What do your clients actually want?

Understanding and estimating household demand for sustainable financial products

Climate-KIC
Co-funded by the European Union

2i investing initiative

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About 2° Investing Initiative

The 2° Investing Initiative (2DII) is an independent, non-profit think tank working to align financial markets and regulations with the Paris Agreement goals.

Globally focused with offices in Paris, New York, Berlin, London, and Brussels, 2DII coordinates some of the world's largest research projects on sustainable finance. Its team of finance, climate, and risk experts develop research, tools, and policy insights to help financial institutions and regulators hasten and adapt to the energy transition.

In order to ensure its independence and the intellectual integrity of its work, 2DII has a multi-stakeholder governance and funding structure, with representatives from a diverse array of financial institutions, governments, and NGOs.

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Executive summary

This paper is made of two building blocks. First, we present results of a survey run in six European countries (Denmark, Estonia, Germany, Greece, Ireland and Romania) in Q4 2021 about households' beliefs and preferences regarding sustainable finance. Second, we use results from the survey to build estimates of potential market shares for different sustainable finance products.

The survey shows that across the six countries:

- 60% of retail investors have mixed financial /sustainability goal, paying attention to maximizing financial returns but also to the alignment of savings with personal values and/or the real impact on the society or the environment.
- The most represented profile is the one that mixes the three goals: 28% of European retail investors want to have it all!
- In all countries, the ranking of individual financial/sustainability goal is the same: first "maximizing return," then "aligning with one's values," and finally "having impact".
- Even if it comes third, having impact is still important for a significant fraction of people (46% on EU-6 average)
- Impact is more searched for when retail investors use their savings to generate a long-term increase in their wealth.
- When they have to make a tradeoff between different financial/sustainability goal, most respondents favor return over impact or value-alignment.
- The sustainability topics people want to be reflected in their savings (for impact or value-alignment purposes) are most frequently environmental or social topics compared to ethical topics.
- There are twice as many respondents expecting sustainable finance products to increase returns than respondents expecting they will decrease returns.
- Most respondents say that they would accept a decrease in return with sustainable products when that helps sustainable companies to grow or when the strategy implies giving up return opportunities

Table: Distribution of sustainability profiles in Europe

	Average EU-6
Pure impact	9%
Pure values	11%
Pure return	20%
Mix of impact and return	3.6%
Mix of values and return	16%
Mix of values and impact	4.8%
Mix of values, impact and return	28%
No clear profile	7.6%

We use data from the survey and mix it with external figures from various sources to estimate market sizes for different sustainable products. Our estimates are based on approximations due to the lack of granularity of external data regarding the European households' current holdings of sustainable financial products. Yet, our estimation models come to several important conclusions.

Regarding sustainable equity strategies, our findings suggest that:

- The potential market size is highest for exclusions (due to an already larger adoption by investment funds and the strongest interest across all techniques from our survey respondents) which could reach between 50% and 66% of total equity assets under management in all countries.
- In contrast, profit-sharing seems to have the lowest potential.
- In terms of potential assets under management, up to EUR 600 billion could be invested in equity funds applying exclusions across the 6 countries, EUR 450 billion in funds applying engagement, EUR 470 billion in funds applying positive screening or impact investing and EUR 350 billion in profit-sharing funds.
- The current supply of retail products, highly concentrated on exclusions (and in a lesser extent on engagement), does not match the demand that seems to be agnostic about the different approaches.

Table: estimated market sizes for sustainable equity strategies

MARKET ESTIMATION RESULTS	Germany	Denmark	Ireland	Greece	Romania	Estonia	EU-6
Potential total equity assets (in EUR bn)							
Exclusions	468	82	34	7	6	2	599
Engagement	344	66	29	6	6	2	451
Positive screening	355	60	29	6	6	2	457
Impact investing	374	56	28	6	5	2	469
Profit-sharing	285	37	25	5	5	1	357

Regarding green financial products, we conclude that:

- Green deposits have by far the highest potential due to the importance of deposits within household wealth. They could represent up to EUR 1,300 billion across the six countries.
- Green bond funds come second due to the importance of bond funds in pensions and life insurance, with a potential market size of more than EUR 800 billion.
- Despite a superior popularity, green thematic equity funds are constrained in their deployment compared with low carbon equity funds because of the limits posed by their lack of sector diversification. According to our estimates, they could reach a total of EUR 97 billion versus EUR 439 billion for low-carbon funds.
- Finally, green equity crowdfunding potential is de facto limited by the low direct holdings of equity by European households (representing between 2% and 7% of their financial wealth).

Table: estimated market sizes for green financial products

MARKET ESTIMATION RESULTS	Germany	Denmark	Ireland	Greece	Romania	Estonia	EU-6
Potential total assets (in EUR bn)							
Green deposits	1012	59	83	80	31	4	1269
Green bond funds	632	108	56	7	10	1	814
Low carbon equity funds	324	77	29	4	4	1	439
Green thematic equity funds	71	17	7	1	1	0	97
Green equity crowdfunding	180	25	8	4	2	0	219

Despite its limitations, our work suggests that the potential of various retail sustainable financial products is most probably far from being exhausted. For that potential to materialize, several possible blockers (e.g., information overload, greenwashing suspicion or sustainability fatigue) leading to a problematic household behavior-intention gap which will have to be addressed.

Introduction

Sustainable financial assets have received unprecedented attention in the past five years at the global level, jumping from $22.8 trillion in 2016 to $35.3 trillion in 2020 according to the Global Sustainable Investment Alliance. Sustainable investing now encompasses a wide range of products and asset classes available for institutional or retail investors.

Even if sustainable finance is a particularly buoying segment in Europe which leads the race across zones regarding the offer of sustainable solutions (Europe is home to more than 80% of all global ESG-themed funds[1]), those are still marginal within European households' financial wealth.

This requires a massive improvement since European households play an important role in the sustainable transition. For instance, as mentioned in a previous report by 2DII[2], the overall funding gap in the 2020-2030 decade for the green transition in the European Union amounts to €340 billion per year. That funding gap could be fully absorbed by a reallocation of future household savings since it represents only 27% of total annual savings by EU households.

But do European households want to invest or save sustainably? Over a dozen of surveys in various countries suggest they do[3]. The last five years have seen an increase in the public awareness of environmental and social issues, especially climate change. Concerns are now shared by all age groups and so is the interest into sustainable finance solutions[4]. If they particularly appeal to millennials, other groups have also raised their interest.

In our surveys, we wanted to address new research questions to get a more precise picture of the motivations, demand and market potential for different sustainable finance solutions, namely: What are the current sociodemographic drivers for demand of sustainable finance products? Which specific sustainable products are the most attractive to European households? And what market sizes could they reach in various European countries in case households translate their stated interests into real actions?

Those are questions this report addresses based on a survey run in six European countries (Denmark, Estonia, Germany, Greece, Ireland and Romania) in Q4 2021. Another series of retail investor surveys will follow in eight European countries (Belgium, Czech Republic, France, Italy, Netherlands, Poland, Spain and Sweden) in 2022. This data will be crucial to quantify business opportunities (and challenges) for the financial industry in Europe in relation to the "megatrend" sustainable finance now represents.

[1] Morningstar (2021) Global Sustainable Fund Flows: Q3 2021 in Review
[2] 2DII (2021)
[3] 2DII (2020)
[4] Schroder (2021)

1. Part I – How sociodemographic factors shape interest for sustainable investments

The study of the sociodemographic profile of retail investors interested or engaged into sustainable investments has drawn attention of researchers since the 1990s. That stream of academic research gathered momentum in the 2010s with the rapid growth of socially responsible investing and other sustainable finance solutions.

Some factors have been heavily searched for by academics, especially age, gender, income, location, education or values. This is due to common assumptions that young, female, urban, high income, highly educated with prosocial values form natural targets for sustainable finance products, in the same way those groups are overrepresented among buyers of sustainable consumer goods.

Relying on surveys as the prominent tool (even if there are also field data being used) and paying attention to different dependent variables (ownership of SR products, share allocated to SR products, interest in SR products, etc.), research actually obtains mixed results with regard to those preconceptions[5].

Age

Studies equally found age playing no role (Fillipini et al. 2022; Wins & Zwergel, 2016; Nilsson 2008; Williams, 2007), a positive role with older investors being more engaged into sustainable investments (Anderson and Robertson, 2021; Rossi et al., 2019; E.Escrig-Olmedo et al.,. 2013) or negative with younger investors being more involved (Bauer et al., 2021, Riedl and Smeets, 2017; Dorfleitner and Nguyen, 2016).

Gender

The literature is less heterogeneous regarding the influence of gender on responsible investments. Results are split between female investors being more prone to invest sustainably and no significant difference across genders.

For instance, Bauer et al. (2021) obtain that women are more prone to ask for the inclusion of SDG engagement and screening in the investment decisions of their pension funds. Dorfleitner & Nguyen (2016) find that women have a higher optimal level of exposure to sustainable funds compared with men while Wins & Zwergel (2016) observe that being a woman increases the propensity to be interested in or to own sustainable funds.

While there is a significant number of studies finding no significant influence of gender on sustainable investment (Fillipini et al. 2022; Anderson and Robertson, 2021; Rossi et al., 2019; Riedl and Smeets, 2017), there is, to our knowledge, no study so far that concludes that men are more prone to invest sustainably.

Income, wealth and other financial characteristics

Some studies also confirm that responsible investors tend to be wealthier or have higher income compared to conventional investors (Fillipini et al. 2022; Anderson and Robertson, 2021; Rossi et al., 2019; Riedl and

[5] See Siddiqui (2018) for a review

Smeets, 2017), in line with theories of post-materialistic values or social signaling (Riedl and Smeets, 2017) in high-status groups.

Such an observation is also compatible with the idea that wealthy people can better cope with decreased returns if sustainable strategies involve abandoning profit opportunities by reducing the investment universe. Dorfleitner and Utz (2014) carried out an online survey of German speaking investors to examine the influence of portfolio sizes on SR investing. In the study, the respondents with high investment volumes were more prone to sacrifice returns in order to invest sustainably.

In contrast, there is a sizeable number of studies that fail to observe any correlation between SR investment and financial variables (Wins & Zwergel, 2016; Dorfleitner & Utz, 2014) or even obtain a negative relationship (Bauer et al., 2021; Junkus and Berry, 2010).

It turns out that overall, the evidence appears to be as inconclusive for income as it is for age.

Education

Regarding education, the picture is pretty similar to the one obtained for gender. Studies can be divided into two groups: those that obtain a positive effect of achieving tertiary education (Fillipini et al. 2022; Rossi et al., 2019; Junkus and Berry, 2010; E.Escrig Olmedo et al., 2012) and those obtaining no effects (Bauer et al.; 2021; Anderson and Robertson, 2021; Riedl & Smeets, 2017).

That variable has been intensively assessed in the most recent period and most studies found no effect. Finally, it is remarkable that, as for gender, there are no studies concluding in the opposite way to the mainstream assumption (i.e. more educated people caring more about sustainability).

Other sociodemographic variables

Beyond age, gender, income and education, some other sociodemographic variables have been less consistently studied. Some research obtains that urban households with a left-wing political orientation (Bauer et al. 2021), concerns about climate (Fillipini et al., 2022), doing volunteering on a regular basis (Wins & Zwergel, 2016) or making donations (Fillipini et al., 2022) are more prone to be sustainable investors. So do people with a high level of financial literacy (Anderson and Robertson, 2021) or sustainable finance literacy (Fillipini et al., 2022). In all cases, the evidence is still too scant to be considered as conclusive.

Table 1 proposes a summary of the most recent studies addressing the sociodemographic profile of responsible investors.

Table 1: sociodemographic determinants of sustainable investments

Study	Geographic zone	Data	Dependent variables	Findings						
				Age	Gender	Financial situation	Education	Location	Values / activities	Financial literacy
Fillipini et al. (2022)	Switzerland	Survey	Owning a sustainable investment			Higher wealth	Tertiary		Donations / Climate concerns	SF literacy
Bauer et al. (2021)	Netherlands	Field survey	Adding a fourth SDG criterion for the pension fund decisions	Younger	Female	Lower income		Urban	Political orientation	
Anderson & Robertson (2021)	Sweden	Survey	Having a 100% ESG retirement portfolio (active choice)	Older		Higher income				
			Carbon emissions of owned stocks (at sector level)							Literacy
Rossi et al. (2019)	Netherlands	Survey	Ownership of SR funds	Older		Higher income	Tertiary			
Riedl & Smeets (2017)	Netherlands	Field data	Ownership of SR equity funds	Younger		Portfolio Size				
			% invested in SR equity funds			Portfolio Size				Literacy
Dorfleitner & Nguyen (2016)	Global	Survey	Optimal proportion of investments in SR funds	Younger	Female					
Wins & Zwergel (2016)	Germany	Survey	Level of involvement into SR investment		Female				Volunteering	
Bauer & Smeets (2015)	Netherlands	Survey	Percentage of assets in a responsible bank	Younger		Lower wealth			Social identification to a responsible bank	
Dorfleitner & Utz (2014)	Global (German)	Survey	Existing investments into SR funds		Female					

Reading: in green are findings that fit with the common preconceptions, in red are findings that go opposite to them, in yellow are findings showing no statistically significant effect of the variable and in grey are untested variables.

It is to be noted that in general the referenced studies have not considered the potential interactions across those generic sociodemographic features while such interactions have been highlighted by other streams of research.

For instance, values and financial literacy might interact since left-wing voters have been observed to be less prone to be interested and involved into capital markets compared to right-wing voters due to political considerations. Kaustia and Torstila (2011) show that left-wing and pro-social investors are less likely to invest in risky assets (whether sustainable or not) because of their aversion towards financial institutions, corporations, and capitalism in general. This could explain the findings by Anderson and Robinson (2021) that pro-environment households are not more likely to hold pro-environment portfolios. As the authors show, such an observation results from overall financial disengagement: pro-environmental households are less likely to own stocks, check pension balances, or make green active retirement planning choices. Green financial engagement by pro-environmental households is finally stronger when they possess higher financial literacy or when informational hurdles to choose sustainable investments are lower.

In the same vein, gender and financial literacy correlate, women being in general less savvy regarding investing issues compared with men (Lusardi and Mitchell, 2014; Bucher-Koenen et al., 2017, 2021). Consequently, the willingness of women to invest sustainably may be hindered by their lower financial literacy, potentially decreasing the coefficients for the female dummy in the models.

Another obvious limitation of the recent studies is that they mostly study situations in northern Europe, with an intensive work done in the Netherlands by researchers from the University of Maastricht. It would be valuable to run international studies to observe whether there are regularities across cultures and geographic zones regarding the sociodemographic determinants of SR investing. Do the findings regarding the clearest effects (i.e. gender and education) hold in Southern and Eastern Europe?

For instance, findings regarding the linkage between gender and risk tolerance or investment in risky assets (with women being less prone to take financial risks) has been found to be culturally biased[6]. Following this, it is challengeable that women would care more about social or environmental issues in all cultures. Or that higher education would lead to enhanced pro-environmental concerns in all contexts.

