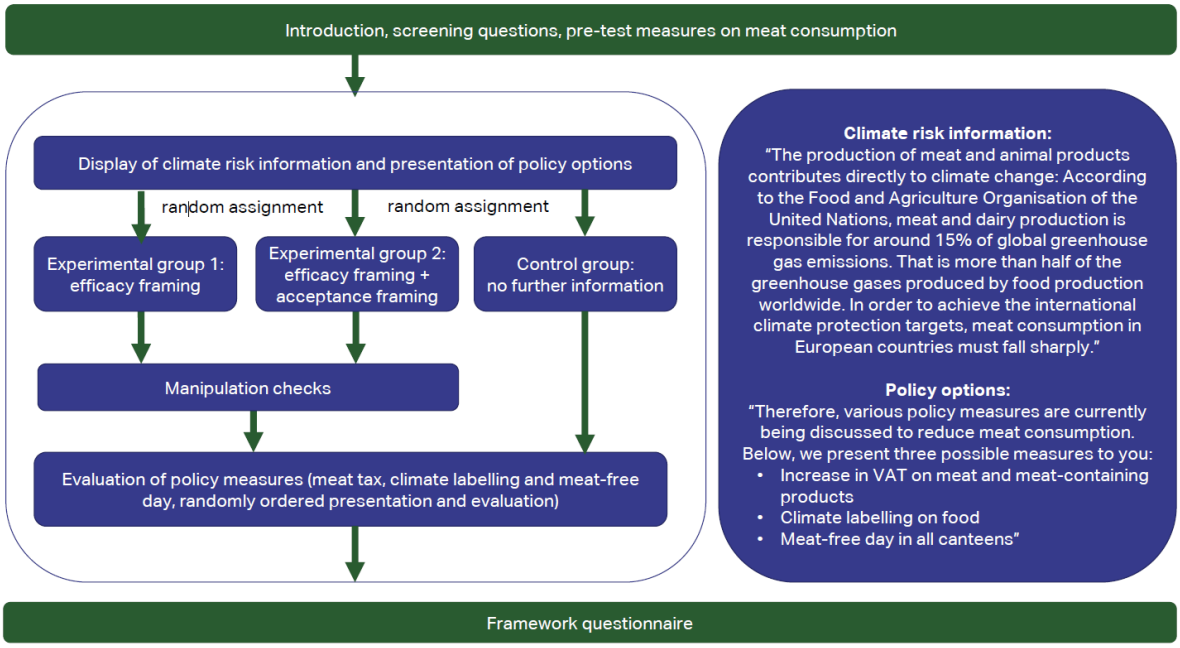
Figure 27: Structure of the acceptance framing diet experiment



As in Study 1, we included all three policy measures (i.e. meat tax, climate labelling, meat-free day in canteens) and afforded the participants to evaluate these. However, in contrast to Study 1, we presented the framings and subsequently afforded the people to evaluate these in (randomised) sequences. Therewith we could control for order effects. Furthermore, when people were assigned to the EG I, they received information on the effectiveness for all three policies and evaluated them accordingly while people in EG II received additional acceptance information for each policy (besides the effectiveness information). We also included manipulation checks after each framing element. As we manipulated knowledge on effectiveness and acceptance of the policies we included knowledge questions accordingly (see Table 16). People who did not select the correct answer in the manipulation check were excluded from the analysis.

As in Study 1, respondents rated the acceptability of all three policies. The question wording was exactly the same and captured evaluations for oneself and for society in the same manner as described in the previous chapter.

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Table 16: Policy measures, framings and manipulation checks for experimental groups

Policy measure	Effectiveness†	Presented effectiveness information and manipulation check (Experimental Group 1)	Acceptance†	Presented acceptance information and manipulation check (Experimental Group 2)
Increase in VAT on meat and meat-containing products	High	***What is the effect of this measure?*** Studies have shown that with an increase in prices, meat consumption decreases. We know that this measure actually leads to a reduction in meat consumption. The effectiveness of this measure is expected to be high.	Medium to low	***What do people think about this measure?*** Studies have shown: Most people do not approve of a mere tax increase. However, if the tax increase is justified or is perceived as fair, people tend to view a tax increase more favourably.
		[Manipulation Check] According to the text, the effectiveness of the measure is expected to be: 1 High* 2 Moderate 3 Low 4 I don't know.		***[Manipulation Check] According to the text, people find this measure to be:*** 1 Very poor 2 Better if the tax increase has a valid reason.* 3 Very good 4 I don't know.
Climate labelling on food	Low	***What is the effect of this measure?*** Studies have shown different results. We do not know if this measure actually leads to a significant reduction in meat consumption. The effectiveness of the measure is expected to be low.	High	***What do people think about this measure?*** Studies have shown: Most people find additional information about products and their impact on the climate to be good. They can then decide for themselves whether they want to choose products with fewer environmental impacts.
		[Manipulation Check] According to the text, the effectiveness of the measure is expected to be: 1 High 2 Moderate 3 Low* 4 I don't know.		***[Manipulation Check] According to the text, people find this measure to be:*** 1 Good* 2 Neither good nor bad 3 Bad 4 I don’t know.

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Policy measure	Effectiveness†	Presented effectiveness information and manipulation check (Experimental Group 1)	Acceptance†	Presented acceptance information and manipulation check (Experimental Group 2)
Meat-free day in all canteens	Medium	***What is the effect of this measure?*** Studies have shown that on a meatless day, meat consumption decreases. However, some people either avoid eating in the canteen on that day or consume more meat in the following days. Therefore, the actual reduction in meat consumption cannot be accurately estimated. The effectiveness of the measure is expected to be moderate.	Low to medium	***What do people think about this measure?*** Studies have shown: Some people do not approve of limiting the food choices in canteens. On the other hand, others support such a measure as they find the restriction appropriate. Some people are indifferent to the matter.
		[Manipulation Check] According to the text, people find this measure to be: 1 High 2 Moderate* 3 Low 4 I don't know		***[Manipulation Check] According to the text, people find this measure to be:*** 1 Always bad 2 Always good 3 Mixed* 4 I don't know.

Note. † Presented effectiveness and acceptance information were summarised based on a literature review and integrated accordingly in the framing messages by the authors. *Correct answers; needed to be chosen for passing the respective manipulation check and thus, for inclusion in the analysis.

4.3.1.2 Variables under examination

Main measures and variables were the same as in the health framing study, i.e. effectiveness and acceptability - each for oneself and for the society.

We also asked for the preference of a certain policy for oneself (i.e. "Which measure would you prefer for yourself if you had to choose one?") and for the society (i.e. "Which measure would you favour for society if you had to choose one?") after having read every information according to the condition people were assigned to.

Furthermore, we measured *meat consumption habits* with two items (e.g. "How often did you consume read meat / other types of meat?") with response categories ranging from '(1) never' to '(8) several times a day' on a Likert-scale and calculated a mean score.

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4.3.1.3 Survey implementation

We collected approximately 790 respondents in Germany and 830 in Denmark by using a professional market research institute as subcontractor (Norstat). The online survey was implemented using the software EFS. Data collection took place between end of August and September 2023. Quota sampling was used to ensure representativeness regarding gender, age (>=18), income and the region in each country[21]. The quotas corresponded to the distribution of the quota characteristics of the target country.

Except the experimental part, the survey was identical in its overall design and sequence of question presentation to the other experiment on diet (see 4.2). The full questionnaire is available upon request. The questionnaire was developed in German, then, translated to English and subsequently Danish by a professional translation agency and checked by the respective partners from Denmark. As we also conducted multivariate analyses we included several covariates in models. The covariates are described in Annex 2, Table A7.

The survey also contained three quality control questions (see section 4.2). Participants who failed to correctly answer at least two control questions were excluded from data analysis. This led to the exclusion of one respondent from Germany and three from Denmark. A small number of participants answered the survey twice, and was excluded. This concerned 10 datasets in Germany, and two in Demark.

After checking the 'cheap talk' to avoid incorrect response or not careful reading of the given information, we excluded six respondents in Germany, and four in Denmark. We excluded 'speeders' i.e. participants who rushed through the survey based on an initial testing phase (i.e. soft launch check of 100 participants per country). In the pre-tests, the average participant took between 27 minutes (Germany) and 32 minutes (Denmark) to complete the survey, with a standard deviation of between 13 (Germany) and 17.5 minutes (Denmark). We screened out all participants who took less than 6 minutes in Germany, and 6.9 minutes in Denmark.

Hence, the final sample size was N = 776 for Germany and N = 810 for Denmark.

4.3.1.4 Data preparation

Before starting the analysis, the data was prepared. The aim of the data preparation was to exclude cases from the analysis that were likely to contain non-reliable data. In addition, because we use gender in our multivariate analyses, non-binary respondents were excluded. Further, we excluded observations with missing responses on the covariates from the multivariate analyses. A sample description and comparison to national statistics can be found in Annex 1, Table A4.

To analyse the experimental effects we excluded participants if they did not pass the manipulation checks successfully (see also Table 16). Final sample sizes per country and after successfully passing the manipulations checks are displayed in Table 17.

[21] The quota sampling was employed across all respondents in each country. Posteriori chi square tests revealed that there were no significant correlations between being in one of the treatment groups and the gender, age, income of the respondent. Representativeness can also be assumed for the individual experimental groups.

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Table 17: Overview of sample size per country and group before and after manipulation check

	Manipulation check	EG 1			EG 2			CG	Total
DE	Before exclusion	255			262			259	776
	After exclusion	Meat tax	Climate Labelling	Meat-free day	Meat tax	Climate Labelling	Meat-free day		All checks successful
		229	223	237	178	164	201		589
DK	Before exclusion	275			261			274	810
	After exclusion	Meat tax	Climate Labelling	Meat-free day	Meat tax	Climate Labelling	Meat-free day		All checks successful
		250	253	250	140	173	200		607

4.3.2 Results

In the following section the results for Germany and Denmark will be presented. First, experimental findings will be presented for participants' perceived acceptability and effectiveness of the policies for themselves and for society overall as also the policy preference ratings in dependence of the group assignment. Afterwards, results from multivariate analyses will be presented to understand predictors for overall approval and policy acceptability of each policy.

4.3.2.1 Experimental effects

First, we analysed the effects of the experimental manipulation. We assumed that the effectiveness and acceptability ratings of all policies correspond to the information people receive, i.e. individuals receiving information about the effectiveness of a measure only will answer in accordance with this information due to anchor effects. In case people receive information on the additional social acceptability of a measure, this information will guide their subsequent acceptability evaluations. Acceptability will 'override' the information on the effectiveness of a certain policy and leads people's acceptability answers. In particular, we assumed that:

a. high effectiveness information leads to high effectiveness ratings of the policy (same applies for low and medium) and higher acceptability ratings compared to the control group;
b. high acceptability information leads to a high acceptability of the measures (same applies for low and medium), and
c. the framings influence the preference of the three types of policies for self and for others (explorative).

Based on a prior literature review we summarised the effectiveness and acceptability of all three policy measures and framed them accordingly (see Table 16).

According to our expectations about the findings we tested the effects of the framings and analysed whether participants in the respective groups differed on average from each other and in contrast to the control group.

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Figure 28 to Figure 31 display the results of the mean score analyses (based on ANOVA and post hoc testing) for both countries and each policy measure using effectiveness and acceptability ratings of oneself and for society overall as dependent measures.

Figure 28: Effectiveness ratings for diet-related sufficiency policies in Germany

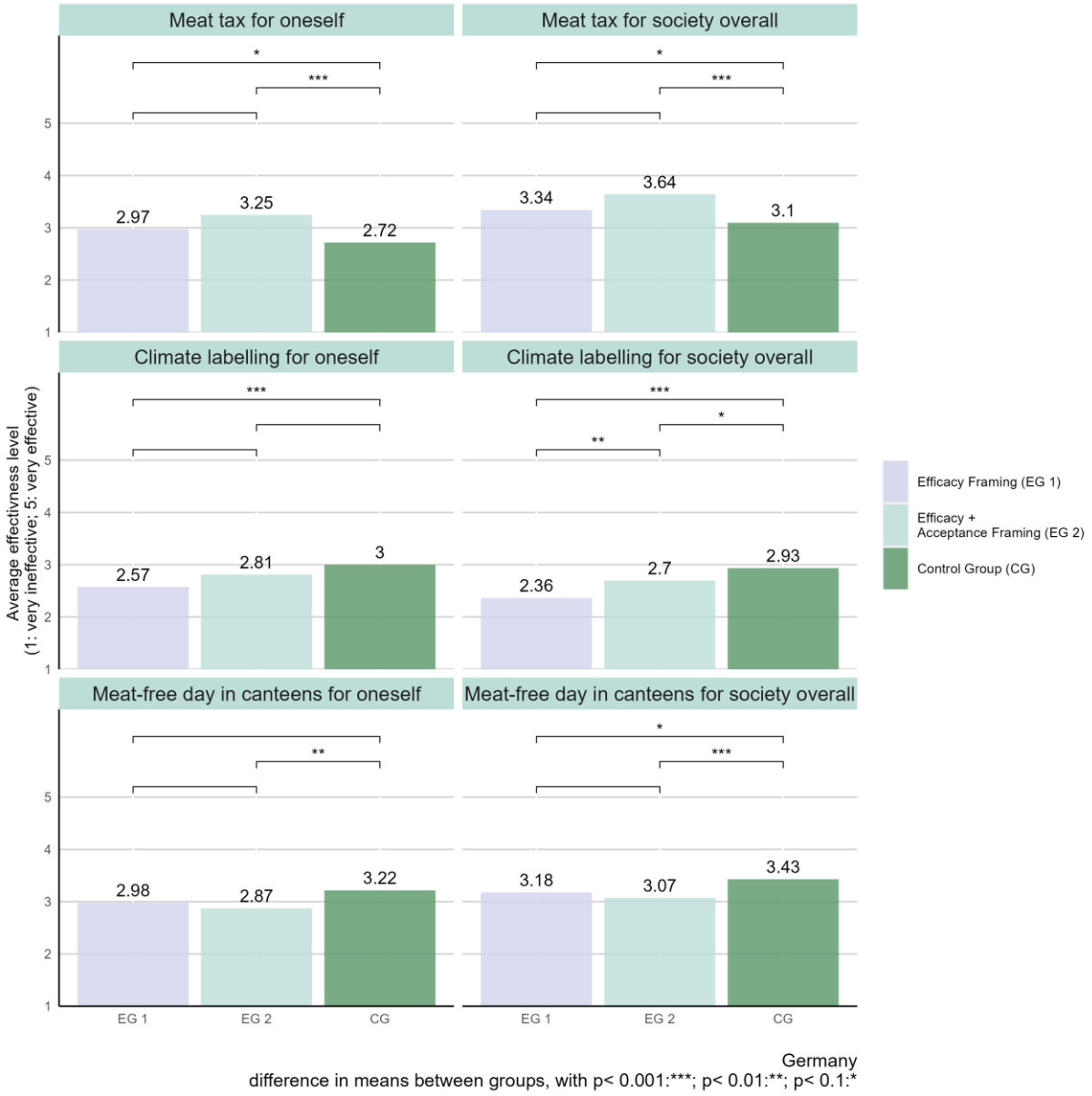

Figure 28 displays the mean ratings of each group for the effectiveness evaluation of all three policies for Germany. The lines and asterisks above the bars indicate if the post-hoc comparison of means between the respective groups are significant or not. One or more asterisks indicate a statistically significant difference. In Germany, mean values differ significantly for *meat tax effectiveness* ratings between the EG 1 and the CG and also between EG 2 and CG for both self and others perspective. This is in line with our hypothesis, indicating that the combined effectiveness and acceptance information in EG 2 increased the ratings. In line with our hypothesis, there is a statistically significant difference between the mean values of EG 1 and CG for both perspectives on the *climate labelling effectiveness* ratings. However, the difference between the effectiveness

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ratings in EG 2 and the CG is only significant in the society perspective and at a 10%-significance level. In case of a *meat-free day in canteens*, results on effectiveness rating of the policy are partially in line with our hypothesis as mean values for the effectiveness ratings are only statistically significant between EG 2 and CG for both, self and societal perspective. However, the difference in effectiveness ratings between EG 1 and CG is only significant in the societal perspective and at a 10%-significance level.

Figure 29: Effectiveness ratings for diet-related sufficiency policies in Denmark

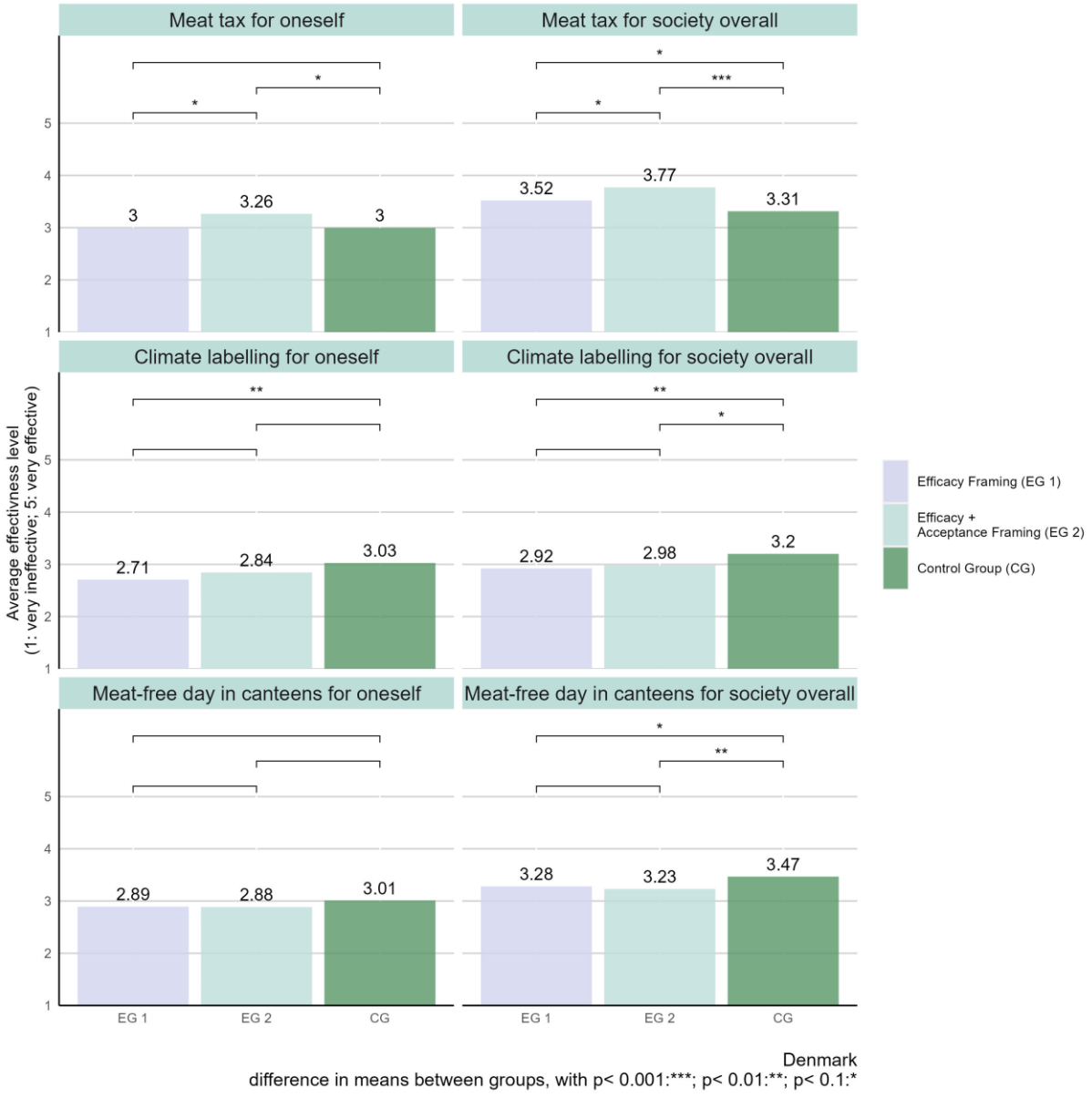

Figure 29 displays the mean of each group for the effectiveness ratings of all three policies for Denmark. The lines and asterisks above the bars indicate if the post-hoc comparison of means between the respective groups are significant or not. One or more than one asterisk indicate a statistically significant difference. Statistically significant differences are only partially equivalent to the results from Germany. In line with our hypothesis, EG 2 and CG significantly differ when people rate the effectiveness of the meat tax for both self and others perspectives. In line with our

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hypothesis we find a statistically significant difference in the effectiveness ratings of the climate labelling policy between EG 1 and CG, Effectiveness ratings for a meat-free day only significantly differ for the others perspective between EG 2 and GC as also for EG 1 and CG.

Figure 30: Acceptability ratings of diet-related sufficiency policies in Germany

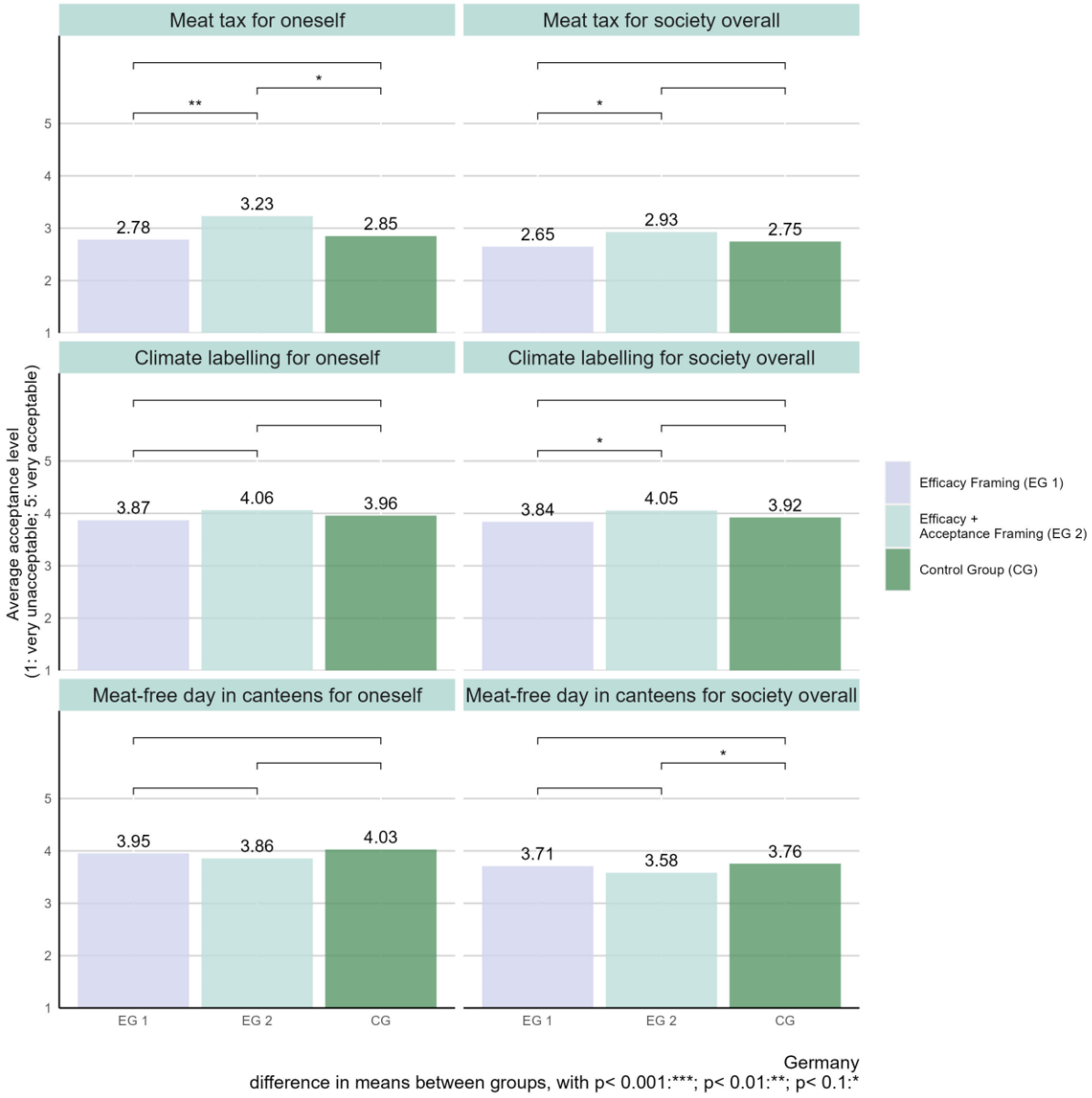

Figure 30 displays the mean ratings of each group for the acceptability ratings of all three policies in Germany with lines and asterisks above the bars indicating significant post-hoc comparisons. In line with our hypothesis, there is a significant effect between EG 2 and CG for the meat tax rating (but for the self-perspective only and at a 10%-significance level). Furthermore, we find significant differences between EG 1 and EG 2. In case of mean acceptability values for climate labelling we only find one statistically significant difference between EG 1 and EG 2 on the others perspective, which is contrary to our hypothesis. Similarly for the acceptability ratings on the meat-free day there are no statistically significant effects except a significant difference between EG 2 and CG on the others perspective at a 10%-significance level.

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Figure 31: Acceptability ratings of diet-related sufficiency policies in Denmark

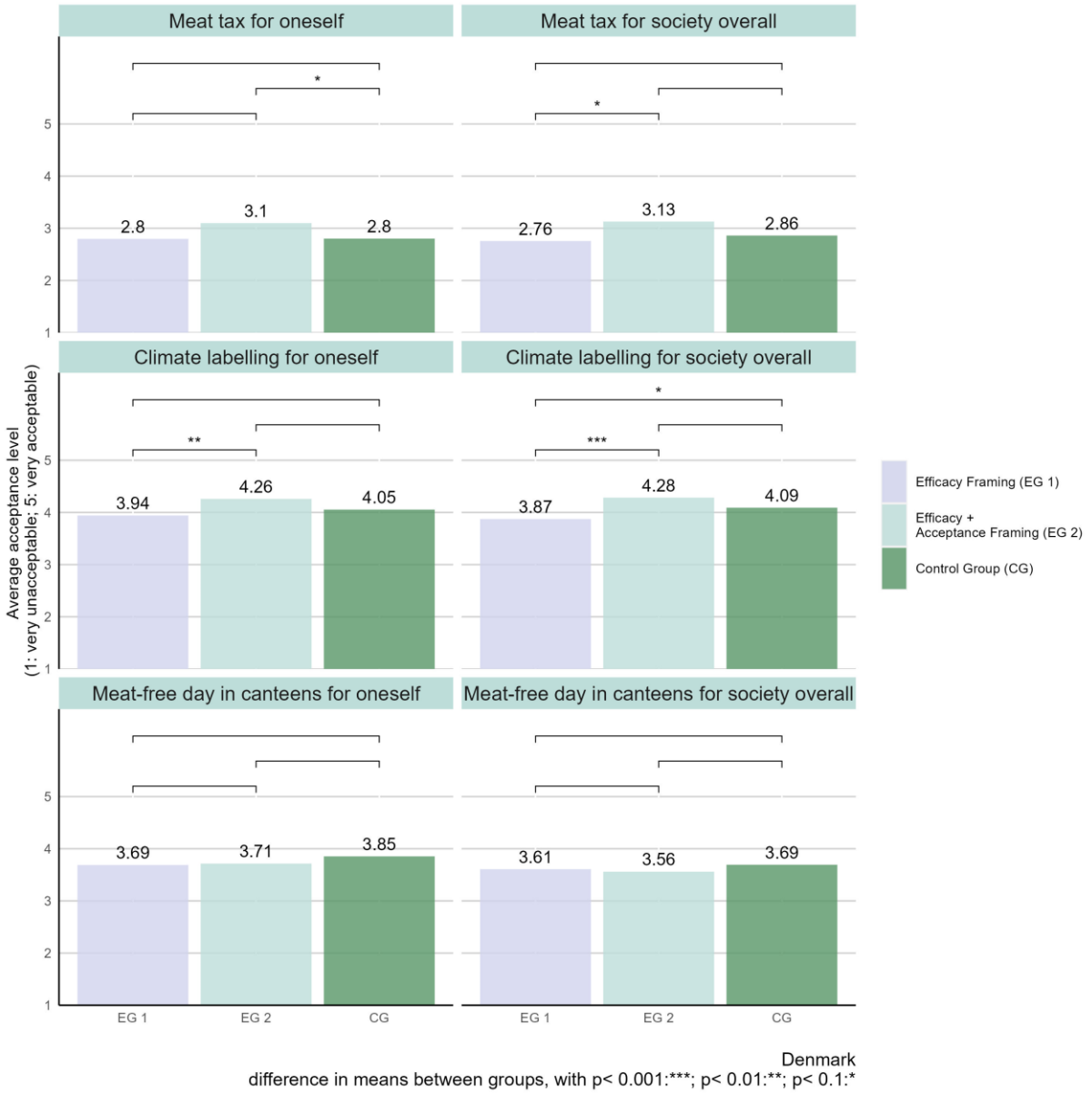

Figure 31 displays the mean ratings of each group for the acceptability ratings of all three policies in Denmark with lines and asterisks above the bars indicating significant post-hoc comparisons. In line with our hypothesis, there is a significant effect (10% significance level) between EG 2 and CG for the meat tax acceptability rating (but, as in Germany, for the self-perspective only). Furthermore, we find a significant difference at the 10% significance level between EG 1 and EG 2 on the others-rating. In case policy acceptability of climate labelling, we find significant differences between the ratings in EG 1 and EG 2 on both perspectives. There are no significant effects in the acceptability evaluations of the meat-free day in canteens.

Furthermore we analysed people's selection of a certain policy (i.e. people had to select one policy out of the three indicating their preference). We tested for significant differences between the policy preferences for oneself and the society in dependence of the experimental or control group by using Chi-Square tests. Hence, we tested for independence between framing and policy

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preferences, assuming that the framing influences policy preferences. Significant results indicate that the framing and preference ratings are not independent from each other. Results from our data are displayed graphically for Germany (see Figure 32) and Denmark (see Figure 33). Again, lines with asterisks indicate significant differences, however, between the groups (and the share of people selecting a certain policy) in total, not between the single policies.

As depicted in Figure 32, in Germany, we find significant differences between CG and the EG 1 for both self and others perspective. Additionally, we find a significant difference between CG and EG 2 for the others-perspective on policy preference ratings. Within the EG 1, significantly more people prefer a meat tax compared to the CG and a lower share of people prefer climate labelling whereas meat-free day is preferred the most for themselves. Analysing the others-perspective, similarly a higher share of people prefer the meat tax compared to the control group. Interestingly, a higher share of people in EG 2 select the meat tax compared to both other groups followed by climate labelling and a meat free day in all canteens.

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Figure 32: Policy preferences in dependence of the treatment in Germany

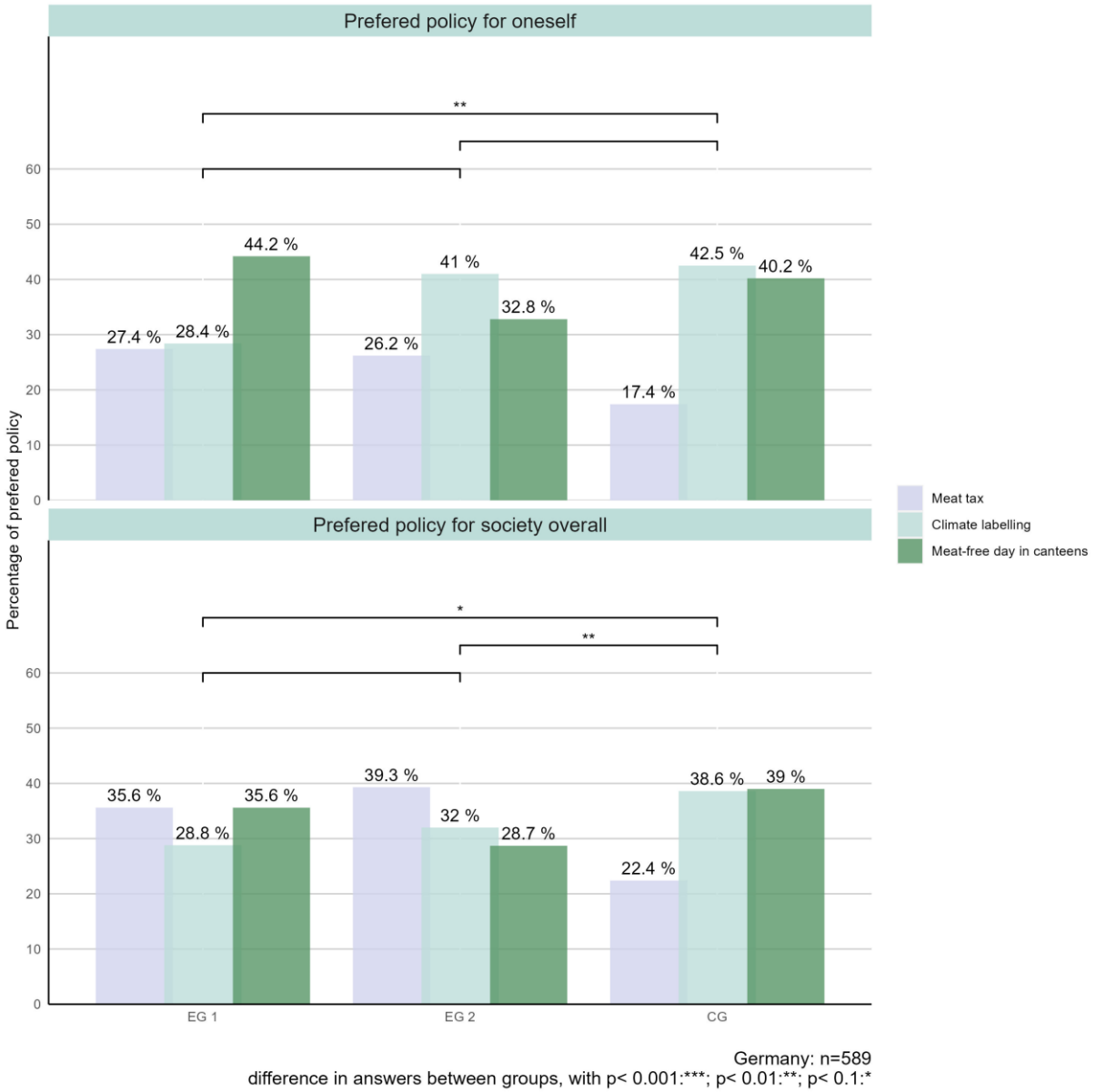

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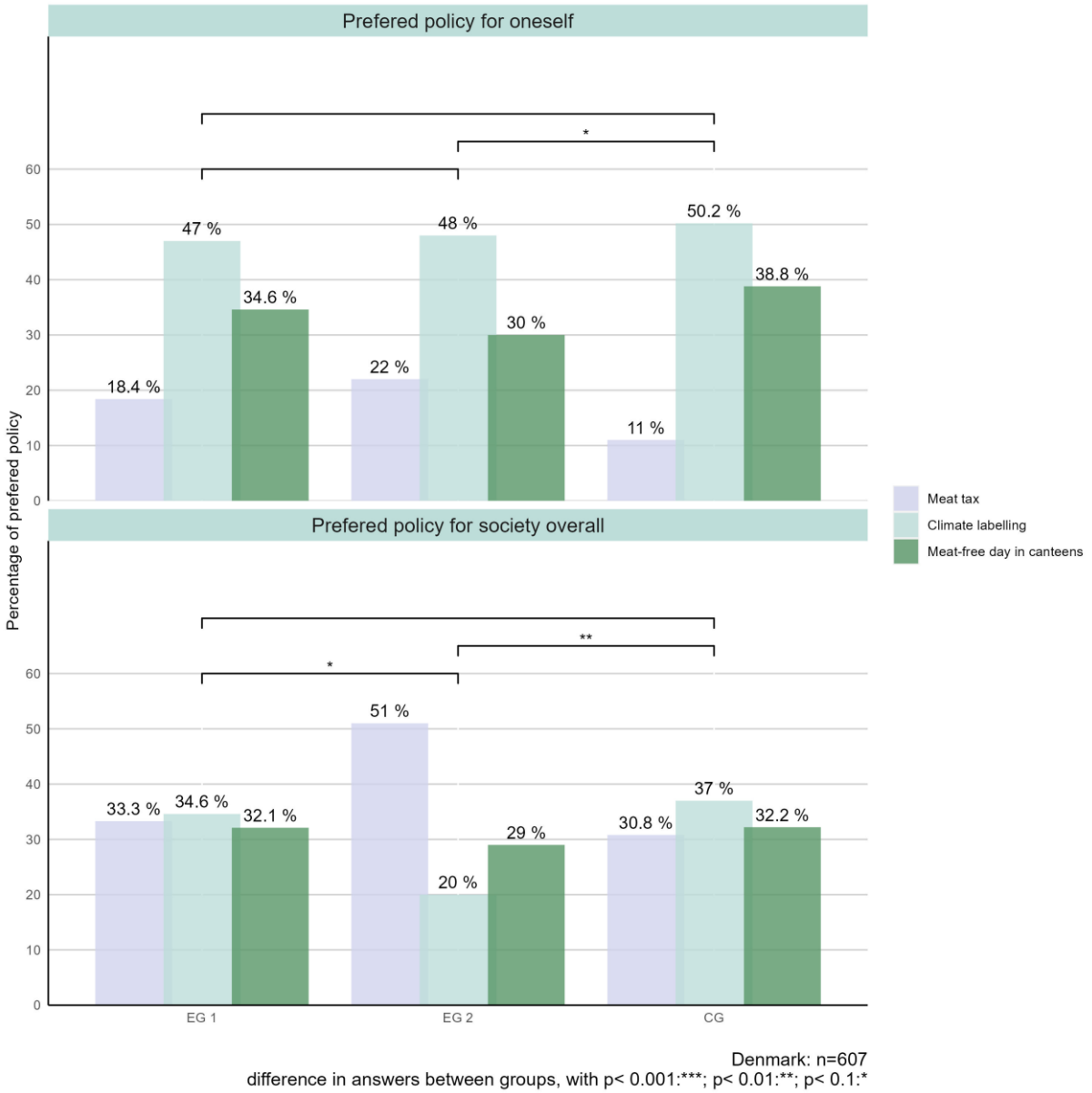
Figure 33: Policy preferences in dependence of treatment for Denmark



Denmark: n=607
difference in answers between groups, with p< 0.001:***; p< 0.01:**; p< 0.1:*

In the case of Denmark (see Figure 33), we find significant differences between EG 2 and CG for the policy preference for oneself and between EG 1 and EG 2 as well as between EG 2 and the CG for the others-perspective. As in Germany a slightly higher share of people in EG 2 prefer a meat tax for themselves in contrast to people within the control group, however, climate labelling is preferred the most and overall in Denmark. Furthermore, a lower share of people prefer a meat-free day in contrast to the control group. However, the overall ranking order remains the same for the self-perspective independently of the treatment. In contrast and in line with results from Germany, the share of people who prefer the meat tax is higher in EG 2 for the others-perspective compared to both EG 1 and CG and is even preferred by the highest share of people.

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4.3.2.2 Multivariate analysis

4.3.2.2.1 Analytical method

To investigate important factors that are significantly associated with the political acceptability of the diet-related sufficiency policies in Germany and Denmark, we conducted linear regression analyses (OLS). As dependent variables we used acceptability ratings of the three diet-related sufficiency policies for oneself and for society. In contrast to the analytical method in study 1 we did not dichotomise the dependent variables. According to research practices in psychology our dependent variables could be assumed as a quasi-metric, thus, justifying the calculation of linear regressions in our case (Eid et al. 2017). A check of the assumptions indicated that the distribution of the residuals was approximately normally distributed; and thus, performing a regression analyses appears appropriate.

Furthermore, and in contrast to Study 1, we did not include perceived effectiveness, fairness, and costliness into the linear regression models as our analyses show that these have been influenced by the applied framings (see results on effectiveness ratings above). Hence, we expect these variables to potentially act as moderators or mediators. However, an analysis of these relationships are not in the scope of the current deliverable. Therefore, we concentrate on important sociodemographic predictors (age, gender, income, education, working situation), important facets of peoples' lifestyles and selected attitudes (meat eating habits, trust in scientists, social norms, sufficiency orientation, policy support, environmental identity) as factors that may relate to our dependent variables in addition to the treatments.

4.3.2.2.2 Results

Figure 34 to Figure 36 give an overview of significant results (at $p<0.1$) of the OLS models for the acceptability of the diet-related sufficiency policies for oneself and for society in Germany and Denmark (for complete statistics see Annex 3.3). Again we distinguish between results that are significant in one country (purple) or in both countries (turquoise).

Results for acceptability of the meat tax for oneself and for society

Figure 34 summarises all significant results (at $p<0.1$) of the linear regression model for the acceptability of the meat tax for oneself and for society in Germany and Denmark.

The *effectiveness plus acceptance framing* correlates significantly positively with the acceptability of the meat tax both countries for oneself and in Denmark for society, only. This corresponds to the ANOVA analyses where people that received this treatment indicated higher acceptability scores compared to both other groups in Germany and Denmark.

Concerning socio-demographic characteristics, with regards to *age*, we find that younger respondents tend to rate a meat tax as acceptable for oneself and for society in Denmark, but only for oneself in Germany. Acceptability for the society is correlated significantly positively with *female* respondents compared to *male* respondents in Germany only. Respondents with a higher *per person income* tend to evaluate policies more acceptable for themselves in Germany and Denmark. In Denmark *working* was also positively correlated with higher acceptability of a meat tax for oneself.

