Next Generation's energy misperception

Alessia Casamassima,[1] Jordi Perdiguero García,[2] Andrea Morone[1]

[1] *Universita degli Studi di Bari "Aldo Moro", Dipartimento di Economia, Management e Diritto dell'Impresa, Largo Abbazia Santa Scolastica, 53, 70124, Bari, Italy*

[2] *Departament d'Economia Aplicada, Universitat Autònoma de Barcelona, 08193 Bellaterra, Spain*

Abstract: The aim of this work is to investigate the energy misperception of different sources among the "Next Generation" group. The analysis is carried out in Italy and the data were obtained through an internet-based survey, administered via Instagram for capturing the Next Generation's perception of the national energy mix. We found that younger have more misperceptions and one of the possible explanations could be that are more negatively affected by media and social media, or public opinion in general. Another motivation could be that the younger generation considers sustainability important and therefore tend to over-perceive renewable energy sources.

***Keywords*—** Energy; Misperception; Renewable; Non-Renewable sources, Survey online, Attitudes

1. Introduction

Energy has a key role in helping the economy, sustainability and the promotion of economic growth, meeting rising energy demand, and simultaneously considering the carbon emission mitigation goal, posing huge pressure on policymakers (Mei et al., 2020). In this vein, a sustainability transition needs policymakers to collect adequate information about the environmental context and especially about the socio-economic system. Miller and Senadeera (2017) argue householders can have an important role in this transition, for instance adopting energy efficiency and saving behaviours, or accepting low-carbon technologies. In the literature, it has been shown that public perception with respect to energy issues affects energy future conditions (Boudet, 2019) and public attitudes concerning energy sources impact energy consumption and policy choices, and this can influence decisions on energy consumption. Therefore, if consumers have a misperception about the energy mix, it is difficult to achieve the objective of a sustainable energy system. We can easily understand that asymmetric information may generate an "energy efficiency gap" when the optimal social level of energy investment is not achieved. (Allcott and Greenstone, 2012).

The debate is focused on what mix of energy sources would be adequate to build a sustainable energy system. The main difficulties concern the fact that it is not feasible to make rational choices among energy sources, and that individual preferences are not homogeneously distributed because they change across different populations. Therefore, if consumers have a misperception about the energy mix, it is hard to achieve the objective of a sustainable energy system.

Generally speaking, misperception captures the scope and magnitude of the distorted reality that individuals adopt and hold (Gorodzeisky and Semyonov, 2018). The concept of misperception has been applied in several contexts, such as environmental quality and climate change impact (Pondorfer, 2019), electric-drive vehicles (Axsen et al., 2017), unemployment (Cardoso et al., 2016) and immigration (Aalberg and Strabac, 2010), but the existent literature concerning energy misperception is limited. For instance, Lee et al. (2020) find that "habits" are one of the main causes of inefficient energy consumption and that feedback may be a solution to reduce energy consumption and mitigate consumers' misperception concerning their effectiveness level of energy use. With respect to energy efficiency, Allcott (2011) demonstrates that misperception about gasoline prices and the relative energy costs could increase or decrease energy efficiency. Public perception has been considered in different fields in the energy context, for instance in the public acceptance related to energy technologies, energy sources or energy policy. Indeed, according to the literature (Leurent et al., 2017, Stoutenboroughetal et al., 2013, Wang et al., 2018), public perception has an important role because a higher level of benefits perception increases public acceptance, and in addition, energy acceptance is strongly affected by individual perception; this affects public support for expanding sources. Moreover, Stoutenboroughetal et al. (2017) in their work found that people who think that the risks associated with nuclear waste storage are high have low support for nuclear energy. This issue has always been addressed by considering energy sources separately; for instance, Devine-Wright, P. (2005) investigated the public perception of wind energy, and other papers (Ntanoset al. (2018), Kim et al. (2018) examined public perception of renewable resources only. Spence et al (2010) study public opinion related to different energy sources asking how favourable or unfavourable their overall opinions or impressions of the several energy sources for producing electricity currently. The novelty of our work is that we analyse public perception towards different energy sources jointly, asking how much of the electricity used in their country they perceive is generated from different renewable and non-renewable energy sources. Again, another originality is that we take into account particular age groups, thus Generation Z and Millennials. Indeed, an important issue about the level of misperception in the energy market is its level in the "Next Generation". The literature emphasizes the importance of studying Generation Z (GenZ) and Millennials as categories of interest because they are the "future consumers", and their consumption behaviour can be linked with sustainable concerns and intertemporal consumer choices. Kymäläinen et al. (2021) argue that, due to the fact that future consumers are at the centre of social acceptance, we should investigate their attitudes from the business perspective to build sustainable choices. Moreover, their consumer behaviour and lifestyle choices are different from the previous generations. Nowadays, Generation Z has developed a great interest in sustainability. This change is generating an effect on general life aspects like changes in

products and services, and investments made by institutions and industry.
The aim of this paper is to investigate the presence of energy misperception, and specifically its level in the Next Generation groups (i.e., Generation Z and Millennials) to cover the gap in the economic literature. Moreover, this is the first work that analyses the energy misperception for specific categories, thus Generation Z and Millennials.
We expected the younger ones will overstate the share of energy sources that they think are used in the production of electricity in Italy, and overall, we found the younger have more misperception than less young. One of the possible explanations could be that younger individuals are more negatively affected by media and social media, for instance with regard to oil spills and emissions, but also because GenZ is a generation for which ethics are very important. We have also seen that younger have more misperception of renewable energy sources. According to Mosdor's survey, over 80% of Generation Z thinks that institutions should invest more in renewable energy resources; this aspect could affect individual perception.
This paper is structured as follows: Section 2 presents the method in which we describe the experimental design, Section 3 describes the empirical approach, Section 4 focuses on results, and finally, in Section 5, we explain the Conclusion and Policy Implications.