[6] Pondorfer et al. (2017)

2. Part II – The 2021 Survey

Presentation of the survey

Where: Six EU countries (Denmark, Estonia, Germany, Greece, Ireland, Romania)

When: November-December 2021

Who: approx. 1000 people per country; adults over 18 with monthly saving above a minimum per month

How: an online survey with the help of the survey institute Kantar

What: a survey questionnaire made of up to 43 questions split in 8 sections. Based on their interest in sustainable finance or finance, participants were allocated a short or long route or could choose between the two routes.

Interest in sustainable finance

In the survey, after asking for sociodemographic information, we questioned subjects about their interest in finance and sustainable finance. Their answers proved a strong positive correlation between expressed interests in the two fields, as shown in figure 1.

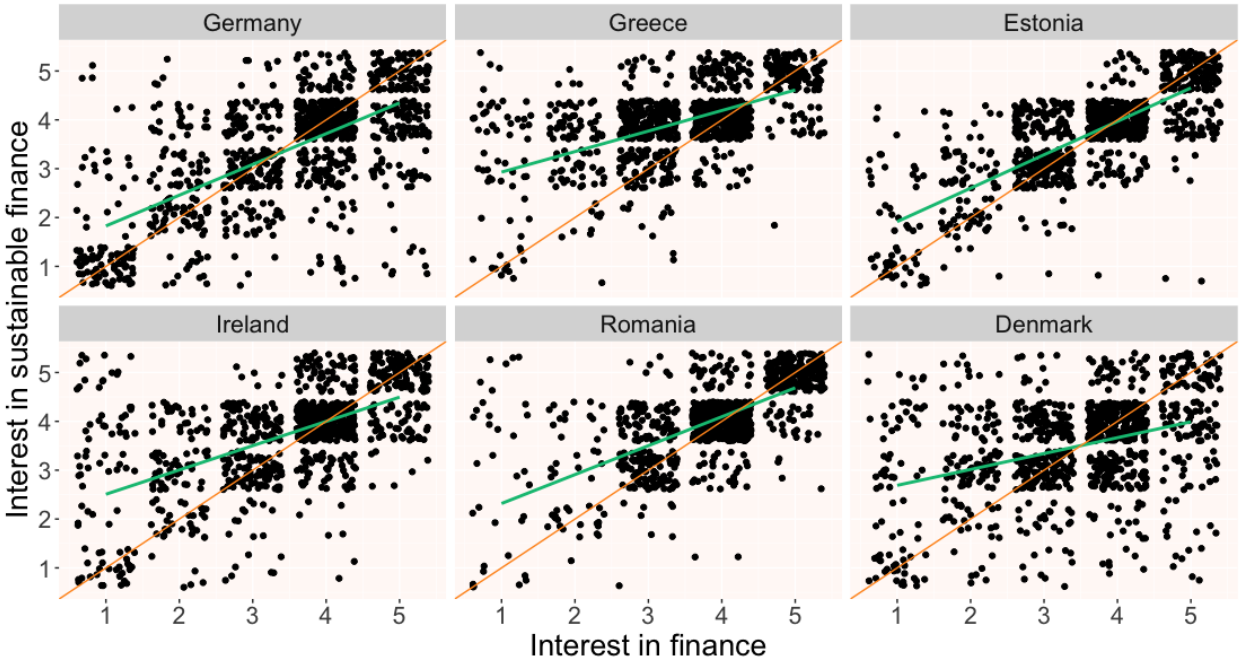
The more someone is interested in finance, the more they also tend to be interested in sustainable finance. Indeed, many respondents are positioned in the top right corner of the figure, displaying a significant interest in both finance and sustainable finance.

A few people position in the top left corner, exhibiting a strong interest in sustainable finance and a low interest in conventional finance. We interpret those people as caring about sustainability issues first. It supports the view that sustainable finance can be an entry point for people not interested in finance or even having an aversion to finance (for political reasons)[7].

Oppositely, there are only very few people in the bottom right corner (i.e., strong interest in conventional finance only), except in Germany and Denmark. An interpretation is that **there may be fatigue or skepticism about sustainable finance in mature markets**, potentially in relation with greenwashing scandals (e.g., DWS or Dekabank in Germany).

[7] Kaustia and Torstila (2011)

Figure 1: Interest in finance and interest in sustainable finance across countries

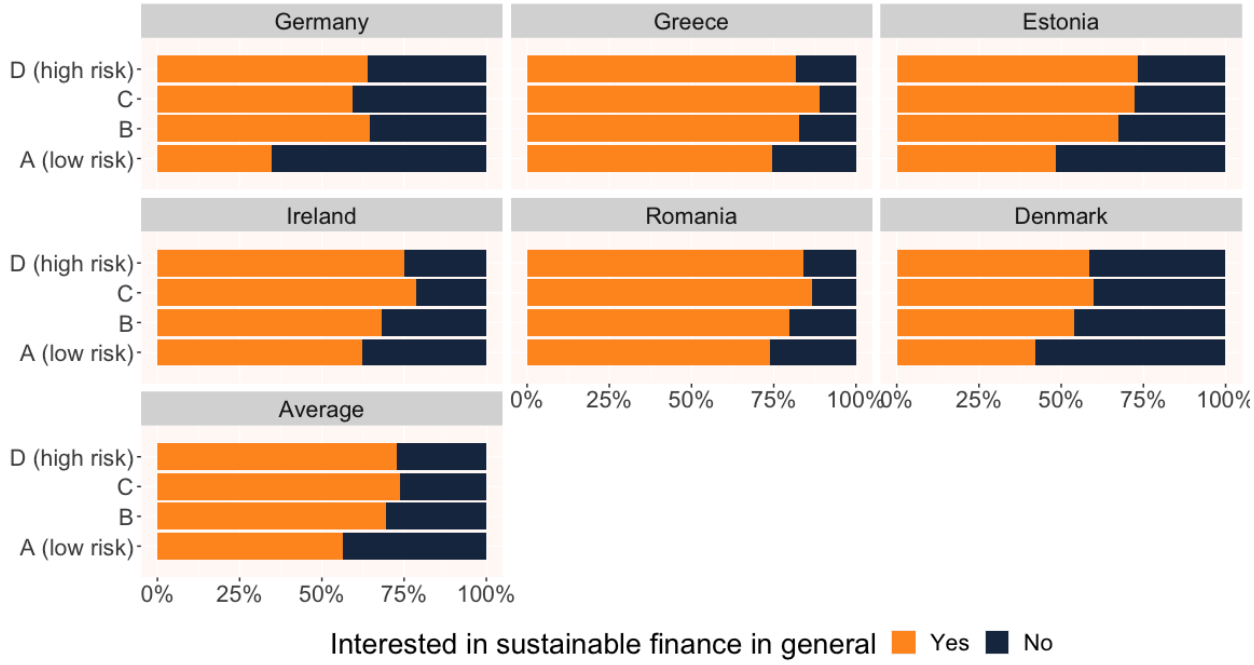


Reading: in orange is the 45° line representing a situation where interests in finance and in sustainable finance are strictly identical; in green is the actual regression line.

Consistently with the review literature, we did not observe a clear relationship between the interest in sustainable finance and various sociodemographic factors (age, gender, income, financial wealth). We nevertheless obtained those **respondents with the strongest risk aversion were remarkably less interested** than the rest of risk profiles (see figure 2). Such observations were confirmed by the statistical models provided in the appendix.

The low interest in sustainable finance by highly risk-averse respondents could be grounded on a false belief that all sustainable finance products target people with a strong appetite for risk. A practical consequence would thus be that people with a high level of risk aversion refrain from asking their financial advisors about sustainable finance solutions even if some could suit them (e.g., green saving accounts, ESG money market funds…).

Figure 2: Interest in sustainable finance depending on risk tolerance



2.1 Sustainability goals

We then asked participants a series of questions regarding their financial or sustainability goal for different practical financial goals attached to their savings (e.g., saving for retirement, generate a precautionary buffer, increase personal wealth, finance personal projects, etc.).

We considered three types of overarching goal, two being related to sustainability (aligning savings with one's values and having an impact on the world) and one being purely financial (achieving maximum return for a certain level of risk).

It enabled us to generate a typology of seven profiles, either pure (focusing on one goal only) or mixed (caring for two or three goal).

A presentation of the seven profiles is made can be found in the table A1 in the annex.

Table 2 presents the distribution of profiles when data are aggregated across financial goals. Several important observations can me made:

- In all countries, the majority of respondents fall in mixed profiles, from 50% in Denmark to 71% in Romania (60% on average).
- Among all profiles, the most represented is the one that mixes the three goal: 28% of European retail investors want to have it all!
- In all countries, the same three profiles are the most frequent (albeit in different orders): "Pure return", "Mix of values and return" and "Mix of values, impact and return".
- Overall, maximizing return is the most frequently cited financial/sustainability goal; it is important for a large majority of people, from 62% in Ireland to 78% in Romania (68% on average).

- Still, just a small minority of respondents only care about returns (20% on average), leaving 80% having at least one sustainability goal.
- Aligning savings with one's values comes second; it is important for a great proportion of respondents, from 47% in Denmark to 75% in Romania (60% on average).
- Having impact with one's savings, despite coming third, is still important for a significant fraction of respondents, from 35% in Denmark and Estonia to 61% in Romania (46% on average).
- In all countries, the ranking of individual financial/sustainability goal is the same: maximizing return then aligning with one's values and finally having impact.

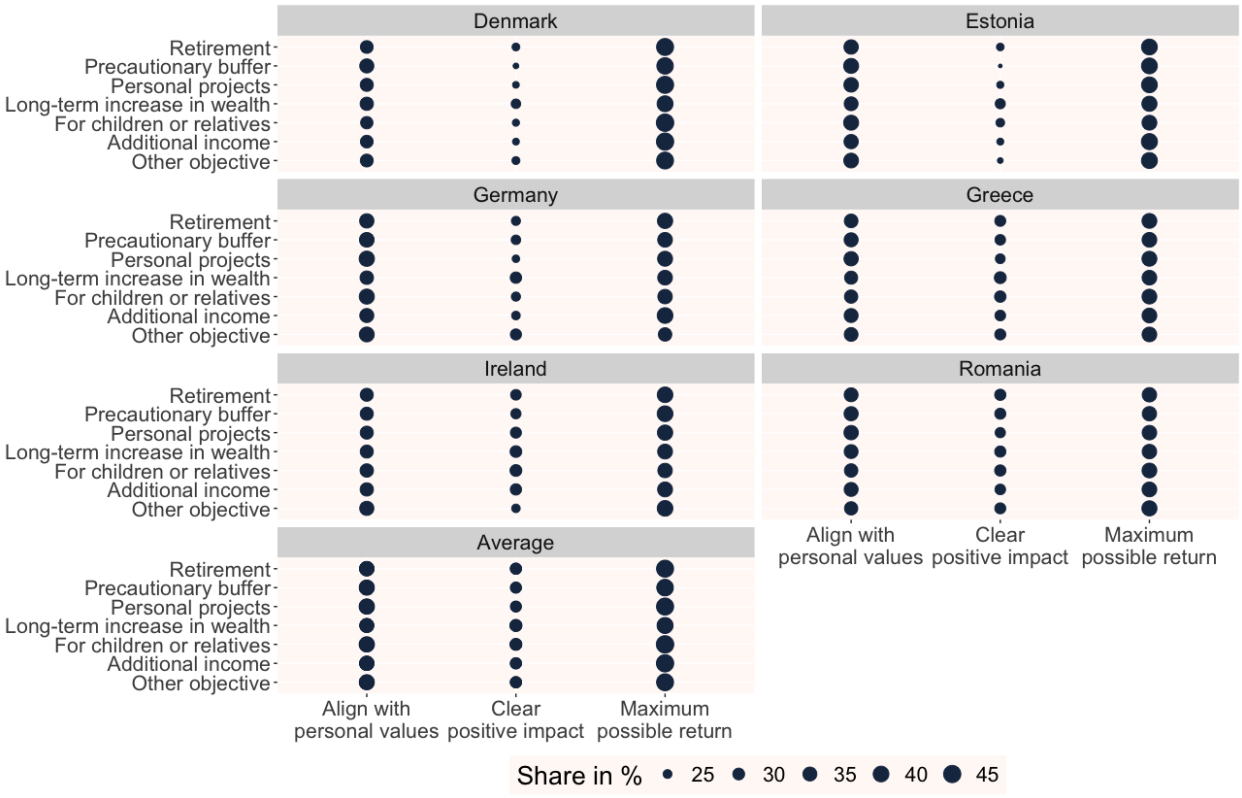
Table 2: Distribution of sustainability profiles (for all financial goals)

	Denmark	Estonia	Germany	Greece	Ireland	Romania	Average
Pure impact	9.6%	8.5%	11%	9.6%	9%	7%	9%
Pure values	10%	13%	16%	11%	9%	7%	11%
Pure return	30%	20%	20%	16%	22%	11%	20%
Mix of impact and return	4%	2.6%	2.5%	4.5%	5%	2.7%	3.6%
Mix of values and return	16%	23%	12%	14.6%	12%	17%	16%
Mix of values and impact	4%	3%	7%	6%	4.5%	4%	4.8%
Mix of values, impact and return	17%	21%	19%	31%	33%	47%	28%
No clear profile	9%	10%	12%	8%	5.5%	4.3%	7.6%

We obtained the same picture when we disaggregated data (see figure A1 in the annex). The ranking of profiles was very similar across financial goals, with the same three profiles being preponderant. It is especially true for the two saving goals that are the most frequently cited (i.e., saving for retirement and generating a precautionary buffer).

In several countries, we could observe that having an impact was remarkably less searched for when savings was accumulated for the preparation of personal projects (in Denmark, Germany, Greece, Romania) or the creation of a precautionary buffer (in Denmark and Estonia) and, oppositely, was more researched when savings targeted a long-term increase in wealth (in Denmark, Estonia, Germany and Ireland). We conclude that some households allow themselves to search for impact only when they have long-term financial goals for their savings.