Meat eating habits are significantly negatively correlated for respondents from both countries and for both perspectives, i.e. the less people eat meat the higher the acceptability ratings.

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Trust in scientists is related significantly positively to ratings of oneself in Denmark and for others in Germany. Respondents from both countries who perceive a stronger *social norm* on eating less meat also indicate higher acceptability concerning both perspectives. Furthermore, *climate change denial* is negatively related to the acceptance of a meat tax in both countries for oneself and for the society in Denmark only. *Sufficiency orientation* significantly positively predicts the acceptability of a meat tax in Denmark and on both perspectives. *Environmental identity* negatively predicts the acceptance of a meat tax for the society in Denmark.

Regarding the influence of political ideologies we consistently find a significant positive relationship between meat tax acceptability and the support of environmental policies.

The support of national policies is negatively related to the acceptability of a meat tax for the society by respondents from Denmark and Germany (i.e. the higher the support for national policies the lower the acceptance of a meat tax).

In Germany we find a negative relationship between the *support of social policies* and the acceptance of a meat tax for oneself and a positive relationship between the *support for liberal policies* and the acceptance of a meat tax for the society, while there are no significant relationships for respondents from Denmark.

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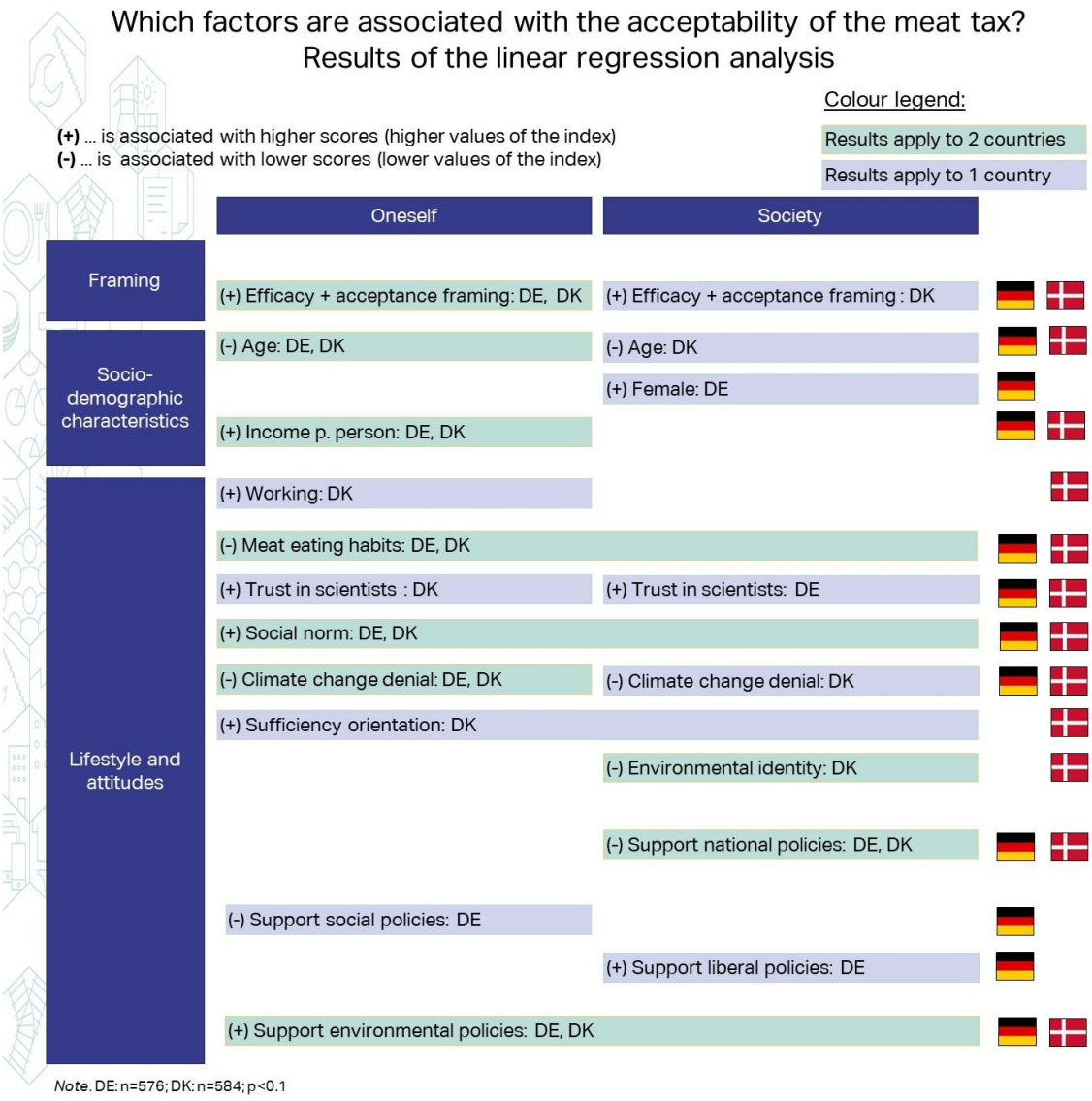
Figure 34: Results of the linear regressions for the acceptability of the meat tax



Results for acceptability of climate labelling for oneself and for society

Figure 35 summarises all significant results (at $p<0.1$) of the linear regression model for the acceptability of climate labelling for oneself and for society in Germany and Denmark.

The *efficacy framing in EG 1* significantly negatively predicts the acceptability of climate labelling for the society for respondents from Denmark only. Furthermore, the *effectiveness plus acceptance framing in EG 2* negatively predicts the acceptability of climate labelling from both perspectives in Denmark (but not in Germany).

Concerning socio-demographic characteristics, with regards to *age*, there is a negative relationship, indicating that younger respondents tend to increasingly accept climate labelling for oneself and

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for society in both countries. *Education* is a significant positive predictor in Denmark only, indicating that higher education predicts a higher acceptability for climate labelling for both perspectives.

Meat eating habits are significantly negatively correlated with the acceptability of climate labelling for respondents from Germany only and for both themselves and the society.

Trust in scientists is related significantly positively for acceptability ratings on oneself and the society in both countries. In Germany, respondents who perceive a stronger *social norm* on eating less meat also indicate higher acceptability on climate labelling for oneself and the society.

Climate change denial is negatively related with the acceptability of climate labelling in both countries on both perspectives. *Sufficiency orientation* significantly positively predicts the acceptability of climate labelling in Denmark and Germany for the society, and in Denmark also for oneself (but not in Germany). *Environmental Identity* positively predicts the acceptability of a climate labelling for oneself in Denmark.

Regarding the influence of political ideologies we find a significant positive relationship between the acceptability of climate labelling and the *support of national policies* in Germany only (but in both perspectives). Furthermore, the support of conservative policies negatively predicts the support of climate labelling in Denmark and for the self-perspective only.

In both countries we find the *support of environmental policies* to positively predict the acceptability of carbon labelling for oneself. In Denmark we also find this relationship only for the acceptability of climate labelling for the society.

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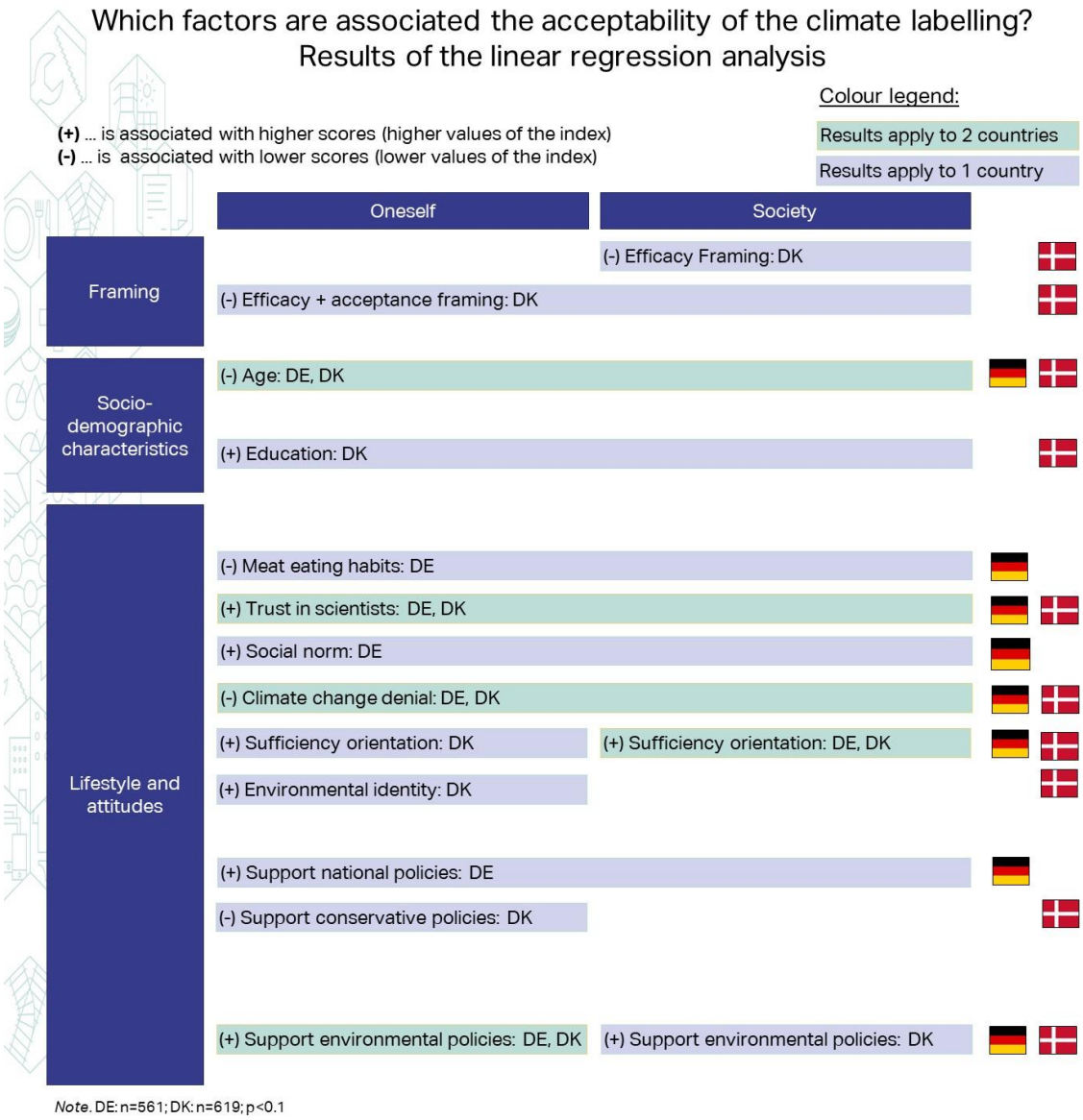
Figure 35: Results of the linear regressions for the acceptability of the climate labelling



Results for acceptability of a meat-free day for oneself and for society

Figure 36 summarises all significant results (at $p<0.1$) of the linear regression model for the acceptability of the meat-free day in canteens, for oneself and for society in Germany and Denmark.

The *effectiveness only framing* in EG 1 does not reveal as a significant predictor for the acceptability of a meat-free day. However and in correspondence to the ANOVA, the *effectiveness plus acceptance framing in EG 2* is correlated negatively with the acceptability of a meat-free day in Germany across both perspectives (but not for Denmark).

Concerning socio-demographic characteristics we find the same relationship with age as for climate labelling, i.e. younger respondents tend to increasingly accept a meat-free day for oneself in both

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countries. Acceptability of a meat-free day for oneself and society is correlated significantly positively with *female* compared to *male* respondents in Germany and Denmark alike. *Income* is a negative predictor across both perspectives for respondents from Denmark only, indicating that a lower income correlates with higher acceptability. In contrast to the former models on the other policies, *education* serves as a negative predictor for respondents from Denmark concerning the acceptability for society (not for Germany and not for the self-perspective), and *working* positively correlates with the acceptability of a meat-free day in canteens for both perspectives in Denmark only.

Meat eating habits are significantly negatively correlated for respondents from both countries and the acceptability of a meat-free day for oneself, but not for the societal perspective.

Trust in scientists consistently positively predicts the acceptability of a meat-free day in both countries and regarding oneself and society. Similarly, *social norms* and *sufficiency orientation* reveal as significant positive predictors for acceptability for a meat-free day across both countries and perspectives, while *climate change denial* shows a consistent negative relationship. *Environmental identity* negatively predicts the acceptability of the meat-free day in canteens, but only for the society and in Denmark.

Regarding the influence of political ideologies we find the support of *conservative policies* to negatively predict the acceptability of the meat-free day for the society in Denmark only. We find negative relationships between both the support for *social policies* and *liberal policies* and the acceptability of a meat-free day for oneself in Germany. This effect remains only for the support of liberal policies in case of the acceptability for the society (again only for respondents from Germany and not from Denmark). People who score high in the support of *environmental policies* in tendency also show a higher acceptability of a meat-free day for oneself in both countries, and in Germany also regarding acceptability for the society.

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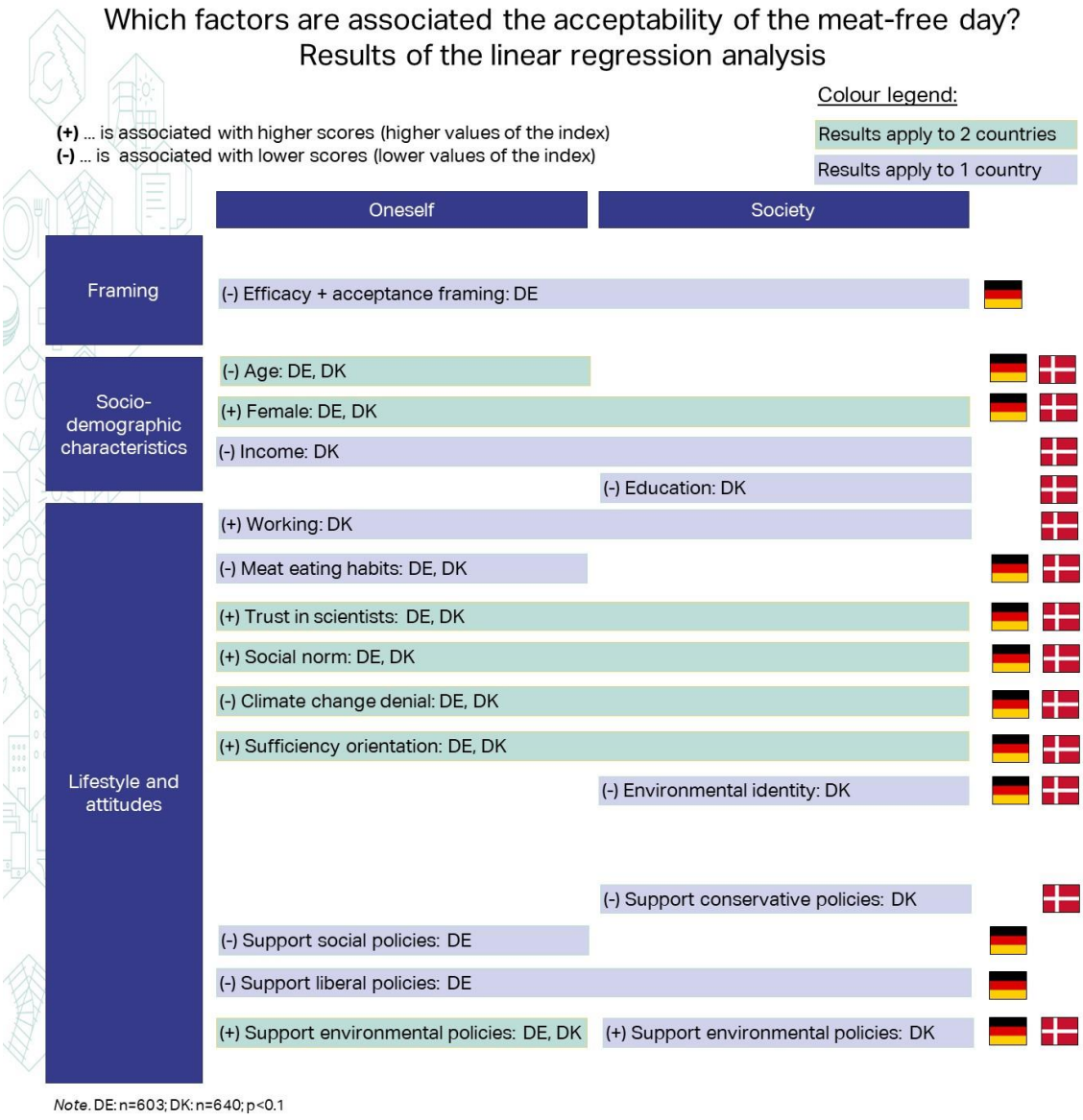
Figure 36: Results of the linear regressions for the acceptability of the meat-free day



4.3.3 Summary and discussion of the acceptance framing experiment

The aim of the study was to examine the effect of different framings, including either effectiveness information about three diet-related sufficiency policies (experimental group 1) or a combination of effectiveness information and additional information on societal acceptance (experimental group 2), on the acceptability ratings of the policies compared to providing no additional information. The three policies - an increase in the meat tax, the introduction of climate labelling on food, and the introduction of a meat-free day in all canteens - were chosen for their systematic differences in effectiveness and general social support. This allowed us to examine specific

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combinations of effectiveness and acceptance information and their effects on people's acceptability ratings.

Our primary interest was to understand whether acceptance information could override effectiveness information or whether it could potentially support acceptability even in case of contradictory information to the effectiveness information (e.g. in case of the meat tax) or when unclear additional information is given (e.g. meat-free days). In addition, we wanted to explore whether information with a high degree of societal acceptance could still guide people's judgments despite the low effectiveness of a particular policy (e.g. in the case of labelling). We also sought to explore key socio-demographic variables that correlates with policy acceptability, as well as lifestyle-related habits and attitudes.

Overall, respondents in both countries indicated higher levels of acceptability for the climate labelling and the meat-free day than for the meat-tax - in line with the findings for France, Italy and Latvia (see section 4.2).

Framing effects on perceived effectiveness, acceptability and policy preferences of diet-related sufficiency policies

Efficacy framing showed effects on the perceived effectiveness of policies, such that it increased perceived effectiveness for the meat tax, which was presented as an effective measure. However, efficacy framing reduced the perceived effectiveness for climate labelling, which was presented as a measure of limited effectiveness. This finding holds for both the self and societal perspectives in Germany, and for the societal perspective in Denmark. This is also the case when efficacy framing is combined with acceptance framing. However, we found hardly any effects of efficacy framing on perceived acceptability.

Information about the societal acceptance of the meat tax in Germany and to some extent also in Denmark was able to increase the acceptability ratings - in accordance with the information provided in the framing. We interpret this as a tendency for additional acceptance information to have an overall positive effect in the case of highly effective but partly critical policies in terms of societal acceptance. Further research is needed to investigate this effect in more detail.

In Denmark, societal acceptance information led to higher climate labelling acceptability ratings - it seems as if low effectiveness information was balanced by high acceptance information. In Germany we observe a small similar effect only for the societal perspective.

Only small effects were found for the meat-free day (only a small decrease due to the combined framing in Germany, societal perspective only). Thus, these results suggest that communicating information on mixed effectiveness and mixed acceptability is not helpful in increasing acceptability. For this measure, the combined framing even had a negative effect across all countries in our regression analyses in Germany, while no effects were found for Denmark.

In conclusion, communicating acceptance - be it rather low or high, but clearly in favour or against a certain policy - seems to have a positive and additional effect compared to communicating effectiveness only. Looking at the results for the meat-free day, providing unclear information about acceptance does not improve acceptability.

Predictors of policy acceptability for diet-related sufficiency policies

The multivariate analyses partly corroborates the effects of the framing experiment. From the socio-demographic variables, *age* consistently shows a negative relationship with the acceptability of all

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three policies. Women display more support for the meat-free day and in Germany, also for the meat tax if a societal perspective is taken (compared to men). In Denmark, income and education also play a role - people with higher income show higher levels of acceptability for the tax (oneself) but lower levels for the meat-free day. Higher levels of education are more positively linked to the acceptability of the labelling, but negatively to the meat-free day.

From the attitudinal variables, *trust in scientists, social norms and sufficiency orientation* are repeatedly positively related to the acceptability for at least two of the three policies in both countries, however, not consistently for all conditions (e.g., trust in scientists does not predict the acceptability of the meat tax). A similar pattern emerges for *climate change denial*, however, with a negative relationship. Specifically, climate change denial decreased the acceptability of all three policies in both countries (but not for the societal perspective of the meat tax). *Political orientations* also show several significant relationships with policy acceptability, however, the pattern is complex and calls for a deeper analysis. The support of environmental policies increased the acceptability of all three policies in both countries (but not for both perspectives).

Trust in scientists emerged as a consistently positive predictor across countries and policies (with the exception in meat tax acceptability), reinforcing the importance of perceived credibility in influencing policy acceptability. The mixed findings for meat tax may reflect nuanced perceptions of this specific policy instrument. Climate change denial consistently served as a negative predictor, indicating that individuals who deny climate change tend to express lower acceptability towards the policies which seems highly plausible. The significant findings for sufficiency orientation point out that the policies seem to align with certain values towards consumption but could be also very culture-specific. Interestingly, we do not find consistent *gender effects* across all policies. However, regarding the support of a meat-free day, females tend to show higher acceptability than men. Perhaps, as information given on meat-free days was the most unclear in effectiveness as well as acceptance, people answered more in line with their general attitudes or beliefs. From previous research we know that diet and meat consumption are very much interconnected with gender and female identities who tend to eat less meat and express a stronger openness to meat-free consumption (Visser et al. 2021; Stanley et al. 2023).

Highlights

- **Policy acceptability:** In both Germany and Denmark, climate labelling and meat-free days are rated higher in terms of acceptability than the meat tax.
- **Efficacy and acceptance framing:** A combination of effectiveness and acceptance information partially increased effectiveness ratings, and to some extent, acceptability ratings for the meat tax in both countries. Providing information on effectiveness and acceptance was associated with lower acceptability for climate labelling and meat-free days.
- **Policy evaluation:** For both countries, we find consistent positive relationships between trust in scientists, social norms for lower meat consumption, and support for environmental policies with acceptability for the three sufficiency policies (a meat tax, carbon labelling, and a meat-free day). We find consistent negative relationships between climate change denial and age with the acceptability of these policies.
- **Gender Dynamics:** However, women in Germany and Denmark expressed higher acceptability for a meat-free day. In Germany, women tend to be more supportive of meat taxes for society than men.

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5 Diffusion paths for sufficiency lifestyles in Europe

5.1 Aim of this study

Sufficiency lifestyles can have positive impacts, such as reduced energy and resource consumption. The magnitude of the potential positive outcomes is related to the number of people who adopt more sufficient lifestyles. It is therefore important to explore the pathways of diffusion of these lifestyles in society in order to support the development of policy recommendations. One pathway for the diffusion of sufficiency lifestyles is communication between individuals, such as between friends or family. Thus, this chapter looks into identifying factors that are related to the communication behaviour of individuals about certain elements of sufficiency lifestyles, specifically spreading the word about sustainable housing and diet. Hence, the central behaviour for diffusion paths that was examined is communication.

The data for this study was collected as part of the framework surveys on the experiments on sufficiency policies in the housing and diet sectors (see chapters 3 and 4). Hence, the sample for the diffusion paths of sufficiency lifestyles comprised the full sample of the diet as well as of the housing survey. Both are separately analysed, described, and finally combined in a comparison regarding potential diffusion paths.

5.2 Methods

In the following section, we shortly present the variables included in the further analysis and the research design.

Firstly, different variables were measured that describe diffusion pathways and communication behaviour regarding sustainable housing and diet. Descriptive results for these variables will follow in section 5.3.1. The variables include:

- Familiarity with the concepts sustainable housing and diet
- Frequency of conversations with different target groups (e.g. partner, children, relatives, etc.)
- Sources of information on sustainable housing and diet

Secondly, we investigated the communication behaviour or role a person would take in a conversation about the topics sustainable housing and sustainable diet. The aim was to understand the communication behaviour in more depth and to investigate which factors predict the role a person takes over in a conversation on sustainable housing or diet.

To this end, we set up a model to predict the communication behaviour (see Figure 37).

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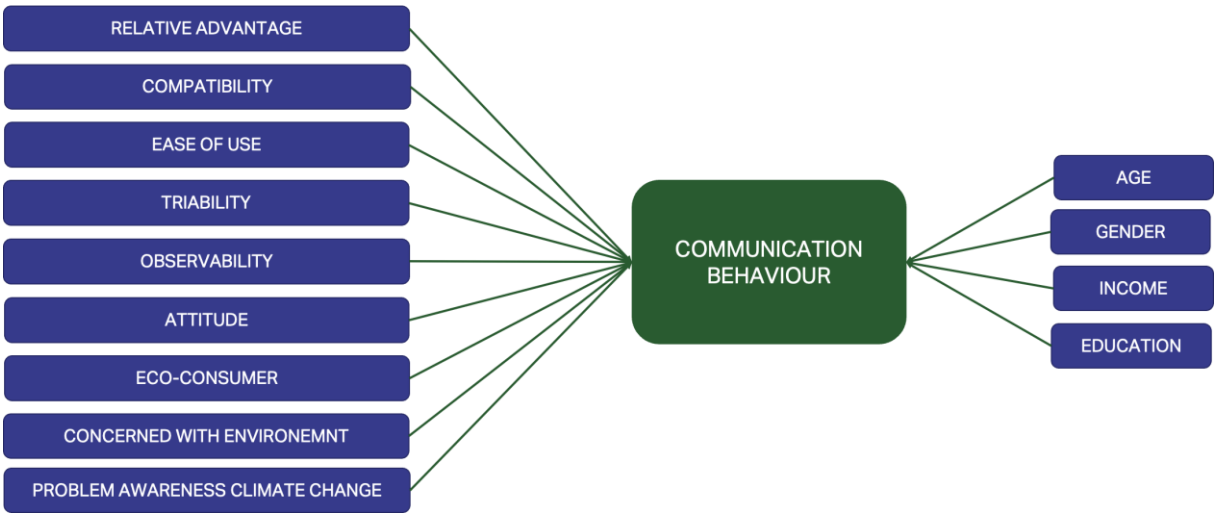
Figure 37: Predictive model of sufficiency communication paths



The variable *communication behaviour* that we aim to predict was built from the question: "Imagine you have a conversation about sustainable housing [diet]: What would most likely be your role in this conversation?" which is shown in Figure 41 for sustainable housing and in Figure 46 for sustainable diet. Respondents were to answer this question for four different target groups (family, friends, colleagues, other acquaintances) and the response option included different degrees of activity, namely

1) I have started the conversation
2) I would actively participate in the conversation
3) I would follow the conversation attentively
4) I wouldn't really listen to the conversation
5) I would leave the conversation completely

Overall, respondents indicated similar responses regarding the communication behaviour across the different target groups (family, friends, colleagues, other acquaintances) (Cronbach's alpha housing = 0.93, Cronbach's alpha diet = 0.93). Hence, we aggregated their indicated communication behaviour into an overall communication behaviour score.[22] As we are particularly interested in understanding what distinguishes active and passive communication, we finally defined three categories instead of five, representing an overall *active* ((1) starting or (2) actively participating), *interested* ((3) attentively following), or *passive* ((4) not really listening or (5) leaving the conversation) communication role of individuals.

To predict the communication behaviour of individuals about sustainable housing and diet respectively, we used nine predictor variables and four socio-demographic variables. The predictor variables were based on the diffusion of innovation theory (Rogers 2005) in combination with the reasoned action approach (Fishbein and Ajzen 2010). Starting from the top left in Figure 37, the first five variables are based on the diffusion of innovation theory (Rogers 2005). A core principle in this theory says that the rate of adoption of an innovation is largely explained by its perceived attributes (Rogers et al. 2009) and it is assumed that these variables also have the potential to

[22] Therefore, we first calculated the individual's mean score in communication role across all target groups. In a second step, we divided it by the number of items.

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predict the communication behaviour. In the following, we describe these five variables of the diffusion of innovation theory in more depth.

Relative advantage comprises the degree to which people expect the innovation to have more positive effects than the idea it supersedes. We operationalised this with the item: Sustainable housing [diet] would improve today's society. *Compatibility* aims to capture the degree to which an innovation matches the values, experiences, and needs of potential adopters. We have taken these aspects together to the item: Sustainable housing [diet] fits with my personality. *Ease of use* captures the perceived difficulty to understand and use an innovation, which we have operationalised in a positively framed single item: Sustainable housing [diet] is simple. *Triability* aims to determine the degree to which an innovation can be used on an experimental basis. We narrowed the form of experimenting with the concept to a realistic and comparable form of information gathered in one item: I have the possibility to talk to someone who lives [eats] sustainably as long as necessary to come to a final evaluation. And finally, *Observability* comprises the degree to which the outcome of an innovation is visible. Similar to the rest, we have operationalised this predictor in a single statement on respondents' perception of use: I have noticed several times that people engage in sustainable housing [eat sustainably].

The four predictors on the bottom left side in Figure 37 are based on the reasoned action approach (RAA) (Fishbein and Ajzen 2010). According to the RAA, attitudes are major determinants to behaviour and thus we included a single-item statement on the specific attitude towards the concept of interest: "In general, I think sustainable housing [diet] is a good thing". Moreover, we aimed at covering environmental identity by including the variables *eco-consumer* ("I think of myself as an environmentally-friendly consumer"*)* and *concerned with environment* ("I think of myself as someone who is very concerned with environmental issues"). In addition, *problem awareness regarding climate change* was included ("To what extent do you think that climate change is a serious problem?").

Finally, to control for socio-demographic characteristics and explore the gender dimension, we included the variables age, education, gender, and income of respondents as shown on the right-hand side of the model (see Figure 37 as well as earlier chapters in this report and D3.1).

5.3 Results

5.3.1 Descriptive findings on communication behaviour

In the following sections, the descriptive findings will be presented. We start with the findings for the variables we use to understand the current communication behaviour (familiarity with the concepts sustainable housing and diet, frequency of conversations with different target groups (e.g. partner, children, relatives, etc.) and source of information on sustainable housing and diet). Further, descriptive results for the hypothetical communication behaviour are presented (incl. the index built for the multivariate analyses). First, the findings for sustainable housing are shown, followed by the findings for sustainable diets.

5.3.1.1 Housing Sample

Figure 38 to Figure 42 present the descriptive statistics separated by country from the framework part of the housing survey.

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Figure 38: Familiarity with the concept sustainable housing per country

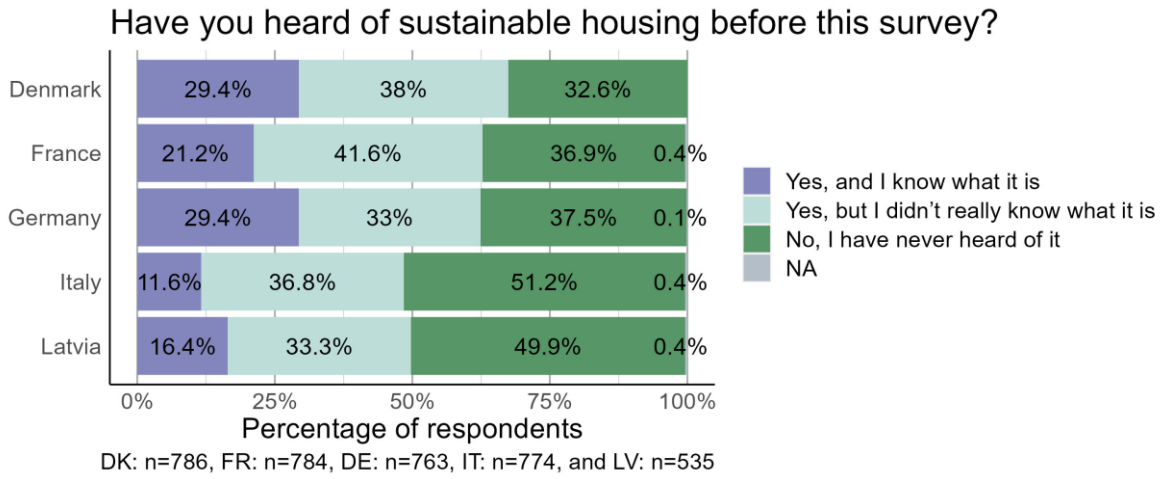

Figure 38 shows that across all five countries, less than 30% were familiar with the concept sustainable housing before taking the survey. In Latvia and Italy, around half of the participants have never heard of it.

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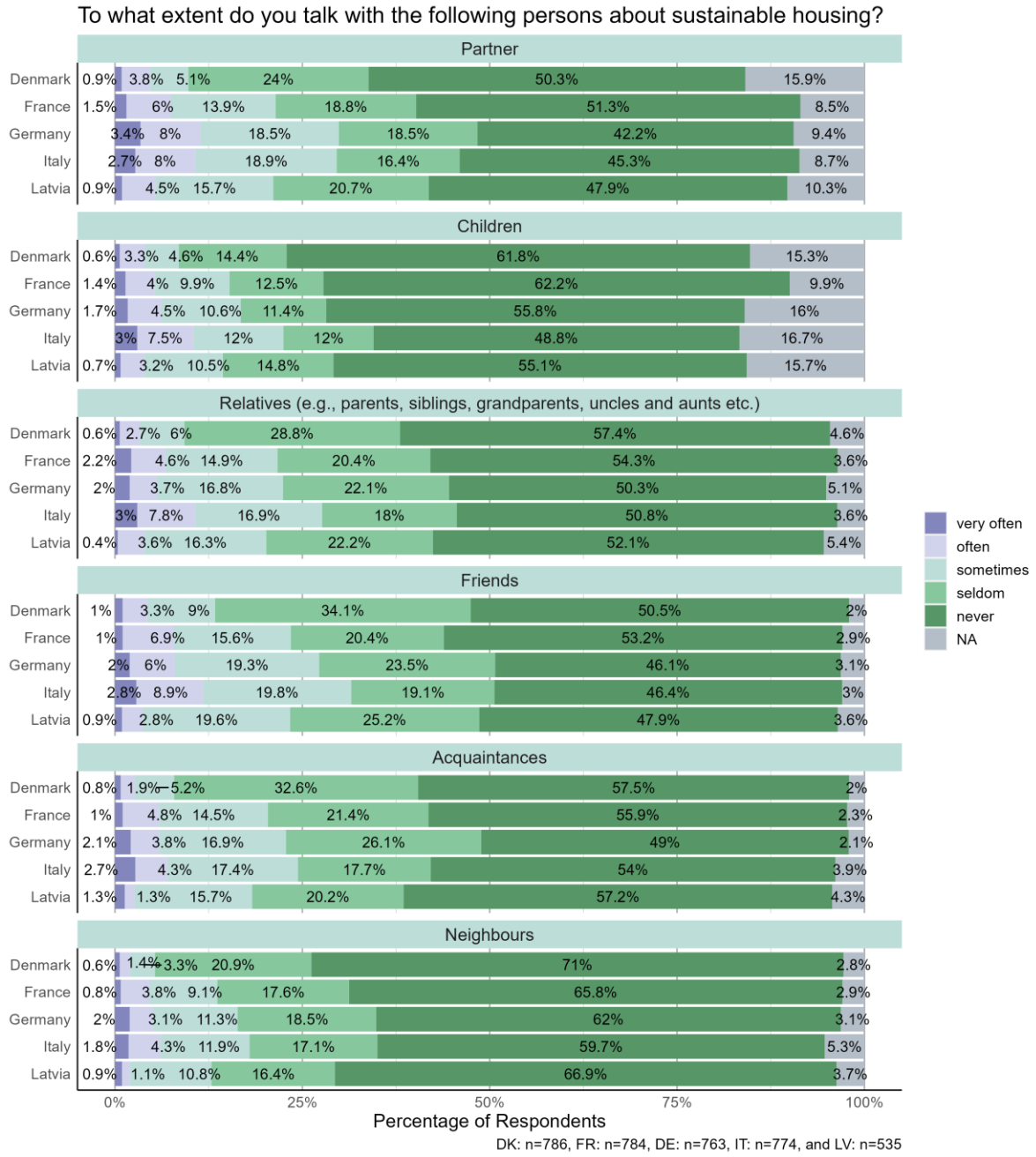
Figure 39: Frequency of conversations about sustainable housing per country and target group



In accordance with the previous figure, Figure 39 shows that between 60% (talking to children in Italy and talking to a partner in Germany) and 90% (talking to neighbours in Germany) of the participants never or seldom talk with their partner, children, relatives, friends, acquaintances, or neighbours about sustainable housing in all countries. Across communication groups, communication patterns of Italy show the highest extent of talking *very often* to *often* about sustainable housing, and Denmark the lowest.

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Figure 40: Source of information on sustainable housing

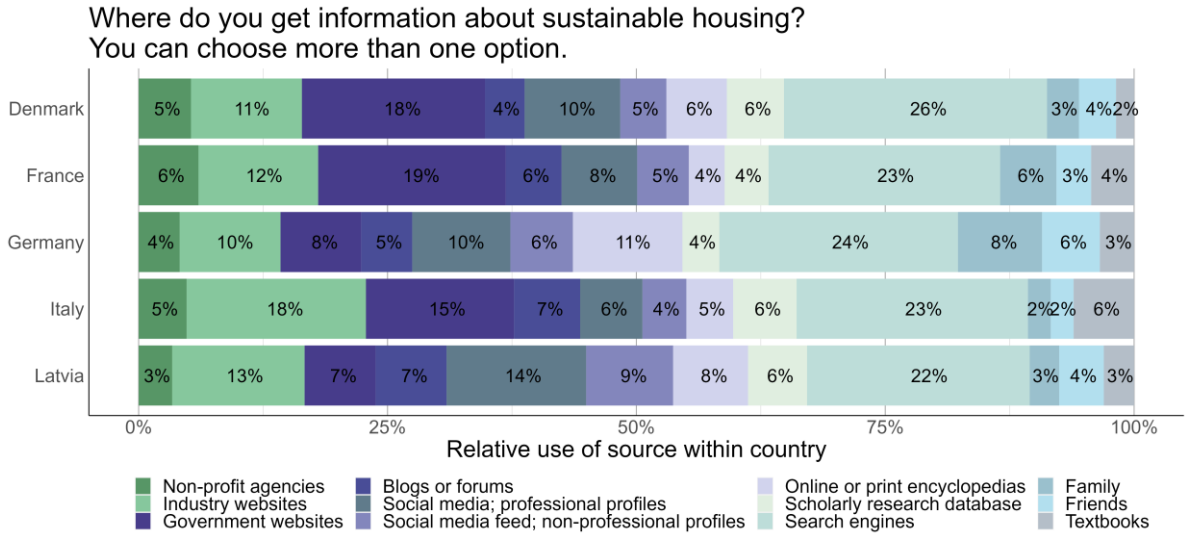

Figure 40 depicts the use of information sources on sustainable housing within each country. Across countries, search engines serve with a share of more than 20% as the main source of information. While in Denmark, France, and Italy governmental websites matter as well with 15% to 19%, in Germany, Denmark, and especially Latvia professional social-media profiles play an important role (10% to 14%). Moreover, in all countries respondents show a high use of industry websites (10% to 18%). In Germany online and print encyclopaedia (11%) are considered more than in the other countries when informing about sustainable housing.

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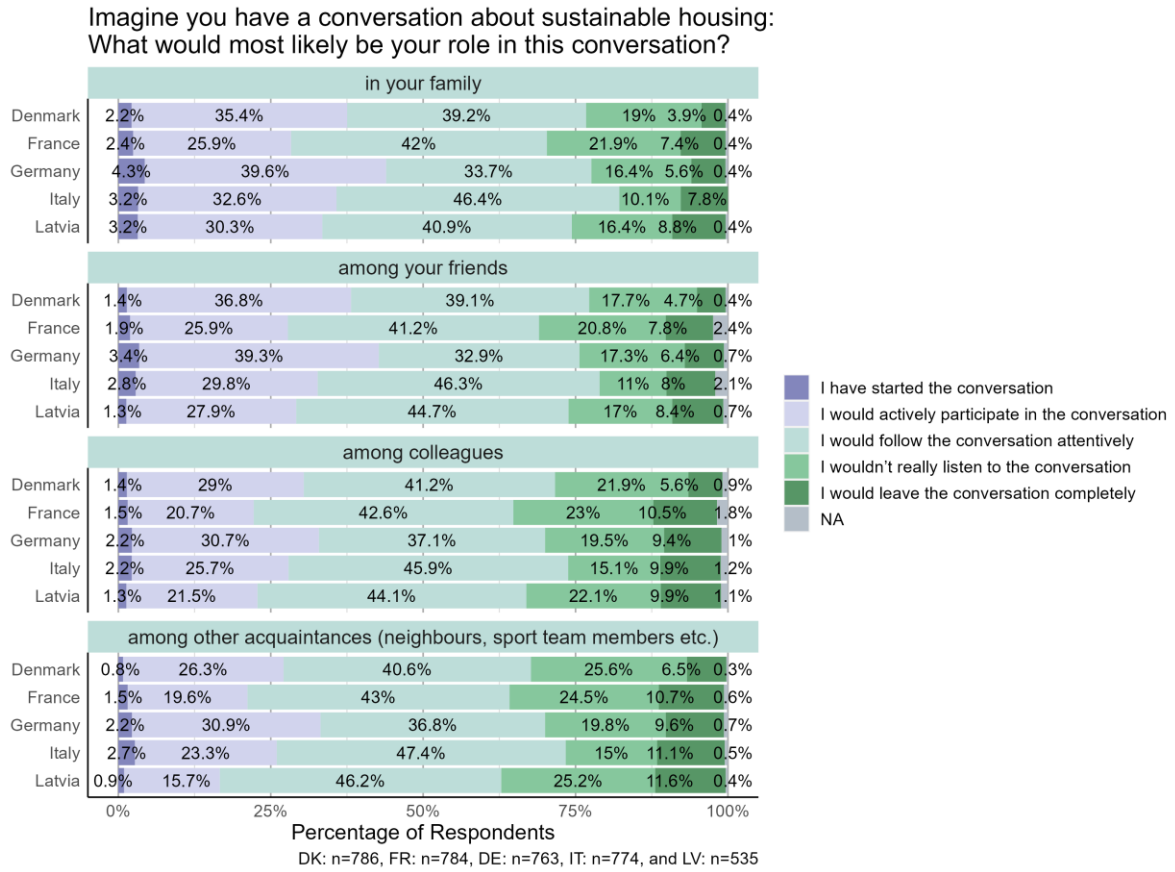
Figure 41: Role in communication about sustainable housing per country and target group



As depicted in Figure 41 when imagining a conversation about sustainable housing, the largest share of respondents (33% to 47%) would follow this conversation attentively across all conversation partners and countries. Compared to the other countries, German respondents show the highest willingness to start or actively participate in a conversation about sustainable housing across conversation partners. Across countries, we can see that active communication behaviour seems more likely when respondents are imaging talking to their family or friends (compared to colleagues and other acquaintances).