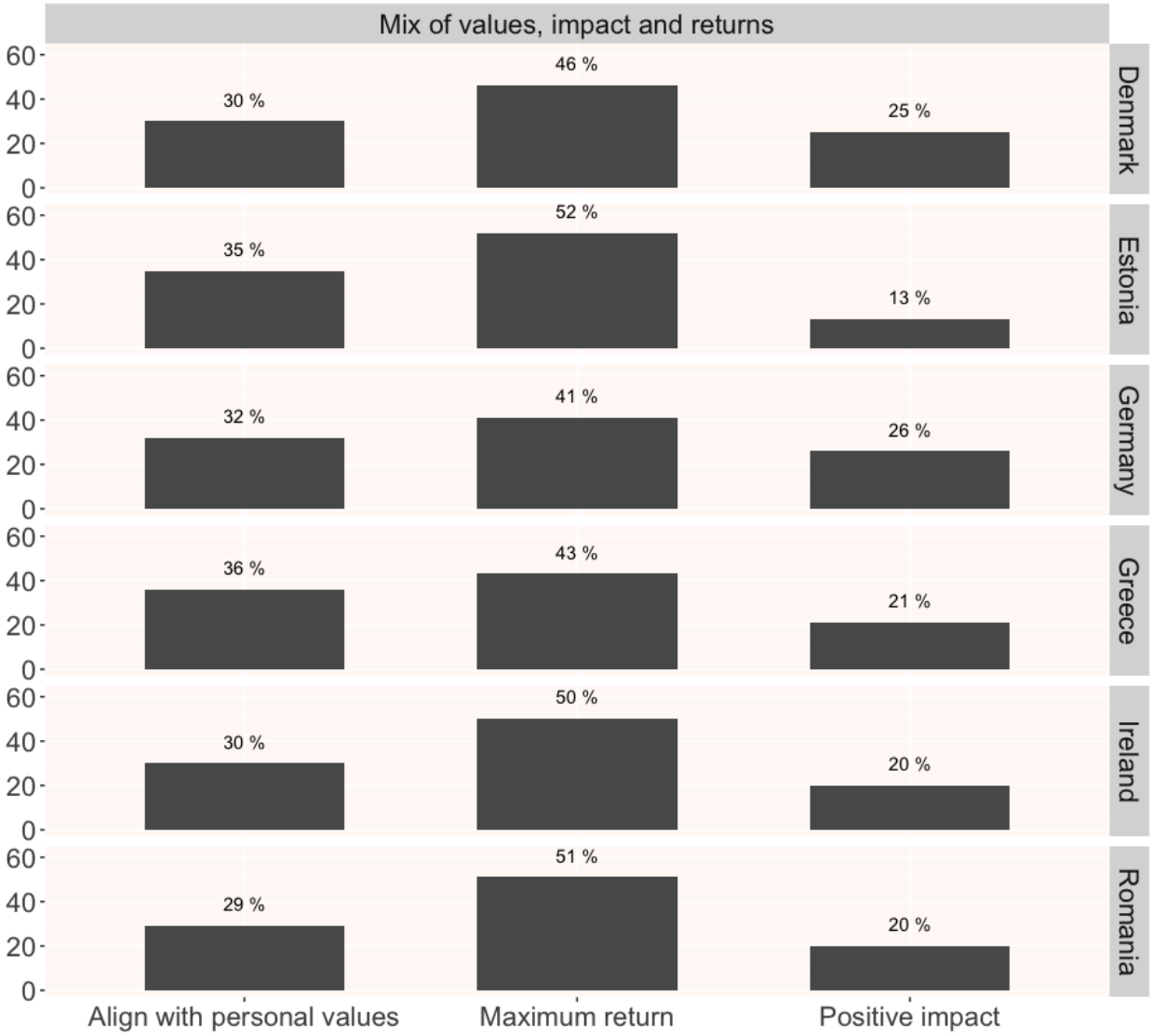
Figure 3: Relative importance of financial/sustainability goal for different saving goals (all profiles)



As already said, in all countries the majority of respondents fall in mixed profiles. Consequently, it is relevant to question how respondents with such a mixed profile would arbitrage in case they cannot get everything they ask for.

We asked those respondents to rank the goals they had reported as important or very important. It turned out that in most cases, **the respondents considered their financial goal (i.e., achieving maximum return) as the most important one.**

Figure 4: dominant financial/sustainability goal (for the profile "Values + Impact + return")



2.2 Sustainability topics

As having an impact is important for 46% of the participants to our survey and aligning with one's values for 60%, it is legitimate to question the type of values people want to express and/or the cause they want to improve with their savings.

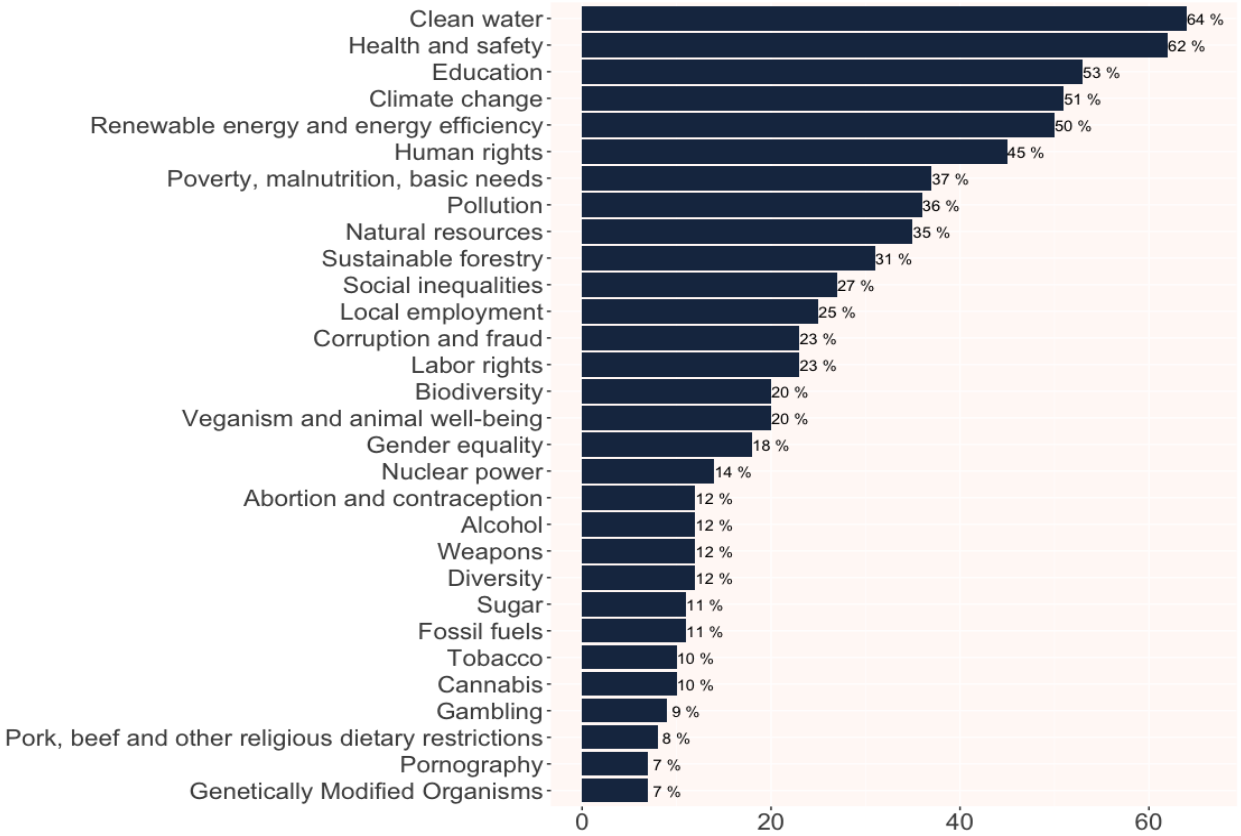
We proposed a list of 30 sustainability topics out of which respondents could select a maximum of 6 topics. The list equally included environmental, social and ethical topics, as in table 3.

Table 3: list of sustainability topics

Environmental topics	Social and governance topics	Ethical topics
Climate change	Human rights	Abortion and contraception
Fossil fuels	Education	Alcohol
Renewable energy and energy efficiency	Health and safety	Tobacco
Nuclear power	Gender equality	Cannabis
Biodiversity	Diversity	Sugar
Pollution	Labor rights	Gambling
Natural resources	Social inequalities	Pornography
Clean water	Poverty, malnutrition, basic needs	Weapons
Sustainable forestry	Corruption and fraud	Veganism and animal well-being
Genetically Modified Organisms	Local employment	Pork, beef and other religious dietary restrictions

Figure 5 presents percentages of respondents that choose the different topics. **The top five topics were three environmental ones (Clean water, Renewable energy and energy efficiency, Climate change) and two social ones (Health and safety, Education). The least often chosen topics were ethical topics** like pornography, GMOs or religious dietary restrictions. The distribution of topics was found to be very similar across countries (see figure A3 in the annex).

Figure 5: popularity of sustainability topics (all countries)



2.3 Financial trade-offs

As there are currently conflicting narratives about the effect on return of applying sustainable approaches to an asset allocation, we questioned participants about their personal beliefs about it.

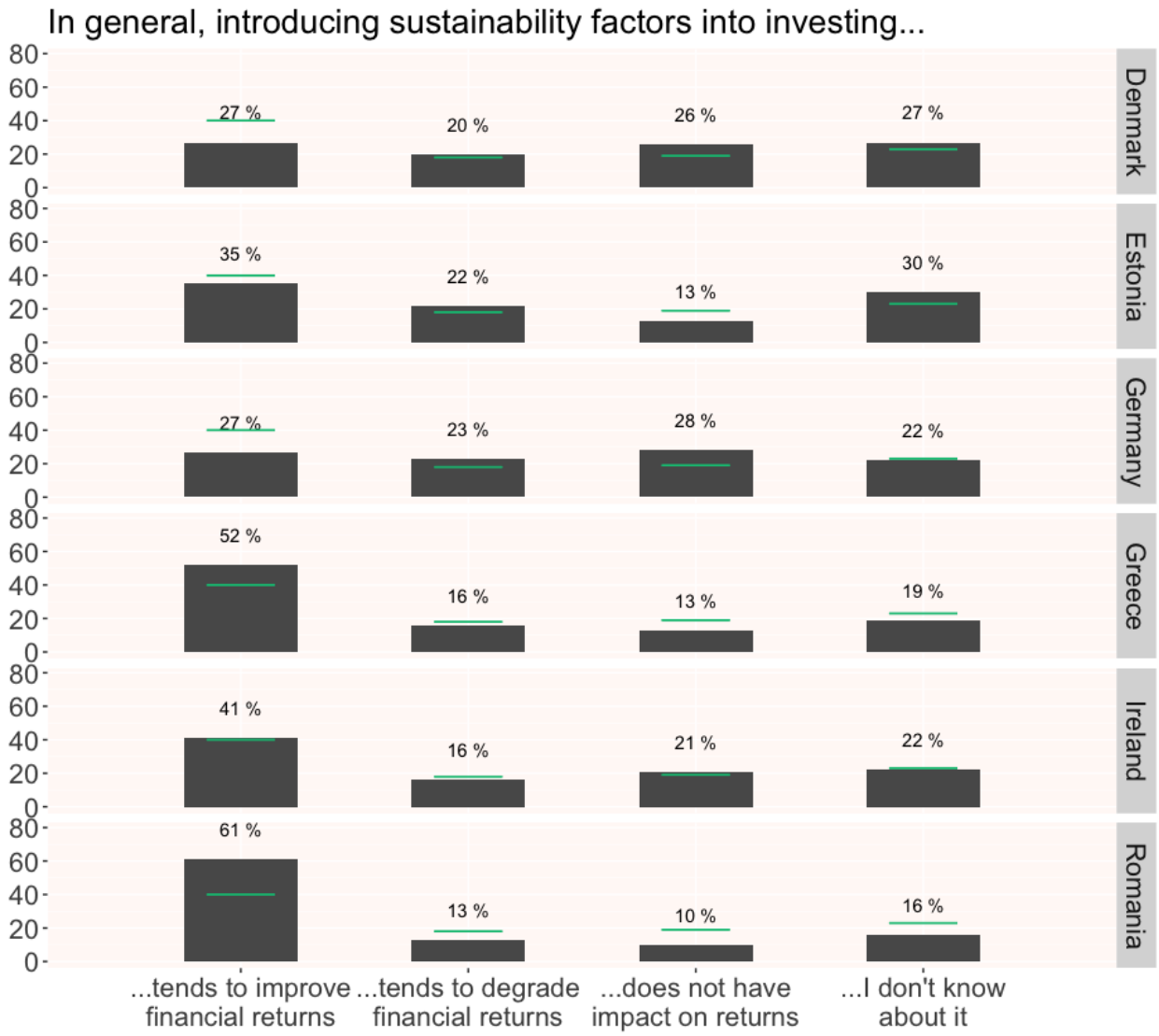
On the one hand, many practitioners (especially from investment firms) defend that sustainable investments should outperform conventional investments because sustainable firms will grow faster in the future and will face reduced transition or reputation risks. Oppositely, academics tend to consider that sustainable strategies should underperform in the long run because they imply restricted investment universes and because reduced risks should be, when asset prices are at an equilibrium, be associated with reduced expected returns[8].

Retail investors' beliefs about the effect of introducing sustainability factors on financial returns are crucial because they will shape the demand for sustainable products as financial return appears to be the first goal for a great majority of individuals, even for those also interested into value alignment or impact.

Overall, we find that **40% of respondents expect an increase in returns while 20% anticipate a decrease**. In Greece and Romania, the optimists are significantly more numerous than in other countries. The opposite is found in Germany and Denmark, confirming the idea that skepticism about sustainable finance is more widespread in those two markets.

[8] See Pastor et al. (2021) and Pedersen et al. (2021)

Figure 6: Believes about effect on returns of sustainable finance



Reading: the green line represents the average amount of people for each answer across all countries.