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Figure 42: Average communication behaviour across target groups per country

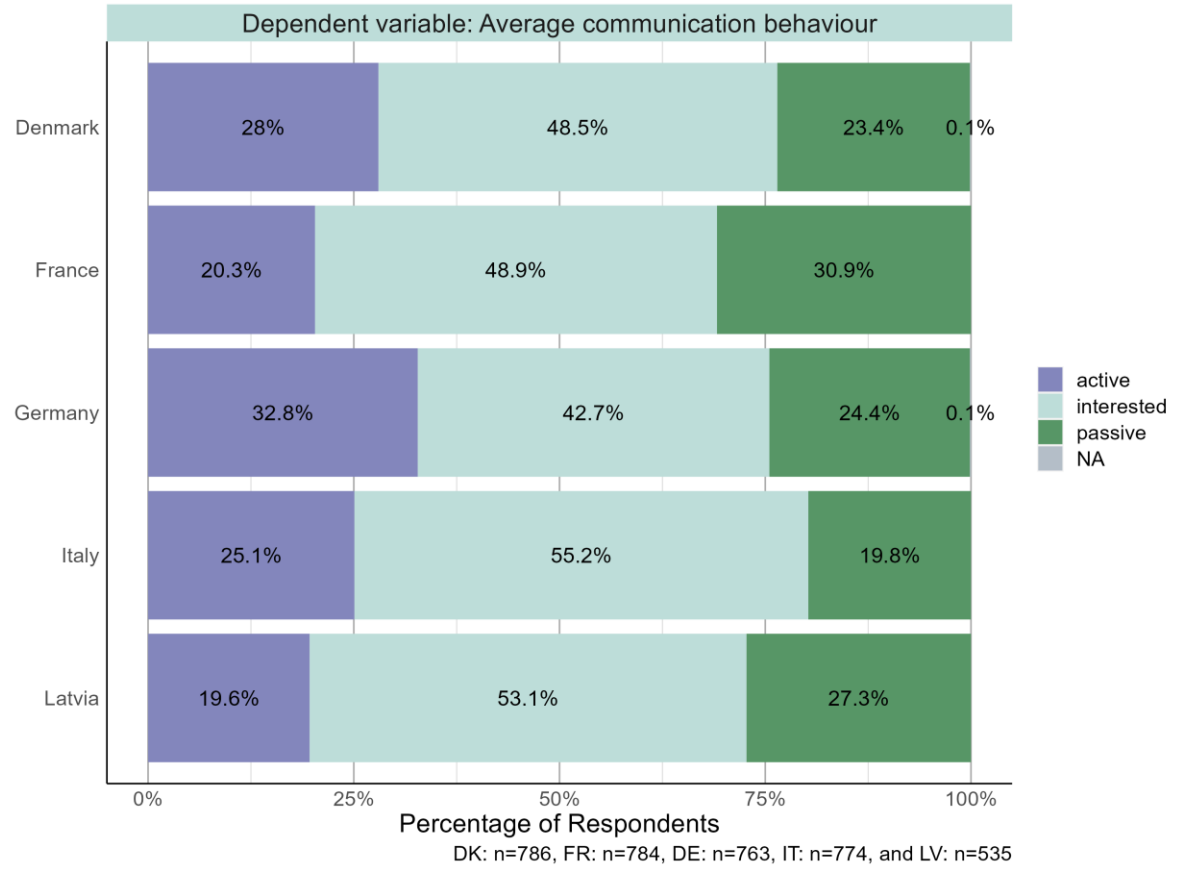

Figure 42 depicts the dependent variable with three categories (active, interested and passive) that we have created based on the role in communication about sustainable housing (compare Figure 41). Around 50% of respondents in each country show an interested communication role on average. In Denmark, Germany, and Italy, the share of respondents that, on average, take an active communication role outweighs the share of passive communicators by 4 to 8 percentage points. This pattern is reversed for France and Latvia. Hence, depending on the country, the share of respondents with a passive or active communication role is between a fifth and a third of the respondents.

5.3.1.2 Diet Sample

Figure 43 to Figure 47 present the descriptive statistics separated by country from the survey on sustainable diet.

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Figure 43: Familiarity with the concept sustainable diet per country

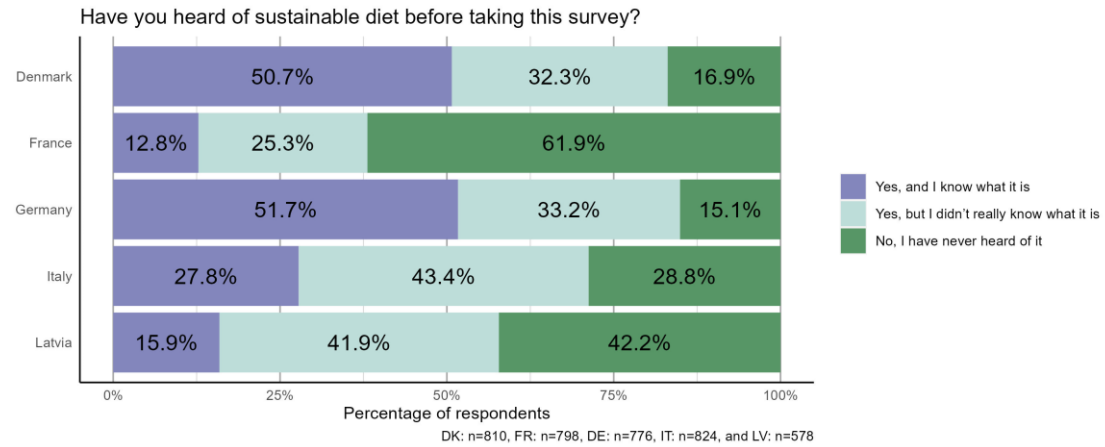

Figure 43 shows that the knowledge about sustainable diet strongly differs between countries - much more than actual differences in dietary styles and also partly in accordance with the rates of vegetarians and vegans in the respective country (Figure 4). About 50% of respondents from Denmark and Germany knew the concept before taking the survey, followed by Italy (27%), Latvia (16%) and France (13%). While 25% to 43% of participants across countries have heard of sustainable diet before, 42% of participants in Latvia and over 60% in France have never heard of it.

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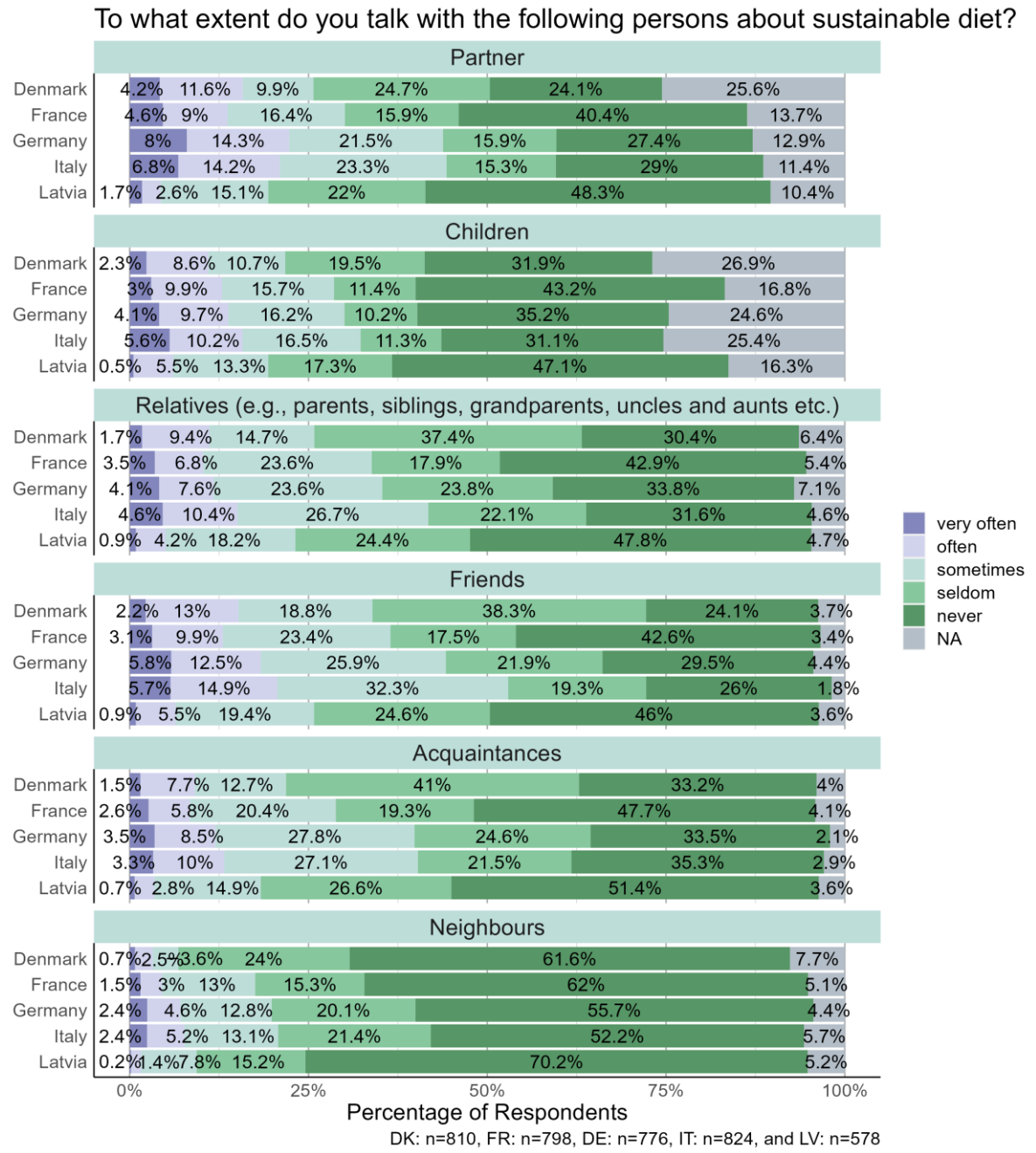
Figure 44: Frequency of conversations about sustainable diet per country and target group



Across countries and conversational partners, Figure 44 indicates that the majority *never* or *seldom* talks about sustainable diet. The overall pattern indicates that more respondents talk to their friends and partners about this topic than with the other target groups. The high amount of missing values for the communication with partners and children most likely reflects that these communication groups do not exist for all respondents.

Respondents from Germany and Italy show a more frequent conversation pattern when it comes to sustainable diet in comparison to the other countries. Respondents from Latvia show the least frequent communication about sustainable diet across groups.

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Figure 45: Source of information on sustainable diet

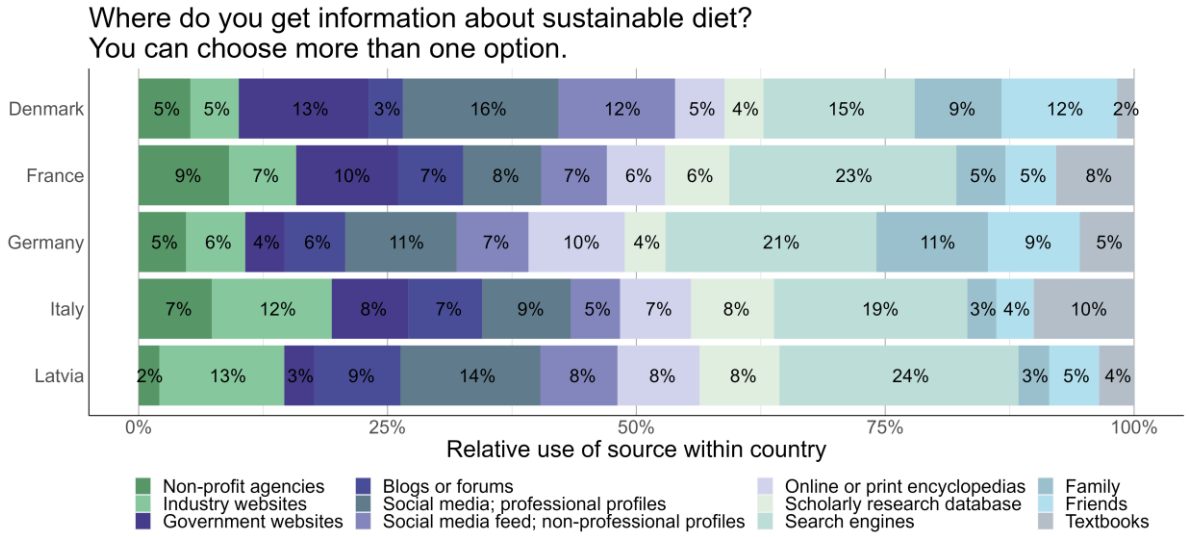

Figure 45 depicts the use of sources for information on sustainable diet. Across countries, search engines serve as one main source of information (with 15% to 24%). While in France and Italy textbooks are more used than in the other countries (8% and 10%), in Denmark, Germany, and Latvia professional social-media profiles are popular (11% to 16%). In Denmark and France there is a higher use of governmental websites (13% and 10%) than in other countries. In Italy and Latvia industry websites serve as an important source for information about sustainable diet (12% and 13%).

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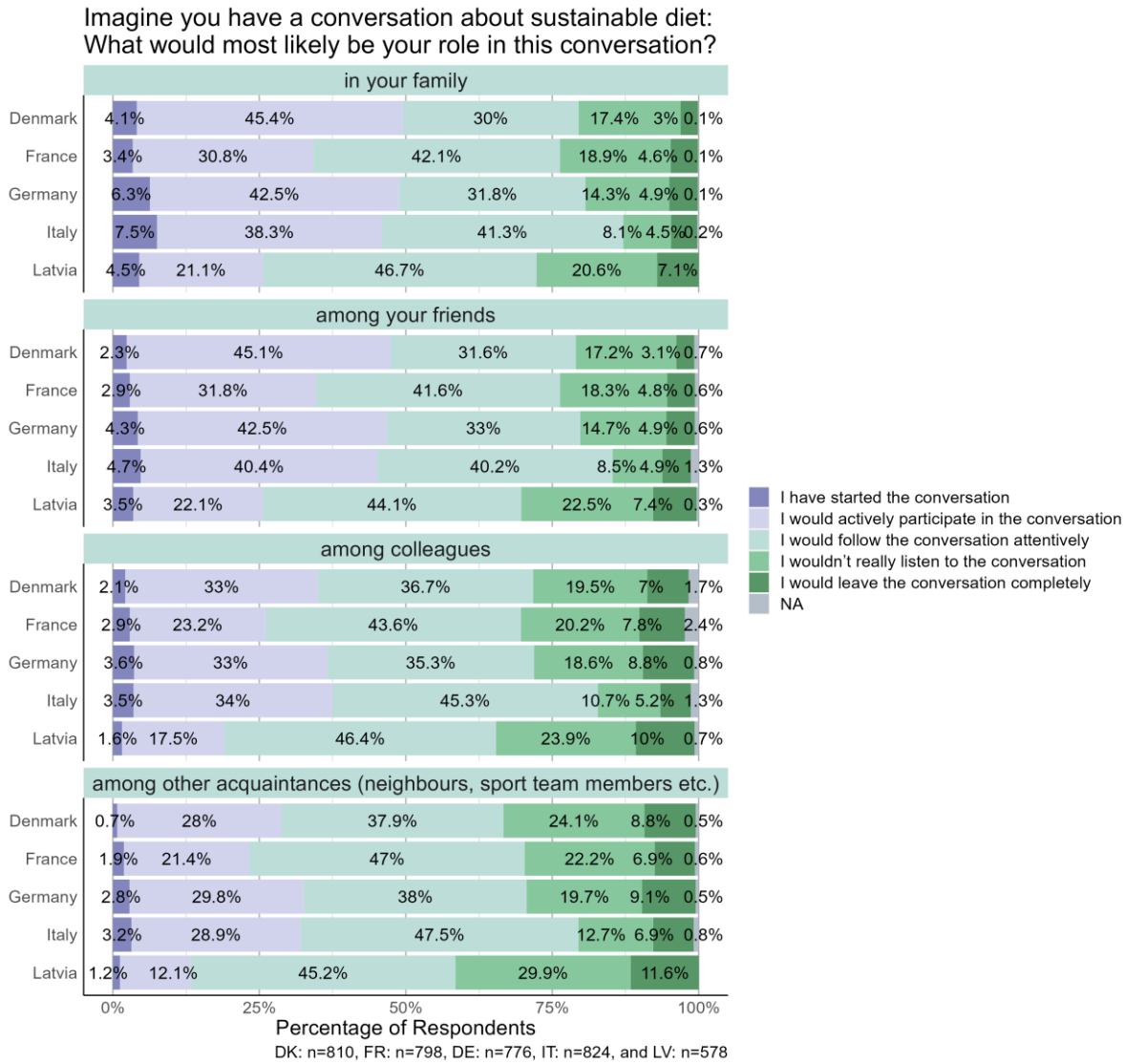
Figure 46: Role in communication about sustainable diet per country and target group



When imagining a conversation about sustainable diet, Figure 46 depicts that in most countries 25% to 50% of respondents would have started the conversation or would actively participate in it across target groups. There is a general tendency to less often take an active communication role when speaking to colleagues or other acquaintances (compared to when talking to family and friends). In a country comparison, respondents from Latvia show the lowest share of people who start or actively participate in a conversation on sustainable housing and the highest share of respondents who would not listen or leave the conversation on sustainable diet, followed by respondents from France.

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Figure 47: Average communication behaviour across target groups

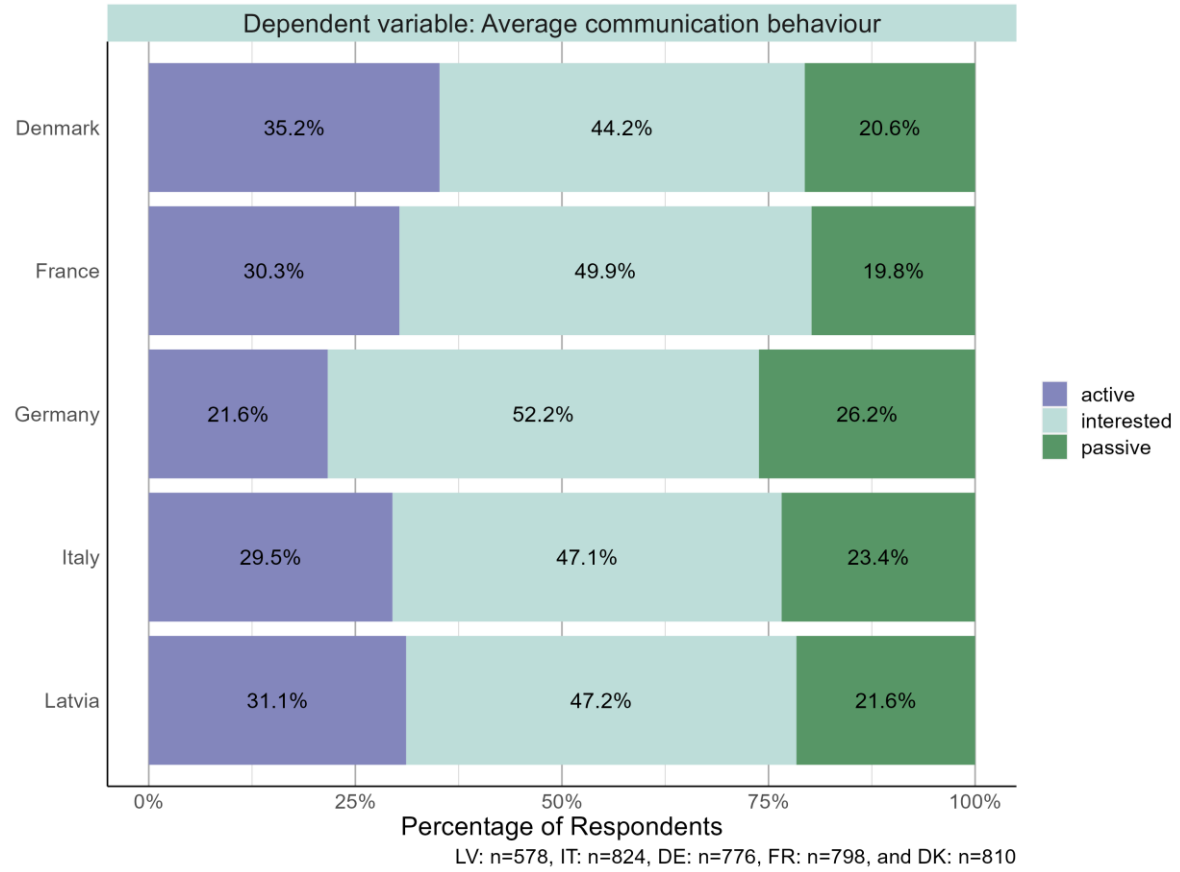

Figure 47 depicts the dependent variable with three categories (active, interested and passive) that we have created based on the role in communication about sustainable housing (see Figure 46). Around half of the respondents in each country show an interested communication role on average. In all countries apart from Germany, the share of respondents that, on average, take an active communication role outweighs the share of passive communicators with about 6 to 15 percentage points. However, compared to the other countries, Germany has the highest share of interested respondents (52%).

5.3.2 Multivariate analysis

As outlined above, the diffusion path analysis aims to explain and predict individual communication behaviour (roles) in relation to sustainable housing and diet. As a dependent variable, we used the three-level variable that describes the role respondents generally expect to play in hypothetical conversations about sustainable housing or diet (see Figure 42 and Figure 47). Based on the model in Figure 37, we calculated a multinomial logistic regression for each country to identify potential predictors of overall communication behaviour. As we collected information on housing and diet separately in different samples, the multinomial logistic regression was also run separately and will be presented as such. However, the analytical approach is identical. As log odds only allow a group-wise comparison, we transformed the results into average marginal effects (AME), which indicate the percentage points of change in the dependent variable if one predictor increases by one unit while the other predictors remain the same. This type of analysis allows us to explore which

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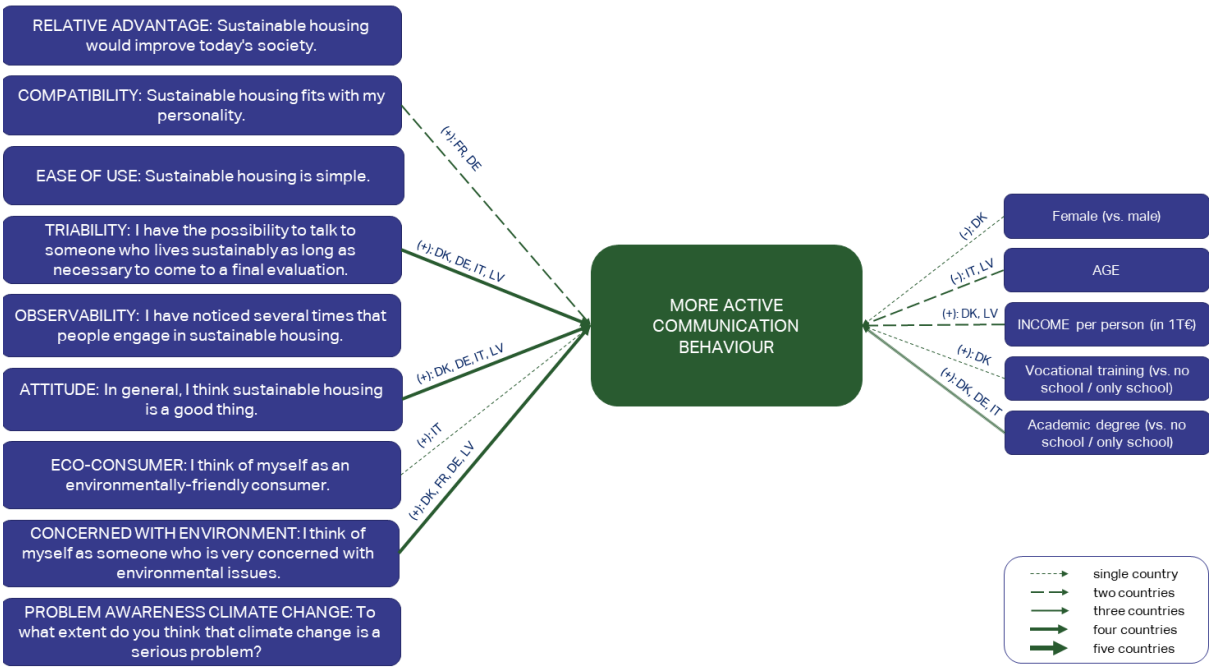
predictors (factors) make it more or less likely for an individual to be in one of the communication groups (active, interested, passive).

5.3.2.1 Housing Sample

The following section provides an overview of the findings from the multinomial regression models for sustainable housing. We focus on similarities and differences between countries. Regression tables (log odds and AME) are included in Annex 3.4, Table A17 and A18 and findings are summarised in the following figures. Due to an error in the translation three variables, namely relative advantage, compatibility and ease of use were only included in France and Germany. Hence, for the models for Denmark, Italy and Latvia we could not integrate these variables.

Figure 48: Significant predictors for active communication about sustainable housing



Note. DK: n = 786; FR: n = 784; DE: n= 763; IT: n= 774; LV: n = 535;
p < 0.1;
Results for relative advantage, compatibility and ease of use are only available for France and Germany

Figure 48 depicts which factors are statistically significantly related to a more active communication behaviour in the field of sustainable housing. In four out of five countries respondents are more likely to engage in more active communication behaviour when they have the possibility to talk to someone who lives sustainably (triability; for Denmark, Germany, Italy and Latvia), when they think that sustainable housing is a good thing (Denmark, Germany, Italy and Latvia) and when they state to be concerned about the environment (Denmark, France, Germany and Latvia). For Denmark, Germany and Italy, active communication behaviour is more likely for respondents with an academic degree (compared to no school or only a school degree). Active communication behaviour is more likely when finding that sustainable housing fits with their personality (compatibility) in both countries in which the factor was tested in (France and Germany). Active communication about sustainable housing is less likely for higher age in Italy and Latvia and becomes more likely for higher income in Denmark and Latvia. In addition, we find several effects for only single countries (higher likelihood when identifying as environmentally-friendly consumer

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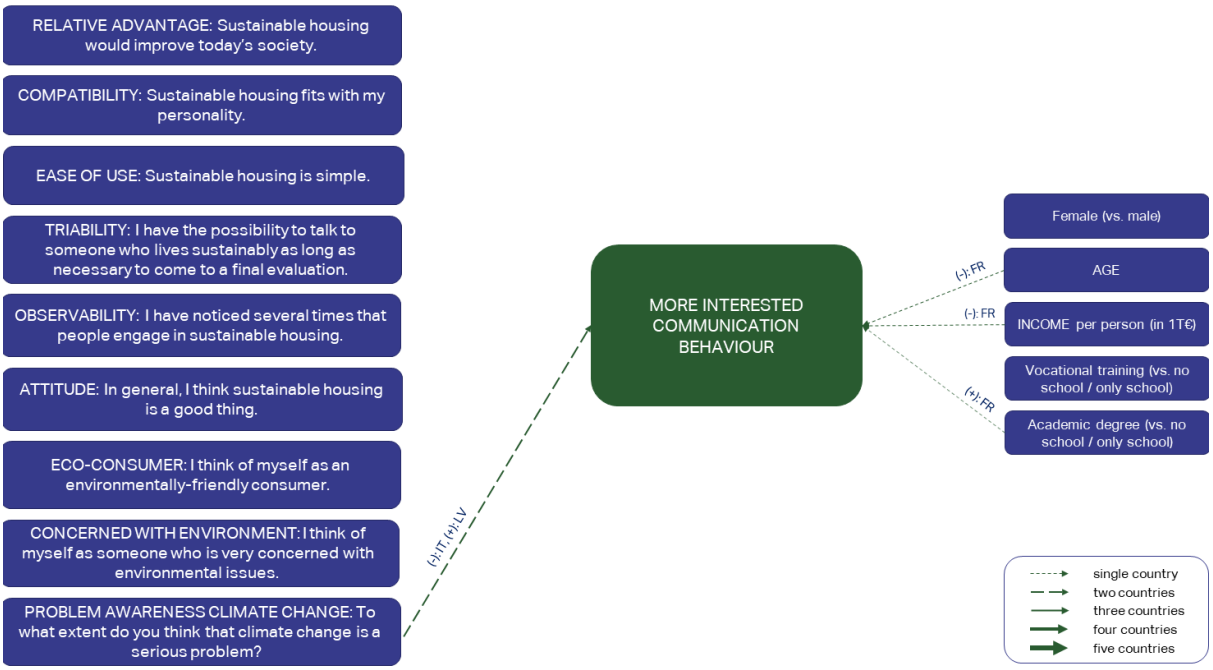
in Italy, lower likelihood for women (compared to men) in Denmark and higher likelihood for vocational training (compared to no school or only a school degree) in Denmark.

Figure 49: Significant predictors for interested communication about sustainable housing



Note. DK: n = 786; FR: n = 784; DE: n= 763; IT: n= 774; LV: n = 535;
p < 0.1;
Results for relative advantage, compatibility and ease of use are only available for France and Germany

Figure 49 gives an overview of the factors which are statistically significantly related to an interested communication behaviour. The category of interested communication behaviour contains individuals that neither imagine that they would actively communicate, nor would engage passively. Few of the factors included in our model are statistically significantly related to interested communication behaviour. In Italy, respondents are less likely to show interested communication behaviour when they are more aware that climate change is a serious problem, while we find the opposite (higher likelihood of interested communication behaviour for higher problem awareness) in Latvia. In addition, in France the likelihood of interested communication behaviour decreases for higher age and higher income and increases when respondents state to have an academic degree (compared to no school or only a school degree). Overall, the analyses revealed less factors for the interested communication behaviour.

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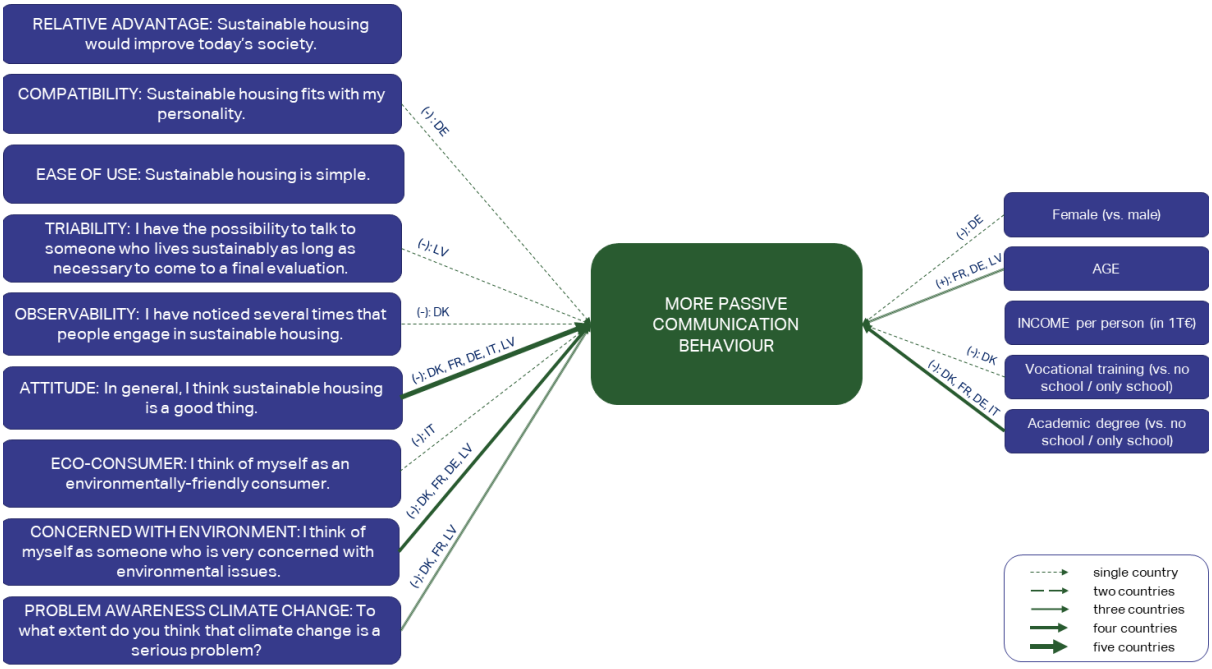
Figure 50: Significant predictors for passive communication about sustainable housing



Note. DK: n = 786; FR: n = 784; DE: n= 763; IT: n= 774; LV: n = 535;
p < 0.1;
Results for relative advantage, compatibility and ease of use are only available for France and Germany

Figure 50 provides an overview of the factors that are statistically significantly related to passive communication behaviour. For all countries, respondents are less likely to state that they would engage in a passive communication role when they think that sustainable housing is a good thing. In four out of five countries, respondents are less likely to engage in passive communication behaviour when they are concerned with the environment (Denmark, France, Germany and Latvia) or have an academic degree (compared to no school or only a school degree; in Denmark, France, Germany and Italy). For three countries, higher awareness of climate change as a serious problem is related to a decrease in likelihood of passive communication behaviour (Denmark, France and Latvia), while older age is associated with an increase in the likelihood to engage in passive communication behaviour (France, Germany, Latvia). In addition, we find several relationships for single countries.

Overall, factors which are found to be related to the communication behaviour in most (at least three) countries when it comes to sustainable housing are: having the possibility to talk to someone who lives sustainably (for active communication), attitude towards sustainable housing (for active and passive communication), being concerned about the environment (for active and passive communication), awareness of climate change as a serious problem (for passive communication) and holding an academic degree compared to no school or only a school degree (for active and passive communication).

5.3.2.2 Diet sample

In the following, the results for the communication behaviour about sustainable diet are presented. Here, the data for all predictors was correctly collected and thus the models are identical across countries.

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We will focus on similarities and differences between countries. The detailed results for the regression models (log odds and AME) can be found in the Annex 3.4, Table A19 and Table A20.

Figure 51: Significant predictors for active communication about sustainable diet

Note. DK: n =810; FR: n = 798; DE: n=776; IT: n=824; LV: n = 578; p < 0.1

Figure 51 shows the factors that are statistically significantly related to more active communication behaviour in the field of sustainable diets. For all countries, an active communication role is more likely when respondents state being more concerned with the environment. For three out of five countries, respondents are more likely to engage in an active communication role when they find that sustainable diet fits with their personality (compatibility; for France, Germany and Latvia), when they think that sustainable diet is a good thing (Denmark, Germany and Italy), when they are younger (France, Italy and Latvia) and when they hold an academic degree (compared to no school or only a school degree, for Denmark, France and Italy). For France and Italy, respondents who state that they have the possibility to talk to someone who eats sustainably (triability) are more likely to state to show more active communication behaviour. For Germany and France active communication behaviour is more likely for higher income. In addition, several associations for single countries have been found (see detailed results for the AME in Annex 3.4, Table A20).

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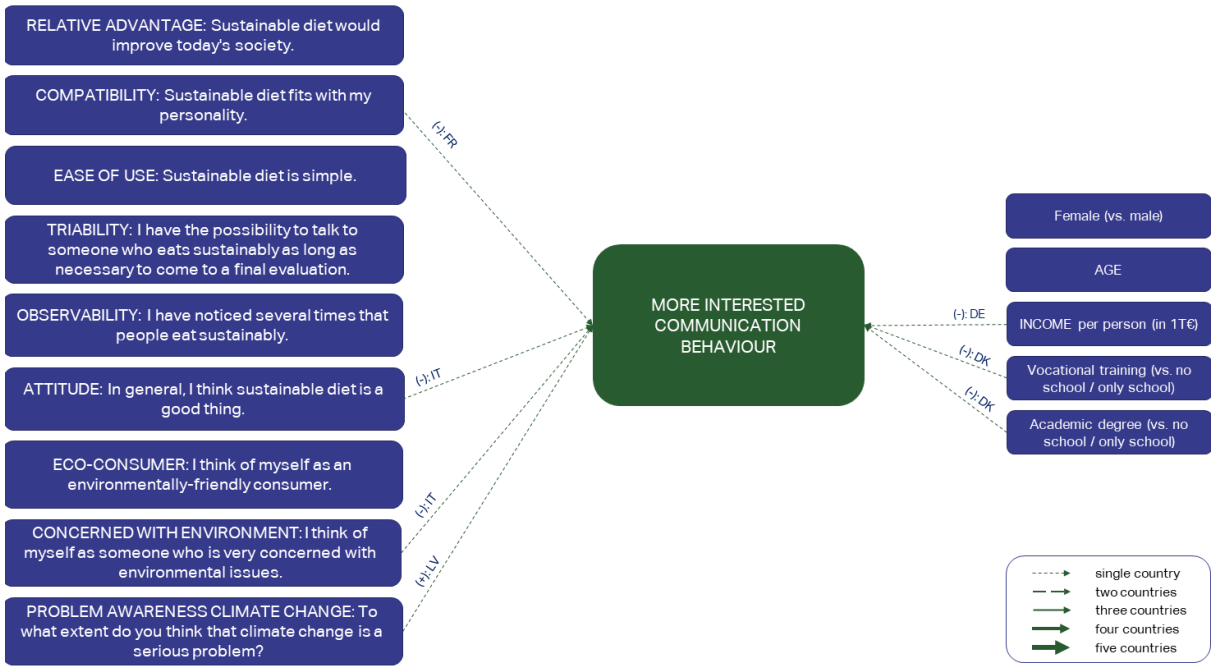
Figure 52: Significant predictors for interested communication about sustainable diet



Note. DK: n =810; FR: n = 798; DE: n=776; IT: n=824; LV: n = 578; $p < 0.1$

Figure 52 provides an overview about the factors that are statistically significantly related to a more interested communication behaviour. Communication behaviour is considered to be interested, when respondents are neither actively communicating nor showing passive communication behaviour. We only find relationships for single countries. No pattern and significant factors across countries were revealed by the results of the multivariate analysis.

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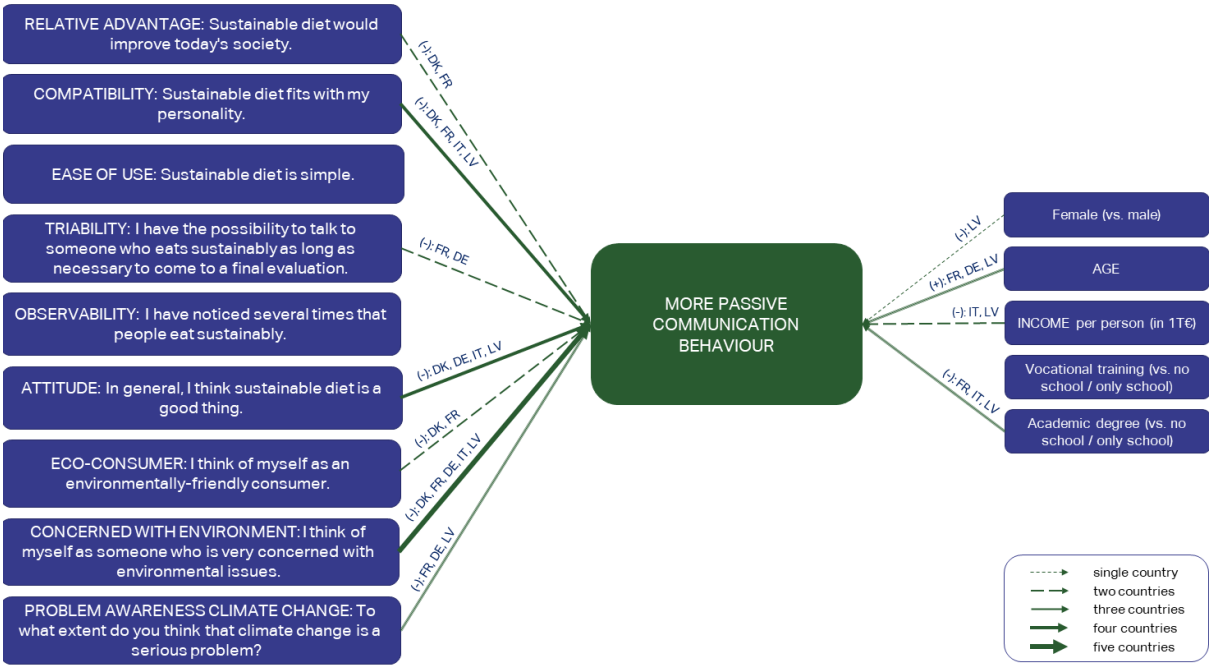
Figure 53: Significant predictors for passive communication about sustainable diet



Note. DK: n =810; FR: n = 798; DE: n=776; IT: n=824; LV: n = 578; $p < 0.1$

Figure 53 depicts the factors that are statistically significantly related to a more passive communication role when it comes to sustainable diet. For all countries, respondents are less likely to communicate passively when they are more concerned with the environment. In four countries, the likelihood of passive communication decreases when sustainable diet fits with the respondents' personality (*compatibility;* for Denmark, France, Italy and Latvia) or when they have a more positive attitude towards sustainable diet (Denmark, Germany, Italy, Latvia). For three countries lower problem awareness (France, Germany and Latvia), higher age (France, Germany and Latvia) and not having an academic degree (France, Italy and Latvia) are statistically significantly related to a more passive communication behaviour. Several other factors are statistically significantly related to a more passive communication behaviour in two countries (relative advantage for Denmark and France, triability of France and Germany, identifying as environmentally-friendly consumer in Denmark and France and income in Italy and Latvia) or in single countries.