We also investigated in which cases respondents would accept lower returns for investments that fully match their sustainability goal. We created three scenarios, considering that the decrease in return would be due to various reasons:

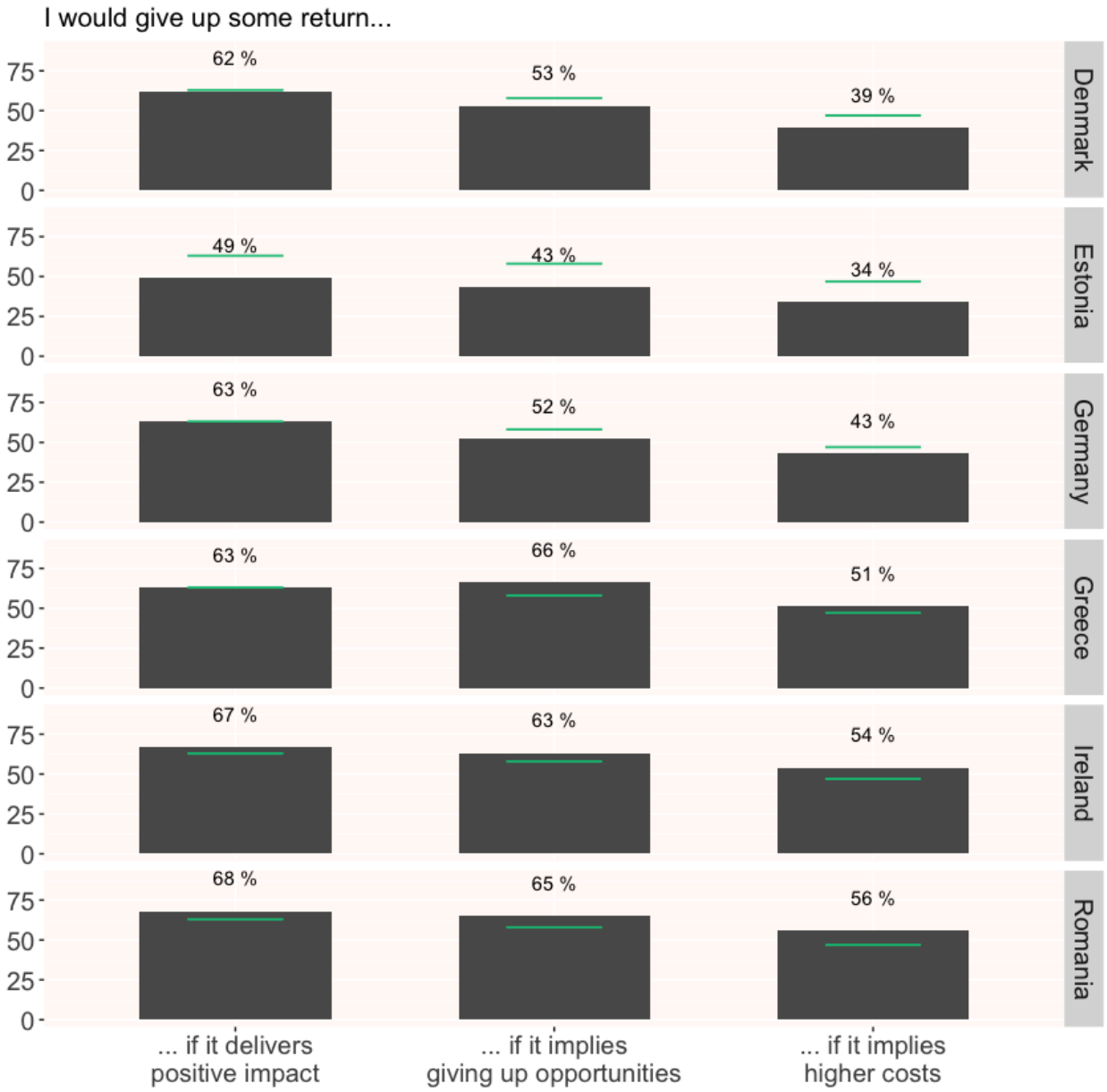
1. The need to help sustainable companies to grow and deliver more positive impact
2. The abandon of return opportunities to match sustainability criteria
3. Increased management costs for financial intermediates (leading to higher fees)

The acceptance rate turned out to be different across scenarios. **It was significantly lower when the decreased returns were the consequence of additional fees required by financial intermediates in response to increased management costs.**

We also notice that the acceptance rate is especially high in the first two scenarios, in contradiction to previous findings that when there is a tradeoff to be made between return and sustainability, a majority

chooses to favor financial return. On this topic, answers appear to be strongly responsive to the phrasing of questions.

Figure 7: Willingness to give up return



Reading: the green line is representing the average amount of people for each answer across all countries.

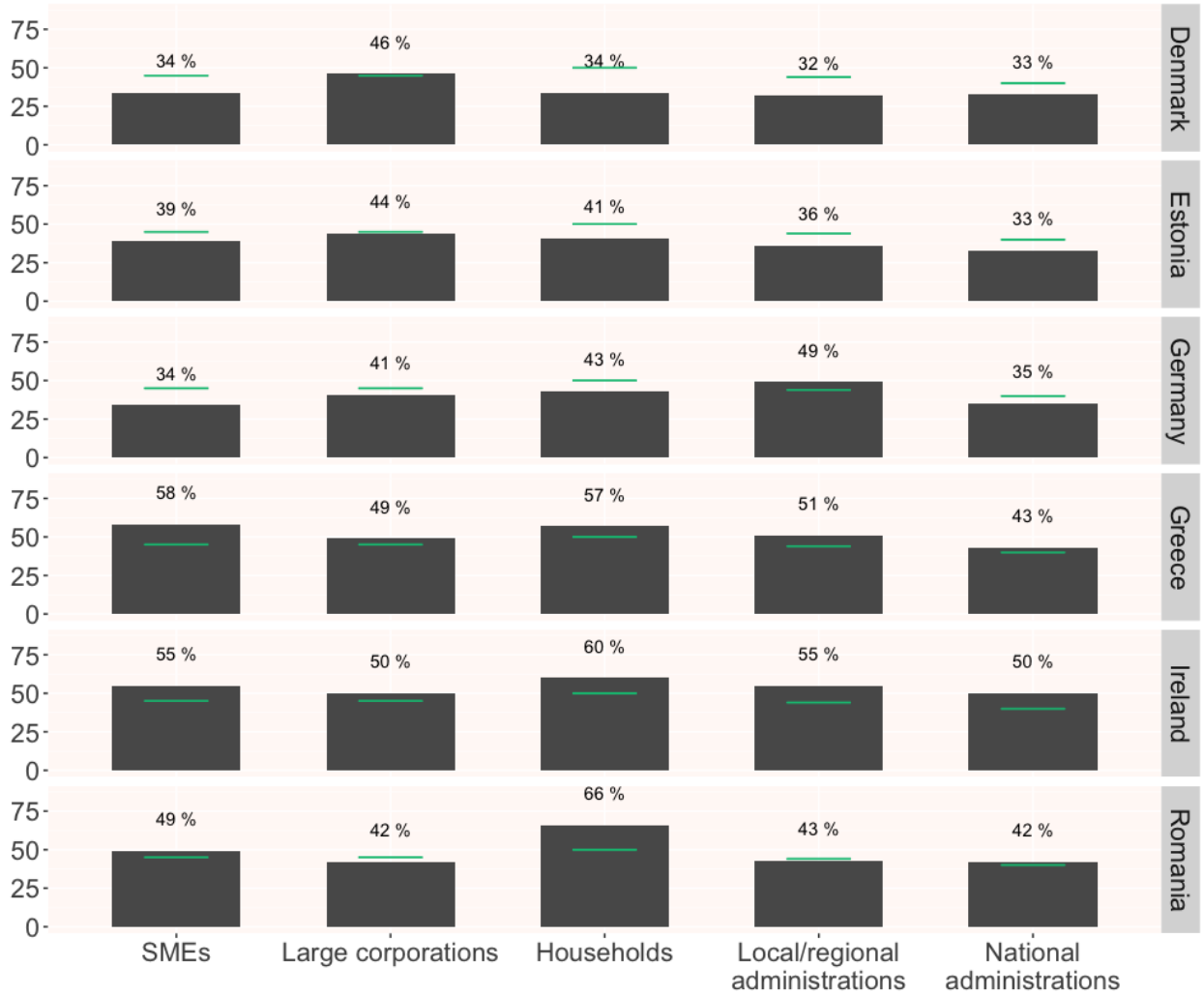
2.4 Financing the green energy transition

In order to understand how retail investors would like to contribute to the financing of the green energy transition with their savings, we asked how much they would be interested in financing renewable energy or energy efficiency projects i) from different economic agents and ii) in different geographic zones, ignoring different financial characteristics (expected return, risk and liquidity).

Regarding economic agents, their answers showed an overall slight preference for financing projects from households and a clearer reluctance to finance projects from national public administrations.

For that question, we were able to identify two groups of countries, with respondents from Denmark, Germany and Estonia being less interested than their peers from Romania, Greece and Ireland in most cases.

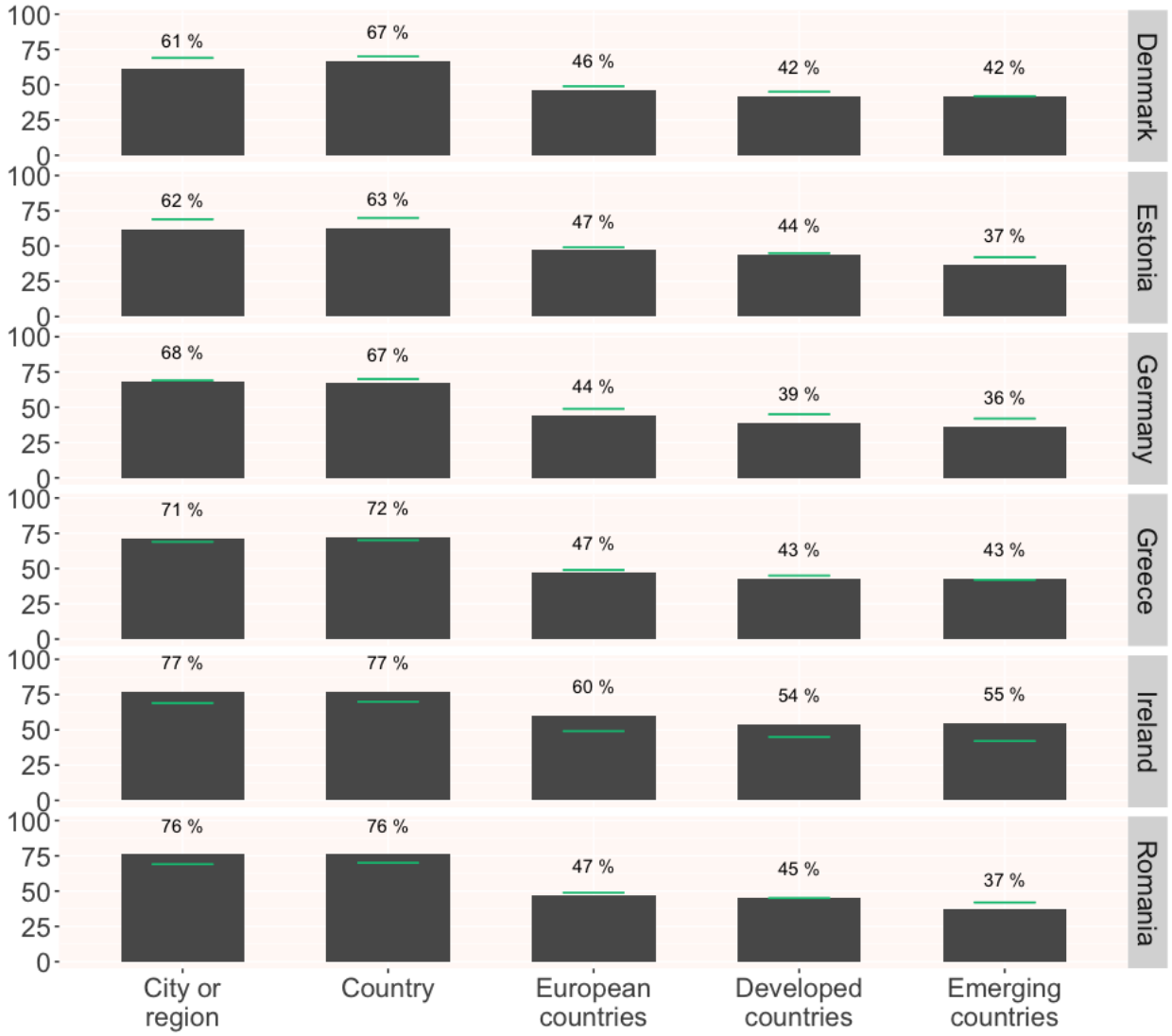
Figure 8: willingness to finance green projects from different economic agents



Reading: the green line represents the average response for each answer across all countries.

As for geographic zones, their preference goes for the financing of local projects (in their city, region or country) compared to remote places (other European countries or other zones). The least appealing projects are those located in developing countries. Variations across countries are smaller when compared to the question about economic agents. Proportions are fairly similar across countries except that respondents from Ireland are generally more interested across all zones while respondents from Germany are less interested.

Figure 9: willingness to finance green projects from different geographic zones



Reading: the green line is representing the average amount of people for each answer across all countries.

The survey results in a nutshell

1) There is a strong positive correlation between interest in finance and interest in sustainable finance

2) Sociodemographic factors poorly explain interpersonal differences in interest in sustainable finance

3) People with high risk aversion are significantly less prone to be interested in sustainable finance

4) In terms of financial/sustainability goal, 60% of respondents fall in mixed profiles

5) In all countries, the ranking of financial/sustainability goal is the same: first "maximizing return" then "aligning with one's values" and finally "having impact"

6) Even if it comes third, having impact is still important for a significant fraction of people (46% on average)

7) Impact is more searched for when retail investors use their savings to generate a long-term increase in their wealth

8) When they have to make a tradeoff between different financial/sustainability goal, most respondents favor return over impact or value-alignment

9) The sustainability topics people want to be reflected in their savings (for impact or value-alignment purposes) are most frequently environmental or social topics compared to ethical topics

10) There are twice as many respondents expecting sustainable finance products to increase returns than respondents expecting they will degrade returns

11) Retail investors are less prone to accept giving up return to meet their sustainability goal if it is due to increased management fees

12) There is a preference for financing green projects that are initiated by households and/or that take place in local areas

3. Part III – Current state of the market for sustainable assets

The overall market

In its Global Sustainable Investment Review 2020, the GSIA assessed the market size of sustainable assets in the different continents based on a specific definition for "sustainable investments". In their report, the term is inclusive of all investment approaches that consider environmental, social and governance (ESG) factors in portfolio selection and management across seven strategies of sustainable or responsible investment. Relying on this fairly loose definition, the market share of sustainable assets in Europe was estimated by the GSIA at 41.6% at the beginning of 2020 (GSIA, 2021) totaling €10.7 trillion. To come up with such figures, Eurosif aggregates data for asset managers, banks and asset owners (pension funds, universities, foundations, state-owned players/national funds and insurance companies).

Restricting the analysis to investment funds available to institutional and retail investors, Morningstar (which applies its own definition for sustainable investments[9]) found the market share of sustainable funds in Europe to be about 11% of total assets under management and reached €1.1 trillion at the end of 2020 (Morningstar, 2021a) thanks to massive inflows.