Summing up, whether respondents are more likely to have an active, interested or passive communication behaviour in the field of sustainable diet is related to the following factors in most countries (at least three countries): being concerned with the environment (for active and passive communication), whether sustainable diet is regarded as compatible with the respondents' personality (active and passive communication), attitude towards sustainable diet (active and passive communication), age (for active and passive communication), the awareness of climate change as a serious problem (for passive communication), holding an academic degree compared to no school or only a school degree (for active and passive communication).

5.4 Summary and discussion

In this section, we investigated communication about sustainable housing and diet, to identify potential diffusion pathways.

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In general, for both topics at least 40% of the respondents have heard of sustainable housing or diet before taking the survey with country-specific differences. When it comes to the frequencies of conversations about sustainable housing and diet, in the diet sample more respondents state that they talk about the topic than in the housing sample across the different communication partners considered. When respondents were asked what role they would take in a hypothetical conversation about sustainable housing or diet, we found that many would play an interested role. Overall, more people stated that they would be likely to play an active role in a discussion on diet rather than on housing.

For the concepts based on the diffusion of innovation theory (Rogers 2005), relative advantage, compatibility, ease of use, triability and observability, the descriptive patterns do not differ much for the housing and diet samples. In general, the proportion of respondents who consider sustainable diet to be a good thing is slightly higher than that for sustainable housing, except in Latvia, where the proportion is lower for the diet sample. When comparing the sources that respondents use to obtain information, industry websites, government websites and search engines seem to be more important for sustainable housing than for sustainable diet, while non-professional social media feeds, family and friends are more important for obtaining information on sustainable diet. However, overall search engines are the most commonly used source of information for both topics (sustainable housing and sustainable diet).

Results from the analysis of the communication role and behaviour (more active, interested or passive communication) show that for both topics (sustainable housing and diet) and for most countries (at least three), the following factors are associated with communication behaviour: being concerned about the environment, finding sustainable housing or diet to be a good thing (attitude), awareness of climate change as a serious problem, and holding an academic degree (compared to no school or only a school degree). In addition, for sustainable housing, having the possibility to talk to someone who lives sustainably is relevant. For communication about sustainable diet, age is associated with communication behaviour.

Gender was integrated as independent variable in the multivariate analyses. Only for single countries and models gender is a statistically significant predictor for communication behaviour. When it comes to sustainable housing, in Denmark, women are less likely to show active communication behaviour, while in Germany women are less likely to show passive communication behaviour.

Summing up, the results from the housing and diet sample are largely similar. We find only minor differences, for instance, sustainable diet tends to be a topic that is slightly more known and talked about.

Highlights

- **Communication on sustainable housing and diet:** In general, the communication patterns for sustainable housing and diet were similar. Sustainable diet tends to be a topic that is slightly more known and talked about.
- **Factors influencing communication behaviour:** In most countries, a more active communication role is more likely for people who report a high level of concern for the environment, have positive attitudes towards sustainable housing or diet, perceive climate change as a serious problem and are more highly educated.
- **Gender Dynamics:** In Denmark, women are less likely to actively communicate about sustainable housing, while in Germany women are less likely to passively communicate. With

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regard to sustainable diets in Latvia, women are more likely to show active and less likely to show passive communication behaviour.

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6 Sufficiency lifestyles in Delhi and Mumbai (India)

This chapter is dedicated to the second survey implemented in India. In the following, we outline the study's aims, the applied methodology and implementation. We then present the results - both on the sufficiency lifestyles (longitudinal part) and on the policy evaluation – and we close this section with a discussion and summary.

6.1 Aim of this study

To consider sufficiency-oriented lifestyles not only in Europe but also from an international perspective, we conducted a similar study as in the European countries that investigated households in two megacities in India as an example from the Global South. Hence, during the course of the project, we conducted two surveys in India – one in 2023 (wave 1) and one in 2024 (wave 2, for more details see section 6.2.4). In this deliverable, we focus on the second survey wave with data collection in 2024. Specifically, as in wave 1, we focused data collection in this second wave also on two megacities (>10Mio inhabitants), namely Mumbai and Delhi. Reasons for the selection of these two cities are outlined in D3.1 (Alexander-Haw et al. 2023).

The aim of this second survey wave is two-fold: on the one hand, we investigate the persistence of lifestyles by comparing the lifestyles of the same participants over a period of time. Hence, in this second study, we recruited the same participants as in the first wave, leading to statements about the persistence of lifestyles regarding sufficiency (longitudinal part). On the other hand, we examine the evaluation of policies with a focus on sufficiency in the Indian context. These policies have been carefully selected with the help of experts in the Indian context. Thus, the study in India takes up the main aims of the study in Europe.

6.2 Methods

The following section presents the methodology used to evaluate sufficiency lifestyles, followed by an overview of the survey and data preparation. As outlined in D3.1 (Alexander-Haw et al. 2023), we implemented the second wave in India also in form of face-to-face interviews instead of online surveys as in the European countries investigated. Reasons are related to achieving a representative sample and related to a successful recontact of participants for the second wave who completed the first survey wave. The aim was to recruit as many participants from the first wave as possible. Eventually, 524 (of 1000) respondents participated in both waves - 251 in Delhi and 273 in Mumbai (see section 6.2.5). In contrast to the implementation of the European survey (wave 2), we decided to not include experimental settings since this is very difficult to realize in an interview and specifically in a face-to-face format. The questionnaire for the second wave was adjusted based on (i) the results of the data analysis from the first survey wave and based on (ii) a workshop with Indian experts regarding the policy evaluation (see section 6.2.3).

6.2.1 Questionnaire: measuring sufficiency lifestyles and policy evaluations

As outlined above, the questionnaire of the second survey wave had two objectives: (1) to assess sufficiency lifestyles and their persistence and (2) the general population's sufficiency policy evaluation. In the following, we describe how both parts have been realized in the questionnaire.

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6.2.1.1 Measuring sufficiency lifestyles

This section outlines our strategy for operationalising sufficiency lifestyles, focusing on simplifying the concept into two core elements:

- The environmental impact of individuals' lifestyles, operationalised as the CO_{2eq} emissions using a CF approach.
- Individual's well-being as it is important to promote lifestyles that preserve physical, psychological, and social well-being, assessed using a scale developed by the WHO (for details on the WHO scale see D3.1 Alexander-Haw et al. 2023).

For assessing the persistence of sufficiency lifestyles, we compared participants' answers on both measures (CF and well-being) from survey wave 1 and survey wave 2. In the second survey wave (implemented in 2024), participants were asked to answer the questionnaire for the reference year 2023, while in survey wave 1 (implemented in 2023), the reference year was 2022.

6.2.1.2 Carbon footprint

The CF calculator applied in the Indian context estimates annual per-capita greenhouse gas emissions related to cooling, motorised transport, and diet based on input data for 2022 and 2023. Thus, each respondent received a CF value for each activity and for each year. A detailed description of how each activity was estimated can be found in D3.1 (Alexander-Haw et al. 2023). Figure 54 summarises the CF calculator adapted to the Indian context. The adjustments are outlined in the following sections.

Cooling

As described in D3.1, to estimate the electricity consumption related to cooling, we utilised the number of room air conditioners (AC), air coolers and fans respondents used, the temperature participants cooled their main living room to, and for how many months and hours per day they cooled their dwelling. We also asked if their main room AC was an inverter or fixed-speed. We then applied the regional electricity emission intensity factors to the total energy consumption to calculate the cooling CF. Estimated emissions are divided by the number of household members; to increase comparability between the years, we used OECD weights[23] as in the longitudinal part for the European countries investigated (cf. section 2.2.1.1).

[23] We use a factor of 1 for first adult, 0.5 for each additional adult, and 0.3 for each child (cf. https://www.oecd.org/els/soc/OECD-Note-EquivalenceScales.pdf).

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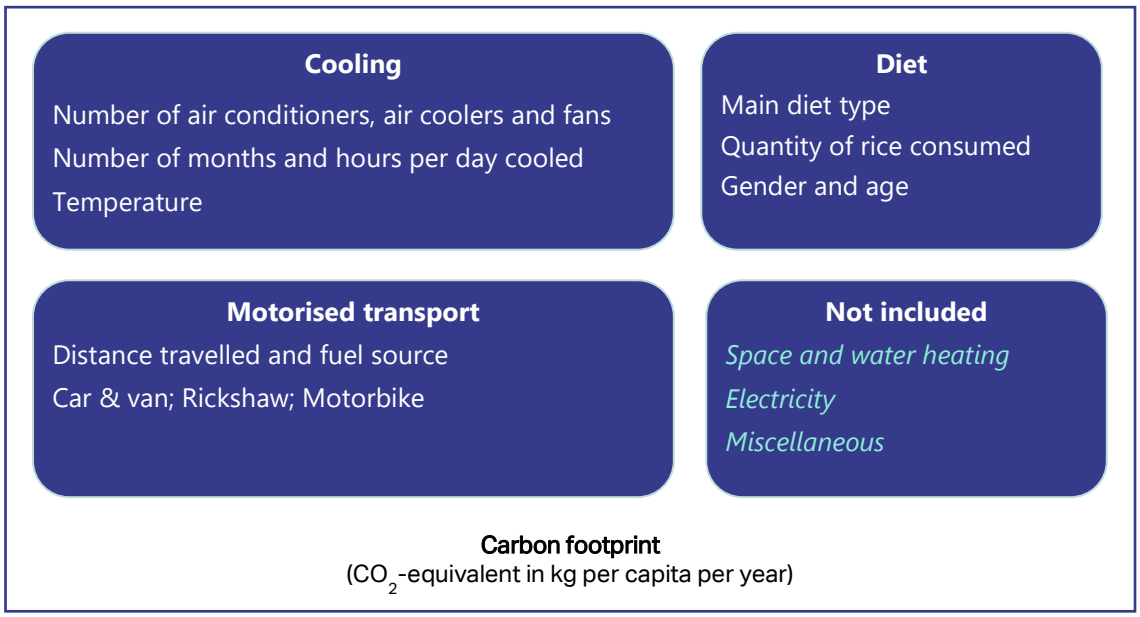
Figure 54: Carbon Footprint Sectors and overview of relevant variables for India



Motorised transport

As described in D3.1, to estimate the motorised transport CF, we asked respondents to report (or estimate as precisely as possible) the total number of kilometres travelled by car and van, by rickshaw, and by motorbike in 2022 (survey wave 1) and 2023 (survey wave 2). We further asked for the fuel type of the car or van and motorcycle respondents used the most, in order to estimate per 100km fuel consumption. We then multiplied fuel consumption and distance travelled per capita yielded our estimate for the total per-capita fuel consumption for each transport type. Multiplying this figure by standard emission factors of fuels yielded per capita CO_{2eq}-emissions related to each fuel type. Motorised transport CF is thus the sum of estimated CO_{2eq}-emissions related to each transport type.

Diet

As described in D3.1, we estimate the diet-related CF depending on the respondent's dairy, fish, egg, meat and rice consumption. As in the EU diet CF calculator, we finally adjusted the diet-related CF depending on the gender and age of the respondent. Given the high proportion of respondents who did not state how much rice they consumed in survey wave 2, we used region-specific average consumption based on the data collected in the first wave to fill these gaps for the diet CF. This amounted to 24kg/year in Delhi, and 72 kg/year in Mumbai.

Total carbon footprint (India)

The Total CF (India) for the Indian context was estimated by combining the CFs related to cooling, motorised transport, and diet. As it differs from the CF calculated for the European countries we will refer to it by mentioning the country in brackets. Due to issues with consistency between survey waves and data quality in wave 1, we did not include carbon footprints related to space and water heating, electricity, or miscellaneous in India (for details cf. D3.1 Alexander-Haw et al. 2023, p. 76-81).

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6.2.1.3 Well-being

For well-being, we used the exact same items in India as in the European context, as described in D3.1 (Alexander-Haw et al. 2023). A reason for this decision is the fact that the WHO-QL-BREF presents the basis for our items and has been validated in an international context to ensure to be applicable across countries and for country comparison – regardless of the Global North or the Global South.

6.2.2 Identification of sufficiency lifestyles

As described in D3.1 and above in the longitudinal study for Europe (see section 2.2.1.3), we identified five sufficiency lifestyle groups using the same general method as in Europe, except that the Total CF (India) for the Indian context is operationalised as the sum of the cooling, motorised transport and diet CFs (see Figure 54).

For each Indian megacity:

1) we used the following two criteria to categorise respondents: CF and well-being.
2) we distinguished quartiles of CF for total CF and individual activities (cooling, motorised transport, and diet).
3) we distinguished above and below median well-being.

Based on the previous steps, we created the following five groups:

Group I - Very Sufficient: above median well-being and CF below or equal to median for all activities[24]

Group II - Sufficient: above median well-being, total CF in the lowest quartile and above second quartile footprint for at least one other CF (i.e., cooling, motorised transport, and diet)

Group III - Low CF, Low Well-Being: below the median total CF and below the median well-being

Group IV - Average CF: total CF between second and third quartile

Group V - High CF: total CF in the fourth quartile

For examining the persistence of sufficiency lifestyles, we checked if respondents stayed within their group by comparing their answers in the first and second survey wave.

6.2.3 Selection of sufficiency policies for the Indian context: Workshop with experts on India

The second aim of the survey was to receive respondents' evaluation of selected sufficiency policies. To ensure that we, as European researchers, do not miss cultural sensitivity when selecting the policies, we conducted a workshop with three experts on India who also have an Indian background themselves. Hence, we presented them with the survey's aim and the planned outline of the survey,

[24] In contrast to the European context, for India, we include respondents whose CF is below or equal to (rather than just below) the median value for each sector as the median of motorised transport CF is equal to 0kg CO_{2eq} in Mumbai.

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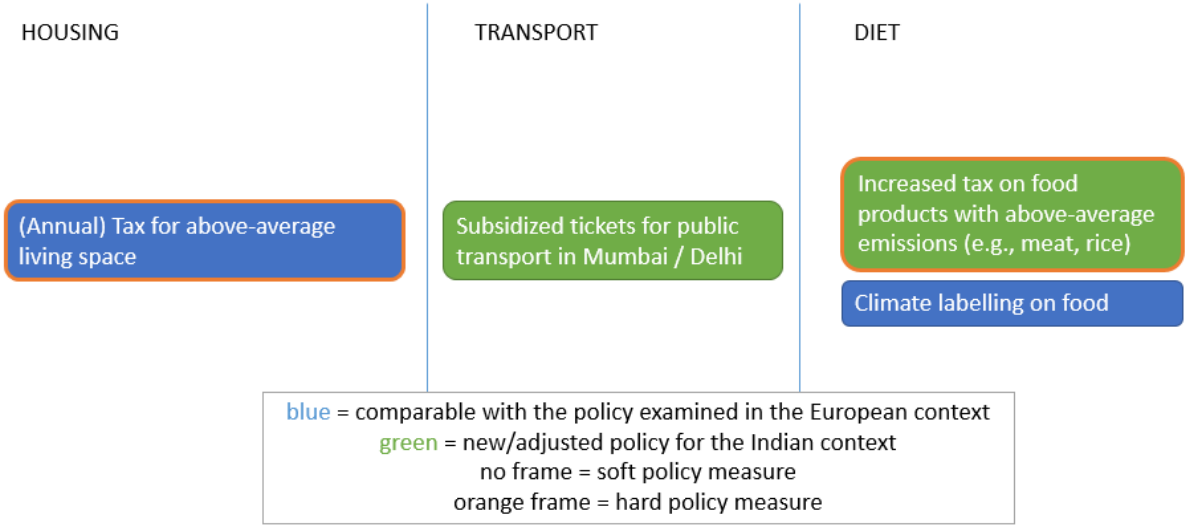
before we carefully developed the sufficiency policies for the policy evaluation in the survey. This workshop took about 2 hours and took place in February 2024. For the selection of the policies focusing on sufficiency, we aimed to create a balance between policies studied in the European context (see sections 3.2.1 and 4.1.1) and, simultaneously, being relevant to the Indian context.

Based on the experts' input, we selected the following four sufficiency policies for evaluation in the survey in Mumbai and Delhi:

- A climate labelling on food
- A carbon tax on food with above-average emissions
- A living space fee, i.e., annual tax for above-average living space
- A public transport subsidy, i.e., subsidised ticket for public transport in Mumbai and Delhi, respectively

Hence, we decided to implement a total of four policy measures – two that are comparable to the European context (one of them focusing on housing and the other one on diet) as well as two additional ones that fit the Indian context (one of them focusing on transport and an adjusted one focusing on diet). In addition, two of the policies present rather soft measures while the other two present hard policy measures (see Figure 55). Moreover, the Indian experts provided valuable advice on specific terms and wordings (e.g., not using the term "energy transition" but more specific terms such as "solar and wind electricity").

Figure 55: Categorisation of the four selected policy measures for the Indian context



To assess respondents' evaluation of the selected sufficiency policy measures, we asked the same questions as in the European context. Specifically, we asked respondents to rate perceived justice, personal affectedness, and acceptability on a five point Likert scale.

6.2.4 Survey implementation

Data collection for the second wave took place in April and May 2024 and was supported by the same market research institute (located in Delhi) as the first survey. Approximately 500 respondents from each city participated in the interviews (for details on the sample, see section 6.2.5). Respondents from the first survey round were recontacted and asked to participate in the second

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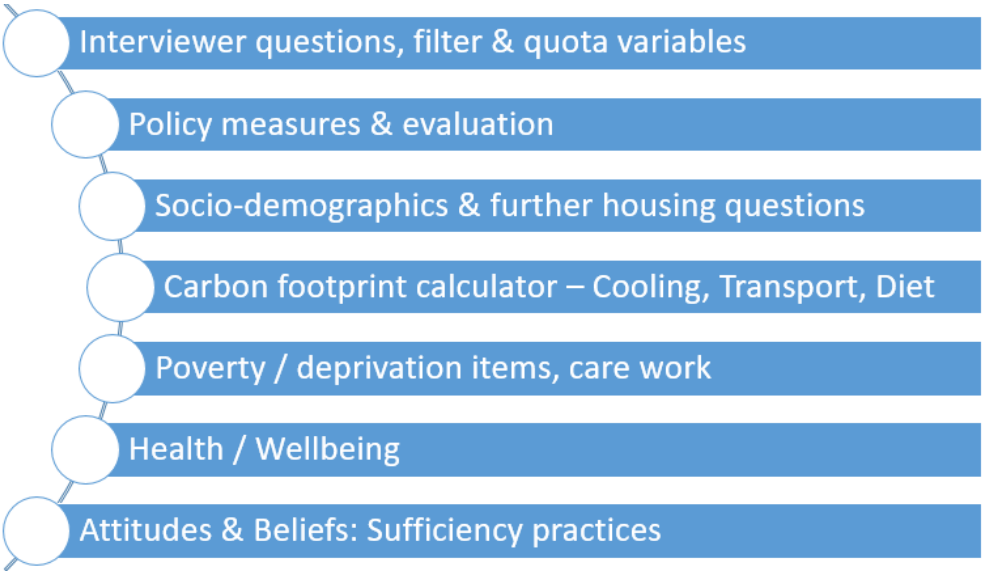
survey in a manner that ensured the samples maintained representativeness for each city (Mumbai and Delhi). Representativeness was defined as considering the distribution of the target population across gender, age, household expenditure and zone of living (in each city). The survey was available in English and Hindi and was accessed by the interviewers via an online tool programmed by Fraunhofer in which the interviewers transferred the respondent's answers. The survey prompted interviewers to read out specific parts (e.g., the policy measures) and/or answer the interviewer questions (e.g., on their age and gender) without the respondents. As not all participants from the first survey participated in the second wave (e.g., not interested, unavailable, or change of place of living), further respondents who had not participated in the first wave (non-panel) were included to raise the sample size (for numbers see section 6.2.5). However, all respondents answered the survey part concerning the evaluation of the policies (full sample). The questionnaire contained various parts in the following order (see Figure 56). The full questionnaire is available upon request.

Figure 56: Order of various parts of the second survey wave in the Indian context



Since the policy measures and their evaluation presented a central part of the survey, this part was asked at the beginning and the order of the policy measures was randomized. The policy measures were presented to the respondents as follows (see Table 18). Each presentation of the policy measure was followed by the evaluation ratings.

Table 18: Presentation of the policy measures in the second survey wave in India

Short introduction: *"In the context of sustainable living, currently policy measures addressing the reduction of the resource consumption per person are discussed. Based on this, we would like to know what you think about the following policy measures. Four policy measures are at the heart of this."*	
Policy Measure	Presentation in the survey
A climate labelling on food	*"Policy measure: It is proposed to introduce climate labelling on food.*

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	With this policy measure in place, food products will be labelled to indicate how many greenhouse gas emissions are produced during cultivation, processing, packaging, transport and sale."
A carbon tax on food	*"Policy measure: It is proposed to introduce an increase in VAT on food with high greenhouse gas emissions.* *With this policy measure in place, the VAT on food and food products with above-average emissions (e.g. meat products and rice) will increase. Consequently, these food products will cost 10% more."*
A living space fee	*"Policy measure: It is proposed to introduce an annual financial fee for dwellings with an above-average living area.* *With this policy measure in place, people with above-average living space will have to pay a higher fee than people whose living space is average or below. This fee applies to all forms of housing - regardless of whether you live in your own home or whether you are renting and also for single and multi-family homes."*
A public transport subsidy	*"Policy measure: It is proposed to introduce subsidized tickets for public transport in your city.* *With this policy measure in place, the tickets for public transport (e.g., metro, tram, bus) will be subsidized by the government. Consequently, the costs for public transport tickets will decrease by 10%."*

6.2.5 Data preparation

As in the first survey wave we again closely monitored the fieldwork and the collected data to ensure high data quality and conducted weekly meetings with the market research institute besides regular e-mail updates (about twice a week) regarding the quota. Moreover and in contrast to the first survey wave, we included two items serving as attention checks asking for socio-demographic information again at the end of the survey (while these questions were already asked at the beginning of the survey) and by comparing the responses from each participant. At the end of the field work, our initial sample size consisted of 1026 participants, with 72 respondents excluded during fieldwork due to low data quality (e.g., both attention check items were answered incorrectly). Hence, we excluded respondents who provided unrealistic data, such as, consuming over 8kg of rice per week, driving 200000km by car or motorbike per year (N=1) or being on holidays for more than 12 weeks/year as well as participants who moved in the reference year for the CF (N=48; 24 in Delhi, 24 in Mumbai).

In addition, we removed respondents whose responses changed in such a way that we were no longer able to use them in the analysis or that were not plausible. This included respondents who reported a different gender in the first and second wave (N=22), an incompatible age (i.e., the age provided in 2023 is smaller than the age provided in 2022 or the age in 2023 is over 2 years higher than the age provided in 2022) (N=3), or whose household size increased or decreased by 5 or more people (N=0).

Thus, our complete sample in India comprises of 961 participants (494 in Delhi and 467 in Mumbai) with 524 respondents (251 in Delhi and 273 in Mumbai) participating in both survey waves and, of

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these, 505 respondents (246 in Delhi and 259 in Mumbai) provided valid responses for both years. Hence, in the Indian context 505 respondents present the panel sample for the longitudinal part on the persistence of sufficiency lifestyles, while the total sample of 961 respondents can be used for the policy evaluation analysis. A sample description based on socio-demographic data and a comparison to national statistics can be found in Annex 1, Table A4.

6.3 Results on India

The upcoming sections present our findings for both Indian megacities in 2022 and 2023, with a focus on the panel respondents who participated in both years for the longitudinal part on the persistence of sufficiency lifestyles. We start by presenting the estimated CFs, followed by a section on well-being. We then present the results regarding the persistence of lifestyle groups over both years. Finally, we present the policy evaluation results with the entire sample from the Indian megacities.

Unless otherwise specified, responses from respondents who did not answer the specific questions were omitted from the figures. Consequently, the sample size for particular results may be less than the overall sample size in each megacity.

6.3.1 Longitudinal part

6.3.1.1 Carbon footprint in India

This section presents summary statistics of various input variables utilised to calculate the CF for the various activities and summary statistics of the CFs related to cooling, motorised transport and diet.

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Table 19: Summary statistics of various CF input variables across both megacities only for the panel sample comparing the two survey waves of 2022 and 2023

	Mean 2022	Mean 2023	SD 2022	SD 2023	Min 2022	Min 2023	Max 2022	Max 2023	N 2022	N 2023	p value
Household size	4.10	4.09	1.20	1.21	1.00	1.00	13.00	13.00	505	505	0.917
Number of air conditioning units	1.24	1.23	1.13	1.09	0.00	0.00	5.00	5.00	505	505	0.821
Number of air coolers	0.31	0.44	0.64	0.69	0.00	0.00	6.00	6.00	505	505	0.002***
Number of fans	3.19	3.28	1.02	1.08	0.00	0.00	10.00	10.00	505	505	0.179
Room temperature (°C) [25]	25.21	24.94	2.63	2.40	20.00	20.00	32.00	34.00	279	245	0.222
Distance travelled by car, motorbike, and rickshaw (in km)	3790.62	3261.29	4677.06	4664.48	0.00	0.00	42526.00	52000.00	505	505	0.072*
Average car occupancy	2.67	2.24	1.06	0.69	1.00	1.00	8.00	6.00	221	217	0.000***
Average rice per person per year (in kg)	44.48	32.04	31.18	29.57	3.90	3.90	208.00	208.00	314	158	0.000***
Eats dairy daily (dummy)	0.74	0.47	0.44	0.50	0.00	0.00	1.00	1.00	483	488	0.000***

*Note: p-value calculated using t-tests; p<0.01:***; p<0.05:**, p<0.1:**

Table 19 depicts summary statistics of eight variables that were used to calculate the CFs related to cooling, motorised transport and diet in 2022 and 2023 across both Indian megacities. Across years, we find a significant increase in the average number of air coolers between 2022 and 2023. We find a significant decrease in the distance travelled by car, motorbike, and rickshaw and in the average car occupancy. Regarding diet, we find a significant decrease in the quantity of rice consumed and percentage of respondents who consume dairy every day between 2022 and 2023[26]. We do not find a significant change in the average household size, average number of air conditioning units and fans, and in the average temperature to which the main living area was cooled between 2022 and 2023.

[25] For the Indian megacities, the room temperature refers to the temperature to which respondents cooled their main living room, in contrast to the study in the EU countries where room temperature refers to the temperature to which the main living room was heated.

[26] The significant decrease in rice consumption is due to a low number of responses in Mumbai in 2023 and is not significant in each megacity when assessed separately.

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Table 20: Summary statistics of the activity-related CFs in India in kg CO_{2eq}, separately for Delhi and Mumbai

	Mean 2022	Mean 2023	SD 2022	SD 2023	Min 2022	Min 2023	Max 2022	Max 2023	N 2022	N 2023	p value
Delhi											
Cooling CF	468	341	449	402	9	9	2123	1893	246	246	0.001***
Motorised transport CF	447	346	473	395	0	0	4436	2667	246	246	0.010**
Diet CF	812	797	215	197	291	291	1419	1296	246	246	0.398
Mumbai											
Cooling CF	676	784	1008	962	0	0	4536	5211	259	259	0.211
Motorised transport CF	178	210	324	406	0	0	1746	4277	259	259	0.33
Diet CF	992	887	222	209	537	507	1395	1364	259	259	0.000***

*Note: p-value calculated using t-tests; p<0.01:***; p<0.05:**, p<0.1:**

Table 20 displays summary statistics of the activity-related CFs in kg of CO_{2eq} associated with cooling, motorised transport and diet in 2022 and 2023, distinguishing by city. Regarding cooling, we observed a statistically significant decrease in the associated CF in Delhi between 2022 and 2023. For the motorised transport CF, we observe a significant decrease in the associated CF in Delhi between 2022 and 2023, whereas there is no significant change (and only descriptively a non-significant increase) in Mumbai. Regarding the CF associated with diet, results reveal a decrease in Mumbai between 2022 and 2023. In Delhi, the CF for diet does not differ significantly between the years. Reasons for these changes may be manifold, for instance, a change in weather conditions between the years and/or COVID-19 related effects. However, the effects could also be artefacts and would require further investigation in future studies.

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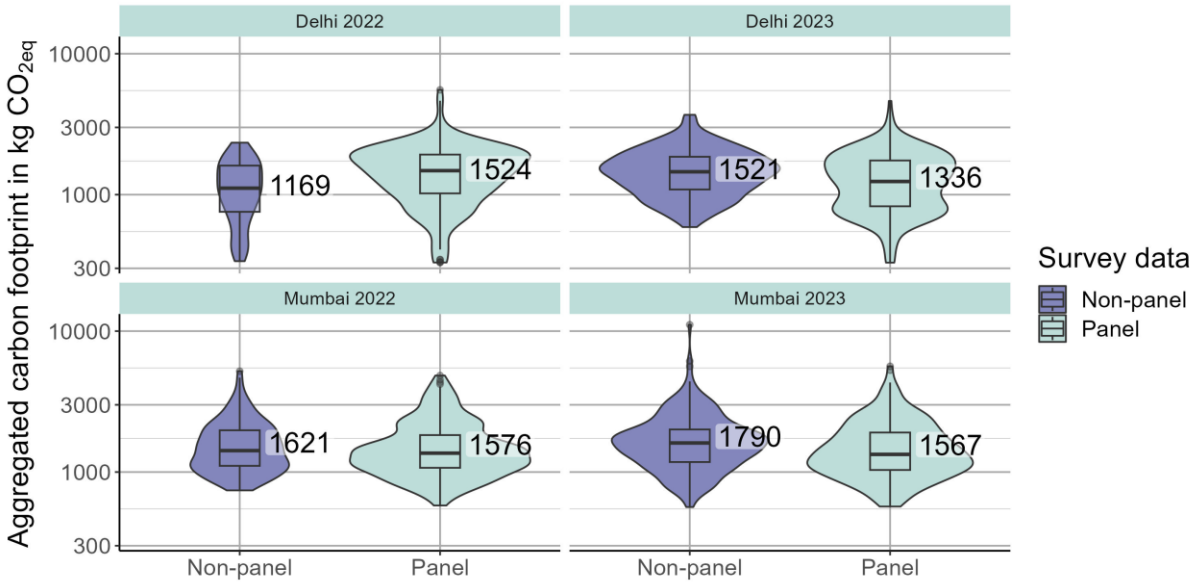
Figure 57: Total CF (India) of respondents in India in 2022 and 2023



Panel (2022 & 2023): Mumbai n=259, Delhi n=246
Non-panel: Mumbai 2022 n=149, 2023 n=224// Delhi 2022 n=77, 2023 n=248
Mean written on graph.
Violin plots are a variation of kernel density plots.

Figure 57 depicts the Total CF (India) composed of the cooling, motorised transport and diet CFs for panel and non-panel respondents in 2022 and 2023. Panel respondents participated in both survey waves, while non-panel respondents participated only in one of the survey waves. The Total CF (India) is generally higher in Mumbai than in Delhi across both years and across panel and non-panel respondents. In 2022, the average Total CF (India) is lower for non-panel respondents than for panel respondents in Delhi, but higher in Mumbai. In 2023, the average Total CF (India) is higher for non-panel than for panel respondents in both megacities. The differences between panel and non-panel respondents may be due to the lower sample size for non-panel respondents (especially in 2022). Another reason may be the fact that panel respondents present a specific type of group, e.g. people who have not moved and are willing to participate in the survey a second time.

6.3.1.2 Well-being in India

To form the lifestyle groups, we also examined respondents' well-being. As Figure 58 shows the respondents reported higher well-being for 2023 than for 2022 – in both Indian cities. In Delhi, the increase in well-being is rather small and the spread of the distribution remained similar. However, in Mumbai, we see an increase and a change in the distribution of responses across the response scale. Specifically, in Mumbai for 2022, the distribution showed two peaks, while for 2023, there is only one peak – comparable to the distributions of well-being in Delhi. Nonetheless, respondents from Delhi seemed to also use the extremes of the response scale to report their well-being, while the distribution in Mumbai is less spread and lies around the scale's midpoint. Reasons for the increased well-being across years in both cities may be the end of the COVID-19 pandemic by the reference year 2023 in the second survey wave.

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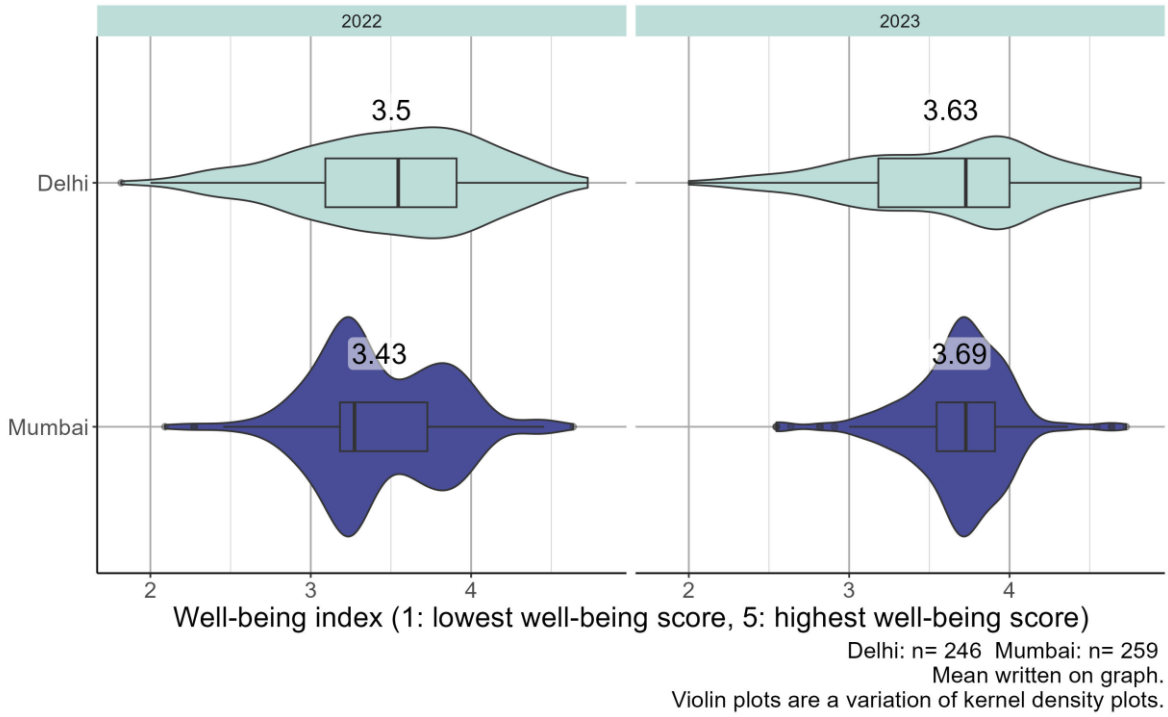
Figure 58: Changes of respondents' well-being between 2022 and 2023.



6.3.1.3 Persistence of lifestyle groups in India

Fehler! Ungültiger Eigenverweis auf Textmarke. depicts the distribution of Indian respondents between the lifestyle groups in 2022 and 2023. As defined, half of the respondents are in Group IV - Average CF, and a quarter are in Group V - High CF. The distribution of respondents in the low CF groups (Groups I to III) varies between the Indian cities in 2022, with 1% or 7% of respondents in Group I - Very Sufficient, 1% or 5% in Group II - Sufficient, and 12% or 23% in Group III - Low CF, Low Well-Being. Hence, in 2022, there were very few respondents with lower CFs and high well-being in Delhi, but almost a quarter (23%) who reported a low CF and a low well-being. In 2023, the picture changed: The distribution of respondents in the low CF groups (Groups I to III) is similar between the megacities, with 9% of respondents in Group I - Very Sufficient, 2% to 6% in Group II - Sufficient, and 10% to 14% in Group III - Low CF, Low Well-Being. Consequently, we found a quite stable distribution across groups in Mumbai but a change, i.e., an increase in the (very) sufficient groups (Groups I and II) in Delhi, across years. Reasons for this may be manifold (e.g., based on differences between the cities); thus, this should present the focus of more detailed analyses in the future.

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Figure 59: Number and percentage of respondents in each lifestyle group in India in 2022 and 2023, separately for Mumbai and Delhi

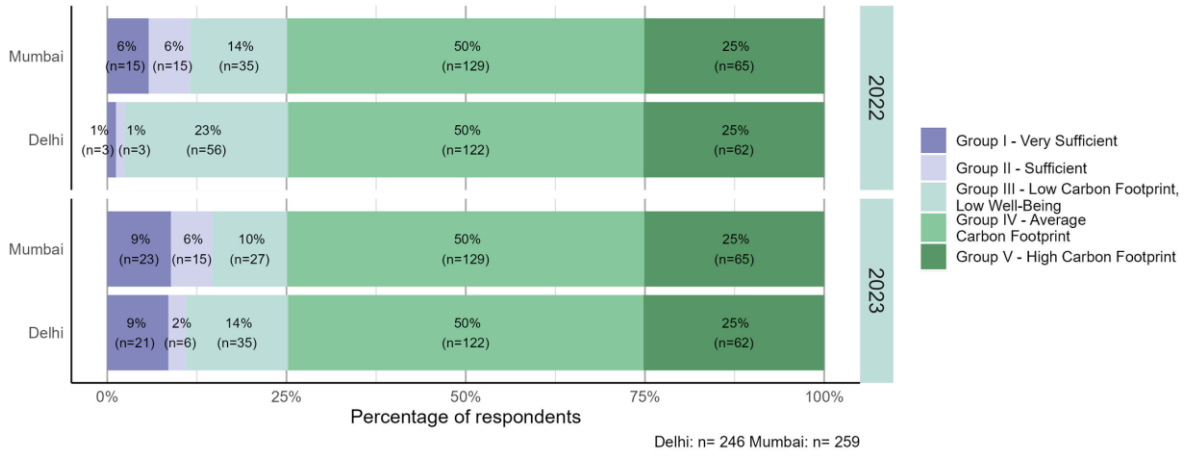

Table 21: Number and percentage of respondents categorised by whether they changed lifestyle group between 2022 and 2023

Lifestyle group in 2022	Delhi		Mumbai	
	Same lifestyle group in 2023	Different lifestyle group in 2023	Same lifestyle group in 2023	Different lifestyle group in 2023
Very Sufficient	1 (33.3%)	2 (66.7%)	3 (20.0%)	12 (80.0%)
Sufficient	0 (0.0%)	3 (100.0%)	0 (0.0%)	15 (100.0%)
Low CF, Low Well-Being	31 (55.4%)	25 (44.6%)	11 (31.4%)	24 (68.6%)
Average CF	87 (71.3%)	35 (28.7%)	77 (59.7%)	52 (40.3%)
High CF	42 (67.7%)	20 (32.3%)	28 (43.1%)	37 (56.9%)

Table 22 presents the number and percentage of respondents categorised by whether they changed lifestyle group between 2022 and 2023 in Delhi and Mumbai. Respondents in Group I - Very Sufficient exhibit relatively low persistence across the years, with between 20% (Mumbai) and 33% (Delhi) remaining in this category. However, it is worth noting that the number of respondents in these groups is extremely low, hence, group changes of single respondents lead to a larger increase in percentages that changed the lifestyle group. Group II - Sufficient has no persistence with 0% of respondents remaining in this group. Thus, respondents in the (very) sufficient groups (Groups I and II) exhibit low persistence, possibly due to the low size. In contrast, Group III - Low CF, Low Well-Being - displays some consistency, with between 31% (Mumbai) and 55% (Delhi) staying within this category. Group IV - Average CF - demonstrates even greater continuity, with between 60% (Mumbai) and 71% (Delhi) remaining within this classification. Lastly, Group V - High CF – shows moderate stability, with between 43% (Mumbai) and 68% (Delhi) staying in this group. It has to be mentioned that the groups differ in size and in descriptors defining them (e.g. the level of well-being is irrelevant for the categorisation to the Average and High CF groups).