Table 4: market shares of sustainable funds in Europe (end 2020)

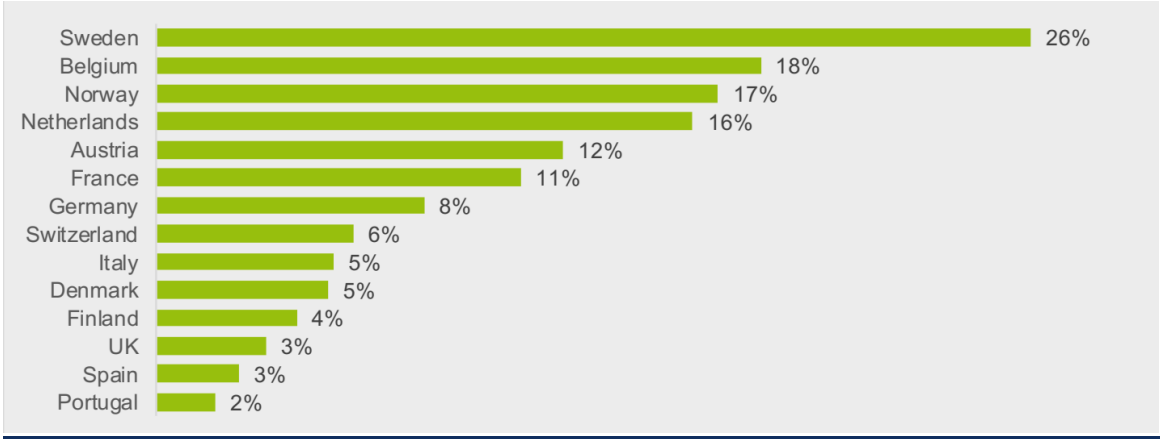
	Sustainable Funds (AuM in EUR bn)	Overall Fund Universe (AuM in EUR bn)	% AuM in Sustainable Funds
Allocation	170	1556	10.9%
Alternative	6.1	337	1.8%
Convertibles	5.5	60,4	9.1%
Equity	681	4746	14.3%
Fixed Income	221	3159	7.0%
Property	11.6	174	6.7%
Miscellaneous	6.5	103	6.3%
TOTAL	1101	10136	10.9%

Source: Morningstar (2021a)

[9] Morningstar has developed a framework for definitions of sustainable investments. This framework has been evolving in the last years and currently distinguishes three types of sustainable funds: ESG (strategy) funds, products that focus on sustainability impact and thematic investment funds (that deal with long-term environmental issues like climate change and water conservation). The classification of a fund to one or more of these categories results from the analysis of the fund's prospectus. Only funds whose core strategy is sustainability-related and /or whose investment policy contains binding ESG factors are included.

In the second and third quarters of 2021, flows to sustainable funds represented half of total net inflows to all investment funds (Morningstar, 2021b). As pointed out in a recent study (BVI, 2021), the proportion of assets within sustainable funds (according to Morningstar definition) is subject to significant variations across European countries, from 2% in Portugal to 26% in Sweden[10].

Figure 10: Market share of sustainable funds in selected European countries (% of net assets, as of July 2020)



Source: Morningstar Direct, BVI

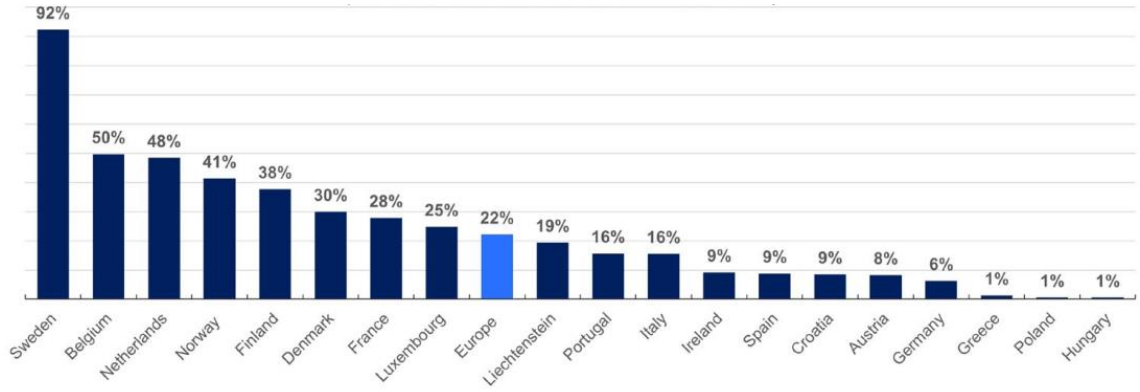
To assess the market share of sustainable funds, we can also rely on SFDR definitions of Article 8 (i.e., funds that promote environmental or social characteristics) and Article 9 products (i.e., funds that have a sustainable investment goal). Even if the regulation requiring asset managers to identify their funds is to come into force only in 2022, a majority of them have already made the self-labelling.

According to Morningstar (2021b) which collected SFDR data on close to 82% of funds available for sale in the European Union, Article 8 and 9 funds accounted in July 2021 for 30.3% and 3.7% of reviewed fund assets and amount to EUR 3 trillion in total. Morningstar analysts estimate that Article 8 and 9 products altogether could reach half of total assets in scope of SFDR by Mid-2022. Currently, active management largely dominates the ESG fund landscape with passive funds accounting for only 11% and 10% of assets in Article 8 and 9 funds respectively. So far, fund companies have taken different approaches to product classification based on their own interpretation of the regulation, some opting for a softer approach than others. This results in a wide range of ESG approaches represented in Articles 8 and 9 funds, with similar strategies featuring in both categories.

The European Fund and Asset Management Association performed the same exercise based on data at the end of Q1 2021 for all funds available in Europe and obtained slightly lower market shares of 22% and 2% for Article 8 and Article 9 funds respectively (EFAMA 2021). As noted previously, there are massive differences across countries, with quasi all funds domiciled in Sweden self-identifying as Article 8 versus quasi none in Hungary.

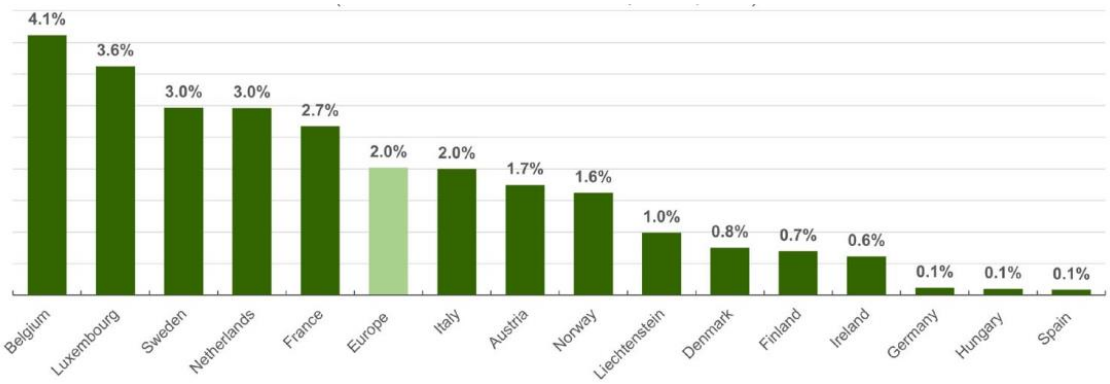
[10] In this study, the assessment is based on the fund's domicile. The funds issued in Luxembourg and Ireland have been allocated to the country of the global headquarter of the respective subsidiary, to prevent the relevant role of Luxembourg and Ireland as funds hubs from blurring the picture of the size of the sustainable market in every European country.

Figure 11: Market share of Article 8 funds (at end Q1 2021)



Source: EFAMA and Morningstar

Figure 12: Market share of Article 9 funds (at end Q1 2021)



Source: EFAMA and Morningstar

To summarize, the assessment of the current market share of sustainable funds in Europe strongly depends on the strictness of the definition used, with estimates varying between 2-4% (Article 9 funds only) and 34% (Article 8 and 9 funds combined)[11].

However, these figures must be treated with caution and should not be used as proxy for the sustainability of the financial industry at this stage. Apart from being highly sensitive to the definition of "sustainable investments", the data provided so far does not discriminate across the various approaches that are commonly used in sustainable finance. Also given the lack of policy guidance and clarity how to define funds under SFDR categories, Morningstar warned in its 2021 fund review hat many funds which switched suddenly from non-sustainable to Art. 8 or 9, might have changed nothing or not much in their investment strategies or even portfolio composition. Regulators and NGOs across Europe are already alerted by the increasing risk of greenwashing around self-labelled Art. 8 or 9 products and therefore call for minimum requirements for those products.[12]

[11] It is important to note that we were unable to compute the market share of sustainable fund retail shares due to the unavailability of specific data.

[12] See for instance the consultation of the German Federal Financial Supervisory Authority (BaFin) on guidelines on sustainable investment funds launched in 2021 and a join policy brief by a group of NGOs and consumer organizations on the minimum criteria for Article 8 and 9 products published in 2022.

3.1 Sustainable equity strategies

The GSIA proposes a breakdown of sustainable assets across several techniques, according to definitions shown in table 5.

Table 5: definitions of sustainable investment techniques

ESG Integration:	The systematic and explicit inclusion by investment managers of ESG factors into financial analysis.
Corporate engagement and shareholder action:	Employing shareholder power to influence corporate behaviour, including through direct corporate engagement (i.e. communicating with senior management and/or boards of companies), filing or co-filing shareholder proposals, and proxy voting guided by comprehensive ESG guidelines.
Exclusion/negative screening:	The exclusion from a fund or portfolio of certain sectors, companies, countries or other issuers based on certain criteria. Exclusion criteria (based on norms and values) can refer, for example, to product categories (e.g. weapons, tobacco), company practices (e.g. animal testing, violation of human rights, corruption), controversies or the failure to meet minimum standards of business or issuer practice based on international norms such as those issued by the United Nations (UN), International Labour Organization (ILO), Organisation for Economic Co-operation and Development (OECD) and non-governmental organisations (NGOs).
Best in class/ positive screening:	Investment in sectors, companies or projects selected for positive ESG performance relative to industry peers, and that achieve a rating above a defined threshold.
Sustainability themed and thematic investing:	Investing in companies or assets specifically contributing to sustainable solutions (e.g. sustainable agriculture or green buildings, or investing in sustainable themes such as low carbon portfolios or portfolios promoting gender equity)
Impact investing and community investing:	**Impact investing:** Investing to achieve positive, social and environmental impacts - requires measuring and reporting against these impacts, demonstrating the intentionality of investor and underlying asset/investee, and demonstrating the investor contribution. **Community investing:** Where capital is specifically directed to traditionally underserved individuals or communities, as well as financing that is provided to businesses with a clear social or environmental purpose. Some community investing is impact investing, but community investing is broader and considers other forms of investing and targeted lending activities.

Source: GSIA

There are large variations in the adoption of those techniques, with negative screening (i.e., exclusions) being 80 times more popular than impact investing in terms of assts under management. While the categorization of investment products into those strategies comes with double counting issues and a very broad range of approaches within each category (e.g. severity of exclusion or quality of Engagement), they can still give as broader picture of the strategies applied in Europe market their respective market shares.

Table 6: Market shares of the different sustainable financial strategies in Europe

	AuM (USD bn)	% sustainable AuM	% total AuM
Exclusions	9242	76.9%	32.0%
Engagement	4743	39.5%	16.4%
ESG integration	4140	34.5%	14.3%
Norms-based screening	3074	25.6%	10.6%
Positive screening	572	4.8%	2.0%
Thematic investing	145	1.2%	0.5%
Impact investing	106	0.9%	0.4%

Source: GSIA, Eurosif. As of end Dec 2020.

3.2 Green financial products

Green deposits

Green deposits are savers' deposits held at a (commercial or cooperative) bank or other financial institutions and specifically used to fund projects that are considered to generate a positive and long-lasting impact on the environment. Thus, the use of these funds is decided by the financial institution while the savers, who directly own the capital deposited in green saving accounts, often lack control on final investment decisions. In some cases, the depositors decide towards which type of activities, the capital will be channelled, like for La Nef in France where depositors choose between green, social and cultural projects.

It is to note that the instrument is not proposed only by cooperative banks. Recently, a series of commercial banks (e.g, HSBC, Deutsche Bank, MUFG Union Bank, Sumitomo Mitsui Banking Corporation) have announced the launch of such solutions in various continents.

The definition of what is considered as "green" varies widely among savings services providers[13].

Green bond funds

Green bonds are fixed-income instruments that raise money specifically earmarked for new or already existing (i.e. finance and refinance) climate and environmental projects. They can be issued by private firms, banks or public entities to support environmental and climate-related activities.

Green bonds are so far the most popular structure within green finance. With a cumulative issuance of more than USD 1 trillion worldwide (Climate Bonds Initiative, 2021) since the first issues (in 2007 for supranational organisations and 2013 for corporates), green bonds have been called "the stars of sustainable finance" by the media (The Economist, 2020). In 2020 only, green bonds raised USD 270 bn worldwide, among which USD 156 bn were due to European issuers (CBI, 2021).

Green bond funds are bond mutual funds specialized in holding green bonds (instead of conventional bonds). Novethic has identified 68 of those in Europe for a total of 21 billion of assets under management in September 2021 (Novethic, 2021). It represents 0.2% of total assets under management across all types of investment funds and 0.7% of the fixed income category.

Low-carbon mutual funds

Many funds invested in listed assets proposing to fight against climate change have been launched in the most recent years. They propose portfolios aligned with a 2°C scenario or to the Paris Agreement. For delivering that promise, they adapt asset allocations compared to standard portfolios, using some or all of the following techniques:

- The exclusion of the most carbon-intensive sectors (especially fossil fuel producers);
- A best-in-class approach to select companies that are the least carbon-intensive within their sectors;

[13] Some banks refer to green savings accounts when financing the planting of a tree for every account opened to offset residual GHG emissions, while others fund green mortgages (e.g. Ecology Building Society) or green loans (e.g. Tandem Bank). For improving transparency, Triodos Bank in the UK and La Nef in France publish on their websites details of every organisation funded using deposits.

- An overweighting of companies that generate products and services that enable to decrease collective carbon emissions (avoided emissions), mostly companies producing renewable energies or energy efficiency solutions.

Low-carbon mutual funds now benefit from multiple adequate indices that must comply with requirements set into law in March 2020 within the European Union's 'Action Plan on Financing Sustainable Growth' to be considered as "Paris-Aligned benchmarks". They can also rely on a private certification, the Morningstar's "Low Carbon Designation", that has been shown to affect investors' capital flows and mutual funds' asset allocations (Ceccarelli et al. 2021).

The claim of low-carbon mutual funds to contribute to mitigate climate change is often supported by portfolio temperature scores that appear to be below 2°C, which is much lower than the ones of mainstream benchmarks which are often above 3°C or even 4°C. Yet, the reality of their effect on climate change mitigation is questionable[14].

Even if most companies are misaligned with a B2DS, it is easy to build portfolios that are aligned without incurring a significant increase in risk or a strong deviation in return versus traditional benchmarks, as shown by Mercereau et al. (2020).

There are currently 91 funds in Europe following a low-carbon approach that cumulated € 49 billion of assets under management in September 2021 (Novethic, 2021), equivalent to 0,4% of total assets under management and 1% of the AuM of the equity asset class.

Green thematic equity funds

Green thematic funds are mutual or private funds that have specialized in investments in companies serving the green transition. They mostly use conventional assets (equity, bonds) to support their thematic investment strategy.

The latest research by Novethic obtains that there are currently 265 mutual funds available to European individual investors dedicated to a green theme, for a total of €146 billion in assets under management (Novethic, 2021). Those figures include funds with a general environmental scope and those with a more specific focus. They represent around 1.4% of total assets under management in investment funds and 3% of the AuM of the equity asset class.

Table 7: Market shares of green funds in Europe

	AuM (EUR bn)	% total AuM in investment funds	% AuM of the asset class
Green bond funds	**21**	**0.2%**	**0.7%**
Low-carbon equity funds	**49**	**0.4%**	**1%**
Green thematic equity funds	**146**	**1.4%**	**3%**

Source: Novethic, Morningstar. As of end Sept 2021.

[14] 2DII (2021), I've got the power! Really?

Green crowdfunding

Crowdfunding platforms have experienced rapid growth and a surge in popularity in recent years, principally after the 2008 financial crisis in response to the difficulties faced by many enterprises attempting to raise private capital. They cluster a large number of investors to finance businesses through digital platforms that connect the supply and demand of capital.

Broadly speaking, crowdfunding appears in two forms: donation-based crowdfunding (referring to funding driven by donations and rewards, excluding financial return expectations), and investment crowdfunding (including both debt and equity financing).

Crowdfunding platforms are more and more used as alternative funding options in different sectors, including the energy industry. They are particularly well adapted to bridge the early-stage financing gaps of investments that do not require large ticket sizes and complex due diligence processes, and that may lack collaterals to get debt financing from banks or VC/PE. In addition, crowdfunding also may open doors for further venture capital investments.

Numerous platforms focusing on green projects have emerged in Europe in the last ten years. Using a digital directory (Crowdspace), we have identified thirty-one specialized green platforms in the continent (e.g., Green Rocket or Greenvesting in Germany, Lendosphere and Lendopolis in France, Trine in Sweden) out of a total of 357 crowdfunding platforms. They are concentrated in a few countries, with Germany hosting a majority of them. Other countries in the scope of this paper so far shelter no crowdfunding platform specialized in green projects.

So far, the overall volumes of transactions of all (both green and general) crowdfunding platforms are limited in continental Europe compared to UK and US, with a total of only $5.2 billion raised through P2P lending in 2020 (mostly in the form of consumer lending) and $1.7 billion through real estate, equity, donation or reward crowdfunding.

But the potential of crowdfunding platforms to complement or even replace traditional funding channels is not negligible as shown by the example of UK, the most advanced country for alternative finance in Europe. There, P2P lending accounted for 44% of total loans to small businesses (i.e., companies with revenues below £ 2 million) in 2019 while equity crowdfunding represented the equivalent of 15% of the VC activity (Cambridge Center for Alternative Finance, 2021)

4. Part IV – An estimate of market size for sustainable equity strategies

In this section we will provide an estimate of market size for five sustainable equity strategies (exclusions, engagement, positive screening, impact investing and profit-sharing[15]) based on findings of the 2021 survey.

Methodology

In order to calculate a potential market size for specific sustainable equity strategies, we use the responses to a series of questions about the interest in investing in financial products applying a certain technique for respondents that expressed a will to have their savings meeting their sustainability goal (i.e., aligning with one's values or having impact).

Respondents were first presented videos and a script describing the technique and then had to report their interest into the relevant products.

For instance, regarding exclusions, we explained that "it is possible to find financial products that exclude from their investment scope firms involved in certain controversial activities. In practice, it means the investment universe from which the portfolio manager can choose investments will be restrained to companies that are NOT involved in the selected controversial activities."

As those questions were rather technical, we restricted them to respondents with stated interest in sustainable finance or conventional finance. By default, other participants are considered not to be interested into investing into products using those techniques. It means our estimates are conservative (i.e., are probably downward biased).

To calculate the potential market size for a certain sustainable equity strategy X in a country, we used the following formula:

$$POT_X = S_X + (NS_X * W_X)$$

- **POT_x is the Potential assets under management for the strategy X**
- **S_x represents the assets already under management for strategy X**
- **NS_x represents the AuM of the listed equity household holdings not using the strategy X**
- **W_x is the willingness to use strategy X**

In an example, this would mean that the potential for exclusion strategies in Germany (POT_{Excl}) is defined by

- The amount of AuM already using exclusion (S_{Excl}) in Germany,
- The AuM in the listed equity asset class in Germany that do not yet use exclusion (NS_{Excl}),
- The proportion of retail investors in Germany that state they are interested into using exclusion according to the survey (W_{Excl}).

[15] Profit-sharing funds are funds that contractually redistribute a predefined fraction of clients' income (obtained from dividends or coupons) to charities or NGOs.

Table 8: Interest in different sustainable equity strategies

	Germany	Denmark	Ireland	Greece	Romania	Estonia
% of retail investors interested into exclusions	34%	25%	42%	41%	50%	39%
% of retail investors interested into engagement	26%	23%	37%	33%	53%	33%
% of retail investors interested into positive screening	31%	24%	40%	40%	52%	36%
% of retail investors interested into impact investing	33%	23%	40%	37%	49%	35%
% of retail investors interested into profit-sharing	25%	15%	36%	30%	46%	26%

We calculated the AuM of the equity asset class not using a certain strategy X as the difference between the total assets of households in the listed equity asset class minus the assets already under management for strategy X. It is important to note that household investments in the listed equity asset class are split across different channels. Households can own individual stocks, but also equity investment funds or indirectly via life insurance and pension funds. Given that retail investments (even through life insurance and pension funds) are most probably less exposed to sustainable assets than institutional investments, the actual market potential can be expected to be even higher than in our model.

In the Annex 3, we detail (internal and external) data used and assumptions we had to make because of the imperfections of the datasets.

4.1 Findings

We obtain that **the potential market size is maximal for the exclusion strategy** that simultaneously benefits from an already large adoption and the strongest interest across all techniques from our survey respondents. It could reach between 34% and 56% of total equity assets under management in all countries.

In contrast, profit-sharing seems to have the lowest potential (between 15% and 46% of equity holdings) as it is the strategy the least attractive to our survey participants. It also suffers from the lack of available data about its adoption across Europe (forcing us to consider its current market share to be zero[16]).

In terms of potential assets under management, up to EUR 600 billion could be invested in equity funds applying exclusions across those 6 countries, around EUR 450 billion in funds applying engagement, positive screening or impact investing and EUR 350 billion in profit-sharing funds.

It implies that **all strategies could expand significantly in the coming years**, especially the ones with the current lowest market shares. There is indeed no high variation in adhesion across techniques while there are large variations in actual AuM relying on those techniques. The supply does not match the demand due to professional habits. The current offer of sustainable equity strategies highly concentrated on exclusions and engagement (according to GSIA's figures) does not reflect the interests stated by retail investors. **In the future, the market breakdown across the different approaches might be much more balanced than it is now.**

Table 9: estimated market sizes for different sustainable equity strategies

RESULTS	Germany	Denmark	Ireland	Greece	Romania	Estonia
Potential total equity AuM implementing exclusions (EUR Bn)	468.1	81.8	33.6	7.3	5.8	1.9
Potential total equity AuM implementing engagement (EUR Bn)	343.7	65.7	28.5	5.6	5.8	1.5
Potential total equity AuM implementing positive screening (EUR Bn)	355.2	60.0	28.5	6.3	5.5	1.5
Potential total equity AuM implementing impact investing (EUR Bn)	373.6	55.6	27.9	5.7	5.1	1.5
Potential total equity AuM implementing profit-sharing (EUR Bn)	284.6	36.5	25,1	4.6	4.8	1.1
Potential total equity AuM implementing exclusions (% total household equity holdings)	41.1%	33.7%	48.2%	47.6%	55.8%	45.3%
Potential total equity AuM implementing engagement (% total household equity holdings)	30.2%	27.0%	40.9%	36.6%	55.2%	36.6%
Potential total equity AuM implementing positive screening (% total household equity holdings)	31.2%	24.7%	40.8%	40.7%	52.6%	36.9%
Potential total equity AuM implementing impact investing (% total household equity holdings)	32.8%	22.9%	40.1%	36.8%	48.9%	35.3%
Potential total equity AuM implementing profit-sharing (% total household equity holdings)	25.0%	15.0%	36.0%	30.0%	46.0%	26.0%
Potential total equity AuM implementing exclusions (% total household assets)	6.4%	6.4%	7.0%	2.5%	3.4%	4.8%
Potential total equity AuM implementing engagement (% total household assets)	4.7%	5.1%	5.9%	1.9%	3.3%	3.9%
Potential total equity AuM implementing positive screening (% total household assets)	4.8%	4.7%	5.9%	2.1%	3.2%	3.9%
Potential total equity AuM implementing impact investing (% total household assets)	5.1%	4.3%	5.8%	1.9%	3.0%	3.8%
Potential total equity AuM implementing profit-sharing (% total household assets)	3.9%	2.8%	5.2%	1.6%	2.8%	2.8%

[16] The actual figure is most probably very close to zero. In France, a country where such a mechanism has been present for a long time, the current market share within investment funds is a mere 0.1%.

5. Part VI – An estimate of market size for green financial products

In this section we reiterate the same exercise on five green financial products (green saving account, green bond fund, low carbon equity funds, green thematic equity fund, green crowdfunding) based on findings of the 2021 survey.

Methodology

In order to calculate a potential market size for green financial solutions, we use the responses to a series of questions about the willingness to switch to five specific green financial products that connect to the green energy transition.

In a dedicated section of the survey, participants were put in the situation of having their financial wealth split across five conventional financial products and were offered the possibility to choose green substitutes for each of them, given that financial characteristics (expected return. risk and liquidity) were the same and that those alternatives were considered by independent researchers to have a more positive impact on the climate by contributing to the financing of the green energy transition.

Table 10: green alternatives in the survey

Conventional products	Proposed green alternatives
Saving account	Green saving account
Bond fund	Green bond fund
Equity fund	Low-carbon equity fund
Sector equity fund	Green thematic equity fund
Listed equity	Green equity crowdfunding

As those questions were rather technical, we restricted them to respondents with stated interest in sustainable finance or conventional finance. By default, other participants are considered not to be interested into switching to green alternatives. As for sustainable equity techniques, our estimates here are conservative (i.e., are probably downward biased).

To calculate the potential market size for a certain green financial product X in a country, we used the following formula:

$$POT_X = S_X + (NP_X * W_X)$$

- **POT_x is the Potential assets under management for the green product X**
- **S_x represents the assets already under management for product X**
- **NP_x represents the assets in the relevant asset category not using the product X**
- **W_x is the willingness to switch to product X**

In an example, this would mean that the potential for green saving or deposit accounts in Greece ($POT_{GreenDep}$) is defined by:

- The amount of assets already in green saving or deposit accounts in Greece ($S_{GreenDep}$),
- The wealth in deposits in Greece that is not in green accounts ($NP_{GreenDep}$),
- The proportion of retail investors in Greece that state they are interested into switching to green saving accounts according to the survey ($W_{GreenDep}$).

Table 11: interest in switching to green alternatives

	Germany	Denmark	Ireland	Greece	Romania	Estonia
% interested into switching to green deposits	39%	35%	54%	53%	58%	39%
% interested into switching to green bonds	40%	35%	50%	50%	55%	38%
% interested into switching to low carbon funds	40%	37%	49%	46%	53%	37%
% interested into switching to green thematic equity funds	43%	40%	54%	50%	57%	46%
% interested into switching to green crowdfunding	35%	28%	42%	49%	50%	35%

In the Annex 4, we detail (internal and external) data used and assumptions we had to make because of the imperfections of the datasets.

5.1 Findings

Across countries, the different green alternatives obtain very similar popularity levels (between 40% and 48%) among survey respondents with green crowdfunding being slightly less popular than other solutions. Nevertheless, such a homogeneity is not observed when we focus on potential market sizes due to an unbalance between households' financial assets.

Green deposits have by far the highest potential due to the importance of deposits within household wealth. They could represent up to EUR 1300 billion across the six countries and 27% of total household financial assets in Greece.

Green bond funds come second due to the importance of bond funds in pensions and life insurance, with a potential market size of more than EUR 800 billion and 11% of household financial wealth in Ireland.

Despite a superior popularity, **green thematic equity funds are constrained in their deployment compared with low carbon equity funds because of the limits posed by their lack of sector diversification**. According to our estimates, they could reach a total of EUR 97 billion versus EUR 439 billion for low-carbon funds.

Finally, **green equity crowdfunding potential is de facto limited by the low direct holdings of listed equity** by European households (between 2% and 7% of their financial wealth).

Table 12: estimated market sizes for green financial products

RESULTS	Germany	Denmark	Ireland	Greece	Romania	Estonia
Potential total assets (in EUR bn)						
Potential total assets in green deposits	1012	59	83	80	31	4
Potential total assets in green bond funds	632	108	56	7	10	1
Potential total assets in low carbon equity funds	324	77	29	4	4	1
Potential total assets in green thematic equity funds	71	17	7	1	1	0
Potential total assets in green equity crowdfunding	180	25	8	4	2	0
% of total household financial assets						
Potential total assets in green deposits	13.8%	4.6%	17.3%	27.3%	18.1%	10.1%
Potential total assets in green bond funds	8.6%	8.4%	11.5%	2.4%	6.0%	2.2%
Potential total assets in low carbon equity funds	4.4%	6.0%	6.1%	1.3%	2.2%	2.9%
Potential total assets in green thematic equity funds	1.0%	1.3%	1.3%	0.3%	0.5%	0.8%
Potential total assets in green equity crowdfunding	2.5%	2.0%	1.7%	1.5%	1.0%	1.0%

Conclusion

In this paper, we documented beliefs and preferences of European households regarding sustainable finance with the ambition to assess the potential market size of different sustainable and green financial products.

In our estimation work, we were **constrained by the absence of granular data** regarding the current ownership by households of different sustainable financial products. So far, most market figures do not disaggregate between retail and institutional holdings and do not propose data at country level. It forced us to ground our calculations on gross approximations.

Despite its limitations, our work proves that the potential of various retail sustainable products is most probably far from being exhausted.

We noticed that there was no strong variation in adhesion across sustainable techniques while there are large variations in actual assets under management relying on those techniques. **The supply does not match the demand**, probably due to professional habits. The financial industry must experiment new pathways to serve the diversity of client profiles. Compared with exclusion funds, green bond funds or green thematic funds, some solutions (like green saving accounts, income-sharing funds or impact investing) are still waiting to be proposed on much larger scales. Another observable mismatch lies in existing sustainable products targeting large multinational companies while households prefer financing local projects initiated by households.

Even if the overall potential seems massive, **several blockers could slow the adoption pace of sustainable solutions** in the future. For instance, households could suffer from behavioral inertia fueled by the high transaction costs associated to information overload or choice overload. In the complex world of sustainable finance, households must digest multiple sources of information and make demanding tradeoffs across financial (risk and return) and non-financial (values and impact) dimensions. There could consequently be a significant behavior-intention gap, leavings portfolio choices lagging statements in surveys.

Another blocker could arise due to a “sustainable finance fatigue” or skepticism in relation with greenwashing scandals. In our survey, several counterintuitive results from Germany and Denmark point in that direction. But more qualitative data is needed to validate that interpretation.

Oppositely, adoption of sustainable products could gather momentum thanks to regulatory changes. It is likely that upcoming changes to MiFID II will encourage more retail flows into sustainable funds as financial advisors will soon be legally bound to ask clients about their sustainability preferences. If the sustainability assessment is made thoroughly and encompasses all dimensions of sustainability preferences, it will also lead investment firms to diversify their offer of sustainable products to meet the variety of clients’ profiles, increasing the capacity of clients to find suitable products in the market.