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Table 22: Comparing lifestyle groups for the same respondents: Number and percentage of respondents from the low CF lifestyle groups in 2022 and their lifestyle group in 2023

	Delhi	Mumbai
Stayed in a low CF group (Group I to III)	42 (67.7%)	31 (47.7%)
Moved to *Group IV - Average CF*	20 (32.3%)	26 (40.0%)
Moved to *Group V - High CF*	0 (0.0%)	8 (12.3%)
Total	62 (100.0%)	65 (100.0%)

Therefore, Table 22 depicts the number and percentage of respondents from the *three low CF lifestyle groups (i.e. Groups I to III)* in 2022 based on their lifestyle group transitions in 2023. Overall, between 48% (Mumbai) and 68% (Delhi) stayed in a low CF group in 2023. Between 32% (Delhi) and 40% (Mumbai) moved from another group to Group IV - Average CF. No respondents shifted to Group V - High CF in Delhi whereas 12% did in Mumbai. Overall, most respondents stayed in a low CF group, and those who did move majoritarily moved to the average CF group.

Table 23: Comparing lifestyle groups for the same respondents: Number and percentage of respondents from the (very) sufficient groups (Group I and II) in 2022 by lifestyle group in 2023

	Delhi	Mumbai
Stayed in a (very) sufficient group (Groups I and II)	1 (16.7%)	9 (30.0%)
Moved to *Group III - Low CF, Low Well-Being*	0 (0.0%)	6 (20.0%)
Moved to *Group IV - Average CF*	5 (83.3%)	12 (40.0%)
Moved to *Group V - High CF*	0 (0.0%)	3 (10.0%)
Total	6 (100.0%)	30 (100.0%)

Table 23 displays the number and percentage of respondents from the *two (very) sufficient groups (i.e. Groups I and II)* in 2022 based on their lifestyle group transitions in 2023. Overall, few respondents stayed in a (very) sufficient group in 2023 (17% in Delhi and 30% in Mumbai). As mentioned above, this may be due to the low number of respondents in the (very) sufficient groups. Between 0% (Delhi) and 20% (Mumbai) moved to the Group III - Low CF, Low Well-Being in 2022. Between 40% (Mumbai) and 83% (Delhi) moved to Group IV - Average CF. Between 0% (Delhi) and 10% (Mumbai) shifted to Group V - High CF in 2022.

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Figure 60: Persistence of lifestyle groups between 2022 and 2023

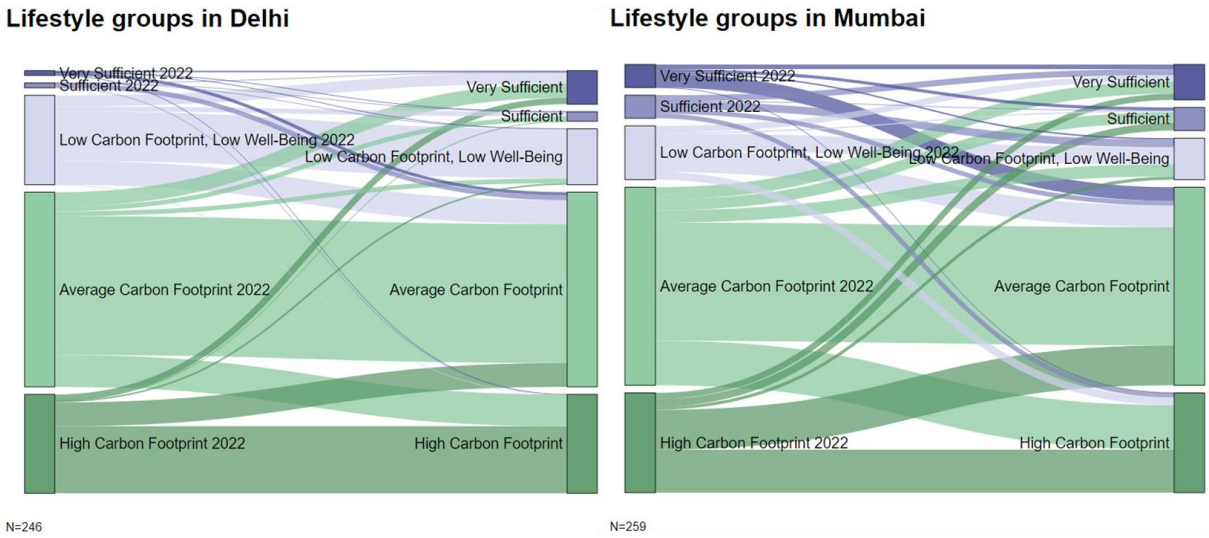

Figure 60 displays the lifestyle group transition of the respondents in 2022 and 2023 in both Indian megacities. Data reveal that the majority of transitions occur between adjacent lifestyle categories (e.g. between high and average CF groups), indicating a degree of continuity in respondents' choices. Notably, there are few instances of respondents from the high CF group in 2022 transitioning to the lower CF groups, (Groups I to III) in 2023, and vice versa. Consequently, there are movements in the direction of sufficiency lifestyles but also movements to more emission-intensive lifestyles in India. These observations underscore the persistence of lifestyle choices within similar sustainability and well-being profiles, with limited movement between contrasting categories. Reasons for transitions from one lifestyle to another may be studied in future research (e.g., focusing on specific lifestyle groups and hence including a larger sample from this lifestyle group and/or conducting qualitative research to explore respondents' reasons).

Table 24: Persistence of lifestyle groups between 2022 and 2023

Lifestyle group in 2023 / Lifestyle group in 2022	I Very Sufficient	II Sufficient	III Low CF, Low Well-Being	IV Average CF	V High CF
Delhi					
I Very Sufficient	1.547	-0.276	-0.710	0.595	-1.012
II Sufficient	-0.532	-0.276	-0.710	1.757	-1.012
III Low CF, Low Well-Being	1.208	1.611	10.025***	-3.884***	-4.943***
IV Average CF	-0.646	0.020	-5.241***	6.758***	-3.157**
V High CF	-0.679	-1.440	-3.288**	-4.625***	8.920***
Mumbai					
I Very Sufficient	1.560	1.288	-0.491	0.813	-2.310
II Sufficient	2.495	-0.989	2.991*	-2.379	-0.469

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Lifestyle group in 2023 / Lifestyle group in 2022	I Very Sufficient	II Sufficient	III Low CF, Low Well-Being	IV Average CF	V High CF
III Low CF, Low Well-Being	0.570	-0.799	4.373***	-1.248	-1.586
IV Average CF	-1.510	-0.251	-2.216	3.169**	-0.967
V High CF	-0.893	0.758	-2.240	-1.827	3.863***

*Note: Table shows standardized residuals from Chi²-Tests; p<0.01:***; p<0.05:**, p<0.1:*; The lack of significant effect for the sufficient lifestyle groups (Group - I Very Sufficient and Group II – Sufficient) may be due to the low number of respondents in these groups.*

Figure 60 offers insights into the persistence of lifestyle groups from 2022 to 2023 in each megacity. As for the longitudinal analysis for the European countries, we employed chi-square tests of independence with a Bernoulli correction to analyse the relationships between the lifestyle groups in these two years. The table displays the standardised residuals, which correspond to the difference between the observed and expected frequencies in each cell. A positive (negative) significant standardised residual indicates that the respondent is more (less) likely than not to be in the specified lifestyle group in 2023 if they were in the corresponding lifestyle group in 2022. The table's diagonal elements in turquoise represent the respondents who remained in the same lifestyle group from one year to the next. Further cells containing significant values are marked in yellow.

For respondents in Group III - Low CF, Low Well-Being, Group IV - Average CF, Group V - High CF, respondents in a specific lifestyle group in 2022 are significantly more likely to be in the same lifestyle group in 2023 than in another. The lack of significant effect for the sufficient lifestyle groups (Group - I Very Sufficient and Group II – Sufficient) may be due to the low number of respondents in these groups.

In addition, we observe the following patterns:

- Respondents in Group II - Sufficient in 2022:
  - are more likely to be in Group III - Low CF, Low Well-Being in Mumbai in 2023.
- Respondents in Group III - Low CF, Low Well-Being in 2022:
  - are less likely to be in Group IV - Average CF in Delhi in 2023,
  - are less likely to be in Group V - High CF in Delhi in 2023.
- Respondents in Group IV - Average CF in 2022:
  - are less likely to be in Group III - Low CF, Low Well-Being in Delhi in 2023,
  - are less likely to be in Group V - High CF in Delhi in 2023.
- Respondents in Group V - High CF in 2022:
  - are less likely to be in Group III - Low CF, Low Well-Being in Delhi in 2023,
  - are less likely to be in Group IV - Average CF in Delhi in 2023.

This underlines, again, the persistence of lifestyle groups and, at the same time, it also shows that respondents tend to transition between neighbouring lifestyle groups– at least in Delhi.

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6.3.1.4 Gender-related effects in India

We carried out logistic regression analyses to examine whether gender is associated with a higher likelihood of changing lifestyle group. We find that women are more likely to be in a different lifestyle group in 2022 and 2023 compared to men. However, this pattern appears to be attributed to the fact that women are more likely to initially belong to low CF groups (Groups I to III) which are more frequently subject to change (to a different lifestyle group most likely due to their well-being but are not more likely to transition to a different lifestyle group based on their CF). Indeed, we do not find any significant difference in likelihood to transition between CF groups between men and women, although this may be due to the relatively low sample size. The underlying reasons for these observed differences remain unclear at this stage of the analysis, requiring further investigation to better understand the factors contributing to the varying rates of lifestyle group changes between men and women.

6.3.2 Policy evaluations in India

The following section presents the results for the second aim of the survey. It displays how respondents evaluated each of the four selected policies in each Indian megacity (see Figure 61). Specifically, we present whether Indian respondents considered the selected sufficiency policy to be fair, to impact them positively (or negatively) and whether they support the policy or not (acceptability rating).

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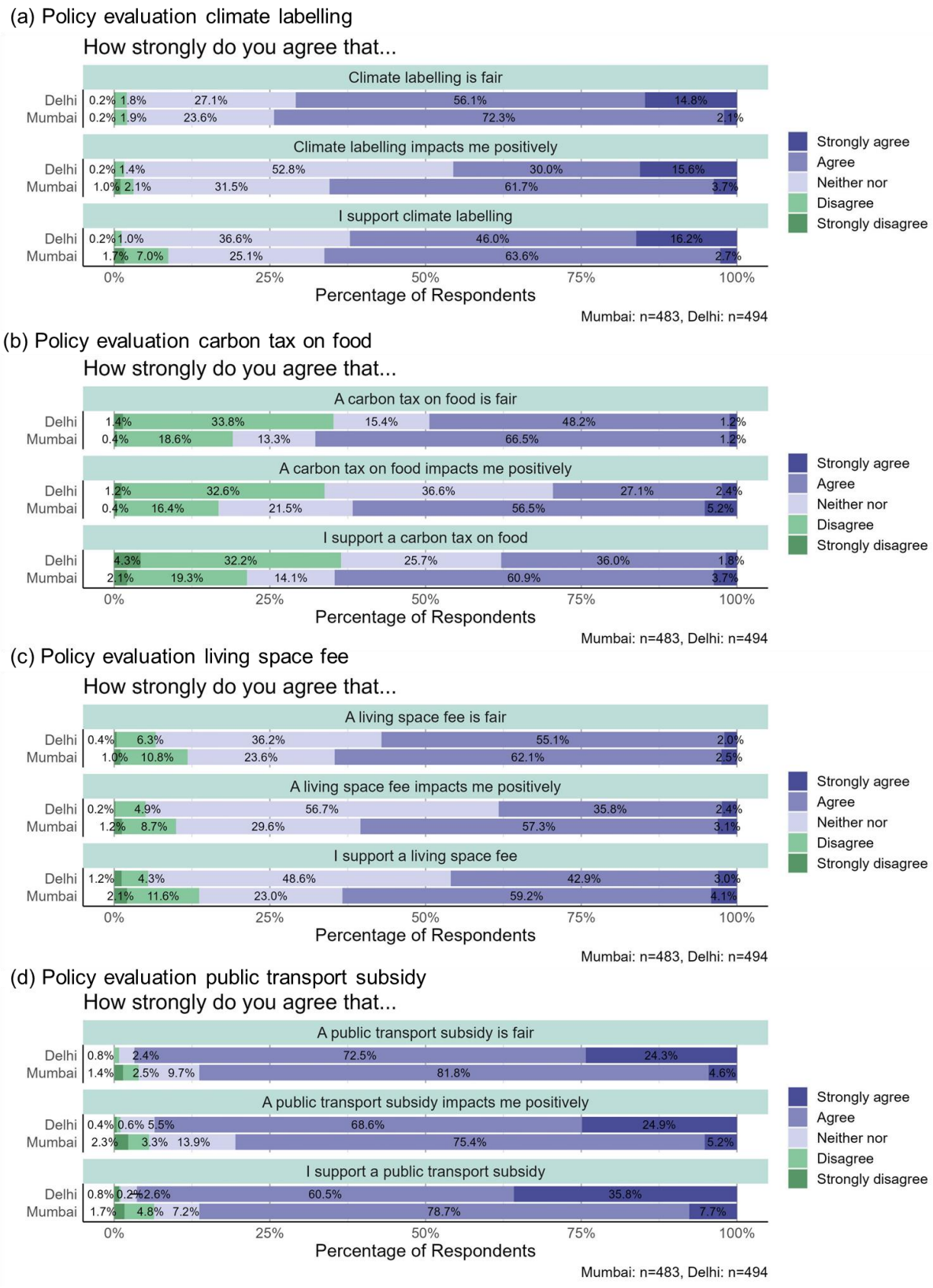
Figure 61: Policy evaluation of the four selected policy measures, separately for Mumbai and Delhi, based on justice, affectedness and acceptability ratings



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Concerning the *justice ratings*, for all policies and across both megacities, an absolute majority of respondents considered the policies to be fair, with the exception of a carbon tax on food in Delhi for which only 49% and thus slightly less than half of the respondents agree that it is fair. A public transport subsidy received the highest rating regarding fairness of the policy in both megacities (by 96% of respondents in Delhi and 86% in Mumbai), followed by climate labelling (71% in Delhi and 74% in Mumbai). A carbon tax on food is considered the least fair in Delhi (49%), whereas a living space fee is considered the least fair in Mumbai (65%) - compared to the fairness rating of the other policies.

Regarding *affectedness ratings*, of the four policies, a public transport subsidy is considered by most respondents to impact them positively (by 94% of respondents in Delhi and 81% in Mumbai). The remaining three policies, i.e. climate labelling, a carbon tax on food, and a living space fee, are considered by the majority of respondents to impact them positively in Mumbai but not in Delhi. In Delhi, over half of respondents do not know if climate labelling and a living space fee would impact them positively or negatively. Around a third of respondents in Delhi expect that a carbon tax on food would impact them negatively.

Analysing the *acceptability ratings*, the majority of respondents support climate labelling (62% in Delhi and 66% in Mumbai) and a public transport subsidy (96% in Delhi and 86% in Mumbai). In Delhi, 30% of respondents support and 37% oppose a carbon tax on food, and 46% support a living space fee. In Mumbai, over 60% of respondents support a carbon tax on food and a living space fee.

Overall, all sufficiency policies received little resistance from the respondents (<10% or <15% of strongly disagree and disagree responses) - except for the carbon tax on food in both Indian cities. Nevertheless, the softer policy measures (i.e., subsidy for public transport and climate labelling) receive more support from the respondents than the harder policy measures. This was especially the case in Delhi (with the highest shares of respondents *strongly* agreeing to support the soft policies investigated with 36% and 16%). However, overall, the sufficiency policies received slightly more support in Mumbai than in Delhi. Reasons for this may be manifold and need to be explored in further research.

6.4 Indian context: Summary and discussion

As the second survey wave implemented in the European countries, the second survey in India had two objectives:

- to investigate the persistence of lifestyles based on a longitudinal approach, hence analysing and comparing the answers of the same respondents over a period of time, leading to insights into the persistence of lifestyles regarding sufficiency.
- to examine the evaluation of policies with a focus on sufficiency in the Indian context based on four carefully selected policy measures with the help of experts with an Indian background.

For the first objective in the longitudinal part, the survey results revealed that, in principle, there is (some) consistency in lifestyle groups (developed based on respondents' reported carbon footprint and well-being). However, we also found some transitions between sufficiency lifestyles in Mumbai and Delhi – from less sufficient lifestyles to more sufficient ones but also vice versa. This demonstrates that lifestyles also change over a period of one year. Notably, specifically in Delhi,

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the transition of sufficiency lifestyles points in a positive direction: The share of respondents in the sufficiency lifestyle groups increased while the share of respondents who reported a low carbon footprint (CF) and low well-being decreased (between the survey waves). In Mumbai, the share of respondents within each lifestyle group appeared to be more stable (than in Delhi).

Another positive finding (in light of sufficiency) is the fact that the overall CF in Mumbai and Delhi decreased between 2022 and 2023. Reasons contributing to this development (i.e., decrease in overall CF) may be (i) the decrease in the distance travelled, (ii) the increase of electric vehicle use that we observed in the data, (iii) lower dairy consumption, as well as (iv) the decrease of the CF of cooling in Delhi.

In addition, we found a small increase in the reported well-being in both Indian cities (which may explain the increased share of respondents in the (very) sufficient groups in Delhi and Mumbai). Reasons for the increased well-being across years in both cities may be the end of the COVID-19 pandemic by the reference year 2023 in the second survey wave.

As a limitation of the study, we need to consider that we reached a specific sample of respondents that participated in the first *and* in the second wave for analyses in the longitudinal part. Looking into sample characteristics, we see that panel participants differ from non-panellists, i.e. this sample is not as representative as desired.

Concerning the survey's second objective on respondents' *evaluation of sufficiency policies*, we found that the majority of respondents in Mumbai and Delhi supported the sufficiency policies, perceived them as fair and as having a positive impact on themselves. This positive evaluation of policy measures was stronger in Mumbai than in Delhi. Moreover, soft policy measures were more supported by the Indian population than hard policy measures. As expected, results revealed differences between Mumbai and Delhi as well as between the results from Europe and India. The latter are presented and discussed in the following section.

6.5 Comparison of the results from Europe and India

In this section, we aim to draw some conclusions by comparing the results from the Indian context (survey results from Mumbai and Delhi) with the results from the European countries (survey results from Germany, France, Italy, Denmark and Latvia). However, it is worth noting that these comparisons should be interpreted with caution due to the different methodological approaches (e.g., face-to-face interviews in India vs. self-administered online survey in Europe), the different geographical scope (i.e., megacities in India vs. country-contexts in Europe) as well as due to cultural differences and required adjustments in questions and wording. Moreover, the surveys consider different reference years in Europe (2021 and 2022) and in India (2022 and 2023).

Figure 62 and Figure 63 depict the distribution of Indian (and EU) respondents between the lifestyle groups in 2022 (2021) and 2023 (2022). Regarding the persistence of lifestyles, we observe that lifestyles in Europe are more stable in our research than in India: The share of respondents within each group is more constant and there is less movement across the two survey waves in Europe compared to India. It has to be noted, however, that the samples in India were also smaller than in Europe. Further analyses would be necessary to determine whether there are significant differences in lifestyle persistence and transition between Europe and India. Comparing the survey results on the share of each lifestyle group of the second survey wave only, there are only minor differences between Europe and India (e.g., very sufficient groups 11-15% in Mumbai and Delhi vs. 10-12% in the European countries investigated; deprived group 10-14% in Mumbai and Delhi vs. 13-16% in the European countries investigated). However, when looking at the proportions of lifestyle groups

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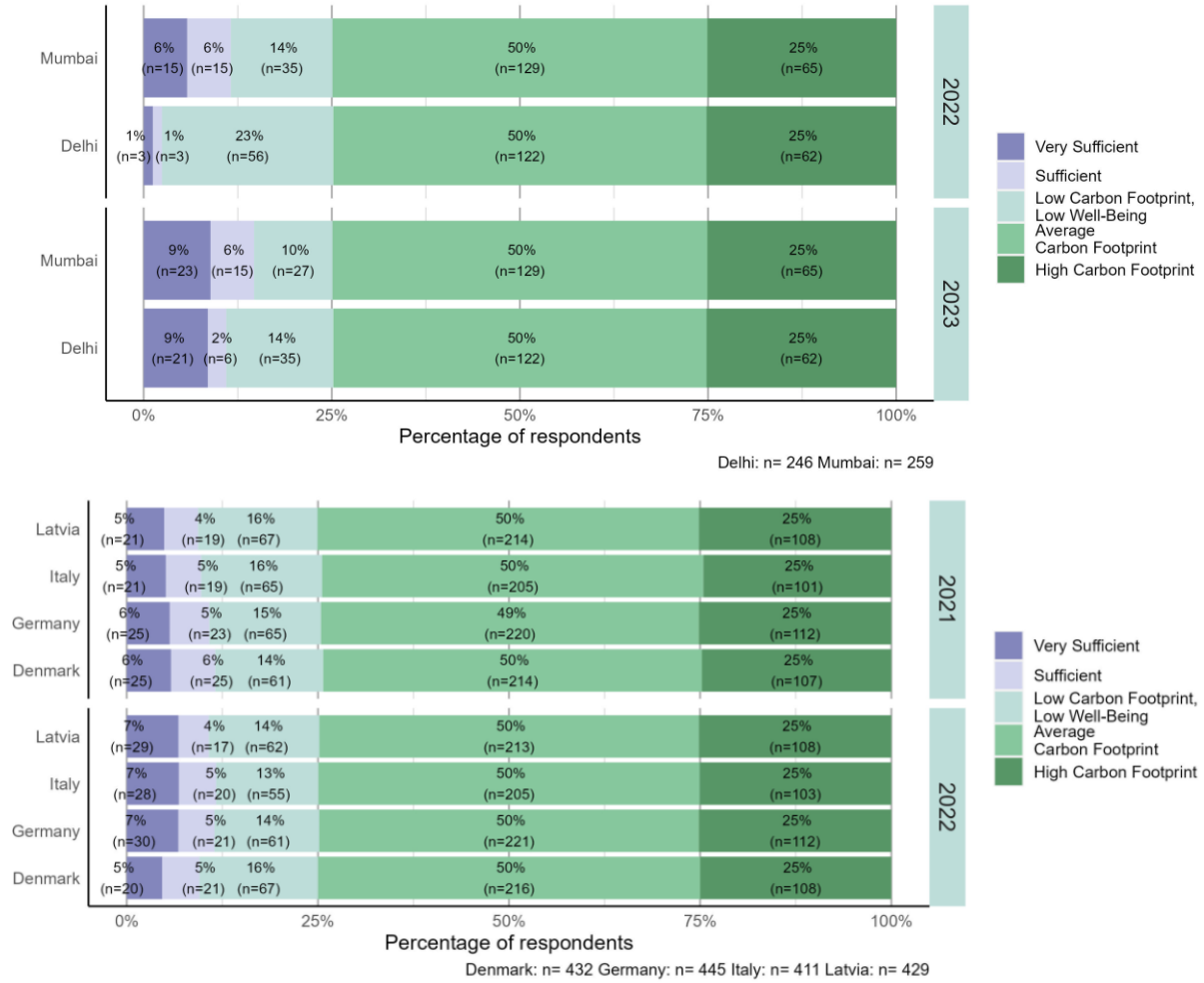
in both waves of the survey, the main difference is the low proportion of the (very) sufficient groups and the high proportion of the deprived group in Delhi in 2022 (compared to the European countries and Mumbai). When assessing movement between lifestyle groups, it appears that more respondents in India move between non-adjacent groups than in Europe. This may be due to the relatively small (smaller) sample size in India, which results in a relatively high proportion of respondents who appear to move between non-adjacent lifestyle groups (although this is only a small proportion of the total number of respondents). Across Europe and India (with the exception of the results from the first survey wave in Delhi), it can be summarised that (sufficiency) lifestyles are largely stable, with around 9-15% of respondents reporting a sufficient lifestyle, and 10-16% reporting low CF but also low well-being.

Figure 62: European vs. Indian context: Number and percentage of respondents in each lifestyle group in India in 2022 and 2023, separately for Mumbai and Delhi[27]



[27] The lifestyle groups "average carbon footprint" and "high carbon footprint" are constructed based on the CF quartiles. In each country and for each year, 50% of respondents fall into the average CF group, while 25% are categorised into the high CF group. In contrast, the sufficiency lifestyle groups consider the CF and the well-being score of respondents.

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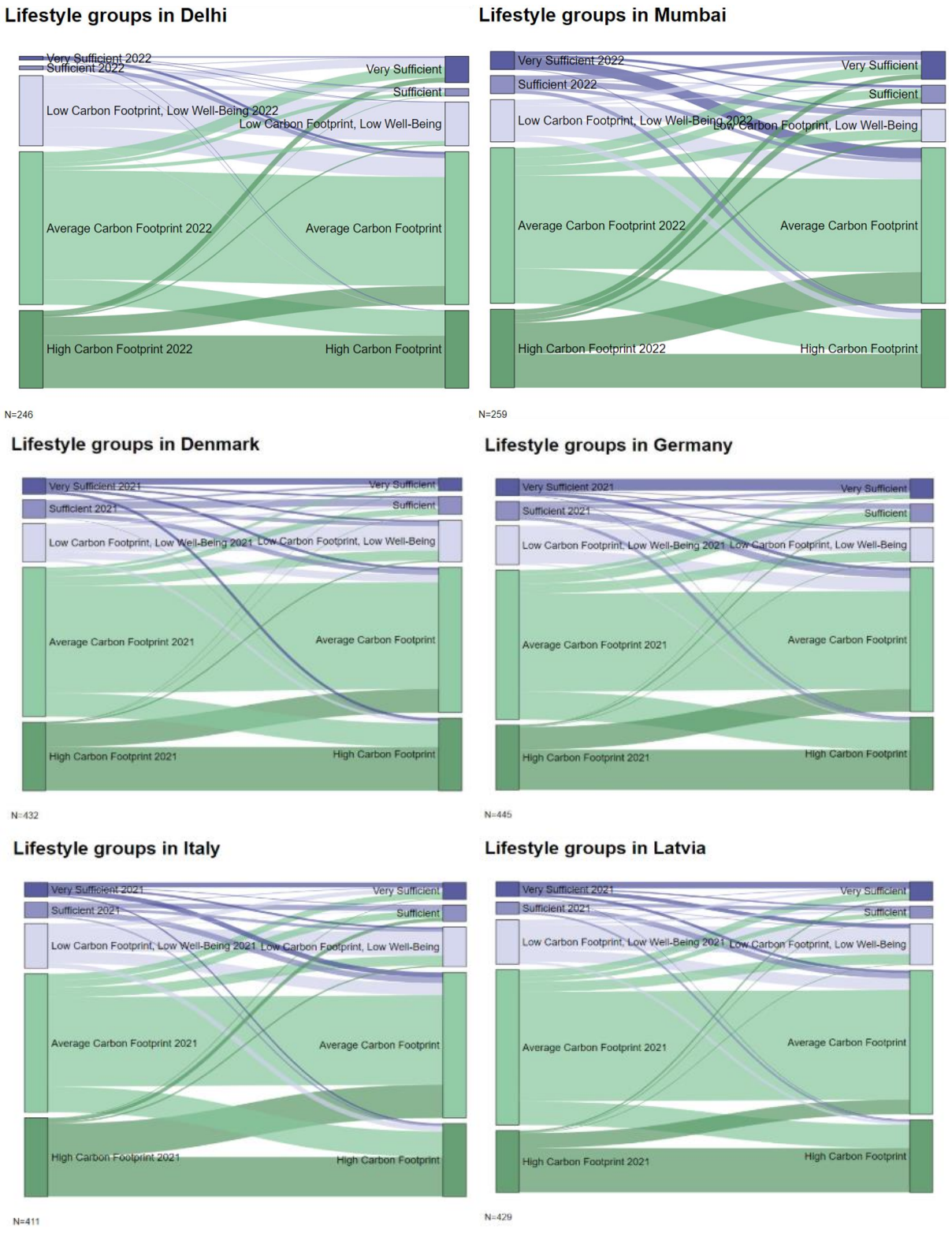
Figure 63: Persistence of lifestyle groups in the Indian megacities and in the EU countries between the first and second survey waves



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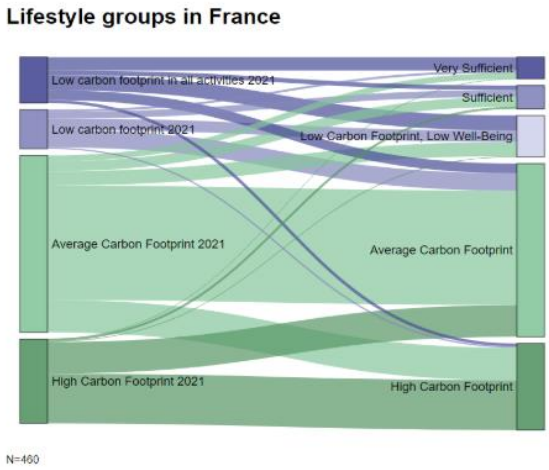

For the *evaluation of policy measures* focusing on sufficiency, we selected two policy measures that were implemented in the European and the Indian context: (1) climate labelling on food, and (2) a fee for above-average living space. While the first is a soft policy measure, the latter is a hard policy measure. When comparing the evaluation of the two policy measures, we observe the following (see Figure 64).

Regarding the climate labelling on food, this soft policy measure, receives support from the majority of respondents in India and in Europe. Notably, the extreme responses (strongly agree and strongly disagree) are selected less often in India than in Europe: The share of respondents that strongly agree with this soft policy on sufficiency is a lot smaller in India (3-16%) than in Europe (20-30%). This may be a cultural difference, e.g., given the relevance of rice in India[28] (especially for low-income households) and its high emissions. However, it is unclear whether the Indian population is aware of the high emissions of rice (just as the population in Europe may be unaware of the high emissions of meat and dairy). At the same time, the share of respondents who are strongly against the climate labelling on food is also smaller in India (1-2%) than in Europe (2-8%). This could also be a cultural difference in making use of extreme answering options which might be more frequent in the more individualistic cultures in Europe than in the more community-oriented ones in India.

Regarding the fee for above-average living space, this hard policy measure received more support in the Indian cities (i.e., Mumbai 63% and Delhi 46%) than in the European countries (16-24%). Notably, we examined megacities in India, but a representative distribution across each country in Europe. Hence, the results are only comparable to some extent. The higher population density in megacities (and in India in general) may be one reason for the higher acceptability ratings of the fee for above-average living space in the two Indian megacities compared to Europe. Moreover, in larger cities the likelihood of living in above-average living space is lower than in rural areas, leading to a lower affectedness or exposure of the sufficiency policy in the Indian cities compared to the European countries investigated. However, the housing structure not only differs between urban and rural areas, but also between countries, thus, many more factors possibly play a role.

Comparing the evaluations of the soft and hard policy measures, one notices that the soft policy measure received more support than the hard policy measure. This result is the same in the European and the Indian context, however, the difference in the evaluations of soft and hard policy

[28] Rice cultivation is linked to high methane levels. The flooded rice fields create ideal conditions for methane-producing microbes. These microbes then release methane into the atmosphere.

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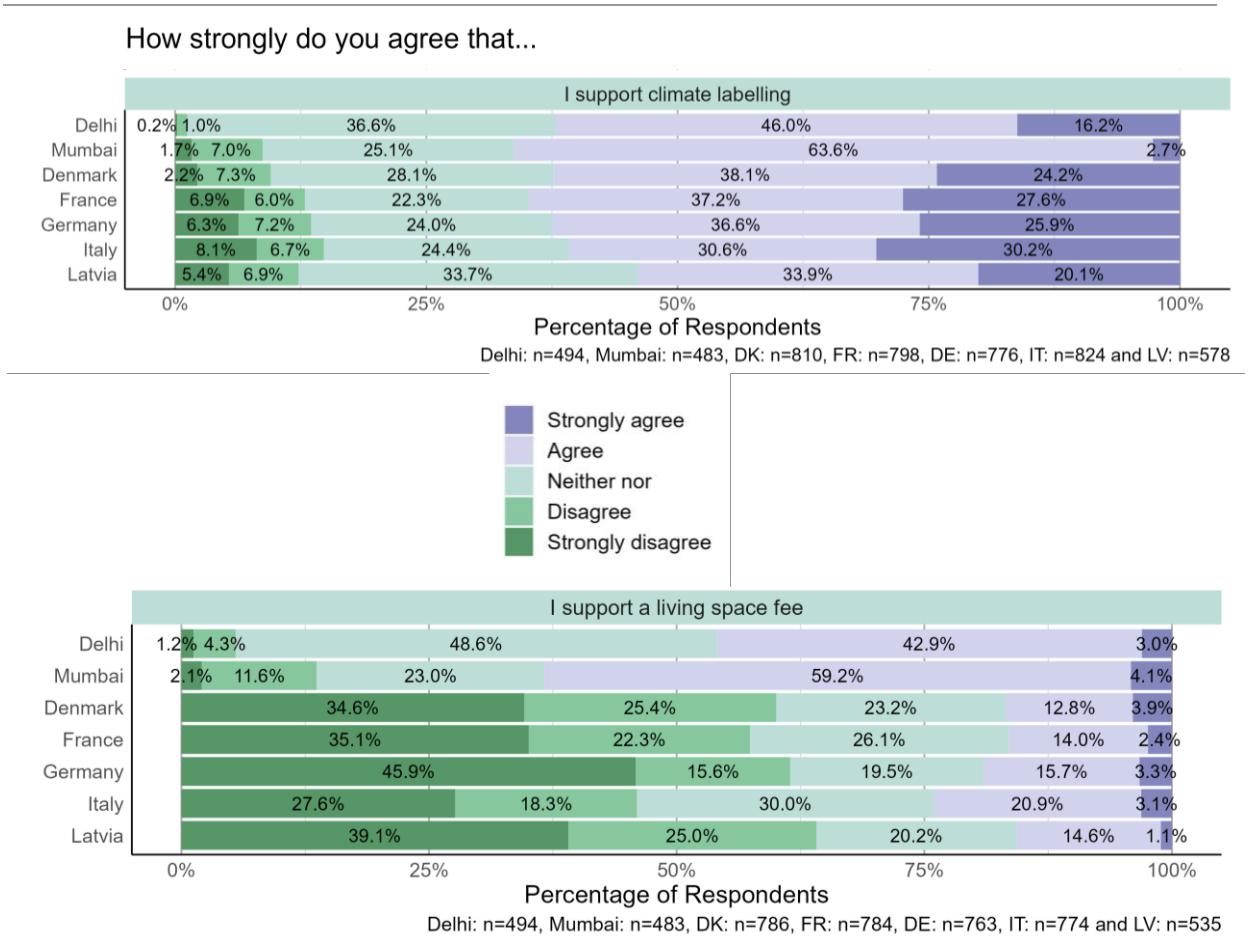
measures is more pronounced in Europe than in India. Overall, we see more differences between India and Europe, in the evaluation of the hard policy measure than in the soft policy measures, however – as outlined above – this may be due to the methodologically required adjustments and the focus on Indian megacities (leading to greater support of the fee on above-average living fee, the hard policy measure).

Figure 64: Comparison of two sufficiency policies and their evaluations between European and Indian respondents



Highlights:

- Indian respondents from Mumbai and Delhi reported slightly lower CFs but slightly higher well-being for 2023 than in the first round of surveys in 2022.
- Lifestyles in India were mostly stable but the share of the sufficient lifestyle groups increased.
- Overall, policy measures on sufficiency were supported by the Indian respondents and considered fair by large shares of the respondents. Hard policy measures (i.e., the carbon tax on food) received lower support than soft policy measures (i.e., subsidised tickets for public transport).
- Further analyses could examine gender differences and determining factors for the lifestyle groups.

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7 Discussion and conclusion

The current deliverable presents the second round of representative surveys of the FULFILL project which are implemented as task 3.3 of WP3. The objectives of task 3.3 are:

- to provide insights into the persistence of sufficiency lifestyles over time,
- to explore the potential incentives and acceptability of policies to promote sufficiency lifestyles using experimental survey designs,
- to investigate potential diffusion pathways. These are defined as the spread of information about sufficiency lifestyles in society.

To this end, a series of surveys were conducted in the five European countries studied and in Delhi and Mumbai as megacities in India. The first survey in the five European countries looked at the persistence of sufficiency lifestyles by collecting data on the CF and well-being for the year 2022 in order to compare the data with the data from 2021 (D3.1 Alexander-Haw et al. 2023). The results are described in chapter 2 of this report. In addition, policy acceptability and evaluation experiments were conducted for two key policy areas, namely housing and diet, which are also the focus of further analysis within the project (D5.2 Breucker and Defard 2023). The housing part combined a framing approach with a focus on two hard measures, i.e. a ban on the construction of single-family homes that are standard-sized or larger and an annual fee for dwellings with above-average living area. The framing contrasted two ways of communicating - either the measure as a way of overcoming unsustainable housing or as a way of punishing unsustainable housing. Preferred combinations with softer policy measures such as incentives or citizen involvement were also explored. The results are presented in chapter 3. Chapter 4 describes the outcomes of two experiments on diet policies that aim to support a sufficiency-oriented lifestyle with low meat consumption. While the same policies were analysed, namely a meat tax, climate labelling of food and a weekly meat-free day in canteens, two different approaches for a framing intervention were applied to investigate the potential effects on policy acceptability. In France, Italy and Latvia, climate change risk information was either presented with or without health risk information. In Denmark and Germany respondents were provided with information on the effectiveness and social acceptance to examine the effects of these treatments on policy acceptability. Finally, chapter 5 presents the findings of analyses on diffusion pathways for sufficiency lifestyles using the data from all experiments, again covering all five countries. Chapter 6 focuses on the study in India, with samples from Mumbai and Delhi. The overall objectives of the study in India are similar, namely to analyse the persistence of sufficiency lifestyles and the acceptance of sufficiency-oriented policies. However, as the first study in India took place later than the first European study and therefore used 2022 as the reference year, the second study uses 2023 and thus differs from the European study in this respect. Also, the policy evaluations in India did not use an experimental design. The structure of the deliverable and the respective objectives are depicted in Figure 65.

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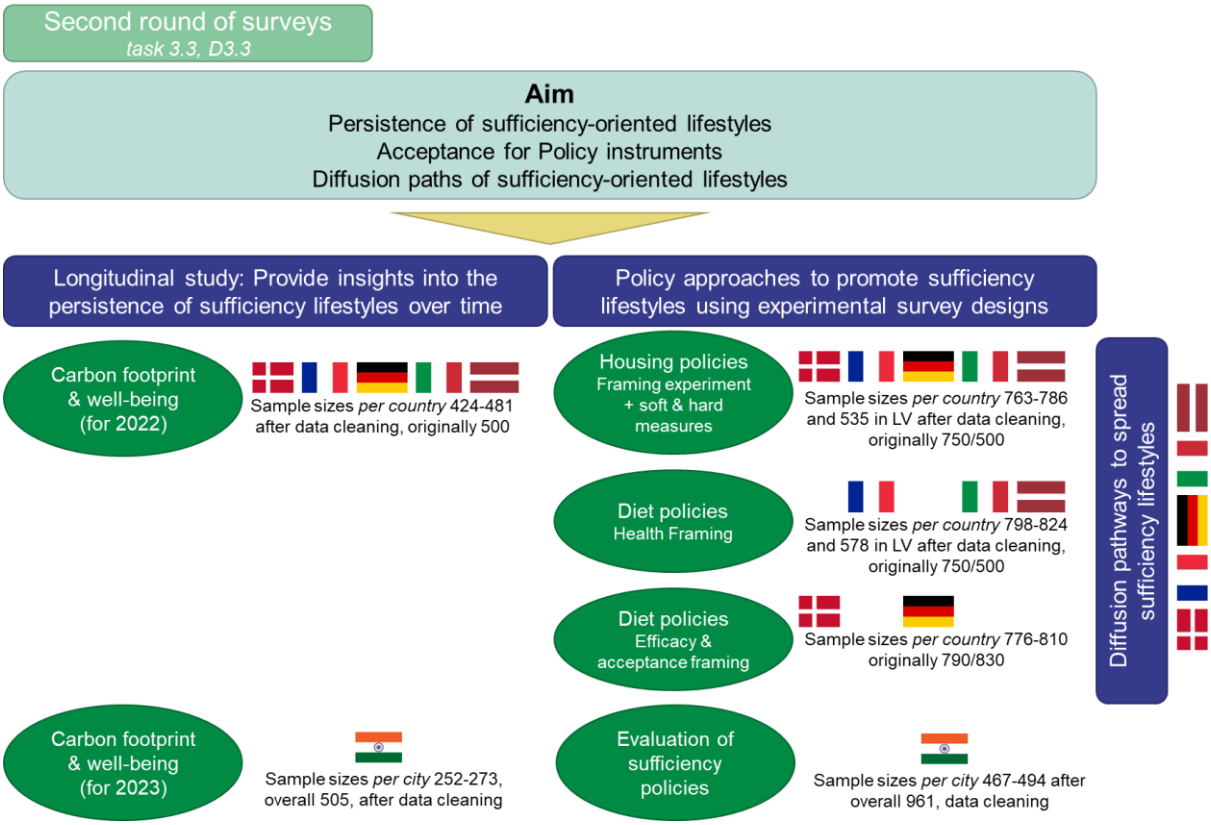
Figure 65: Overview on the studies in this report



In the following, we will take up the main findings from the different chapters and start the discussion on integrating them. Furthermore, study limitations will be addressed and the main findings for the gender dimension discussed.

The longitudinal study analyses the stability of lifestyles, particularly sufficiency lifestyles, over several months, revealing consistent patterns for the European countries in well-being scores and CF between 2021 and 2022. About 61.5% of respondents maintain their lifestyle groups, with transitions mainly occurring between adjacent CF categories (92.4%). Overall, lifestyles show a high degree of stability. This includes all the activities analysed as well as the level of well-being which remains fairly stable. If changes do occur, it is important to note, that higher CF in 2021 correlate with a lower likelihood of transitioning to lower CF categories in 2022, highlighting the challenge of motivating individuals to adopt environmentally friendly behaviours. It has to be noted, that the studies compare two years of crises - 2021 marked by the Corona pandemic and 2022 by the war in Ukraine and the energy crisis. Nevertheless, the overall CF and well-being remain largely unaffected, indicating that larger political and infrastructural changes are required to change lifestyles. As discussed at the end of chapter 5, the patterns of sufficiency lifestyles between Mumbai and Delhi and Europe appeared similar in the second survey - but the first survey, as documented in D3.1, revealed more differences. Nevertheless, some results point in the direction that lifestyles are more transient in India. It is relevant to note that the reference years of the studies in India differ from the ones in Europe and that the sample size and structure as well as the method of data collection is also different. This puts limitations on the comparability of the samples in India and Europe.

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Regarding the acceptance of sufficiency policies in Europe, the survey on housing analyses acceptability evaluations of two sufficiency policies: banning the construction of new single-family homes that are standard-sized or larger and imposing an annual financial fee for above-average living space. Findings show that both measures are generally viewed negatively by respondents on various dimensions (including affectedness, fairness, and effectiveness), with more opposition than support. Latvia had particularly strong opposition, while Italy had fewer dissenters. Respondents expressed a preference for combining the measures with financial incentives for home renovation and involving citizens in policy design. Framing influenced policy evaluation, with more positive responses when the policy aimed to "overcome unsustainable housing choices" compared to "punish unsustainable choices". Variables influencing acceptability evaluations included familiarity with measures, trust in politicians, problem awareness, no preference for single-family homes, less living space, sufficiency orientation and income. Not all variables showed the same level or direction of influence in all countries studied, highlighting the multifaceted nature of policy acceptability across different countries.

The first diet study investigates the *impact of a combined climate risk and health framing* in contrast to a climate risk framing only on the acceptability of diet-related sufficiency policies in France, Italy, and Latvia. While the additional health framing has limited effects overall, it significantly increases the acceptability of a meat-free day in Latvian canteens. The study suggests that lower prior knowledge in Latvia may have amplified the persuasive effects of the combined framing. Respondents who perceived policies as effective and fair were more likely to express higher acceptability. For most countries and policies, expected cost impact had a negative or no correlation with acceptability. Surprisingly, we found a significant and positive correlation between the expected cost impact and the acceptability of the meat tax for society in Italy. Dietary choices played a significant role, with plant-based and low meat diet followers more accepting of certain policies. Unexpectedly, support for environmental policies was associated with lower acceptability in Latvia and Italy for specific measures. The study highlights the complex factors influencing public acceptability of diet-related sufficiency policies.

Respondents in the two countries included in the second diet study, Denmark and Germany, showed higher acceptability for climate labelling and a meat-free day than for a meat tax, consistent with the findings from France, Italy and Latvia in the first diet study. Efficacy framing influenced perceived effectiveness, increasing it for the meat tax and decreasing it for climate labelling. Additional information on societal acceptance increased acceptability ratings for the meat tax in Germany and partially in Denmark, suggesting a positive effect for highly effective but critical policies. However, mixed information about the meat-free day had limited or no effect.

For the second diet study, multivariate analyses also supported framing effects. Age consistently showed a negative relationship with acceptability, while women generally showed more support for the meat-free day. Income and education played different roles in different countries. Trust in scientists, social norms for lower meat consumption and sufficiency orientation were positive predictors of acceptability, while climate change denial consistently had a negative impact. The relevance of trust in scientists highlights the importance of perceived credibility. However, mixed results for meat taxes suggest nuanced perceptions, and the consistent negative impact of climate change denial suggests lower acceptability among deniers. Sufficiency orientation highlighted the alignment of policies with particular values. Policy orientations showed complex relationships.

The analysis on the diffusion pathways explores communication regarding sustainable housing and diet. Generally, roughly half of respondents from various countries were familiar with both topics, with varying levels of awareness for sustainable diet in different countries. The analysis based on

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the diffusion of innovation theory reveals similar patterns for both topics. The proportion of those considering sustainable diet positively is generally higher, except in Latvia. Regarding communication behaviour (role), most respondents indicated to have an interested communication role, i.e. neither passive nor active. This points to a high potential to activate them. Factors influencing communication behaviour include environmental concern, positive attitudes towards sustainability, awareness of climate change, holding an academic degree, and, for housing, the possibility to talk to someone living sustainably. Age is associated with communication behaviour for a sustainable diet. Overall, the results show minor differences between housing and diet samples, with diet being slightly more known and discussed.

In India, respondents were more open to and supportive of sufficiency policies than in Europe. The overall pattern of preference for softer policy measures (such as information campaigns) compared to harder policy measures (such as taxation) was the same in India and Europe.

Limitations of the studies in Europe

The studies in Europe were carried out in 2023, a year still characterised by rising consumer prices in many areas and the ongoing war in Ukraine. This is more relevant in relation to the long-term study, which referred to 2022 for inputs - a year in which energy prices were highly volatile. This also had an impact on the CF estimate. More generally, it remains open and beyond the scope of empirical analyses based on our data to determine the influence of the different crises, which limits the generalisability of the results.

It is also worth noting that the sample size in Latvia for the experimental studies is smaller than in the other countries, which may explain why for some analyses (e.g. regarding housing policies) fewer significant differences are found as this is possibly due to lack of statistical power.

Another limitation of the experimental studies relates to the respondents' familiarity, or more precisely the potential lack of familiarity, with the proposed policies. The questionnaire format can only provide limited information and does not allow for direct interaction with the participants. Therefore, additional formats such as the citizens' workshops conducted in other FULFILL WPs are extremely useful to further embed the findings.

The manipulation check in the experiments also identified a number of participants who did not pass. This means that the remaining sample is unlikely to be fully representative. At the same time, this captures in a ways common situations where it cannot be expected that everyone pays attention when information is provided.

Finally, surveys are not able to capture the societal debates going on at the same time as the policy studies. For example, a meat-free day in canteens was discussed very critically in Germany a few years ago, which may have influenced the participants' responses.

In conclusion, these limitations highlight the importance of combining the findings with other methodological approaches, as envisaged in the project, as well as future research to address these issues and provide a more robust understanding.

Limitations for the study in India were discussed in chapter 5.

Gender dimension

In all analyses, the gender dimension was explored. In the longitudinal study in Europe and India, women's group membership seemed to be more volatile than men's. Further analyses could examine the reasons for it. Summing up for the policy experiments in Europe, we see the following

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patterns: With regard to housing policy, there were hardly any gender differences. In terms of diet, however, we find several gender differences in both experiments. These are not entirely consistent across samples and measures, but overall women tend to be more supportive of the proposed policies. Future analysis aimed at identifying these relationships in detail is highly relevant. Regarding the diffusion paths, gender differences for single countries have been identified. When it comes to sustainable housing, in Denmark women are less likely to show active communication behaviour, while in Germany women are less likely to show passive communication behaviour. Addressing sustainable diets, in Latvia women are more likely to perform active communication behaviour and are less likely to show passive behaviour.

Conclusion

In summary, the second round of the FULFILL project explored the persistence of sufficiency lifestyles, policy incentives and potential diffusion pathways in five European countries. The longitudinal study shows high stability of lifestyles, while the housing survey reveals negative views of strict sufficiency policies, with several framings showing the potential to influence evaluations. Accompanying measures could potentially help to increase acceptability as well as familiarity with policies, trust in politicians and problem awareness. Dietary sufficiency policy studies highlight factors such as perceived effectiveness, fairness and current dietary choices. The study in India shows a different picture regarding the policies which supports the relevance of such cross-country studies comparing European and Indian results. Despite challenges and differences between countries, the findings provide valuable insights for understanding and promoting sufficiency lifestyles.

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9 Annex

A.1 Sample description

Representativeness

The samples from all countries are representative in terms of gender, age, income, and region of living as the recruitment of participants included quota on these variables. The following tables provide an overview in how far the actual sample aligns with statistics on the population level for each survey.

Table A1: Longitudinal study: sample description and comparison to national

Country	Variable	Category	Share in population	Share in the sample (N)	Share among people who did not move during 2021 and who spent 12 weeks or less away from home because they were on holiday (n)
Denmark (N = 503, n = 449)	Gender	Male	49.75%	56.06% (282)	56.79% (255)
		Female	50.25%	43.94% (221)	43.21% (194)
	Age	18-30	20.35%	13.32% (67)	10.91% (49)
		31-45	24.05%	21.07% (106)	21.83% (98)
		46-60	24.15%	27.83% (140)	28.51% (128)
		> 60	31.25%	37.77% (190)	38.75% (174)
	Income	< 191,100 DKK	25.00%	22.47% (113)	22.94% (103)
		191,100 - 308,900 DKK	25.00%	23.86% (120)	22.49% (101)
		308,900 DKK - 530,200 DKK	25.00%	27.04% (136)	27.17% (122)
		> 530,200 DKK	25.00%	26.64% (134)	27.39% (123)
	Region	Hovedstaden	31.80%	29.03% (146)	29.18% (131)
		Midtjylland	22.85%	21.07% (106)	21.38% (96)
		Nordjylland	10.05%	9.74% (49)	9.8% (44)
		Sjaelland	14.35%	15.11% (76)	14.92% (67)
		Syddanmark	20.90%	25.05% (126)	24.72% (111)
	Urbanisation	Cities	37.2%	39.56% (199)	39.2% (176)
		Towns or suburbs	30.6%	32.41% (163)	32.29% (145)
		Rural areas	32.2%	26.04% (131)	26.95% (121)

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Country	Variable	Category	Share in population	Share in the sample (N)	Share among people who did not move during 2021 and who spent 12 weeks or less away from home because they were on holiday (n)
		Unknown	0%	1.99% (10)	1.56% (7)
France (N = 539, n = 481)	Gender	Male	48.40%	51.76% (279)	51.56% (248)
		Female	51.60%	48.24% (260)	48.44% (233)
	Age	18-30	19.00%	7.05% (38)	5.2% (25)
		31-45	23.45%	23.01% (124)	22.04% (106)
		46-60	24.65%	25.42% (137)	25.99% (125)
		> 60	32.90%	44.53% (240)	46.78% (225)
	Income	< 19,200€	25.00%	18.55% (100)	17.46% (84)
		19,200 - 31,200€	27.00%	28.76% (155)	29.31% (141)
		31,200 - 43,200€	23.00%	24.49% (132)	25.16% (121)
		43,200 - 60,000€	16.00%	19.85% (107)	19.75% (95)
		> 60,000€	9.00%	8.35% (45)	8.32% (40)
	Region	Auvergne-Rhône-Alpes	12.40%	13.91% (75)	13.93% (67)
		Bourgogne-Franche-Comté	4.25%	6.86% (37)	6.65% (32)
		Bretagne	5.20%	5.38% (29)	5.2% (25)
		Centre - Val de Loire	3.90%	2.04% (11)	2.08% (10)
		Corse	0.55%	0.19% (1)	0.21% (1)
		Grand Est	8.45%	9.09% (49)	9.15% (44)
		Hauts-de France	9.10%	10.2% (55)	10.19% (49)
		Île de France	18.90%	16.88% (91)	16.84% (81)
		Normandie	5.05%	4.27% (23)	4.57% (22)
		Nouvelle Aquitaine	9.25%	8.72% (47)	8.73% (42)
		Occitanie	9.20%	9.46% (51)	9.36% (45)
		Pays de la Loire	5.90%	4.27% (23)	4.37% (21)
		Provence-Alpes-Côte d'Azur	7.80%	8.72% (47)	8.73% (42)
	Urbanisation	Cities	37.2%	46.75% (252)	44.91% (216)
		Towns or suburbs	28.5%	16.14% (87)	16.63% (80)

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Country	Variable	Category	Share in population	Share in the sample (N)	Share among people who did not move during 2021 and who spent 12 weeks or less away from home because they were on holiday (n)
		Rural areas	34.3%	28.2% (152)	29.94% (144)
		Unknown	0%	8.91% (48)	8.52% (41)
Germany (N = 517, n = 457)	Gender	Male	49.30%	53.19% (275)	52.74% (241)
		Female	50.70%	46.81% (242)	47.26% (216)
	Age	18-30	17.90%	11.22% (58)	9.85% (45)
		31-45	23.60%	25.15% (130)	25.6% (117)
		46-60	25.00%	27.08% (140)	28.23% (129)
		> 60	33.50%	36.56% (189)	36.32% (166)
	Income	< 15,600€	13.30%	15.28% (79)	15.32% (70)
		15,600 - 31,200€	29.70%	28.82% (149)	28.23% (129)
		31,200 - 43,200€	17.80%	16.83% (87)	17.51% (80)
		43,200 - 60,000€	16.80%	14.12% (73)	13.13% (60)
		> 60,000€	22.20%	24.95% (129)	25.82% (118)
	Region	Baden-Württemberg	13.35%	13.35% (69)	13.79% (63)
		Bayern	15.85%	18.18% (94)	18.16% (83)
		Berlin	4.40%	4.64% (24)	4.6% (21)
		Brandenburg	3.05%	3.09% (16)	3.06% (14)
		Bremen	0.80%	0.97% (5)	1.09% (5)
		Hamburg	2.25%	2.71% (14)	2.63% (12)
		Hessen	7.55%	5.8% (30)	6.13% (28)
		Mecklenburg-Vorpommern	1.95%	1.55% (8)	1.09% (5)
		Niedersachsen	9.65%	10.83% (56)	11.38% (52)
		Nordrhein-Westfalen	21.55%	19.92% (103)	20.13% (92)
		Rheinland-Pfalz	4.95%	5.03% (26)	4.6% (21)
		Saarland	1.20%	1.55% (8)	0.88% (4)
		Sachsen	4.85%	2.9% (15)	3.06% (14)
		Sachsen-Anhalt	2.60%	3.48% (18)	3.28% (15)
		Schleswig-Holstein	3.50%	2.51% (13)	2.84% (13)

FULFILL has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101003656.

Country	Variable	Category	Share in population	Share in the sample (N)	Share among people who did not move during 2021 and who spent 12 weeks or less away from home because they were on holiday (n)
		Thüringen	2.55%	3.48% (18)	3.28% (15)
	Urbanisation[29]	Cities	38.7%	42.55% (220)	43.11% (197)
		Towns or suburbs	41.3%	34.04% (176)	33.92% (155)
		Rural areas	20.1%	15.86% (82)	16.19% (74)
		Unknown	0%	7.54% (39)	6.78% (31)
Italy (N = 487, n = 424)	Gender	Male	48.70%	42.3% (206)	42.69% (181)
		Female	51.30%	57.7% (281)	57.31% (243)
	Age	18-30	15.90%	9.65% (47)	8.49% (36)
		31-45	22.55%	24.64% (120)	24.06% (102)
		46-60	27.40%	33.88% (165)	34.67% (147)
		> 60	34.25%	31.83% (155)	32.78% (139)
	Income	< 16,000€	20.00%	22.79% (111)	22.88% (97)
		16,000 - 23,999€	20.00%	22.18% (108)	21.93% (93)
		24,000 - 33,999€	20.00%	21.15% (103)	21.93% (93)
		34,000 - 51,000€	20.00%	21.36% (104)	21.46% (91)
		> 51,000€	20.00%	12.53% (61)	11.79% (50)
	Region	Abruzzo	2.15%	2.46% (12)	2.36% (10)
		Basilicata	0.90%	1.23% (6)	0.94% (4)
		Calabria	3.15%	2.46% (12)	2.83% (12)
		Campania	9.60%	11.29% (55)	11.08% (47)
		Emilia-Romagna	7.50%	5.54% (27)	5.66% (24)
		Friuli-Venezia Giulia	2.00%	2.26% (11)	2.59% (11)
		Lazio	9.65%	9.45% (46)	9.43% (40)
		Liguria	2.55%	3.29% (16)	3.54% (15)
		Lombardia	16.80%	20.12% (13)	20.52% (11)
		Marche	2.55%	2.67% (55)	2.59% (47)

[29] Using urbanisation classification as per https://ec.europa.eu/eurostat/web/degree-of-urbanisation/background, and national statistics from: https://ec.europa.eu/eurostat/databrowser/view/ILC_LVHO01__custom_5023702/default/table?lang=en

FULFILL has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101003656.

Country	Variable	Category	Share in population	Share in the sample (N)	Share among people who did not move during 2021 and who spent 12 weeks or less away from home because they were on holiday (n)
		Molise	0.50%	0.62% (3)	0.71% (3)
		Piemonte	7.20%	4.72% (23)	4.48% (19)
		Puglia	6.65%	8.42% (41)	8.25% (35)
		Sardegna	2.70%	2.67% (13)	2.59% (11)
		Sicilia	8.15%	8.83% (43)	8.02% (34)
		Toscana	6.20%	3.29% (16)	3.3% (14)
		Trentino - Alto Adige/Südtirol	1.80%	1.85% (9)	1.65% (7)
		Umbria	1.45%	1.03% (5)	1.18% (5)
		Valle D'Aosta	0.20%	0% (0)	0% (0)
		Veneto	8.20%	7.8% (38)	8.25% (35)
	Urbanisation	Cities	36.3%	36.14% (176)	35.14% (149)
		Towns or suburbs	45.7%	39.01% (190)	39.86% (169)
		Rural areas	18.0%	8.01% (39)	7.78% (33)
		Unknown	0%	16.84% (82)	17.22% (73)
Latvia (N = 516, n = 440)	Gender	Male	46.10%	46.12% (238)	47.05% (207)
		Female	53.90%	53.88% (278)	52.95% (233)
	Age	18-30	20.50%	14.34% (74)	10.68% (47)
		31-45	23.45%	25% (129)	24.09% (106)
		46-60	23.45%	27.13% (140)	28.41% (125)
		> 60	32.25%	33.53% (173)	36.82% (162)
	Income	< 6.000€	20.00%	20.35% (105)	20.68% (91)
		6.000 - 8.999€	20.00%	13.76% (71)	14.09% (62)
		9.000 - 14.999€	20.00%	22.29% (115)	22.5% (99)
		15.000 - 21.000€	20.00%	21.12% (109)	20% (88)
		> 21.000€	20.00%	22.48% (116)	22.73% (100)
	Region	Kurzeme	12.45%	13.57% (70)	12.73% (56)
		Latgale	13.50%	15.12% (78)	15.91% (70)
		Pieriga	20.00%	15.12% (78)	14.77% (65)

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Country	Variable	Category	Share in population	Share in the sample (N)	Share among people who did not move during 2021 and who spent 12 weeks or less away from home because they were on holiday (n)
		Riga	32.45%	31.4% (162)	31.36% (138)
		Vidzeme	9.55%	11.82% (61)	12.27% (54)
		Zemgale	12.00%	12.98% (67)	12.95% (57)
	Urbanisation	Cities	43.2%	38.57% (199)	38.18% (168)
		Towns or suburbs	22.0%	14.53% (75)	14.77% (65)
		Rural areas	34.8%	37.98% (196)	38.41% (169)
		Unknown	0%	8.91% (46)	8.64% (38)

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Table A2: Housing study: sample description and comparison to national statistics

Country	Variable	Category	Share in population	Share in the sample (N)	Share among people who did not move during 2021 and who spent 12 weeks or less away from home because they were on holiday (n)
Denmark (N = 786, n = 682)	Gender	Male	49.75%	49.87% (392)	50.59% (345)
		Female	50.25%	50.13% (394)	49.41% (337)
	Age	18-30	20.35%	21.12% (166)	16.13% (110)
		31-45	24.05%	19.47% (153)	20.09% (137)
		46-60	24.15%	31.93% (251)	34.9% (238)
		> 60	31.25%	27.48% (216)	28.89% (197)
	Income	< 191,100 DKK	25.00%	22.9% (180)	21.11% (144)
		191,100 - 308,900 DKK	25.00%	26.72% (210)	25.81% (176)
		308,900 DKK - 530,200 DKK	25.00%	25.95% (204)	27.27% (186)
		> 530,200 DKK	25.00%	24.43% (192)	25.81% (176)
	Region	Hovedstaden	31.80%	32.95% (259)	33.14% (226)
		Midtjylland	22.85%	22.26% (175)	21.7% (148)
		Nordjylland	10.05%	10.18% (80)	9.97% (68)
		Sjaelland	14.35%	12.6% (99)	13.05% (89)
		Syddanmark	20.90%	22.01% (173)	22.14% (151)
	Urbanisation	Cities	37.2%	43.77% (344)	42.08% (287)
		Towns or suburbs	30.6%	27.1% (213)	27.71% (189)
		Rural areas	32.2%	28.12% (221)	29.18% (199)
		Unknown	0%	1.02% (8)	1.03% (7)
France (N = 784, n = 671)	Gender	Male	48.40%	47.32% (371)	47.09% (316)
		Female	51.60%	52.68% (413)	52.91% (355)
	Age	18-30	19.00%	17.73% (139)	14.46% (97)
		31-45	23.45%	25.64% (201)	26.23% (176)
		46-60	24.65%	23.6% (185)	24.89% (167)
		> 60	32.90%	33.04% (259)	34.43% (231)
	Income	< 19,200€	25.00%	25.13% (197)	24.44% (164)
		19,200 - 31,200€	27.00%	27.55% (216)	25.78% (173)

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		31,200 - 43,200€	23.00%	21.56% (169)	21.76% (146)
		43,200 - 60,000€	16.00%	16.33% (128)	17.59% (118)
		> 60,000€	9.00%	9.44% (74)	10.43% (70)
	Region	Auvergne-Rhône-Alpes	12.40%	12.88% (101)	13.41% (90)
		Bourgogne-Franche-Comté	4.25%	3.83% (30)	3.58% (24)
		Bretagne	5.20%	4.97% (39)	4.62% (31)
		Centre - Val de Loire	3.90%	3.83% (30)	3.43% (23)
		Corse	0.55%	0.51% (4)	0.45% (3)
		Grand Est	8.45%	8.42% (66)	8.49% (57)
		Hauts-de France	9.10%	8.67% (68)	8.79% (59)
		Île de France	18.90%	17.47% (137)	17.73% (119)
		Normandie	5.05%	5.36% (42)	5.51% (37)
		Nouvelle Aquitaine	9.25%	9.82% (77)	9.39% (63)
		Occitanie	9.20%	10.59% (83)	10.58% (71)
		Pays de la Loire	5.90%	5.48% (43)	5.66% (38)
		Provence-Alpes-Côte d'Azur	7.80%	8.16% (64)	8.35% (56)
	Urbanisation	Cities	37.2%	51.79% (406)	50.52% (339)
		Towns or suburbs	28.5%	15.82% (124)	16.1% (108)
		Rural areas	34.3%	30.99% (243)	32.04% (215)
		Unknown	0%	1.4% (11)	1.34% (9)
Germany (N = 763, n = 688)	Gender	Male	49.30%	49.8% (380)	49.85% (343)
		Female	50.70%	50.2% (383)	50.15% (345)
	Age	18-30	17.90%	18.61% (142)	15.99% (110)
		31-45	23.60%	23.2% (177)	22.67% (156)
		46-60	25.00%	24.51% (187)	26.02% (179)
		> 60	33.50%	33.68% (257)	35.32% (243)
	Income	< 15,600€	13.30%	12.19% (93)	11.77% (81)
		15,600 - 31,200€	29.70%	29.1% (222)	28.34% (195)
		31,200 - 43,200€	17.80%	18.61% (142)	18.75% (129)
		43,200 - 60,000€	16.80%	17.17% (131)	17.73% (122)
		> 60,000€	22.20%	22.94% (175)	23.4% (161)
	Region	Baden-Württemberg	13.35%	22.02% (168)	21.8% (150)
		Bayern	15.85%	16.12% (123)	16.42% (113)

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		Berlin	4.40%	14.29% (109)	14.39% (99)
		Brandenburg	3.05%	9.7% (74)	9.74% (67)
		Bremen	0.80%	7.73% (59)	6.98% (48)
		Hamburg	2.25%	5.37% (41)	5.67% (39)
		Hessen	7.55%	1.18% (9)	1.16% (8)
		Mecklenburg-Vorpommern	1.95%	4.33% (33)	4.65% (32)
		Niedersachsen	9.65%	2.62% (20)	2.62% (18)
		Nordrhein-Westfalen	21.55%	3.41% (26)	3.05% (21)
		Rheinland-Pfalz	4.95%	3.8% (29)	4.07% (28)
		Saarland	1.20%	3.67% (28)	3.49% (24)
		Sachsen	4.85%	2.23% (17)	2.33% (16)
		Sachsen-Anhalt	2.60%	1.7% (13)	1.6% (11)
		Schleswig-Holstein	3.50%	1.05% (8)	1.16% (8)
		Thüringen	2.55%	0.79% (6)	0.87% (6)
	Urbanisation[30]	Cities	38.7%	38.93% (297)	39.39% (271)
		Towns or suburbs	41.3%	35.26% (269)	35.32% (243)
		Rural areas	20.1%	20.71% (158)	20.64% (142)
		Unknown	0%	5.11% (39)	4.65% (32)
Italy (N = 774, n = 682)	Gender	Male	48.70%	47.55% (368)	49.41% (337)
		Female	51.30%	52.45% (406)	50.59% (345)
	Age	18-30	15.90%	16.93% (131)	14.81% (101)
		31-45	22.55%	20.41% (158)	19.94% (136)
		46-60	27.40%	28.04% (217)	28.74% (196)
		> 60	34.25%	34.63% (268)	36.51% (249)
	Income	< 16,000€	20.00%	20.8% (161)	20.53% (140)
		16,000 - 23,999€	20.00%	20.54% (159)	20.82% (142)
		24,000 - 33,999€	20.00%	21.45% (166)	21.55% (147)
		34,000 - 51,000€	20.00%	20.8% (161)	20.53% (140)
		> 51,000€	20.00%	16.41% (127)	16.57% (113)
	Region	Abruzzo	2.15%	2.33% (18)	2.49% (17)
		Basilicata	0.90%	0.65% (5)	0.59% (4)

[30] Using urbanisation classification as per https://ec.europa.eu/eurostat/web/degree-of-urbanisation/background, and national statistics from: https://ec.europa.eu/eurostat/databrowser/view/ILC_LVHO01__custom_5023702/default/table?lang=en

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		Calabria	3.15%	3.36% (26)	2.93% (20)
		Campania	9.60%	9.95% (77)	9.82% (67)
		Emilia-Romagna	7.50%	7.24% (56)	7.33% (50)
		Friuli-Venezia Giulia	2.00%	1.94% (15)	2.2% (15)
		Lazio	9.65%	9.95% (77)	10.41% (71)
		Liguria	2.55%	2.45% (19)	2.79% (19)
		Lombardia	16.80%	17.44% (16)	17.01% (12)
		Marche	2.55%	2.07% (77)	1.76% (67)
		Molise	0.50%	0.52% (4)	0.59% (4)
		Piemonte	7.20%	6.72% (52)	6.89% (47)
		Puglia	6.65%	7.49% (58)	8.06% (55)
		Sardegna	2.70%	2.33% (18)	2.64% (18)
		Sicilia	8.15%	8.27% (64)	7.48% (51)
		Toscana	6.20%	5.94% (46)	5.87% (40)
		Trentino - Alto Adige/Südtirol	1.80%	1.42% (11)	1.32% (9)
		Umbria	1.45%	1.29% (10)	1.32% (9)
		Valle D'Aosta	0.20%	0% (0)	0% (0)
		Veneto	8.20%	8.53% (66)	8.5% (58)
	Urbanisation	Cities	36.3%	43.8% (339)	43.4% (296)
		Towns or suburbs	45.7%	42.25% (327)	42.82% (292)
		Rural areas	18.0%	9.17% (71)	9.09% (62)
		Unknown	0%	4.78% (37)	4.69% (32)
Latvia (N = 535, n = 474)	Gender	Male	46.10%	45.98% (246)	46.62% (221)
		Female	53.90%	54.02% (289)	53.38% (253)
	Age	18-30	20.50%	21.5% (115)	17.93% (85)
		31-45	23.45%	24.3% (130)	23.21% (110)
		46-60	23.45%	22.62% (121)	24.89% (118)
		> 60	32.25%	31.59% (169)	33.97% (161)
	Income	< 6.000€	20.00%	21.5% (115)	20.46% (97)
		6.000 - 8.999€	20.00%	19.25% (103)	19.83% (94)
		9.000 - 14.999€	20.00%	21.87% (117)	21.73% (103)
		15.000 - 21.000€	20.00%	16.26% (87)	16.24% (77)
		> 21.000€	20.00%	21.12% (113)	21.73% (103)
	Region	Kurzeme	12.45%	12.34% (66)	12.66% (60)

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		Latgale	13.50%	13.64% (73)	13.71% (65)
		Pieriga	20.00%	19.07% (102)	20.25% (96)
		Riga	32.45%	33.27% (178)	31.01% (147)
		Vidzeme	9.55%	9.53% (51)	10.34% (49)
		Zemgale	12.00%	12.15% (65)	12.03% (57)
	Urbanisation	Cities	43.2%	39.81% (213)	38.19% (181)
		Towns or suburbs	22.0%	13.27% (71)	13.71% (65)
		Rural areas	34.8%	36.45% (195)	38.82% (184)
		Unknown	0%	10.47% (56)	9.28% (44)

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Table A3: Diet study 1 (health framing treatment): sample description and comparison to national statistics

Country	Variable	Category	Share in population	Share in the sample
France (N=798)	Gender	Male	48.40%	48.12% (384)
		Female	51.60%	51.88% (414)
	Age	18-30	19.00%	15.54% (124)
		31-45	23.45%	23.31% (186)
		46-60	24.65%	25.56% (204)
		> 60	32.90%	35.59% (284)
	Income	< 19,200€	25.00%	21.43% (171)
		19,200 - 31,200€	27.00%	28.7% (229)
		31,200 - 43,200€	23.00%	23.56% (188)
		43,200 - 60,000€	16.00%	17.67% (141)
		> 60,000€	9.00%	8.65% (69)
	Region	Auvergne-Rhône-Alpes	12.40%	10.15% (81)
		Bourgogne-Franche-Comté	4.25%	4.89% (39)
		Bretagne	5.20%	6.39% (51)
		Centre - Val de Loire	3.90%	4.89% (39)
		Corse	0.55%	0.25% (2)
		Grand Est	8.45%	9.52% (76)
		Hauts-de France	9.10%	9.65% (77)
		Île de France	18.90%	19.3% (154)
		Normandie	5.05%	4.26% (34)
		Nouvelle Aquitaine	9.25%	8.4% (67)
		Occitanie	9.20%	8.65% (69)
		Pays de la Loire	5.90%	5.26% (42)
		Provence-Alpes-Côte d'Azur	7.80%	8.4% (67)
	Urbanisation	Cities	37.2%	45.49% (363)
		Towns or suburbs	28.5%	17.29% (138)
		Rural areas	34.3%	29.45% (235)
		Unknown	0%	7.77% (62)
Italy (N=824)	Gender	Male	48.70%	45.63% (376)
		Female	51.30%	54.37% (448)
	Age	18-30	15.90%	18.69% (154)
		31-45	22.55%	21% (173)
		46-60	27.40%	27.43% (226)
		> 60	34.25%	32.89% (271)
	Income	< 16,000€	20.00%	19.9% (164)
		16,000 - 23,999€	20.00%	20.87% (172)
		24,000 - 33,999€	20.00%	21.72% (179)
		34,000 - 51,000€	20.00%	20.27% (167)
		> 51,000€	20.00%	17.23% (142)

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Country	Variable	Category	Share in population	Share in the sample
	Region	Abruzzo	2.15%	2.31% (19)
		Basilicata	0.90%	1.46% (12)
		Calabria	3.15%	3.03% (25)
		Campania	9.60%	11.17% (92)
		Emilia-Romagna	7.50%	7.52% (62)
		Friuli-Venezia Giulia	2.00%	1.33% (11)
		Lazio	9.65%	10.19% (84)
		Liguria	2.55%	2.67% (22)
		Lombardia	16.80%	17.48% (13)
		Marche	2.55%	1.58% (92)
		Molise	0.50%	0.73% (6)
		Piemonte	7.20%	5.83% (48)
		Puglia	6.65%	8.13% (67)
		Sardegna	2.70%	3.16% (26)
		Sicilia	8.15%	7.16% (59)
		Toscana	6.20%	4.61% (38)
		Trentino - Alto Adige / Südtirol	1.80%	1.58% (13)
		Umbria	1.45%	0.97% (8)
		Valle D'Aosta	0.20%	0.00% (0)
		Veneto	8.20%	9.1% (75)
	Urbanisation	Cities	36.3%	37.01% (305)
		Towns or suburbs	45.7%	35.32% (291)
		Rural areas	18.0%	8.62% (71)
		Unknown	0%	19.05% (157)
Latvia (N=578)	Gender	Male	46.10%	45.67% (264)
		Female	53.90%	54.33% (314)
	Age	18-30	20.50%	21.8% (126)
		31-45	23.45%	21.97% (127)
		46-60	23.45%	24.74% (143)
		> 60	32.25%	31.49% (182)
	Income	< 6.000€	20.00%	20.07% (116)
		6.000 - 8.999€	20.00%	17.13% (99)
		9.000 - 14.999€	20.00%	21.28% (123)
		15.000 - 21.000€	20.00%	18.69% (108)
		> 21.000€	20.00%	22.84% (132)
	Region	Kurzeme	12.45%	12.46% (72)
		Latgale	13.50%	13.84% (80)
		Pieriga	20.00%	16.96% (98)
		Riga	32.45%	32.01% (185)
		Vidzeme	9.55%	11.94% (69)
		Zemgale	12.00%	12.8% (74)

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Country	Variable	Category	Share in population	Share in the sample
	Urbanisation	Cities	43.2%	39.79% (230)
		Towns or suburbs	22.0%	14.71% (85)
		Rural areas	34.8%	34.08% (197)
		Unknown	0%	11.42% (66)

Table A4: Diet study 2 (acceptance framing experiment): sample description and comparison to national statistics

Country	Variable	Category	Share in population	Share in the sample
Denmark (N=810)	Gender	Male	49.75%	49.14% (398)
		Female	50.25%	50.86% (412)
	Age	18-30	20.35%	20.25% (164)
		31-45	24.05%	25.43% (206)
		46-60	24.15%	23.95% (194)
		> 60	31.25%	30.37% (246)
	Income	< 191,100 DKK	25.00%	24.44% (198)
		191,100 - 308,900 DKK	25.00%	25.19% (204)
		308,900 DKK - 530,200 DKK	25.00%	24.44% (198)
		> 530,200 DKK	25.00´%	25.93% (210)
	Region	Hovedstaden	31.80%	31.85% (258)
		Midtjylland	22.85%	23.21% (188)
		Nordjylland	10.05%	10.25% (83)
		Sjaelland	14.35%	12.96% (105)
		Syddanmark	20.90%	21.73% (176)
	Urbanisation	Cities	37.20%	43.33% (351)
		Towns or suburbs	30.60%	28.15% (228)
		Rural areas	32.20%	27.41% (222)
		Unknown	0%	1.11% (9)
Germany (N=776)	Gender	Male	49.30%	49.61% (385)
		Female	50.70%	50.39% (391)
	Age	18-30	17.90%	16.75% (130)
		31-45	23.60%	24.1% (187)
		46-60	25.00%	24.61% (191)
		> 60	33.50%	34.54% (268)
	Income	< 15,600€	13.30%	11.08% (86)
		15,600 - 31,200€	29.70%	28.22% (219)
		31,200 - 43,200€	17.80%	19.85% (154)
		43,200 - 60,000€	16.80%	18.17% (141)
		> 60,000€	22.20%	22.68% (176)
	Region	Baden-Württemberg	13.35%	14.69% (114)

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Country	Variable	Category	Share in population	Share in the sample
		Bayern	15.85%	16.37% (127)
		Berlin	4.40%	4.38% (34)
		Brandenburg	3.05%	3.74% (29)
		Bremen	0.80%	1.16% (9)
		Hamburg	2.25%	2.45% (19)
		Hessen	7.55%	7.47% (58)
		Mecklenburg-Vorpommern	1.95%	1.8% (14)
		Niedersachsen	9.65%	8.51% (66)
		Nordrhein-Westfalen	21.55%	21.52% (167)
		Rheinland-Pfalz	4.95%	5.15% (40)
		Saarland	1.20%	1.42% (11)
		Sachsen	4.85%	2.58% (20)
		Sachsen-Anhalt	2.60%	2.45% (19)
		Schleswig-Holstein	3.50%	3.09% (24)
		Thüringen	2.55%	3.22% (25)
	Urbanisation	Cities	38.70%	39.82% (309)
		Towns or suburbs	41.30%	39.82% (309)
		Rural areas	20.10%	19.33% (150)
		Unknown	0%	1.03% (8)

Table A5: Longitudinal study: sample description and comparison to national statistics in Delhi and Mumbai (India)

City	Variable	Category	Share in population	Share in final sample (n)
Delhi (N = 494)	Gender	Male	54%	56.07% (277)
		Female	46%	43.93% (217)
		Non-binary	0%	0%
	Age	18-29	33%	33.6% (166)
		30-44	37%	36.84% (182)
		45-59	20%	19.84% (98)
		>= 60	11%	9.72% (48)
	Monthly consumer expenditure per person in household	<= 2300 INR	13%	12.55% (62)
		2300 - 3100 INR	18%	17.61% (87)
		3100 - 4400 INR	24%	23.89% (118)
		4400 - 7600 INR	26%	26.11% (129)
		> 7600 INR	19%	19.84% (98)

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City	Variable	Category	Share in population	Share in final sample (n)
	Zone	North	20%	19.64% (97)
		East	20%	22.06% (109)
		South	20%	19.23% (95)
		West	20%	18.42% (91)
		Center	20%	20.65% (102)
Mumbai (N = 408)	Gender	Male	52%	50.93% (246)
		Female	48%	49.07% (237)
		Non-binary	0%	0%
	Age	18-29	31%	29.81% (144)
		30-44	35%	35.4% (171)
		45-59	22%	22.15% (107)
		>= 60	12%	12.63% (61)
	Monthly consumer expenditure per person in household	<= 2300 INR	14%	10.97% (53)
		2300 - 3100 INR	19%	20.08% (97)
		3100 - 4400 INR	25%	24.84% (120)
		4400 - 7600 INR	27%	29.81% (144)
		> 7600 INR	15%	14.29% (69)
	Zone	North	20%	20.91% (101)
		East	20%	21.95% (106)
		South	20%	18.22% (88)
		West	20%	19.25% (93)
		Centre	20%	19.67% (95)

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A.2 Covariate overview

The following tables present the covariates that were used in the analyses for all three experiments; housing, diet study 1 (health framing), diet study 2 (acceptance framing), and for the diffusion analysis.

Table A5: Overview of covariates: housing policy experiment

	Variable	Description or question asked to respondents	Coding
Framing experiment housing	*Experiment: overcome (vs. control)*	Around one-third of the respondents were presented with the following text: *The aim of this policy is to overcome unsustainable housing choices.*	1: the respondent saw the overcome condition 2: the respondents saw the punish condition 3: the respondent did not get any additional information on the aim of the policy (control group)
	Experiment: punish (vs. control)	Around one-third of the respondents were presented with the following text: *The aim of this policy is to punish unsustainable housing choices.*	
Housing situation and preference	*Tenant (vs. homeowner)*	*Do you rent or own the apartment/ house where you primarily lived in 2022?*	1: the respondent's household rents the dwelling they lived in 0: the respondent owns the dwelling they lived in/ Other
	Preference single-family home	*Regardless of whether you currently live in that type or not: What type of housing do you like most?*	1: A detached house (free-standing with 1-2 dwellings) 0: A terraced house (1-2 dwellings as double house, row house, or other)/ A multi-family house (3-12 dwellings)/ An apartment block (13 or more dwellings)/ Other
	Living space	*What size is the living space of your dwelling in 2022 in m^2? Please, estimate if you are not sure.*	Metric, between 1 and 3.000 m^2
Sufficient behaviour	*Belonging to sufficient group*	The carbon footprint related to heating for each person was calculated based on various questions. Based on this and on questions related to personal well-being, respondents were identified that belong to the sufficient group (belong to the highest half regarding well-being in the sample for their country and to the lowest quarter when it comes to the carbon footprint for heating in their country).	1: respondent belongs to the sufficient group 0: respondent does not belong to the sufficient group
Attitudes and political behaviour	*Problem awareness sustainable housing*	*In how far do you think that the provision of sufficient sustainable housing is a serious problem?*	1: no serious problem at all 2: rather not a serious problem 3: undecided

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	Variable	Description or question asked to respondents	Coding
			4: rather a serious problem 5: a very serious problem
	Trust national politicians	*In how far do you trust the following groups and institutions in [country of respondent]?* *National politicians (members of parliament, ministers etc.)*	1: fully distrust 2: tend not to trust 3: undecided 4: tend to trust 5: fully trust
	Say in what government does	*From your point of view: In general, to what extent does the political system in [country of respondent] give people like you a say in what the government does?*	1: not at all 2: a little 3: a moderate amount 4: a large amount 5: an extreme amount
	Voted: no (vs. yes)	*Did you vote in the latest national election?*	1: yes 2: no, I did not vote but I was eligible to vote 3: no, I did not vote as I was not eligible to vote
	Voted: not eligible (vs. yes)		
Familiarity with the policy	*Heard of ban/fee*	*Have you heard about this policy measure before this survey?*	1: yes, but I didn't really know what it is / yes, and I know what it is] 0: No, I have never heard of it
Sociodemographic characteristics	*Female (vs. male)*		1: Female 0: Male
	Age		Metric, between 1 and 92
	Income per person (in 1T€)	Net annual income of respondents household divided by household size using OECD weights[31]	In 1000€
	Working	*Which of the following categories describes your cur-rent situation best?*	1: Full-time employed/ Part-time employed/ Self-employed 0: In training / education/ House wife / house husband/ Looking for work / currently unemployed/ retired/ Other/ Prefer not to answer
	Vocational training (vs. no school/ only school)	*What is the highest level of education that you have completed?*	1: No school completed/ Primary education/ Secondary education (college, high school, middle school) 2: Vocational/technical training or education
	Academic degree (vs. no		

[31] That is, a value of 1 to the household head, of 0.5 to each additional adult member and of 0.3 to each child (cf. https://www.oecd.org/els/soc/OECD-Note-EquivalenceScales.pdf).