The proposition of new sustainable products could also attract to finance households that had an aversion to financial markets for any reason (e.g., if they perceive financial investments as boring, complex or unethical). In our survey, we observed in some countries a fraction of respondents significantly more interested into sustainable finance than into conventional finance. And academic papers have already documented such a phenomenon when new supply creates new demand for sustainable financial assets[17]. Next iterations of the estimation models incorporating different adoption scenarios will tell if we are taking that virtuous path.

[17] Brière and Ramelli (2020) analyzed the portfolio choices in employee saving plans in France. They found that the inclusion of responsible equity options in the menu of available funds was associated with a higher equity allocation by plan participants. Difference-in-differences analyses confirmed that the introduction of a responsible equity option to a saving plan was followed by an increase of 6.5% in participants’ appetite for stocks, contrary to what happened with conventional equity funds.

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Annex 1: additional figures

Table A1: typology of investor profiles based on financial and sustainability motivations

Profile	Description
Pure impact	A participant marks it as "(Very) important" in a financial goal (or across financial goals) to have a clear impact. Other financial/sustainability goal are considered "Neutral" or "Not so/ Not at all important".
Pure values	A participant marks it as "(Very) important" in a financial goal (or across financial goals) to align savings with his/her values. Other financial or sustainability goal are considered "Neutral" or "Not so/ Not at all important".
Pure return	A participant marks it as "(Very) important" in a financial goal (or across financial goals) to make the maximum possible return. Other financial or sustainability goal are considered "Neutral" or "Not so/ Not at all important".
Mix of values and impact	A participant marks it as "(Very) important" in a financial goal (or across financial goals) to align savings with his/her values and to have a clear impact. Making maximum return is considered "Neutral" or "Not so/ Not at all important".
Mix of values and return	A participant marks it as "(Very) important" in a financial goal (or across financial goals) to align savings with his/her values and to achieve maximum return. Having impact is considered "Neutral" or "Not so/ Not at all important".
Mix of impact and return	A participant marks it as "(Very) important" in a financial goal (or across financial goals) to have impact and to achieve maximum return. Alignment with his/her personal values is considered "Neutral" or "Not so/ Not at all important".
Mix of values, impact and return	A participant values all three financial or sustainability goals as "Important" or "Very important".

Figure A1: Sustainability goals per financial objective and country (green dots indicate the European average)

Figure A2: popularity of sustainability topics (individual countries)

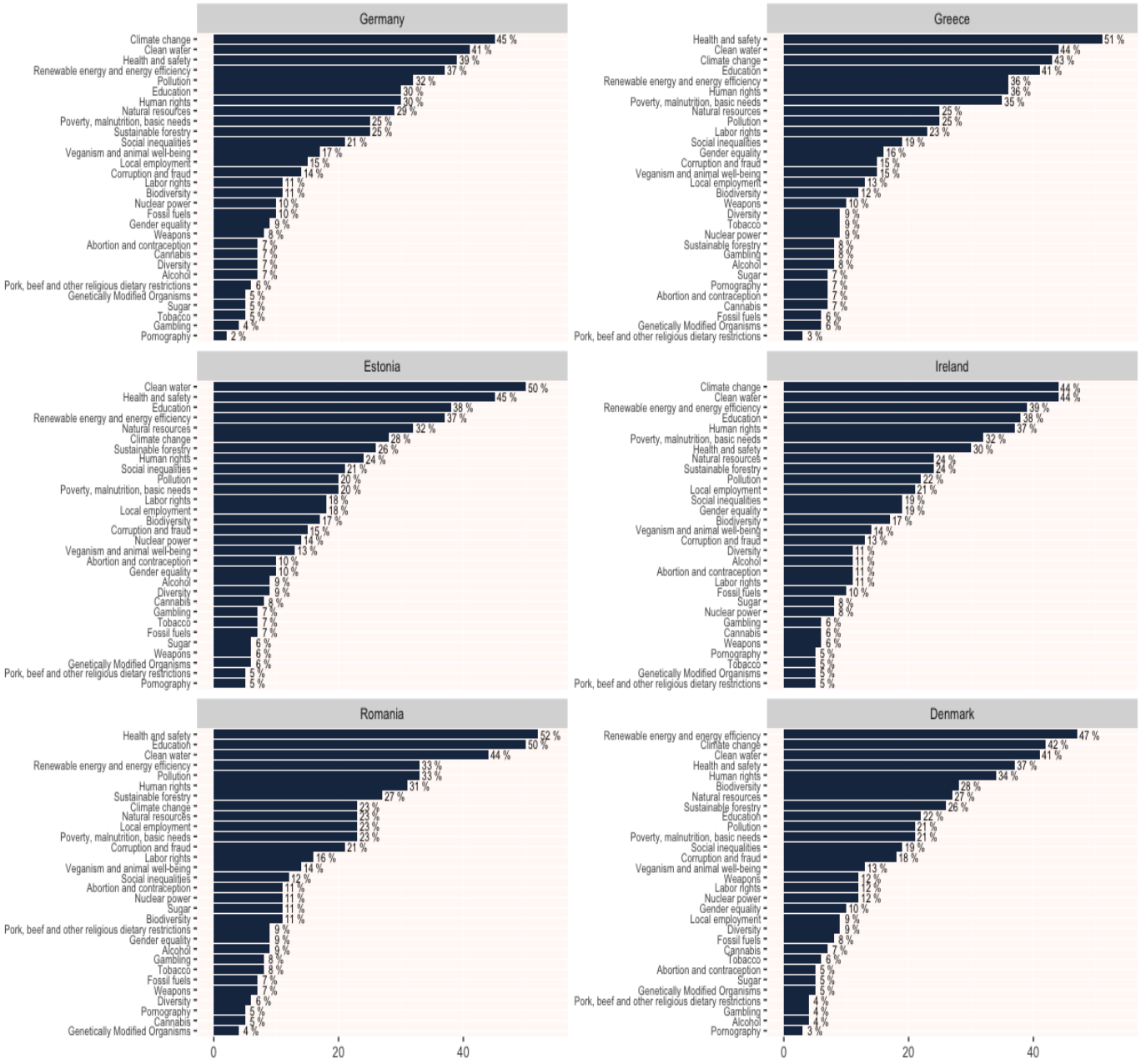
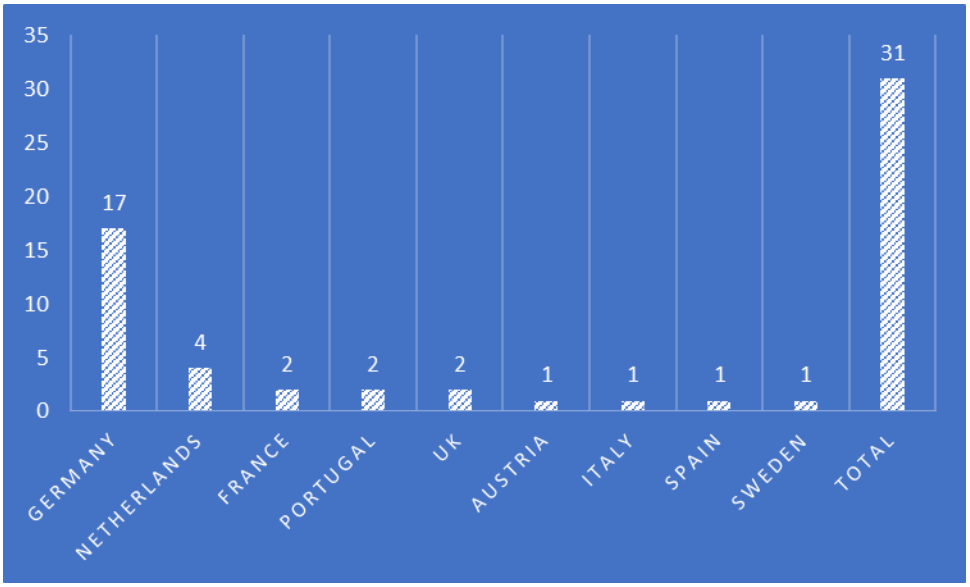


Figure A3: Green crowdfunding platforms in Europe per country of origin



Source: Crowdspace

Annex 2- Modelling individual propensity to be a sustainable investor

Presentation of models

In this annex, we are interested into understanding variations across individuals in their interest for sustainable finance solutions. For the purpose of determining important characteristics of sustainable retail investors in contrast to traditional investors. two types of models were run.

First, a model was run to explain the general interest for sustainable finance. A second model focused on the willingness to opt for green financial solutions for the allocation of future savings. In the survey. five green financial products were presented as relevant substitutes for mainstream financial products.

Table A2: description of models

Model 1: general interest in sustainable finance		Model 2: interest in green financial products
Interest in sustainable finance (binary derived from the Likert scale answering option)	Dependent variable	Interest in switching to green financial products (binary derived from the average across several products)
Included	Sociodemographic factors	Included
Included	Financial information	Included
Not included	Interest in finance	Included
Complete sample Germany: n = 996 Greece: n = 999 Estonia: n = 999 Ireland: n = 997 Romania: n = 999 Denmark: n = 1001	Sample	Long route sample (only participants with stated interest) Germany: n = 610 (61 %) Greece: n = 757 (76 %) Estonia: n = 655 (66 %) Ireland: n = 695 (70 %) Romania: n = 814 (81 %) Denmark: n = 601 (60 %)
Logistic regression	Model type	Logistic regression

Being interested in sustainable finance

We first investigated the probability of being interested in sustainable finance topics. This captures a high-level view that might be disconnected from practical investment choices.

For the regression. we created a feature variable that considered as “Interested” all participants that stated to be “Interested” or “Very interested” in sustainable finance on a Likert scale and as “Not interested” for the rest.

The model is presented below.

Table A3: Logit Model for general interest in sustainable finance

Category	Denmark		Germany		Estonia		Romania		Greece		Ireland	
Intercept	-14.753		-1.289		-4.538	***	-1.418		-0.306		-13.929	
Gender												
Male	-		-		-0.021		-0.375		-0.059		-0.255	
Female	-0.078		0.212		-		-		-		-	
Other	13.442		-1.974		12.772		-14.683		-2.648		13.713	
Age												
25-34	-0.2		0.313		0.149		0.289		-0.321		0.298	
35-44	-0.199		-0.376		-0.331		0.479		-0.452		-0.249	
45-54	-0.752		-0.393		-0.328		-0.048		-0.603		-0.138	
55+	-0.451		-0.266		-1.111	***	-0.63		-0.332		-0.105	
Education												
School qualification	14.197		0.923		2.658	*	1.273		0.855		14.037	
Bachelor's degree	14.489		0.938		2.821	*	1.155		1.508	*	14.68	
Master's degree	15.25		1.831		3.382	**	1.634		1.185		14.463	
PhD	15.506		1.488		1.913		0.422		1.43		15.272	
Other professional qualification	14.244		1.142		2.805	*	1.654		1.401		14.409	
Prefer not to say	13.644		-0.012		2.193		14.672		1.119		15.231	
Income												
Category 2 (low)	0.609		-0.602		1.528		0.231		0.534		-0.121	
Category 3	0.195		-0.316		1.345		1.095		0.268		-0.076	
Category 4	-0.136		-0.209		1.652	*	1.342		0.506		-0.62	
Category 5	0.277		-0.289		1.773	*	0.623		0.493		0.1	
Category 6	0.206		-0.045		1.448	*	1.239		0.508		-0.022	
Category 7 (high)	-0.089		-0.145		1.645	*	1.292	*	0.159		-0.14	
Don't want to answer	0.691		0.303		1.099		0.769		-0.148		-0.272	
Saving Rate												
Category 2 (low)	0.06		-0.403		0.521		0.204		0.01		0.012	
Category 3	0.232		0.152		0.074		-0.039		0.385		-0.001	
Category 4	0.244		0.014		0.61		0.234		0.26		0	
Category 5 (high)	0.307		-0.319		0.482		0.056		-0.067		0.062	
Total savings												
Category 2 (low)	0.192		-0.165		0.05		0.377		-0.047		0.178	
Category 3	-0.078		-0.031		0.517		0.07		0.108		0.15	
Category 4	-0.641		0.287		0.414		0.066		-0.172		0.348	
Category 5	-0.351		0.368		0.674		1.212	*	0.332		0.611	
Category 6	-0.173		0.382		0.902	*	-0.211		0.318		0.476	
Category 7	-0.209		0.071		0.049		0.198		-0.502		0.846	
Category 8	-0.142		0.163		0.67		0.338		0.598		2.195	**
Category 9	-0.269		0.066		0.043		0.752		1.323		0.336	
Category 10 (high)	-0.481		-0.077		-0.004		-0.698		-0.585		-0.469	
Risk appetite												
B (low)	0.462	*	1.198	***	0.881	***	0.468		0.534	*	0.175	
C	0.737	**	0.871	***	0.995	***	0.911	**	1.18	***	0.638	*
D (high)	0.494		1.097	***	0.935	**	0.94	**	0.464		0.624	*
Main financial goal												

Precautionary buffer	-		-0.309		-0.277		-0.022		-		-	
Retirement	0.376	*	-		-		0.073		0.207		-0.17	
Increase wealth	-0.27		1.09	**	0.197		0.576		0.095		0.042	
Additional income	1.034	**	1.035	*	0.551		-		0.994	*	0.388	
Personal projects	0.2		0.185		-0.249		-0.579		-0.208		0.562	
Children or relatives	0.756		1.106		-0.684		-1.09		0.023		0.383	
Other projects	-0.249		-0.463		0.47		-0.066		0.04		0.946	

Interest in adopting green financial products

In a dedicated section of the survey, participants were put in the situation of having their financial wealth split across five conventional financial products and were offered the possibility to choose green substitutes for each of them, given that financial characteristics (expected return, risk and liquidity) were the same and that those alternatives were considered by independent researchers to have a more positive impact on the climate by contributing to the financing of the green energy transition.

For the regression, a feature variable was created that determines the overall interest in sustainable finance solutions: averaging the interest in the five products and labelling a mean higher than 3.5 as to be interested (1), and below as uninterested (0).

For each country, the data was split in a training (80% of the data) and test set to check for the predictive power of the respective logistic model.

Table A4 below shows the model for the interest in switching to green financial products.