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	Variable	Description or question asked to respondents	Coding
	school/ only school)		3: Academic degree (Bachelor and Master degree or PhD)
	City (vs. rural)	Degree of urbanisation of the region the respondent lives in[32]	1: Cities 0: Towns and suburban/ rural
Lifestyle and attitudes	*Support national policies*	*I identify with nationally oriented policies.*	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
	Support social policies	*I identify with socially oriented policies.*	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
	Support conservative policies	*I identify with conservative oriented policies.*	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
	Support liberal policies	*I identify with liberally oriented policies.*	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
	Support environmental policies	*I identify with environmentally oriented policies.*	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
	Use little resources	*Through my lifestyle I want to use as little resources as possible (e.g. water, energy, wood).*	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
	Possess only few things	*I find it desirable to possess only few things.*	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree

[32] The urbanisation is determined using the postcode, postcode to NUTS tables (https://gisco-services.ec.europa.eu/tercet/flat-files) and urbanisation data from Eurostat (https://gisco-services.ec.europa.eu/tercet/Various/PC_DGURBA_2018.zip).

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	Variable	Description or question asked to respondents	Coding
	New things are a waste	*All the new things that are sold all the time are a big waste of resources to me.*	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
	Too much in supermarkets	*I think it is unnecessary to have this affluence of different products in our supermarkets.*	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
	Eco-consumer	*I think of myself as an environmentally-friendly consumer.*	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
	Concerned with environment	*I think of myself as someone who is very concerned with environ-mental issues*	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree

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Table A6: Overview of covariates: diet study 1 (health framing experiment)

	Variable	Description or question asked to respondents	Coding
Health framing treatment	*Experiment: Health treatment*	50% of respondents viewed the following text: *In addition to its impact on the climate, high meat consumption poses a serious health risk: Many studies indicate that regular meat consumption increases the risk of heart attacks, high blood pressure, diabetes and elevated cholesterol levels. The consumption of red meat (beef, pork, veal, lamb, goat) has also been linked to various types of cancer.*	0: respondent did not receive health framing treatment 1: respondent received health framing treatment
Policy evaluation: for each policy	*Effectiveness of meat tax for oneself*	*In your opinion, how effective are the following policy measures to reduce meat consumption ... ... with regard to your own meat consumption?* *Increase in VAT on meat and meat products*	0: Very ineffective/ Ineffective/ Neither nor 1: Effective/Very effective
	Fairness of meat tax for oneself	*How fair do you think the following policies are for yourself?* *Increase in VAT on meat and meat products*	0: Very unfair/ Unfair/ Neither nor 1: Fair/ Very fair
	Costliness of meat tax for oneself	*Do you believe that as a result of the policy measures below, you would have lower or higher expenses?* *Increase in VAT on meat and meat products*	0: Much lower expenses/ Lower expenses/ No difference 1: Higher expenses/ Much higher expenses
	Effectiveness meat tax for society	*In your opinion, how effective are the following policy measures to reduce meat consumption ... ... with regard to the meat consumption of society as a whole?* *Increase in VAT on meat and meat products*	0: Very ineffective/ Ineffective/ Neither nor 1: Effective/Very effective
	Fairness meat tax for society	*How fair do you think the following policies are for society as a whole?* *Increase in VAT on meat and meat products*	0: Very unfair/ Unfair/ Neither nor 1: Fair/ Very fair
	Costliness meat tax for society	*Do you believe that as a result of the policy measures below, society would have lower or higher expenses?* *Increase in VAT on meat and meat products*	0: Much lower expenses/ Lower expenses/ No difference 1: Higher expenses/ Much higher expenses
	Effectiveness of climate labelling for oneself	*In your opinion, how effective are the following policy measures to reduce meat consumption ... ... with regard to your own meat consumption?*	0: Very ineffective/ Ineffective/ Neither nor 1: Effective/Very effective

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	Variable	Description or question asked to respondents	Coding
		Climate labelling on food	
	Fairness of climate labelling for oneself	*How fair do you think the following policies are for yourself?* *Climate labelling on food*	0: Very unfair/ Unfair/ Neither nor 1: Fair/ Very fair
	Costliness of climate labelling for oneself	*Do you believe that as a result of the policy measures below, you would have lower or higher expenses?* *Climate labelling on food*	0: Much lower expenses/ Lower expenses/ No difference 1: Higher expenses/ Much higher expenses
	Effectiveness climate labelling for society	*In your opinion, how effective are the following policy measures to reduce meat consumption ... ... with regard to the meat consumption of society as a whole?* *Climate labelling on food*	0: Very ineffective/ Ineffective/ Neither nor 1: Effective/Very effective
	Fairness climate labelling for society	*How fair do you think the following policies are for society as a whole?* *Climate labelling on food*	0: Very unfair/ Unfair/ Neither nor 1: Fair/ Very fair
	Costliness climate labelling for society	*Do you believe that as a result of the policy measures below, society would have lower or higher expenses?* *Climate labelling on food*	0: Much lower expenses/ Lower expenses/ No difference 1: Higher expenses/ Much higher expenses
	Effectiveness of meat-free day in all canteens for oneself	*In your opinion, how effective are the following policy measures to reduce meat consumption ... ... with regard to your own meat consumption?* *Meat-free day in all canteens*	0: Very ineffective/ Ineffective/ Neither nor 1: Effective/Very effective
	Fairness of meat-free day in all canteens for oneself	*How fair do you think the following policies are for yourself?* *Meat-free day in all canteens*	0: Very unfair/ Unfair/ Neither nor 1: Fair/ Very fair
	Costliness of meat-free day in all canteens for oneself	*Do you believe that as a result of the policy measures below, you would have lower or higher expenses?* *Meat-free day in all canteens*	0: Much lower expenses/ Lower expenses/ No difference 1: Higher expenses/ Much higher expenses
	Effectiveness meat-free day in all canteens for society	*In your opinion, how effective are the following policy measures to reduce meat consumption ... ... with regard to the meat consumption of society as a whole?* *Meat-free day in all canteens*	0: Very ineffective/ Ineffective/ Neither nor 1: Effective/Very effective
	Fairness meat-free day	*How fair do you think the following policies are for society as a whole?*	0: Very unfair/ Unfair/ Neither nor

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	Variable	Description or question asked to respondents	Coding
	in all canteens for society	*Meat-free day in all canteens*	1: Fair/ Very fair
	Costliness meat-free day in all canteens for society	*Do you believe that as a result of the policy measures below, society would have lower or higher expenses?* *Meat-free day in all canteens*	0: Much lower expenses/ Lower expenses/ No difference 1: Higher expenses/ Much higher expenses
Sociodemographic characteristics	*Age*		18-90
	Female		0 Male 1 Female
	Highest education level	Highest level of education of respondent	0: No school completed/ Primary education/Secondary education (college, high school, middle school)/ Vocational/technical training or education 1: Academic degree (Bachelor and Master degree or PhD)
	Income	Net annual income of respondents household divided by household size using OECD weights[33]	In 1000€
Lifestyle and attitudes	*Eats in canteen*	*How often do you usually eat in a corporate or public canteen (e.g., at work, school, university)?*	0: Never 1: Less often than 1 - 3 times per month/ 1-3 times per month/ 1-3 times per week/ More often than 3 times per week
	Main diet type	*How would you characterise your main diet?*	Dummy variables: Vegan, vegetarian or pescetarian: Pescetarian (including fish products, but no meat products)/ Vegetarian (no meat or fish products)/ Vegan (no meat, fish, dairy or egg products) Flexitarian: Flexitarian (meat-reduced, e.g. 1-2 times a week) Varied and high meat diets: Highly meat-based (e.g. meat twice a day)/ Mixed diet (including meat, fish, dairy, vegetables, ...) (base variable)

[33] That is, a value of 1 to the household head, of 0.5 to each additional adult member and of 0.3 to each child (cf. https://www.oecd.org/els/soc/OECD-Note-EquivalenceScales.pdf).

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	Variable	Description or question asked to respondents	Coding
	Support national policies.	*I identify with nationally oriented policies.*	0: Strongly disagree/disagree/ neither disagree nor agree 1: Agree/ strongly agree
	Support social policies.	*I identify with socially oriented policies.*	0: Strongly disagree/disagree/ neither disagree nor agree 1: Agree/ strongly agree
	Support conservative policies.	*I identify with conservative oriented policies.*	0: Strongly disagree/disagree/ neither disagree nor agree 1: Agree/ strongly agree
	Support liberal policies.	*I identify with liberally oriented policies.*	0: Strongly disagree/disagree/ neither disagree nor agree 1: Agree/ strongly agree
	Support environmental policies.	*I identify with environmentally oriented policies.*	0: Strongly disagree/disagree/ neither disagree nor agree 1: Agree/ strongly agree
	High nutrition knowledge	To calculate the composite covariate *high nutrition knowledge,* we first calculated the arithmetic mean of the raw scores of the covariates below. We then performed a median split to obtain a dummy covariate.	
		How often do you inform yourself on the following topics? *New scientific findings on the effects of meat-containing food on health.*	
		New scientific findings on the effects of meat-based food on the environment.	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
		[Country's] government policy for a healthier diet.	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
		[Country's] government policy to improve animal welfare.	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
		Positions of political parties on meat consumption.	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
		Global trends in meat consumption.	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree

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	Variable	Description or question asked to respondents	Coding
			5: Strongly agree
		Product labelling for the climate friendliness of food.	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
		Product labelling for the healthiness of food.	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
		Debates on policy measures to reduce meat consumption.	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
	High climate change denial	To calculate the composite covariate *high climate change denial,* we first calculated the arithmetic mean of the raw scores of the covariates below. We then performed a median split to obtain a dummy covariate.	
		To what extent do you agree with the following statements? *A man-made climate change does not exist.*	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
		Climate change is not caused by human activities.	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
		Global warming and climate change are completely natural phenomena, unrelated to human actions.	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
	High social norm	To calculate the composite covariate *high social norm,* we first calculated the arithmetic mean of the raw scores of the covariates below. We then performed a median split to obtain a dummy covariate.	
		Please indicate, to what extent you agree with the following statements: *Most of my family, friends or colleagues appreciate it when I eat little or no meat.*	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree

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	Variable	Description or question asked to respondents	Coding
		Most people who are important to me believe that it is the right thing to do to eat little or no meat.	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
		Many of my family, friends or colleagues eat little or no meat.	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree

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Table A7: Overview of covariates: diet study 2: acceptance framing experiment

	Variable	Description or question asked to respondents	Coding
Framing experiment	*Experiment: efficacy (vs. control)*	*One third of respondents viewed the following text (e.g. VAT on meat-containing products):* *What is the effect of this measure?* Studies have shown that with an increase in prices, meat consumption decreases. We know that this measure actually leads to a reduction in meat consumption. The effectiveness of this measure is expected to be high.	1: respondents received general information on meat consumption and climate change effects 2: respondents received efficacy framing for each policy 3: respondents received efficacy framing + acceptance framing
	Experiment: acceptance (vs. control)	*One third of respondents viewed the following text (e.g. VAT on meat-containing products):* *What is the effect of this measure?* Studies have shown that with an increase in prices, meat consumption decreases. We know that this measure actually leads to a reduction in meat consumption. The effectiveness of this measure is expected to be high. *What do people think about this measure?* Studies have shown: Most people do not approve of a mere tax increase. However, if the tax increase is justified or is perceived as fair, people tend to view a tax increase more favourably.	
Sociodemographic characteristics	*Age*		Metric (between 18 - 87)
	Female (vs. male)		0: Male 1: Female
	Highest education level	Highest level of education of respondent	0: No school completed/ Primary education/Secondary education (college, high school, middle school)/ Vocational/technical training or education 1: Academic degree (Bachelor and Master degree or PhD)

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	Variable	Description or question asked to respondents	Coding
	Income	Net annual income of respondents household divided by household size using OECD weights[34]	In 1000€
	Working	*Which of the following categories describes your current situation best?*	0: In training / education/ House wife / house husband/ Looking for work / currently unemployed/ retired/ Other/ Prefer not to answer 1: Full-time employed/ Part-time employed/ Self-employed
	Vocational training (vs. no school/ only school)	*What is the highest level of education that you have completed?*	1: No school completed/ Primary education/ Secondary education (college, high school, middle school) 2: Vocational/technical training or education 3: Academic degree (Bachelor and Master degree or PhD)
	Academic degree (vs. no school/ only school)		
Lifestyle and attitudes	*Meat eating habits*	To calculate the composite covariate meat eating habits, we calculated the arithmetic mean of the raw scores of the covariates below.	
		How often did you consume the following food products in the past few months: *Read meat (beef, pork, veal, lamb, goat)*	1: Never 2: Less frequently than once a month 3: Once a month 4: Several times a month 5 Once a week 6: Several times a week 7: Once a day 8: Several times a day
		Other types of meat (e.g. poultry, game)	1: Never 2: Less frequently than once a month 3: Once a month 4: Several times a month 5 Once a week 6: Several times a week 7: Once a day

[34] That is, a value of 1 to the household head, of 0.5 to each additional adult member and of 0.3 to each child (cf. https://www.oecd.org/els/soc/OECD-Note-EquivalenceScales.pdf).

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	Variable	Description or question asked to respondents	Coding
			8: Several times a day
	Support national policies.	*I identify with nationally oriented policies.*	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
	Support social policies.	*I identify with socially oriented policies.*	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
	Support conservative policies.	*I identify with conservative oriented policies.*	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
	Support liberal policies.	*I identify with liberally oriented policies.*	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
	Support environmental policies.	*I identify with environmentally oriented policies.*	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
	Climate change denial	To calculate the composite covariate climate change denial, we calculated the arithmetic mean of the raw scores of the covariates below.	
		To what extent do you agree with the following statements? *A man-made climate change does not exist.*	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
		Climate change is not caused by human activities.	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree

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	Variable	Description or question asked to respondents	Coding
			4: Agree 5: Strongly agree
		Global warming and climate change are completely natural phenomena, unrelated to human actions.	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
	Social norm	To calculate the composite covariate *social norm,* we first culated the arithmetic mean of the raw scores of the covariates below.	
		Please indicate, to what extent you agree with the following statements: *Most of my family, friends or colleagues appreciate it when I eat little or no meat.*	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
		Most people who are important to me believe that it is the right thing to do to eat little or no meat.	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
		Many of my family, friends or colleagues eat little or no meat.	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
	Sufficiency orientation	To calculate the composite covariate *sufficiency orientation,* we first calculated the arithmetic mean of the raw scores of the covariates below.	
		Through my lifestyle I want to use as little re-sources as possible (e.g. water, energy, wood).	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
		I find it desirable to possess only few things.	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree

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	Variable	Description or question asked to respondents	Coding
			5: Strongly agree
		All the new things that are sold all the time are a big waste of resources to me.	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
		I think it is unnecessary to have this affluence of different products in our supermarkets.	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
	Trust in Scientists	*In how far do you trust the following groups and institutions in [country of respondent]?* *Scientists*	1: fully distrust 2: tend not to trust 3: undecided 4: tend to trust 5: fully trust

Table A8: Overview of covariates: diffusion pathways

	Variable	Description or question asked to respondents	Coding
Diffusion of innovation	*Relative advantage*	*Sustainable housing would improve today's society.*	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
	Compatibility	*Sustainable housing fits with my personality.*	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
	Ease of use	*Sustainable housing is easy.*	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
	Triability	*I have the possibility to talk to someone who lives in sustainable housing as long as necessary to come to a final evaluation.*	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
	Observability	*I noticed several times that people engage in sustainable housing.*	1: Strongly disagree 2: Disagree

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	Variable	Description or question asked to respondents	Coding
			3: Neither disagree nor agree 4: Agree 5: Strongly agree
Lifestyle and attitudes	*Attitude*	*In general, I think sustainable housing is a good thing.*	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
	Eco-consumer	*I think of myself as an environmentally-friendly consumer.*	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
	Concerned with environment	*I think of myself as someone who is very concerned with environ-mental issues*	1: Strongly disagree 2: Disagree 3: Neither disagree nor agree 4: Agree 5: Strongly agree
	Problem awareness climate change	*In how far do you think that climate change is a serious problem?*	1: no serious problem at all 2: rather not a serious problem 3: undecided 4: rather a serious problem 5: a very serious problem
Sociodemographic characteristics	*Female (vs. male)*		1: Female 0: Male
	Age		Metric, between 1 and 92
	Income per person (in 1T€)	Net annual income of respondents household divided by household size using OECD weights[35]	In 1000€
	Vocational training (vs. no school/ only school)	*What is the highest level of education that you have completed?*	1: No school completed/ Primary education/ Secondary education (college, high school, middle school) 2: Vocational/technical training or education 3: Academic degree (Bachelor and Master degree or PhD)
	Academic degree (vs. no school/ only school)		

[35] That is, a value of 1 to the household head, of 0.5 to each additional adult member and of 0.3 to each child (cf. https://www.oecd.org/els/soc/OECD-Note-EquivalenceScales.pdf).

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A.3 Regression results

The following tables display the coefficients of the models for all three experiments; housing, diet health framing (Study 1), diet acceptance framing (Study 2), and for the diffusion analysis.

A.3.1 Regression results: housing policy experiment

The following tables display the coefficients of the models. For the binary logit model (far right) log odds are shown as coefficients.

Table A9: Regression results: housing policy experiment: ban

	Dependent variable:					
	Support ban					High support ban (vs. low)
	OLS					logistic
	Denmark	France	Germany	Italy	Latvia	Germany
Experiment: overcome (vs. control)	0.003	-0.033	0.201**	0.087	0.052	0.336
	(0.074)	(0.088)	(0.089)	(0.095)	(0.116)	(0.254)
Experiment: punish (vs. control)	-0.058	0.071	0.084	0.030	0.062	0.054
	(0.076)	(0.089)	(0.091)	(0.095)	(0.116)	(0.258)
Tenant (vs. homeowner)	-0.044	0.123	0.043	0.028	0.049	0.148
	(0.072)	(0.086)	(0.079)	(0.101)	(0.121)	(0.250)
Preference single-family home	-0.202***	-0.163**	-0.213**	-0.135*	-0.196**	-0.288
	(0.063)	(0.082)	(0.082)	(0.079)	(0.095)	(0.229)
Living space	-0.001	-0.001	-0.0001	-0.0003	0.0001	-0.003
	(0.001)	(0.001)	(0.0002)	(0.0004)	(0.0003)	(0.002)
Belonging to sufficient group	-0.175*	-0.165	0.007	0.218*	-0.038	-0.215
	(0.096)	(0.116)	(0.111)	(0.126)	(0.137)	(0.327)
Problem awareness sustainable housing	0.284***	0.138***	0.056	0.054	0.093*	-0.012
	(0.038)	(0.040)	(0.034)	(0.038)	(0.053)	(0.101)
Trust national politicians	0.135***	0.120***	0.259***	0.096**	0.026	0.715***
	(0.032)	(0.043)	(0.046)	(0.048)	(0.051)	(0.137)
Say in what government does	0.042	0.062*	0.081**	0.080*	-0.020	0.153
	(0.031)	(0.036)	(0.038)	(0.045)	(0.061)	(0.107)
Voted: no (vs. yes)	0.276*	-0.139	0.273*	0.066	-0.053	1.048**
	(0.167)	(0.123)	(0.147)	(0.116)	(0.191)	(0.411)
Voted: not eligible (vs. yes)	-0.001	-0.196	0.114	0.606**	0.097	0.469
	(0.250)	(0.250)	(0.223)	(0.263)	(0.228)	(0.616)

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Heard of ban	0.310***	0.208**	0.232***	0.594***	0.468***	0.331
	(0.084)	(0.099)	(0.083)	(0.117)	(0.146)	(0.235)
Female (vs. male)	0.0001	0.017	0.122	0.107	0.011	0.024
	(0.065)	(0.077)	(0.077)	(0.083)	(0.098)	(0.216)
Age	-0.003	-0.006**	-0.001	-0.002	-0.006	0.002
	(0.002)	(0.003)	(0.003)	(0.003)	(0.004)	(0.008)
Income per person (in 1T€)36	-0.001	-0.009***	-0.005**	-0.007**	-0.001	-0.015**
	(0.002)	(0.003)	(0.002)	(0.003)	(0.010)	(0.006)
Working	-0.035	-0.040	0.147*	0.122	-0.105	0.458*
	(0.072)	(0.087)	(0.087)	(0.086)	(0.112)	(0.250)
Vocational training (vs. no school/ only school)	-0.155*	0.107	-0.007	0.080	0.115	-0.172
	(0.091)	(0.116)	(0.098)	(0.123)	(0.140)	(0.273)
Academic degree (vs. no school/ only school)	-0.090	0.017	-0.070	-0.135	-0.042	-0.256
	(0.088)	(0.093)	(0.105)	(0.087)	(0.122)	(0.289)
City (vs. rural)	0.024	0.018	0.013	-0.058	-0.100	0.059
	(0.069)	(0.080)	(0.079)	(0.079)	(0.097)	(0.223)
Support national policies	-0.014	0.012	0.049	-0.070	-0.026	0.061
	(0.035)	(0.048)	(0.039)	(0.046)	(0.062)	(0.115)
Support social policies	0.040	0.097**	0.045	0.096*	0.143**	-0.012
	(0.039)	(0.046)	(0.044)	(0.056)	(0.068)	(0.130)
Support conservative policies	0.017	0.072*	-0.017	0.003	0.001	-0.021
	(0.038)	(0.040)	(0.040)	(0.041)	(0.060)	(0.119)
Support liberal policies	-0.044	-0.076	-0.119***	-0.015	0.069	-0.236**
	(0.035)	(0.047)	(0.039)	(0.044)	(0.065)	(0.115)
Support environmental policies	0.057	0.066	0.031	0.147**	0.017	-0.037
	(0.049)	(0.052)	(0.052)	(0.063)	(0.083)	(0.154)
Use little resources	0.045	0.174***	0.052	-0.065	-0.011	0.047
	(0.046)	(0.051)	(0.053)	(0.059)	(0.063)	(0.157)
Possess only few things	0.076**	0.056	0.158***	0.070	0.127**	0.315**
	(0.038)	(0.048)	(0.043)	(0.047)	(0.063)	(0.126)
New things are a waste	-0.006	-0.147***	0.135***	-0.028	0.051	0.461***
	(0.046)	(0.053)	(0.048)	(0.046)	(0.062)	(0.148)
Too much in supermarkets	0.110***	0.069	-0.063	0.006	-0.018	-0.132
	(0.038)	(0.052)	(0.045)	(0.045)	(0.054)	(0.135)
Eco-consumer	-0.090**	0.020	-0.042	-0.042	-0.029	-0.073
	(0.045)	(0.056)	(0.058)	(0.083)	(0.075)	(0.166)

[36] Net annual income of respondent's household divided by household size using OECD weights. We use a factor of 1 for the household head, 0.5 for each additional adult above 14, and 0.3 for each child (cf. https://www.oecd.org/els/soc/OECD-Note-EquivalenceScales.pdf).

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Concerned with environment	0.065	0.019	0.024	0.220***	0.015	0.151
	(0.046)	(0.053)	(0.058)	(0.079)	(0.077)	(0.169)
Constant	0.852***	1.101***	0.480	1.169***	1.221***	-4.111***
	(0.284)	(0.318)	(0.347)	(0.381)	(0.438)	(1.065)
Observations	532	526	537	519	314	537
Adjusted R^2	0.397	0.263	0.281	0.215	0.083	
Pseudo R^2						0.186

*Note: Standard errors in parenthesis. *p<0.1 **p<0.05 ***p<0.01*

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Table A10: Regression results: housing policy experiment: fee

	Dependent variable:					
	Support fee					High support fee (vs. low)
	OLS					logistic
	Denmark	France	Germany	Italy	Latvia	Germany
Experiment: overcome (vs. control)	0.062	-0.082	0.208**	0.153	-0.087	0.439*
	(0.078)	(0.091)	(0.091)	(0.102)	(0.124)	(0.260)
Experiment: punish (vs. control)	0.045	0.065	0.117	0.012	-0.104	0.267
	(0.081)	(0.092)	(0.092)	(0.102)	(0.124)	(0.266)
Tenant (vs. homeowner)	0.037	0.247***	0.171**	0.132	0.024	0.424*
	(0.076)	(0.089)	(0.081)	(0.108)	(0.129)	(0.231)
Preference single-family home	-0.095	-0.039	-0.136	-0.120	-0.101	-0.234
	(0.067)	(0.085)	(0.084)	(0.084)	(0.102)	(0.236)
Living space	-0.002***	-0.002**	-0.0001	-0.0002	-0.0003	0.0001
	(0.001)	(0.001)	(0.0002)	(0.0004)	(0.0003)	(0.001)
Belonging to sufficient group	0.040	-0.052	0.123	0.042	0.109	0.144
	(0.102)	(0.120)	(0.113)	(0.134)	(0.146)	(0.321)
Problem awareness sustainable housing	0.319***	0.178***	0.098***	0.089**	0.085	0.192*
	(0.040)	(0.041)	(0.035)	(0.040)	(0.057)	(0.101)
Trust national politicians	0.122***	0.135***	0.186***	0.060	0.096*	0.428***
	(0.034)	(0.044)	(0.046)	(0.051)	(0.055)	(0.133)
Say in what government does	0.078**	0.063*	0.115***	0.079	0.080	0.332***
	(0.033)	(0.037)	(0.039)	(0.048)	(0.065)	(0.109)
Voted: no (vs. yes)	0.348*	-0.047	0.231	0.075	0.001	0.805*
	(0.177)	(0.126)	(0.149)	(0.123)	(0.206)	(0.419)
Voted: not eligible (vs. yes)	0.025	-0.016	-0.031	0.541*	-0.147	-0.022
	(0.264)	(0.258)	(0.227)	(0.281)	(0.244)	(0.703)
Heard of fee	0.298***	0.377***	0.506***	0.538***	0.480***	1.228***
	(0.103)	(0.114)	(0.099)	(0.122)	(0.160)	(0.283)
Female (vs. male)	0.019	0.060	0.042	0.146*	0.002	-0.128
	(0.069)	(0.080)	(0.077)	(0.088)	(0.106)	(0.221)
Age	-0.002	-0.002	-0.002	-0.0005	-0.003	-0.009
	(0.002)	(0.003)	(0.003)	(0.003)	(0.004)	(0.008)
Income per person (in 1T€)[37]	0.0002	-0.005*	-0.004*	-0.006*	-0.013	-0.020***
	(0.002)	(0.003)	(0.002)	(0.003)	(0.011)	(0.007)
Working	0.008	-0.029	0.142	0.094	-0.171	0.428*
	(0.076)	(0.090)	(0.088)	(0.092)	(0.120)	(0.257)
Vocational training (vs. no school/ only school)	0.084	0.161	-0.168*	-0.029	0.023	-0.267

[37] Net annual income of respondent's household divided by household size using OECD weights. We use a factor of 1 for the household head, 0.5 for each additional adult above 14, and 0.3 for each child (cf. https://www.oecd.org/els/soc/OECD-Note-EquivalenceScales.pdf).

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	(0.096)	(0.120)	(0.100)	(0.131)	(0.150)	(0.276)
Academic degree (vs. no school/ only school)	0.128	-0.134	-0.194*	-0.155*	-0.055	-0.529*
	(0.093)	(0.096)	(0.106)	(0.093)	(0.131)	(0.300)
City (vs. rural)	0.063	0.012	0.010	-0.133	-0.104	0.120
	(0.073)	(0.083)	(0.080)	(0.085)	(0.104)	(0.227)
Support national policies	0.092**	-0.068	-0.012	-0.112**	-0.034	-0.198*
	(0.037)	(0.050)	(0.040)	(0.049)	(0.067)	(0.116)
Support social policies	0.029	0.102**	0.072	0.074	0.078	0.114
	(0.042)	(0.048)	(0.045)	(0.060)	(0.073)	(0.132)
Support conservative policies	0.015	0.035	-0.043	0.008	-0.006	-0.075
	(0.040)	(0.042)	(0.041)	(0.044)	(0.064)	(0.118)
Support liberal policies	-0.090**	-0.013	-0.085**	-0.020	0.047	-0.165
	(0.037)	(0.049)	(0.040)	(0.047)	(0.070)	(0.117)
Support environmental policies	0.027	0.139***	0.109**	0.169**	0.074	0.278*
	(0.052)	(0.054)	(0.053)	(0.067)	(0.089)	(0.163)
Use little resources	0.060	0.113**	0.056	0.012	0.056	0.068
	(0.048)	(0.052)	(0.054)	(0.063)	(0.068)	(0.162)
Possess only few things	0.100**	0.107**	0.046	0.091*	0.068	-0.079
	(0.040)	(0.050)	(0.044)	(0.050)	(0.067)	(0.129)
New things are a waste	-0.040	-0.110**	0.070	-0.020	0.050	0.241*
	(0.049)	(0.054)	(0.049)	(0.049)	(0.066)	(0.144)
Too much in supermarkets	0.111***	-0.007	-0.076*	-0.054	0.056	-0.215
	(0.040)	(0.053)	(0.046)	(0.048)	(0.058)	(0.134)
Eco-consumer	-0.003	-0.021	-0.057	-0.064	-0.099	-0.126
	(0.048)	(0.058)	(0.059)	(0.089)	(0.080)	(0.171)
Concerned with environment	-0.020	0.021	0.084	0.112	0.034	0.212
	(0.048)	(0.054)	(0.060)	(0.085)	(0.082)	(0.176)
Constant	0.198	0.780**	0.682*	1.452***	1.240***	-2.894***
	(0.303)	(0.328)	(0.353)	(0.406)	(0.469)	(1.047)
Observations	532	526	537	519	314	537
Adjusted R^2	0.381	0.308	0.309	0.167	0.131	
Pseudo R^2						0.221

*Note: Standard errors in parenthesis. *p<0.1 **p<0.05 ***p<0.01*

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A.3.2 Regression results: diet study 1 (health framing experiment)

The following tables display the coefficients of the models for diet study 1 in log odds.

Table A11: Regression results: diet study 1 (health framing experiment): meat tax

	Dependent variable:					
	Meat tax acceptability for oneself			Meat tax acceptability for society		
	France	Italy	Latvia	France	Italy	Latvia
Experiment: Health treatment	-0.152	0.385	0.209	-0.290	0.252	0.392
	(0.283)	(0.254)	(0.385)	(0.296)	(0.271)	(0.395)
Effectiveness meat tax policy for oneself	0.610**	0.767***	0.432			
	(0.300)	(0.271)	(0.479)			
Fairness meat tax policy for oneself	3.337***	3.578***	4.029***			
	(0.381)	(0.306)	(0.493)			
Cost meat tax policy for oneself	-0.609**	0.225	-1.253***			
	(0.284)	(0.310)	(0.453)			
Effectiveness meat tax policy for society				1.357***	1.618***	0.198
				(0.292)	(0.320)	(0.415)
Fairness meat tax policy for society				3.297***	2.873***	3.092***
				(0.344)	(0.301)	(0.516)
Cost meat tax policy for society				-0.616**	0.512*	0.014
				(0.294)	(0.278)	(0.588)
Age	0.002	0.007	-0.010	0.002	0.018*	-0.014
	(0.010)	(0.009)	(0.014)	(0.009)	(0.010)	(0.014)
Female (vs. male)	-0.121	0.115	0.047	-0.127	0.531*	0.963**
	(0.293)	(0.268)	(0.383)	(0.314)	(0.288)	(0.477)
Academic degree (vs. no academic degree)	-0.288	0.162	0.100	-0.153	-0.135	0.325
	(0.292)	(0.271)	(0.434)	(0.323)	(0.299)	(0.390)
Income per person (in 1T€)[38]	0.024**	0.005	0.060*	0.007	-0.000	-0.037
	(0.010)	(0.007)	(0.032)	(0.010)	(0.010)	(0.033)
Vegan, vegetarian or pescetarian (vs. varied and high meat diets)	2.869***	1.087*	1.235*	1.379**	-0.498	1.080*
	(0.794)	(0.609)	(0.724)	(0.623)	(0.426)	(0.584)
Flexitarian (vs. varied and high meat diets)	0.760**	0.407	0.060	0.270	0.464	0.590
	(0.322)	(0.263)	(0.465)	(0.323)	(0.292)	(0.482)
Support national policies	0.699*	0.573**	-0.479	-0.207	-0.227	0.078
	(0.367)	(0.282)	(0.479)	(0.329)	(0.307)	(0.455)

[38] Net annual income of respondent's household divided by household size using OECD weights. We use a factor of 1 for the household head, 0.5 for each additional adult above 14, and 0.3 for each child (cf. https://www.oecd.org/els/soc/OECD-Note-EquivalenceScales.pdf).

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Support social policies	-0.227	0.777**	0.409	0.411	-0.548	0.247
	(0.333)	(0.365)	(0.538)	(0.352)	(0.398)	(0.492)
Support conservative policies	-0.569	-0.662*	0.343	0.007	-0.109	-0.092
	(0.410)	(0.390)	(0.474)	(0.381)	(0.342)	(0.463)
Support liberal policies	0.006	0.038	0.801*	0.492	0.103	-0.119
	(0.372)	(0.275)	(0.425)	(0.390)	(0.293)	(0.419)
Support environmental policies	0.875**	-0.333	-1.013**	0.790**	0.631	-0.645
	(0.366)	(0.362)	(0.463)	(0.362)	(0.386)	(0.494)
High nutrition knowledge[39]	0.559*	-0.136	0.747*	0.586*	-0.144	0.447
	(0.325)	(0.259)	(0.394)	(0.332)	(0.287)	(0.485)
High climate change denial[40]	-0.250	-0.396	-0.585	-0.044	-0.206	-1.007**
	(0.307)	(0.273)	(0.435)	(0.323)	(0.298)	(0.458)
High social norm[41]	0.019	0.723**	-0.320	0.377	0.806**	-0.143
	(0.305)	(0.286)	(0.413)	(0.352)	(0.322)	(0.424)
Constant	-4.075***	-4.378***	-2.204**	-4.384***	-5.461***	-3.035**
	(0.715)	(0.657)	(1.062)	(0.757)	(0.789)	(1.199)
Observations	764	761	525	764	761	525
Pseudo R^2	0.435	0.461	0.501	0.461	0.436	0.361

*Note: Standard errors in parenthesis. *p<0.1 **p<0.05 ***p<0.01*

[39] Dummy variable based on the nutrition knowledge index where above median = 1 and below median = 0.

[40] Dummy variable based on the climate change denialindex where above median = 1 and below median = 0.

[41] Dummy variable based on the social norm index where above median = 1 and below median = 0.

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Table A12: Regression results: diet study 1 (health framing experiment): climate labelling

	Dependent variable:					
	Climate labelling acceptability for oneself			Climate labelling acceptability for society		
	France	Italy	Latvia	France	Italy	Latvia
Experiment: Health treatment	0.170	-0.149	0.240	0.220	0.007	0.323
	(0.228)	(0.232)	(0.237)	(0.231)	(0.199)	(0.248)
Effectiveness climate labelling for oneself	1.034***	0.990***	0.809**			
	(0.333)	(0.289)	(0.346)			
Fairness climate labelling for oneself	2.729***	3.327***	2.184***			
	(0.270)	(0.265)	(0.284)			
Cost climate labelling for oneself	-0.611	-0.308	-0.875***			
	(0.384)	(0.404)	(0.296)			
Effectiveness climate labelling for society				0.833**	0.867***	1.125***
				(0.357)	(0.249)	(0.380)
Fairness climate labelling for society				3.010***	2.546***	2.473***
				(0.278)	(0.212)	(0.277)
Cost climate labelling for society				-0.423	-0.599*	-0.772***
				(0.347)	(0.314)	(0.283)
Age	0.001	-0.006	-0.003	-0.000	-0.009	-0.003
	(0.008)	(0.008)	(0.008)	(0.008)	(0.007)	(0.008)
Female (vs. male)	-0.299	0.010	0.148	-0.083	-0.046	0.442*
	(0.230)	(0.234)	(0.251)	(0.237)	(0.211)	(0.262)
Academic degree (vs. no academic degree)	0.162	0.230	-0.181	0.367	0.192	0.210
	(0.244)	(0.257)	(0.252)	(0.253)	(0.234)	(0.266)
Income per person (in 1T€)[42]	0.008	0.001	0.020	0.004	0.008	0.015
	(0.008)	(0.008)	(0.025)	(0.008)	(0.007)	(0.024)
Vegan, vegetarian or pescetarian (vs. varied and high meat diets)	-0.074	1.013**	1.548	0.577	-0.174	1.805*
	(0.658)	(0.499)	(1.031)	(0.592)	(0.456)	(1.093)
Flexitarian (vs. varied and high meat diets)	0.487	0.069	-0.009	0.999***	0.354	-0.273
	(0.301)	(0.252)	(0.330)	(0.301)	(0.223)	(0.351)
Support national policies	0.798***	-0.078	0.096	0.305	0.055	0.133
	(0.279)	(0.272)	(0.275)	(0.269)	(0.224)	(0.286)

[42] Net annual income of respondent's household divided by household size using OECD weights. We use a factor of 1 for the household head, 0.5 for each additional adult above 14, and 0.3 for each child (cf. https://www.oecd.org/els/soc/OECD-Note-EquivalenceScales.pdf).

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Support social policies	-0.322	1.045***	-0.182	-0.373	0.186	-0.561*
	(0.332)	(0.311)	(0.290)	(0.327)	(0.270)	(0.293)
Support conservative policies	-0.165	0.124	-0.460	-0.258	-0.186	0.047
	(0.346)	(0.303)	(0.310)	(0.353)	(0.249)	(0.310)
Support liberal policies	0.043	-0.218	-0.275	0.624*	0.173	0.214
	(0.372)	(0.261)	(0.338)	(0.376)	(0.219)	(0.352)
Support environmental policies	0.400	-0.268	0.896***	0.582*	0.187	0.766**
	(0.349)	(0.305)	(0.317)	(0.337)	(0.278)	(0.321)
High nutrition knowledge	0.095	-0.013	-0.361	0.132	-0.211	-0.504*
	(0.241)	(0.243)	(0.257)	(0.241)	(0.218)	(0.260)
High climate change denial	-0.967***	-0.485*	-0.391	-0.971***	-0.722***	-0.441
	(0.249)	(0.258)	(0.266)	(0.264)	(0.225)	(0.281)
High social norm[43]	0.159	-0.379	0.332	0.113	-0.120	0.203
	(0.244)	(0.241)	(0.246)	(0.239)	(0.217)	(0.249)
Constant	-0.610	-0.974*	-0.345	-0.755	-0.667	-0.597
	(0.515)	(0.522)	(0.564)	(0.511)	(0.500)	(0.581)
Observations	764	761	525	764	761	525
Pseudo R^2	0.430	0.466	0.301	0.454	0.363	0.346

*Note: Standard errors in parenthesis. *p<0.1 **p<0.05 ***p<0.01*

[43] Dummy variable based on the social norm index where above median = 1 and below median = 0.