Table A4: Logit model for likelihood of switching to green products per country including the interest in finance

Category	**Denmark**		**Germany**		**Estonia**		**Romania**		**Greece**		**Ireland**	
Intercept	-13.946		12.289		-30.774		-2.343		11.448		13.928	
Gender												
Male	-		-		-0.071		-0.061		0.216		0.252	
Female	-0.096		0.422		-		-		-		-	
Age												
25-34	2.614	***	0.555		-0.117		0.228		-0.943	*	-0.05	
35-44	1.498	*	0.167		-0.183		0.394		-0.997	**	-0.028	
45-54	1.337	*	-0.035		-0.714		0.45		-0.451		0.785	
55+	1.106		0.111		-0.807	*	-0.168		-1.141	**	0.117	
Education												
School qualification	-0.739		-15.129		14.684		33.021		1.356		-	
Bachelor's degree	-1.019		-15.145		14.71		33.095		1.394		0.322	
Master's degree	-1.229		-14.762		14.731		33.024		1.373		0.693	*
PhD	-0.277		-13.71		15.42		32.872		1.741		0.817	
Other professional qualification	-1.411		-14.823		14.52		32.845		1.59		0.808	
Prefer not to say	-0.227		-0.686		15.109		32.515		1.114		0.242	
Income												
Category 2 (low)	-1.838		0.595		0.06		-15.067		0.596		-0.488	

Category 3	-2.951	*	-0.174		0.321		-14.748		0.468		-0.699	
Category 4	-2.509		0.037		-0.298		-15.023		1.013	*	-0.536	
Category 5	-2.787	*	0.017		-0.734		-14.365		1.266	*	-0.737	
Category 6	-2.437		0.074		0.014		-14.557		0.462		0.996	
Category 7 (high)	-2.526		0.297		-0.342		-14.909		-0.373		-0.372	
Don't want to answer	-3.735	**	1.073		-0.456		-14.587		-1.453		-0.642	
Saving Rate												
Category 2 (low)	-0.294		0.603		0.582		0.225		-0.424		0.352	
Category 3	-0.003		0.644		1.125	*	-0.438		-0.822	**	0.215	
Category 4	0.3		0.916	*	1.239	**	0.208		-0.375		-0.239	
Category 5 (high)	-0.968	*	0.569		0.733		-0.037		0.641		-0.05	
Total savings												
Category 2 (low)	-0.776		0.227		0.347		-0.539		0.004		0.433	
Category 3	0.119		-0.257		0.642		0.334		0.416		-0.026	
Category 4	-0.099		0.193		0.155		-0.405		1.083	**	-0.255	
Category 5	0.137		0.143		-0.125		-0.201		0.208		0.231	
Category 6	-0.049		-0.111		-0.04		-0.243		1.098	*	-0.57	
Category 7	0.007		-0.056		0.191		-0.618		0.505		0.141	
Category 8	0.18		-0.389		1.605	*	0.403		0.864		0.046	
Category 9	-0.145		0.059		0.961		-0.068		0.628		-0.667	
Category 10 (high)	0.023		-0.811		0.267		-0.563		-0.062		0.194	
Risk appetite												
B (low)	0.492		0.189		-0.14		-0.332		0.144		0.423	
C	0.407		0.009		-0.172		0.176		0.685	*	0.444	
D (high)	0.791		-0.047		-0.524		0.001		0.251		1.081	**
Main financial goal												
Precautionary buffer	-		-0.333		0.113		-0.105		-		-	
Retirement	0.693	*	-		-		-0.165		-0.022		-0.088	
Increase wealth	0.304		-0.531		-0.107		-0.179		0.012		-0.049	
Additional income	0.203		-0.183		0.002		-		-0.315		0.193	
Personal projects	-0.714		0.489		0.184		0.109		0.666		0.231	
Children or relatives	-0.128		-0.289		0.781		1.006		-0.88		-0.664	
Other projects	-1.284		0.971		0.123		0.861		-0.138		0.569	
Interest in finance												

Disagree	-1.499		-0.075		0.285		1.863		0.62		-0.189	
Neither	-0.364		-0.122		0.017		0.03		0.574		0.565	
Agree	-0.363		-0.16		-0.013		0.309		0.872		0.876	
Strongly agree	-0.973		-0.199		0.171		0.519		1.227	*	1.057	
Interest in sustainable finance												
Disagree	14.947		2.181		-		-		-		-31.789	
Neither	16.076		1.505		16.079		-16.73		-14.819		-14.873	
Agree	16.817		2.688	*	15.82		-15.354		-13.018		-14.299	
Strongly agree	18.976		3.532	**	16.465		-15.007		-13.332		-13.84	

Annex 3 - An estimate of market size for sustainable equity strategies: data and assumptions

In this subsection, we detail (internal and external) data used and assumptions we had to make because of the imperfections of the datasets.

Assets already under management for the different sustainable equity strategies

Formula: Assets already under management for strategy X = Total household financial assets * Share of listed equity within household financial assets * % of listed equity assets using the strategy X

1) Total household financial assets
    - Data: European Central Bank (Q2 2021)
        - Limitations: none
2) Share of listed equity within household financial assets
    - Includes direct holdings of listed equity + indirect holdings through investment funds, life insurance and pension funds (Q2 2021).
    - Data: ECB for direct holdings of listed equity, holdings of investment funds, life insurance and pension funds (Q2 2021).
        - Limitations: none.
    - Data: Morningstar for asset allocation in investment funds (Q4 2020).
        - Limitations: no focus on retail, no country breakdown
        - Assumptions: the asset allocation is the same for retail investment fund shares than for institutional fund shares; the asset allocation is the same across all European countries.
    - Data: OECD Pension funds in figures for asset allocation in pension funds.
        - Limitations: none.
    - Data: EIOPA for asset allocation of life insurance.
        - Limitations: no focus on life insurance contracts; no differentiation between client-managed contracts and company-managed contracts.
        - Assumptions: the asset allocation is the same in life insurance as for other types of insurance contracts; the asset allocation is the same in client-managed contracts and in company-managed contracts.
3) Proportion of listed equity assets using the strategy X
    - Data: Morningstar for the proportion of equity assets in sustainable funds
        - Limitations of the dataset:
            - No distinction between household holdings and institutional holdings.
            - No country breakdown (European-level data).
        - Assumptions:
            - The proportion of sustainable assets in retail and institutional holdings is the same[18]
            - The proportion of sustainable assets in equity investments is the same across countries
    - Data: Global Sustainable Investment Alliance (Q4 2020) based on Eurosif for proportions of sustainable assets using the different strategies
        - Limitations of the dataset:

[18] In reality, retail investments are most probably less exposed to sustainable funds than institutional investments

        - No distinction between household holdings and institutional holdings. Eurosif aggregates data for asset managers, banks and asset owners (pension funds, universities, foundations, state-owned players/national funds and insurance companies).
        - No asset class breakdown
        - No country breakdown (European-level data).
    - Assumptions:
        - The proportion of the different strategies within household sustainable equity holdings is the same as for total (i.e., owned by either households or financial institutions) sustainable equity holdings
        - The proportion of the different strategies within household sustainability equity holdings is the same as for total sustainable holdings (i.e., same proportion across all asset classes)
        - The proportion of the different strategies within sustainable AuM in the equity asset class are the same across all European countries

Table A5: estimated current proportions of sustainable equity strategies within household equity investments

	% European household equity assets
Exclusions	**11.00%**
Engagement	**5.65%**
Positive screening	**0.69%**
Impact investing	**0.13%**
Profit-sharing	**0.00%**

Listed equity household holdings not using the strategy X

Formula: AuM of the listed equity household holdings not using the strategy X = total household equity holdings – assets already invested in the strategy X

Willingness to use strategy X

Data source: 2DII

Limitations:

- no differentiation between households already owning investments using the strategy X and others
- respondents with no interest in finance or sustainable finance did not answer the questions regarding sustainable strategies and are by default considered to be not interested in the strategies (creating a downward bias in our estimates)

Assumptions:

- holders and non-holders of investments using strategy X have the same willingness to invest in such products

Table A6 gathers all data for the six countries.

Table A6: databank for estimation of market sizes for several sustainable equity techniques

DATA	Source	Date	Data Granularity	Germany	Denmark	Ireland	Greece	Romania	Estonia
Total Household Financial Assets (EUR Bn)	ECB	June 2021	Country	7325.28	1281.265	482.331	293.862	172.663	39.341
% holdings in listed equity	ECB	June 2021	Country	7%	7%	4%	3%	2%	3%
% holdings in investment funds	ECB	June 2021	Country	11%	7%	1%	3%	3%	16%
% holdings in life insurance	ECB	June 2021	Country	16%	26%	12%	4%	1%	1%
% holdings in pension funds	ECB	June 2021	Country	13%	18%	33%	1%	10%	0%
Asset allocation of investment funds to equity	Morningstar	Dec 2020	Europe	47.0%	47.0%	47.0%	47.0%	47.0%	47.0%
Asset allocation of life insurance to equity	EIOPA	Dec 2019	Country	15.8%	15.8%	15.8%	15.8%	15.8%	15.8%
Asset allocation of pension funds to equity	OECD	Dec 2020	Country	6.5%	25.4%	24.5%	19.4%	24.8%	48.8%
% of sustainable assets in total equity AuM	Morningstar	Dec 2020	Europe	14,3%	14,3%	14,3%	14,3%	14,3%	14,3%
% of sustainable AuM doing exclusions	GSIA/Eurosif	Dec 2020	Europe	76.9%	76.9%	76.9%	76.9%	76.9%	76.9%
% of sustainable AuM doing engagement	GSIA/Eurosif	Dec 2020	Europe	39.5%	39.5%	39.5%	39.5%	39.5%	39.5%
% of sust. AuM doing positive screening	GSIA/Eurosif	Dec 2020	Europe	4.8%	4.8%	4.8%	4.8%	4.8%	4.8%
% of sustainable AuM doing impact investing	GSIA/Eurosif	Dec 2020	Europe	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
% of sustainable AuM doing profit-sharing	NA	NA	NA	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% of retail interested into exclusions	2DII	nov-21	Country	34%	25%	42%	41%	50%	39%
% of retail interested into engagement	2DII	nov-21	Country	26%	23%	37%	33%	53%	33%
% of retail interested into positive screening	2DII	nov-21	Country	31%	24%	40%	40%	52%	36%
% of retail interested into impact investing	2DII	nov-21	Country	33%	23%	40%	37%	49%	35%
% of retail interested into profit-sharing	2DII	nov-22	Country	25%	15%	36%	30%	46%	26%

Annex 4 - An estimate of market size for green financial products: data and assumptions

In this subsection, we detail (internal and external) data used and assumptions we had to make because of the imperfections of the datasets.

Assets already under management for the different green products

Formula: Assets already under management for green product X = Total household financial assets * Share of the relevant asset category within household financial assets * % of the asset category already invested in the product X

1) Total household financial assets
    - Data: European Central Bank (Q2 2021)
        - Limitations: none
2) Share of the relevant asset category within household financial assets
    - Data: ECB for household financial assets in the different asset categories
        - Limitations: none
        - Assumptions: none
    - Data: Morningstar for asset allocation in investment funds.
        - Limitations: no focus on retail. no country breakdown
        - Assumptions: the asset allocation is the same for retail investment fund shares than for institutional fund shares; the asset allocation is the same across all European countries.
    - Data: OECD Pension funds in figures for asset allocation in pension funds.
        - Limitations: none.
    - Data: EIOPA for asset allocation of life insurance.
        - Limitations: no focus on life insurance contracts; no differentiation between client-managed contracts and company-managed contracts.
        - Assumptions: the asset allocation is the same in life insurance as for other types of insurance contracts; the asset allocation is the same in client-managed contracts and in company-managed contracts.
3) Percentage of asset categories already invested in the product X
    - Data: Morningstar and Novethic for proportions of AuM using different green strategies for listed bonds and equities
        - Limitations: no focus on retail. no country breakdown
        - Assumptions: the asset allocation is the same for retail investment fund shares than for institutional fund shares; the asset allocation is the same across all European countries.
    - No data available for proportions of deposits in green accounts and for proportions of fixed income or equity household investments in green crowdfunding

Assets in the relevant asset category not using the product X

Formula: AuM in the relevant asset category not using the green product X = total household holdings in the asset category – assets already invested in the green product X

Willingness to switch to green in product X's asset category

- Data source: 2DII

- Limitations:
    - no differentiation between households already invested in the green product X and others
    - respondents with no interest in finance or sustainable finance did not answer the questions regarding green financial alternatives and are by default considered to be not interested in those solutions (creating a downward bias in our estimates)
- Assumptions: holders and non-holders of the green product X have the same willingness to switch to green product X

Remark: because green thematic equity funds are not sector-diversified. we considered they could not be used as a substitute for diversified equity portfolios. Consequently. we assigned to them a maximum of 20% of total investments in the equity asset class as in a core-satellite investment approach.

Table A7 gathers all data for the six countries:

Table A7: databank to estimate household demand for green financial products

DATA	Source	Date	Data Granularity	Germany	Denmark	Ireland	Greece	Romania	Estonia
Total Household Financial Assets (EUR bn)	ECB	June 2021	Country	7325.28	1281.265	482.331	293.862	172.663	39.341
% holdings in deposits	ECB	June 2021	Country	35%	13%	32%	51%	31%	26%
% holdings in debt securties	ECB	June 2022	Country	2%	0%	0%	1%	2%	0%
% holdings in listed equity	ECB	June 2021	Country	7%	7%	4%	3%	2%	3%
% holdings in investment funds	ECB	June 2021	Country	11%	7%	1%	3%	3%	16%
% holdings in life insurance	ECB	June 2021	Country	16%	26%	12%	4%	1%	1%
% holdings in pension funds	ECB	June 2021	Country	13%	18%	33%	1%	10%	0%
Asset allocation of investment funds to equity	Morningstar	Dec 2020	Europe	47%	47%	47%	47%	47%	47%
Asset allocation of investment funds to bonds	Morningstar	Dec 2020	Europe	31%	31%	31%	31%	31%	31%
Asset allocation of life insurance to equity	EIOPA	Dec 2019	Europe	15.8%	15.8%	15.8%	15.8%	15.8%	15.8%
Asset allocation of life insurance to bonds	EIOPA	Dec 2019	Europe	62.5%	62.5%	62.5%	62.5%	62.5%	62.5%
Asset allocation of pension funds to equity	OECD	Dec 2020	Country	6.5%	25.4%	24.5%	19.4%	24.8%	48.8%
Asset allocation of pension funds to bonds	OECD	Dec 2020	Country	45.7%	28.6%	45.1%	45.3%	73.8%	48.0%
% of deposits in green accounts	NA	NA	NA	0%	0%	0%	0%	0%	0%
% of bond AuM in green bonds	Novethic / Morningstar	Dec 2020	Europe	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%
% of equity AuM in low-carbon funds	Novethic / Morningstar	Dec 2020	Europe	1%	1%	1%	1%	1%	1%
% of equity AuM in green thematic funds	Novethic / Morningstar	Dec 2020	Europe	3%	3%	3%	3%	3%	3%
% of retail interested into switching to green deposits	2DII	Nov 2021	Country	39%	35%	54%	53%	58%	39%
% of retail interested into switching to green bonds	2DII	Nov 2022	Country	40%	35%	50%	50%	55%	38%
% of retail interested into switching to low carbon funds	2DII	Nov 2021	Country	40%	37%	49%	46%	53%	37%
% of retail interested into switching to green thematic equity funds	2DII	Nov 2021	Country	43%	40%	54%	50%	57%	46%
% of retail interested into switching to green crowdfunding	2DII	Nov 2022	Country	35%	28%	42%	49%	50%	35%