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Table A13: Regression results: diet study 1 (health framing experiment): meat-free day

	Dependent variable:					
	Meat-free day acceptability for oneself			Meat-free day acceptability for society		
	France	Italy	Latvia	France	Italy	Latvia
Experiment: Health treatment	0.038	-0.167	0.543*	-0.204	0.171	0.711***
	(0.235)	(0.278)	(0.279)	(0.230)	(0.221)	(0.264)
Effectiveness meat-free day for oneself	1.570***	2.157***	2.149***			
	(0.327)	(0.364)	(0.340)			
Fairness meat-free day for oneself	3.590***	3.656***	2.797***			
	(0.382)	(0.324)	(0.345)			
Costliness meat-free day for oneself	-1.509**	0.172	-1.043***			
	(0.652)	(0.454)	(0.367)			
Effectiveness meat-free day for society				1.537***	1.116***	1.591***
				(0.280)	(0.247)	(0.292)
Fairness meat-free day for society				3.294***	2.899***	2.849***
				(0.320)	(0.252)	(0.289)
Cost meat-free day for society				-0.579	0.389	-0.350
				(0.394)	(0.320)	(0.337)
Age	0.007	0.011	0.005	0.018**	-0.001	0.017
	(0.009)	(0.011)	(0.010)	(0.009)	(0.008)	(0.010)
Female (vs. male)	0.451*	0.647**	0.472	0.473*	0.309	0.390
	(0.255)	(0.293)	(0.293)	(0.251)	(0.241)	(0.273)
Academic degree (vs. no academic degree)	0.262	0.082	-0.024	0.210	0.286	-0.195
	(0.267)	(0.301)	(0.305)	(0.262)	(0.252)	(0.288)
Income per person (in 1T€)[44]	-0.001	0.002	0.046	-0.005	-0.010	0.013
	(0.009)	(0.013)	(0.029)	(0.008)	(0.007)	(0.026)
Eats in canteen	0.216	0.382	-0.479	0.145	0.305	-0.148
	(0.311)	(0.385)	(0.322)	(0.317)	(0.290)	(0.331)
Vegan, vegetarian or pescetarian (vs. varied and high meat diets)	1.355	-0.877*	0.687	0.624	-0.403	-0.070
	(1.239)	(0.500)	(0.866)	(1.084)	(0.537)	(0.945)
Flexitarian (vs. varied and high meat diets)	0.736**	0.548*	0.622	0.621*	0.122	-0.038
	(0.308)	(0.312)	(0.388)	(0.325)	(0.245)	(0.367)
Support national policies	0.603**	0.113	0.306	0.358	0.043	0.093
	(0.271)	(0.341)	(0.320)	(0.272)	(0.246)	(0.305)

[44] Net annual income of respondent's household divided by household size using OECD weights. We use a factor of 1 for the household head, 0.5 for each additional adult above 14, and 0.3 for each child (cf. https://www.oecd.org/els/soc/OECD-Note-EquivalenceScales.pdf).

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Support social policies	-0.460	0.985**	-0.220	-0.514*	0.368	0.506
	(0.298)	(0.409)	(0.340)	(0.305)	(0.284)	(0.336)
Support conservative policies	-0.590*	-0.613	-0.607	-0.504	-0.026	-1.505***
	(0.341)	(0.386)	(0.370)	(0.334)	(0.287)	(0.361)
Support liberal policies	-0.122	0.235	0.696**	0.115	-0.021	0.051
	(0.333)	(0.315)	(0.353)	(0.327)	(0.242)	(0.351)
Support environmental policies	0.882***	-0.693*	0.190	0.698**	0.074	-0.543
	(0.302)	(0.420)	(0.348)	(0.308)	(0.278)	(0.368)
High nutrition knowledge[45]	0.279	-0.107	-0.266	0.073	-0.126	0.051
	(0.254)	(0.290)	(0.292)	(0.255)	(0.234)	(0.297)
High climate change denial[46]	-0.600**	-0.868**	-0.223	-0.567**	0.193	-0.307
	(0.263)	(0.348)	(0.300)	(0.240)	(0.260)	(0.290)
High social norm[47]	0.035	0.376	0.126	-0.148	0.355	-0.418
	(0.252)	(0.274)	(0.284)	(0.252)	(0.228)	(0.279)
Constant	-1.883***	-2.345***	-1.894***	-2.270***	-2.094***	-2.663***
	(0.603)	(0.651)	(0.685)	(0.600)	(0.582)	(0.684)
Observations	764	761	525	764	761	525
Pseudo R^2	0.525	0.574	0.500	0.517	0.420	0.447

*Note: Standard errors in parenthesis. *p<0.1 **p<0.05 ***p<0.01*

[45] Dummy variable based on the nutrition knowledge index where above median = 1 and below median = 0.

[46] Dummy variable based on the climate change denialindex where above median = 1 and below median = 0.

[47] Dummy variable based on the social norm index where above median = 1 and below median = 0.

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A.3.3 Regression results: diet study 2 (acceptance framing experiment)

The following tables display the coefficients of the regression models for diet study 2 (acceptance framing experiment).

Table A14: Regression results: diet study 2 (acceptance framing experiment): meat tax

	Dependent variable:			
	Meat tax acceptability for oneself		Meat tax acceptability for society	
	Denmark	Germany	Denmark	Germany
Experiment: efficacy (vs. control)	0.116	0.106	-0.001	0.022
	(0.101)	(0.116)	(0.098)	(0.113)
Experiment: efficacy + acceptance (vs. control)	0.252**	0.426***	0.267**	0.156
	(0.116)	(0.124)	(0.113)	(0.121)
Female (vs. male)	0.043	0.071	-0.067	0.192*
	(0.095)	(0.103)	(0.092)	(0.100)
Age	-0.004	-0.009**	-0.001	-0.006*
	(0.003)	(0.004)	(0.003)	(0.004)
Income per person (in 1T€)[48]	0.005**	-0.006*	0.001	0.005
	(0.002)	(0.003)	(0.002)	(0.003)
Working	0.298	-0.093	0.147	-0.184
	(0.108)	(0.118)	(0.105)	(0.115)
Vocational training (vs. no school/ only school)	0.006	0.005	-0.011	0.019
	(0.132)	(0.130)	(0.128)	(0.126)
Academic degree (vs. no school/ only school)	0.075	0.071	-0.117	0.071
	(0.129)	(0.143)	(0.125)	(0.139)
Meat eating habits	-0.200***	-0.145***	-0.191***	-0.078**
	(0.038)	(0.035)	(0.037)	(0.034)
Trust scientists	0.139***	0.095	0.086	0.104*
	(0.065)	(0.063)	(0.064)	(0.061)
Social Norm	0.336***	0.405***	0.337***	0.312***
	(0.056)	(0.062)	(0.054)	(0.061)
Climate change denial	-0.175***	-0.141**	-0.191***	-0.048
	(0.056)	(0.057)	(0.054)	(0.055)
Sufficiency orientation	0.237***	0.004	0.307***	0.095

[48] Net annual income of respondent's household divided by household size using OECD weights. We use a factor of 1 for the household head, 0.5 for each additional adult above 14, and 0.3 for each child (cf. https://www.oecd.org/els/soc/OECD-Note-EquivalenceScales.pdf).

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	(0.075)	(0.072)	(0.073)	(0.071)
Environmental identity	-0.052	0.085	-0.159**	0.090
	(0.066)	(0.069)	(0.065)	(0.067)
Support national policies	-0.143***	-0.062	-0.105**	-0.090**
	(0.046)	(0.047)	(0.044)	(0.046)
Support social policies	0.059	-0.127*	-0.039	0.069
	(0.039)	(0.065)	(0.057)	(0.063)
Support conservative policies	-0.051	-0.070	-0.038	-0.032
	(0.053)	(0.052)	(0.051)	(0.051)
Support liberal policies	-0.004	0.068	-0.052	0.091*
	(0.047)	(0.054)	(0.046)	(0.053)
Support environmental policies	0.327***	0.381***	0.284***	0.250***
	(0.066)	(0.069)	(0.065)	(0.067)
Constant	1.145**	1.505***	2.151***	0.860*
	(0.506)	(0.494)	(0.492)	(0.482)
Observations	584	576	584	575
Adjusted R^2	0.429	0.409	0.349	0.290
F-Statistic	24.044***	21.977***	17.438***	13.346***
df	19; 564	19; 556	19; 564	19; 555

*Note: Standard errors in parenthesis. *p<0.1 **p<0.05 ***p<0.01*

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Table A15: Regression results: diet study 2 (acceptance framing experiment): meat tax

	Dependent variable:			
	Climate labelling acceptability for oneself		Climate labelling acceptability for society	
	Denmark	Germany	Denmark	Germany
Experiment: efficacy (vs. control)	-0.057	-0.055	-0.182**	-0.069
	(0.072)	(0.086)	(0.071)	(0.086)
Experiment: efficacy + acceptance (vs. control)	0.174**	0.049	0.156**	0.106
	(0.078)	(0.094)	(0.077)	(0.094)
Female (vs. male)	-0.007	0.039	-0.059	0.018
	(0.066)	(0.077)	(0.065)	(0.077)
Age	-0.008***	-0.008***	-0.006***	-0.009***
	(0.002)	(0.003)	(0.002)	(0.003)
Income per person (in 1T€)[49]	0.003	0.000	0.000	0.000
	(0.002)	(0.002)	(0.002)	(0.002)
Working	0.006	0.059	0.060	0.069
	(0.074)	(0.088)	(0.074)	(0.088)
Vocational training (vs. no school/ only school)	-0.013	0.046	0.012	0.065
	(0.092)	(0.097)	(0.091)	(0.097)
Academic degree (vs. no school/ only school)	0.156*	-0.021	0.172*	-0.004
	(0.090)	(0.106)	(0.089)	(0.106)
Meat eating habits	-0.018	-0.053**	-0.014	-0.050*
	(0.026)	(0.026)	(0.026)	(0.026)
Trust scientists	0.174***	0.163***	0.210***	0.177***
	(0.045)	(0.048)	(0.045)	(0.048)
Social Norm	0.031	0.158***	0.060	0.117**
	(0.039)	(0.048)	(0.038)	(0.047)
Climate change denial	-0.168***	-0.279***	-0.159***	-0.245***
	(0.039)	(0.043)	(0.038)	(0.043)
Sufficiency orientation	0.214***	0.072	0.222***	0.115**
	(0.053)	(0.055)	(0.052)	(0.055)
Environmental identity	0.095**	0.046	0.047	0.053
	(0.047)	(0.052)	(0.047)	(0.052)
Support national policies	0.034	0.059*	0.029	0.075**

[49] Net annual income of respondent's household divided by household size using OECD weights. We use a factor of 1 for the household head, 0.5 for each additional adult above 14, and 0.3 for each child (cf. https://www.oecd.org/els/soc/OECD-Note-EquivalenceScales.pdf).

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	(0.032)	(0.035)	(0.031)	(0.035)
Support social policies	0.005	-0.031**	0.003	0.001
	(0.041)	(0.049)	(0.041)	(0.049)
Support conservative policies	-0.079**	-0.013	-0.005	-0.024
	(0.037)	(0.038)	(0.037)	(0.038)
Support liberal policies	0.037	0.006	0.011	0.043
	(0.032)	(0.040)	(0.032)	(0.040)
Support environmental policies	0.156***	0.154***	0.100**	0.056
	(0.047)	(0.052)	(0.046)	(0.052)
Constant	2.203***	3.021***	2.264***	2.931***
	(0.355)	(0.385)	(0.352)	(0.385)
Observations	619	561	619	561
Adjusted R^2	0.340	0.362	0.294	0.308
F-Statistic	17.792***	17.703***	15.541***	14.125***
df	19; 599	19; 541	19; 599	19; 541

*Note: Standard errors in parenthesis. *p<0.1 **p<0.05 ***p<0.01*

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Table A16: Regression results: diet study 2 (acceptance framing experiment): meat-free day

Regression results: meat-free day acceptability

	Dependent variable:			
	Meat-free day acceptability for oneself		Meat-free day acceptability for society	
	Denmark	Germany	Denmark	Germany
Experiment: efficacy (vs. control)	0.003	0.023	0.070	0.067
	(0.093)	(0.104)	(0.093)	(0.106)
Experiment: efficacy + acceptance (vs. control)	-0.022	-0.206*	-0.013	-0.200*
	(0.097)	(0.109)	(0.097)	(0.112)
Female (vs. male)	0.506***	0.396***	0.438***	0.487***
	(0.084)	(0.092)	(0.083)	(0.094)
Age	-0.006**	-0.006*	-0.001	-0.001
	(0.003)	(0.003)	(0.003)	(0.003)
Income per person (in 1T€)[50]	0.004*	0.002	-0.005**	0.000
	(0.002)	(0.003)	(0.002)	(0.003)
Working	0.285***	0.169	0.231**	0.115
	(0.095)	(0.104)	(0.094)	(0.107)
Vocational training (vs. no school/ only school)	0.020	0.093	-0.162	0.159
	(0.117)	(0.113)	(0.126)	(0.116)
Academic degree (vs. no school/ only school)	0.015	-0.074	-0.214*	-0.052
	(0.115)	(0.125)	(0.115)	(0.128)
Meat eating habits	-0.072**	-0.096***	-0.045	-0.002
	(0.034)	(0.031)	(0.034)	(0.032)
Trust scientists	0.345***	0.160***	0.291**	0.110*
	(0.058)	(0.056)	(0.058)	(0.057)
Social Norm	0.226***	0.240***	0.247***	0.244***
	(0.050)	(0.055)	(0.050)	(0.057)
Climate change denial	-0.271***	-0.156***	-0.223***	-0.154***
	(0.049)	(0.050)	(0.049)	0.052
Sufficiency orientation	0.290***	0.184***	0.282***	0.159**
	(0.067)	(0.065)	(0.067)	(0.067)

[50] Net annual income of respondent's household divided by household size using OECD weights. We use a factor of 1 for the household head, 0.5 for each additional adult above 14, and 0.3 for each child (cf. https://www.oecd.org/els/soc/OECD-Note-EquivalenceScales.pdf).

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Environmental identity	-0.067	0.070	-0.142**	0.056
	(0.060)	(0.060)	(0.060)	(0.062)
Support national policies	-0.042	-0.009	-0.034	0.046
	(0.041)	(0.042)	(0.041)	(0.043)
Support social policies	0.048	-0.005	0.002	0.048
	(0.052)	(0.058)	(0.052)	(0.060)
Support conservative policies	-0.016	-0.039	-0.076*	-0.013
	(0.049)	(0.046)	(0.046)	(0.047)
Support liberal policies	0.003	-0.085*	-0.011	-0.125**
	(0.042)	(0.048)	(0.042)	(0.049)
Support environmental policies	0.228***	0.134**	0.183***	0.085
	(0.060)	(0.063)	(0.059)	(0.064)
Constant	1.086**	2.463***	1.701***	1.730***
	(0.450)	(0.452)	(0.448)	(0.464)
Observations	640	603	640	603
Adjusted R^2	0.440	0.314	0.352	0.227
F-Statistic	27.408***	15.521***	19.236***	10.313***
df	19, 620	19; 583	19; 620	19; 583

*Note: Standard errors in parenthesis. *p<0.1 **p<0.05 ***p<0.01*

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A.3.4 Regression results: diffusion pathways

The following tables display the coefficients of the regression models for the diffusion pathways in log odds and in average marginal effects.

Table A17: Regression results: diffusion pathways housing in log odds[51]

	Dependent variable: Communication role									
	Denmark		France		Germany		Italy		Latvia	
	passive	active	passive	active	passive	active	passive	active	passive	active
	Ref. interested communication role									
Relative advantage			-0.167	-0.034	-0.017	-0.031				
			(0.161)	(0.170)	(0.169)	(0.141)				
Compatibility			-0.141	0.248	-0.448**	0.264*				
			(0.135)	(0.158)	(0.185)	(0.154)				
Ease of Use			-0.037	0.016	-0.056	0.101				
			(0.130)	(0.119)	(0.143)	(0.112)				
Triability	-0.117	0.167	-0.005	0.075	0.001	0.199**	-0.041	0.219**	-0.228	0.276*
	(0.123)	(0.114)	(0.112)	(0.110)	(0.126)	(0.099)	(0.123)	(0.107)	(0.147)	(0.161)
Observability	-0.257**	-0.047	-0.160	-0.007	0.179	-0.110	0.191	-0.048	0.076	0.162
	(0.124)	(0.110)	(0.118)	(0.118)	(0.149)	(0.112)	(0.133)	(0.113)	(0.162)	(0.165)
Attitude	-0.491***	0.234*	-0.388**	0.178	-0.292	0.247	-0.689***	0.403***	-0.433***	0.531***
	(0.132)	(0.137)	(0.160)	(0.192)	(0.178)	(0.164)	(0.131)	(0.141)	(0.147)	(0.203)
Eco-consumer	0.050	-0.061	-0.148	-0.023	0.009	0.047	-0.286	0.322*	-0.060	-0.100
	(0.156)	(0.141)	(0.144)	(0.163)	(0.171)	(0.152)	(0.187)	(0.194)	(0.177)	(0.207)
Concerned with environment	-0.555***	0.540***	-0.437***	0.591***	-0.766***	0.157	-0.125	0.149	-0.397**	0.514**

[51] Due to an error in the translation the variables relative advantage, compatibility and ease of use were only included in France and Germany. Hence, for the models for Denmark, Italy and Latvia we could not integrate these variables.

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	(0.142)	(0.137)	(0.137)	(0.170)	(0.166)	(0.148)	(0.183)	(0.182)	(0.176)	(0.230)
Problem awareness climate change	-0.325***	0.080	-0.145	0.147	-0.099	0.097	0.076	0.208*	-0.301***	-0.031
	(0.116)	(0.123)	(0.103)	(0.141)	(0.113)	(0.109)	(0.104)	(0.119)	(0.108)	(0.139)
Female (vs. male)	0.108	-0.503***	0.034	-0.086	-0.493**	-0.051	0.032	-0.267	-0.231	-0.107
	(0.220)	(0.195)	(0.200)	(0.215)	(0.234)	(0.191)	(0.213)	(0.195)	(0.235)	(0.262)
Age	0.0004	0.001	0.013*	0.006	0.014*	0.002	0.004	-0.011*	0.017**	-0.017**
	(0.007)	(0.006)	(0.007)	(0.007)	(0.007)	(0.006)	(0.007)	(0.007)	(0.008)	(0.008)
Income per person (in 1T€)	0.004	0.008*	0.012	0.012*	-0.005	0.003	0.001	0.011	-0.013	0.059**
	(0.005)	(0.004)	(0.007)	(0.007)	(0.006)	(0.005)	(0.008)	(0.007)	(0.024)	(0.023)
Vocational training (vs. no school/ only school)	-0.577**	0.500*	-0.111	-0.488	-0.008	0.365	-0.184	-0.154	-0.333	0.189
	(0.278)	(0.292)	(0.283)	(0.349)	(0.275)	(0.248)	(0.295)	(0.320)	(0.339)	(0.390)
Academic degree (vs. no school/ only school)	-0.588**	0.435	-0.728***	0.095	-0.598*	0.621**	-0.356	0.414*	-0.079	0.144
	(0.278)	(0.275)	(0.243)	(0.260)	(0.321)	(0.252)	(0.240)	(0.212)	(0.276)	(0.330)
Constant	4.881***	-4.337***	4.031***	-5.839***	3.916***	-4.268***	1.929***	-5.207***	3.247***	-5.581***
	(0.725)	(0.779)	(0.668)	(0.914)	(0.741)	(0.744)	(0.739)	(0.827)	(0.839)	(1.203)
Observations	786		784		763		774		535	
Akaike Inf. Crit.	1,353.248	1,353.248	1,314.987	1,314.987	1,301.276	1,301.276	1,336.683	1,336.683	917.785	917.785

*Note: Standard errors in parenthesis. *p<0.1 **p<0.05 ***p<0.01*

The reference category is "interested communication role". Therefore, the coefficients have to be interpreted in comparison to the reference category.

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Table A18: Regression results: diffusion pathways housing in average marginal effects[52]

	Dependent variable:									
	communication role									
	Denmark		France		Germany		Italy		Latvia	
	Group	*AME*	*Group*	*AME*	*Group*	*AME*	*Group*	*AME*	*Group*	*AME*
Relative advantage			active	0.0002	active	-0.0049				
			interested	0.0241	interested	0.0059				
			passive	-0.0243	passive	-0.001				
Compatibility			active	0.0395*	active	0.0659**				
			interested	-0.0106	interested	-0.0067				
			passive	-0.029	passive	-0.0593***				
Ease of Use			active	0.0033	active	0.0208				
			interested	0.0028	interested	-0.0101				
			passive	-0.0061	passive	-0.0106				
Triability	active	0.0331*	active	0.0103	active	0.0368**	active	0.0386**	active	0.0465*
	interested	-0.012	interested	-0.0072	interested	-0.029	interested	-0.0259	interested	-0.0031
	passive	-0.021	passive	-0.0031	passive	-0.0078	passive	-0.0128	passive	-0.0434**
Observability	active	0.0002	active	0.0037	active	-0.0265	active	-0.0141	active	0.0198
	interested	0.0315	interested	0.0204	interested	-0.0004	interested	-0.0153	interested	-0.027
	passive	-0.0317**	passive	-0.024	passive	0.027	passive	0.0294	passive	0.0071
Attitude	active	0.0572**	active	0.0364	active	0.0574*	active	0.0914***	active	0.0941***
	interested	0.0097	interested	0.0252	interested	-0.0147	interested	-0.0026	interested	-0.0149
	passive	-0.0668***	passive	-0.0617***	passive	-0.0426**	passive	-0.0887***	passive	-0.0792***

[52] Due to an error in the translation the variables relative advantage, compatibility and ease of use were only included in France and Germany. Hence, for the models for Denmark, Italy and Latvia we could not integrate these variables.

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	active	-0.0119	active	0.0012	active	0.0082	active	0.0651*	active	-0.0114
Eco-consumer	interested	0.0029	interested	0.0207	interested	-0.0075	interested	-0.0189	interested	0.0181
	passive	0.009	passive	-0.0219	passive	-0.0007	passive	-0.0462**	passive	-0.0067
	active	0.1181***	active	0.1042***	active	0.0545**	active	0.0291	active	0.0901**
Concerned with environment	interested	-0.0354	interested	-0.0236	interested	0.0316	interested	-0.0077	interested	-0.0161
	passive	-0.0827***	passive	-0.0806***	passive	-0.0861***	passive	-0.0214	passive	-0.074***
	active	0.0242	active	0.0248	active	0.0216	active	0.0325	active	0.0042
Problem awareness climate change	interested	0.0193	interested	0.0015	interested	-0.0061	interested	-0.036*	interested	0.0413*
	passive	-0.0436***	passive	-0.0263*	passive	-0.0155	passive	0.0035	passive	-0.0454***
	active	-0.0888***	active	-0.0125	active	0.0092	active	-0.0447	active	-0.0073
Female (vs. male)	interested	0.0571	interested	0.0047	interested	0.0495	interested	0.0318	interested	0.0418
	passive	0.0317	passive	0.0078	passive	-0.0587**	passive	0.0129	passive	-0.0345
	active	0.0002	active	0.0005	active	-0.0001	active	-0.0019*	active	-0.0027***
Age	interested	-0.0002	interested	-0.0022*	interested	-0.0016	interested	0.001	interested	-0.0005
	passive	0.0000	passive	0.0018*	passive	0.0017*	passive	0.0009	passive	0.0032***
	active	0.0012*	active	0.0012	active	0.0008	active	0.0018	active	0.0083***
Income per person (in 1T€)	interested	-0.0014	interested	-0.0027**	interested	0.0000	interested	-0.0016	interested	-0.0045
	passive	0.0003	passive	0.0015	passive	-0.0008	passive	-0.0002	passive	-0.0038
Vocational training (vs. no school / only school)	active	0.1048**	active	-0.0578	active	0.0664	active	-0.0194	active	0.0359
	interested	-0.0136	interested	0.0621	interested	-0.0517	interested	0.0397	interested	0.0214
	passive	-0.0912***	passive	-0.0042	passive	-0.0147	passive	-0.0203	passive	-0.0572
Academic degree (vs. no school / only school)	active	0.0946**	active	0.0347	active	0.1399***	active	0.0812**	active	0.0215
	interested	-0.0016	interested	0.0803*	interested	-0.046	interested	-0.0198	interested	-0.0043
	passive	-0.0931***	passive	-0.115***	passive	-0.0939***	passive	-0.0614**	passive	-0.0172
Observations	786		784		763		774		535	

*Note: *p<0.1 **p<0.05 ***p<0.01*

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Table A19: Regression results: diffusion pathways diet in log odds

	Dependent variable: communication role									
	Denmark		France		Germany		Italy		Latvia	
	passive	active	passive	active	passive	active	passive	active	passive	active
	Ref. interested communication role									
Relative advantage	-0.279	0.017	-0.444**	-0.041	-0.009	0.195	-0.205	-0.132	-0.203	0.208
	(0.170)	(0.162)	(0.180)	(0.174)	(0.169)	(0.149)	(0.229)	(0.182)	(0.224)	(0.253)
Compatibility	-0.367**	-0.032	-0.243	0.520***	-0.162	0.271*	-0.339*	0.176	-0.529**	0.646***
	(0.153)	(0.134)	(0.152)	(0.160)	(0.156)	(0.141)	(0.187)	(0.139)	(0.226)	(0.245)
Ease of Use	0.108	0.065	-0.040	-0.243**	-0.076	0.146	0.057	-0.029	0.295	-0.127
	(0.151)	(0.113)	(0.144)	(0.119)	(0.151)	(0.116)	(0.163)	(0.115)	(0.202)	(0.188)
Triability	-0.006	0.162	-0.265**	0.170	-0.264*	-0.041	-0.183	0.194*	0.042	0.168
	(0.139)	(0.116)	(0.126)	(0.107)	(0.138)	(0.110)	(0.157)	(0.104)	(0.172)	(0.175)
Observability	-0.116	0.207*	0.067	-0.038	-0.117	-0.016	-0.060	0.158	-0.049	-0.337
	(0.130)	(0.108)	(0.143)	(0.114)	(0.148)	(0.111)	(0.171)	(0.113)	(0.199)	(0.208)
Attitude	-0.472**	0.622***	-0.201	0.176	-0.806***	0.472**	-0.434*	0.627***	-0.550**	0.061
	(0.197)	(0.198)	(0.201)	(0.197)	(0.199)	(0.186)	(0.223)	(0.190)	(0.217)	(0.275)
Eco-consumer	-0.372**	0.118	-0.421**	0.212	-0.072	0.318**	0.007	-0.196	-0.260	-0.154
	(0.151)	(0.137)	(0.168)	(0.170)	(0.166)	(0.153)	(0.222)	(0.169)	(0.174)	(0.193)
Concerned with environment	-0.458***	0.449***	-0.322*	0.387**	-0.274**	0.343**	-0.415**	0.743***	-0.710***	0.602***
	(0.142)	(0.132)	(0.164)	(0.168)	(0.140)	(0.136)	(0.194)	(0.165)	(0.178)	(0.220)
Problem awareness climate change	-0.078	0.137	-0.388***	0.114	-0.255**	-0.042	-0.056	0.230**	-0.348***	-0.090
	(0.138)	(0.137)	(0.109)	(0.135)	(0.120)	(0.115)	(0.130)	(0.117)	(0.125)	(0.159)
Female (vs. male)	-0.195	-0.079	-0.056	-0.217	-0.170	0.158	-0.035	0.256	-0.424*	0.437

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	(0.240)	(0.193)	(0.219)	(0.199)	(0.245)	(0.195)	(0.264)	(0.192)	(0.246)	(0.282)
Age	0.010	0.003	0.020***	-0.014**	0.015*	-0.004	-0.002	-0.011*	0.016*	-0.016*
	(0.007)	(0.006)	(0.007)	(0.006)	(0.008)	(0.006)	(0.009)	(0.006)	(0.008)	(0.009)
Income per person (in 1T€)	-0.002	0.006	-0.003	0.007	-0.004	0.024***	-0.026**	0.004	-0.034	0.036
	(0.006)	(0.004)	(0.008)	(0.006)	(0.008)	(0.006)	(0.010)	(0.006)	(0.024)	(0.024)
Vocational training (vs. no school/ only school)	0.126	0.538*	-0.333	0.202	-0.215	-0.295	0.303	-0.100	-0.400	0.158
	(0.284)	(0.286)	(0.287)	(0.311)	(0.277)	(0.248)	(0.320)	(0.287)	(0.331)	(0.418)
Academic degree (vs. no school/ only school)	-0.141	0.913***	-0.567**	0.671***	-0.505	-0.015	-0.628**	0.382*	-0.540*	-0.057
	(0.312)	(0.268)	(0.253)	(0.237)	(0.349)	(0.265)	(0.314)	(0.200)	(0.288)	(0.356)
Constant	5.226***	-7.560***	6.006***	-5.262***	5.371***	-6.804***	4.605***	-6.952***	6.961***	-4.526***
	(0.886)	(0.948)	(0.829)	(0.894)	(0.900)	(0.866)	(0.955)	(0.847)	(1.078)	(1.293)
Observations	810		798		776		824		578	
Akaike Inf. Crit.	1,307.110	1,307.110	1,296.824	1,296.824	1,207.471	1,207.471	1,268.637	1,268.637	882.242	882.242

*Note: Standard errors in parenthesis. *p<0.1 **p<0.05 ***p<0.01*
The reference category is "interested communication role". Therefore, the coefficients have to be interpreted in comparison to the reference category.

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Table A20: Regression results: diffusion pathways housing in average marginal effects

	Dependent variable:									
	communication role									
	Denmark		France		Germany		Italy		Latvia	
	Group	*AME*	*Group*	*AME*	*Group*	*AME*	*Group*	*AME*	*Group*	*AME*
Relative advantage	active	0.01	active	0.0029	active	0.0321	active	-0.0193	active	0.03
	interested	0.021	interested	0.0472	interested	-0.026	interested	0.0348	interested	0.0019
	passive	-0.031*	passive	-0.0502***	passive	-0.006	passive	-0.0155	passive	-0.0319
Compatibility	active	0.0038	active	0.0892***	active	0.0488**	active	0.0376	active	0.1016**
	interested	0.0351	interested	-0.0483*	interested	-0.0254	interested	-0.0065	interested	-0.0199
	passive	-0.039***	passive	-0.0409***	passive	-0.0233	passive	-0.031**	passive	-0.0817***
Ease of Use	active	0.0075	active	-0.0338**	active	0.0258	active	-0.0061	active	-0.0202
	interested	-0.0182	interested	0.0335	interested	-0.0142	interested	0.0003	interested	-0.0257
	passive	0.0106	passive	0.0003	passive	-0.0116	passive	0.0058	passive	0.0458
Triability	active	0.027	active	0.0321*	active	-0.0005	active	0.0381**	active	0.0196
	interested	-0.0217	interested	0.0028	interested	0.0265	interested	-0.0187	interested	-0.0219
	passive	-0.0053	passive	-0.0349**	passive	-0.0259**	passive	-0.0193	passive	0.0023
Observability	active	0.0379**	active	-0.0072	active	0.0003	active	0.0292	active	-0.0356*
	interested	-0.0192	interested	-0.002	interested	0.0116	interested	-0.0207	interested	0.0365
	passive	-0.0187	passive	0.0092	passive	-0.0119	passive	-0.0084	passive	-0.0009
Attitude	active	0.1201***	active	0.0316	active	0.0971***	active	0.1228***	active	0.0174
	interested	-0.055	interested	-0.0038	interested	-0.0153	interested	-0.0774**	interested	0.0552
	passive	-0.0651***	passive	-0.0278	passive	-0.0818***	passive	-0.0454***	passive	-0.0726***
Eco-consumer	active	0.0293	active	0.0421	active	0.0542**	active	-0.0337	active	-0.013
	interested	0.0136	interested	0.0105	interested	-0.0385	interested	0.0294	interested	0.0458

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	passive	-0.0429***	passive	-0.0526***	passive	-0.0157	passive	0.0043	passive	-0.0328
	active	0.0891***	active	0.0688**	active	0.0637***	active	0.1442***	active	0.0985***
Concerned with environment	interested	-0.0298	interested	-0.0228	interested	-0.028	interested	-0.0978***	interested	0.0021
	passive	-0.0593***	passive	***	passive	-0.0357***	passive	-0.0464***	passive	-0.1006***
	active	0.0249	active	0.0258	active	-0.0009	active	0.042**	active	-0.0043
Problem awareness climate change	interested	-0.0123	interested	0.0213	interested	0.026	interested	-0.0325	interested	0.0495**
	passive	-0.0125	passive	-0.0471***	passive	-0.0251**	passive	-0.0095	passive	-0.0452***
	active	-0.0076	active	-0.0308	active	0.0299	active	0.0454	active	0.0592*
Female (vs. male)	interested	0.0279	interested	0.0327	interested	-0.0078	interested	-0.0373	interested	0.0105
	passive	-0.0203	passive	-0.0019	passive	-0.0221	passive	-0.0081	passive	-0.0697**
	active	0.0003	active	-0.0026***	active	-0.001	active	-0.0018*	active	-0.0022**
Age	interested	-0.0013	interested	-0.0003	interested	-0.0007	interested	0.0018	interested	-0.0003
	passive	0.0011	passive	0.0028***	passive	0.0017*	passive	0.0001	passive	0.0025**
	active	0.0011	active	0.001	active	0.0039***	active	0.0012	active	0.0049*
Income per person (in 1T€)	interested	-0.0007	interested	-0.0005	interested	-0.0029***	interested	0.0012	interested	0.0006
	passive	-0.0004	passive	-0.0005	passive	-0.001	passive	-0.0024***	passive	-0.0055*
	active	0.0832*	active	0.0381	active	-0.0427	active	-0.0236	active	0.0269
Vocational training (vs. no school / only school)	interested	-0.0826*	interested	0.0057	interested	0.0582	interested	-0.0075	interested	0.0303
	passive	-0.0007	passive	-0.0438	passive	-0.0155	passive	0.0311	passive	-0.0573
	active	0.1601***	active	0.1152***	active	0.0096	active	0.0802**	active	0.0044
Academic degree (vs. no school / only school)	interested	-0.1169**	interested	-0.0291	interested	0.0418	interested	-0.0192	interested	0.0715
	passive	-0.0432	passive	-0.086***	passive	-0.0514	passive	**	passive	-0.0759*
Observations		810		798		776		824		578

*Note: *p<0.1 **p<0.05 ***p<0.01*

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Table A21: Regression results: diffusion pathways housing

Average Marginal Effects: Diffusion pathways diet in average marginal effects

	Dependent variable:									
	communication role									
	Denmark		France		Germany		Italy		Latvia	
	Group	*AME*	*Group*	*AME*	*Group*	*AME*	*Group*	*AME*	*Group*	*AME*
Relative advantage	active	0.01	active	0.0029	active	0.0321	active	-0.0193	active	0.03
	interested	0.021	interested	0.0472	interested	-0.026	interested	0.0348	interested	0.0019
	passive	-0.031*	passive	-0.0502***	passive	-0.006	passive	-0.0155	passive	-0.0319
Compatibility	active	0.0038	active	0.0892***	active	0.0488**	active	0.0376	active	0.1016**
	interested	0.0351	interested	-0.0483*	interested	-0.0254	interested	-0.0065	interested	-0.0199
	passive	-0.039***	passive	-0.0409***	passive	-0.0233	passive	-0.031**	passive	-0.0817***
Ease of Use	active	0.0075	active	-0.0338**	active	0.0258	active	-0.0061	active	-0.0202
	interested	-0.0182	interested	0.0335	interested	-0.0142	interested	0.0003	interested	-0.0257
	passive	0.0106	passive	0.0003	passive	-0.0116	passive	0.0058	passive	0.0458
Triability	active	0.027	active	0.0321*	active	-0.0005	active	0.0381**	active	0.0196
	interested	-0.0217	interested	0.0028	interested	0.0265	interested	-0.0187	interested	-0.0219
	passive	-0.0053	passive	-0.0349**	passive	-0.0259**	passive	-0.0193	passive	0.0023
Observability	active	0.0379**	active	-0.0072	active	0.0003	active	0.0292	active	-0.0356*
	interested	-0.0192	interested	-0.002	interested	0.0116	interested	-0.0207	interested	0.0365
	passive	-0.0187	passive	0.0092	passive	-0.0119	passive	-0.0084	passive	-0.0009
Attitude	active	0.1201***	active	0.0316	active	0.0971***	active	0.1228***	active	0.0174
	interested	-0.055	interested	-0.0038	interested	-0.0153	interested	-0.0774**	interested	0.0552
	passive	-0.0651***	passive	-0.0278	passive	-0.0818***	passive	-0.0454***	passive	-0.0726***
Eco-consumer	active	0.0293	active	0.0421	active	0.0542**	active	-0.0337	active	-0.013
	interested	0.0136	interested	0.0105	interested	-0.0385	interested	0.0294	interested	0.0458

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	passive	-0.0429***	passive	-0.0526***	passive	-0.0157	passive	0.0043	passive	-0.0328
	active	0.0891***	active	0.0688**	active	0.0637***	active	0.1442***	active	0.0985***
Concerned with environment	interested	-0.0298	interested	-0.0228	interested	-0.028	interested	-0.0978***	interested	0.0021
	passive	-0.0593***	passive	***	passive	-0.0357***	passive	-0.0464***	passive	-0.1006***
	active	0.0249	active	0.0258	active	-0.0009	active	0.042**	active	-0.0043
Problem awareness climate change	interested	-0.0123	interested	0.0213	interested	0.026	interested	-0.0325	interested	0.0495**
	passive	-0.0125	passive	-0.0471***	passive	-0.0251**	passive	-0.0095	passive	-0.0452***
	active	-0.0076	active	-0.0308	active	0.0299	active	0.0454	active	0.0592*
Female (vs. male)	interested	0.0279	interested	0.0327	interested	-0.0078	interested	-0.0373	interested	0.0105
	passive	-0.0203	passive	-0.0019	passive	-0.0221	passive	-0.0081	passive	-0.0697**
	active	0.0003	active	-0.0026***	active	-0.001	active	-0.0018*	active	-0.0022**
Age	interested	-0.0013	interested	-0.0003	interested	-0.0007	interested	0.0018	interested	-0.0003
	passive	0.0011	passive	0.0028***	passive	0.0017*	passive	0.0001	passive	0.0025**
	active	0.0011	active	0.001	active	0.0039***	active	0.0012	active	0.0049*
Income per person (in 1T€)	interested	-0.0007	interested	-0.0005	interested	-0.0029***	interested	0.0012	interested	0.0006
	passive	-0.0004	passive	-0.0005	passive	-0.001	passive	-0.0024***	passive	-0.0055*
	active	0.0832*	active	0.0381	active	-0.0427	active	-0.0236	active	0.0269
Vocational training (vs. no school / only school)	interested	-0.0826*	interested	0.0057	interested	0.0582	interested	-0.0075	interested	0.0303
	passive	-0.0007	passive	-0.0438	passive	-0.0155	passive	0.0311	passive	-0.0573
	active	0.1601***	active	0.1152***	active	0.0096	active	0.0802**	active	0.0044
Academic degree (vs. no school / only school)	interested	-0.1169**	interested	-0.0291	interested	0.0418	interested	-0.0192	interested	0.0715
	passive	-0.0432	passive	-0.086***	passive	-0.0514	passive	**	passive	-0.0759*
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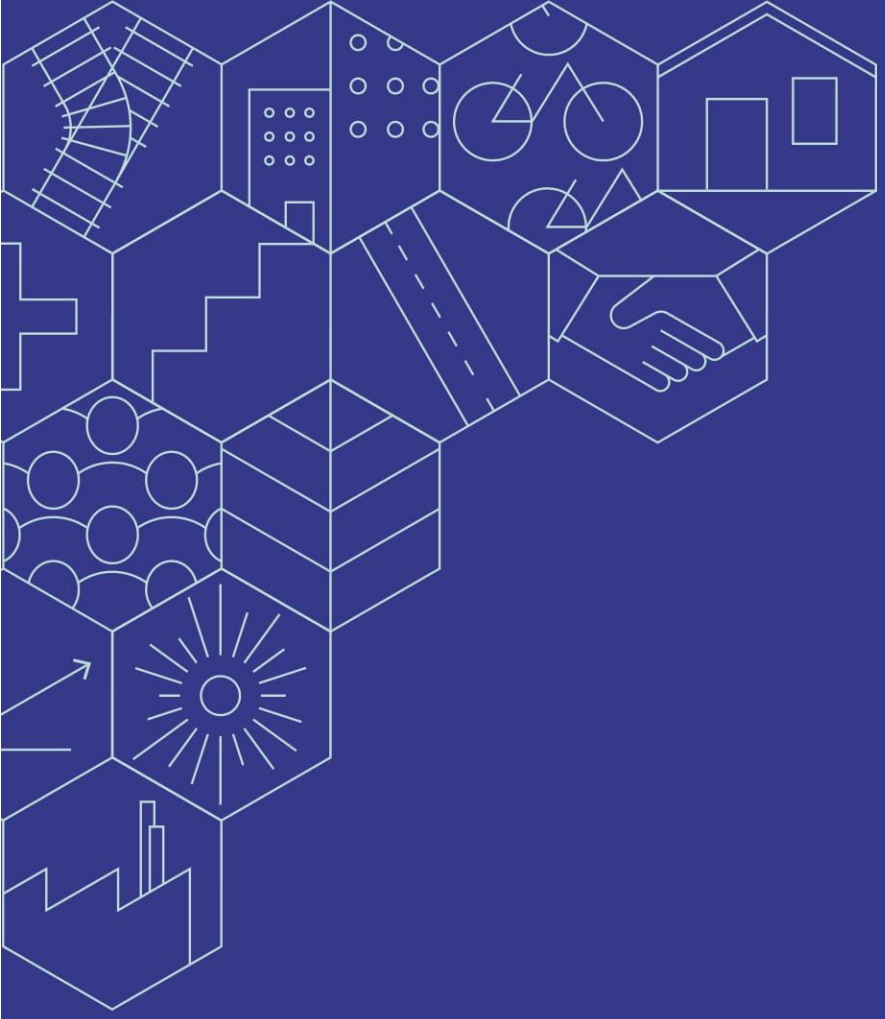

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