2. Method and Data

2.1. Method

We collected 288 complete observations through an online experiment. The Google form was published on the Instagram page of "ale.conomista" which counts 53 thousand followers. The aim was to gather a sample composed of individuals from eighteen years old to twenty-four years old, to capture the "Generation Z" perception, individuals from twenty-five years old to forty to analyse the "Millennial" energy perception, and individuals belonging to Generation X category (from 41 years old)[1]. Fox et al. (2007) found that online platforms are comfortable for the younger populations, as they are familiar with an online social network, and we think this aspect may help us to receive reliable answers.
In the questionnaire, participants were asked to answer 30 questions in order to find evidence about individual attitudes, such as sensitivity to climate change, environmental issues, propensity for the social issue and to help people. We have also five socio-demographic questions. In order to capture the energy misperception about the national electricity mix for different energy sources (e.g. Biomass, Coal, Hydroelectric power, Natural Gas, Nuclear power, Solar power, Wind power) we asked how much of the electricity used in their country do they perceive is generated by each different energy sources; with respect the amount of each energy source that they perceive being produced, respondents are asked to provide their perceptions in accordance with a four option shown in the table 1.[2] For reaching the goal of our analysis, we need to compare the actual value

Table 1. Questions about individual's perception

Description	General question	Typology of answer
Coal energy	How much of the electricity used in your country do you perceive is generated from: coal/ hydroelectric power/ natural gas/ nuclear/ solar/ wind/ biomass?	0-25% | 25%-50% | 50%-75% | 75%-100%
Natural gas		
Hydroelectric power		
Nuclear power		
Solar power		
Wind power		
Biomass energy		

with the perceived value. In addition, we selected several explanatory variables for trying to capture possible determinants of energy misperception. We focused on a potential misperception about the national electricity mix, thus the division of electrical production among different energy sources. Therefore, we analysed how individual perceptions about the share of each energy source in the electricity mix deviate from the real values. To build a measure of misperception, we created a dummy variable for each energy source; specifically, we fixed 0 to state a "Well-perception"(when the answer is equal to the real value) and 1 to indicate "Misperception". Table 2 it is shown the percentage of electricity production in Italy in 2020, according to "Our World in Data". "Our World in Data" is a scientific publication site where it is possible to find data that show how conditions in the world change and why this happens. Table 3, it has shown the percentage of misperception for each energy source, taken from individual answers. From this table, we can argue that the level of energy misperception is significant, except for Nuclear power, probably because Italy does not have nuclear power plants and does not use these technologies.
In table 4 we can see the observation number and percentage among different generation groups. Generation Z is not representative of the Country but it can show a preliminary picture of the different levels of misperception among them, taking into account the other two categories.

[1] In our analysis we do not consider Generation X.
[2] The whole questionnaire is available in the Appendix.

Table 2. Trasformation of real value into quartile

Energy sources	Electricity production	Quartile
Biomass	9.16%	0-25%
Coal	5.44%	0-25%
Hydroelectric power	17.46%	0-25%
Natural Gas	45.63%	25%-50%
Nuclear Power	0%	0-25%
Solar Power	9.66%	0-25%
Wind Power	6.88%	0-25%

To explain the possible determinants of different misperceptions among "Next generation" groups, we considered different variables; such variables are related to the individual status of the respondents, their views of energy policy, as well as their attitudes towards some everyday energy use and climate issues. Most of the variables are expressed in the Likert Scale (for instance, 1 = a very large amount, 2 = a large amount, 3 = a medium amount, 4 = a small amount and 5 = none at all).

Table 3. Percentage of misperception for each energy sources

Energy sources	Misperception(%)	Obs
Biomass	35%	288
Coal	70%	288
Hydroelectric power	62%	288
Natural Gas	57%	288
Nuclear Power	20%	288
Solar Power	58%	288
Wind Power	43%	288

Table 4. Descriptive statistic for GenZ, Millennials and GenX

	Obs	Percentage
Generation Z	225	78%
Millennials	42	15%
Generation X	21	7%
Total	**288**	**100%**

3. Empirical approach

To reach our research goal, we proceed as follows: firstly, to reduce the dimensionality of possible explanatory variables we conducted a factor analysis for all variables, excluding socio-demographic variables, and to each factor, we gave an economic interpretation. Secondly, we analysed the correlation between misperceptions and factors previously determined in the factor analysis, among misperceptions and, finally, between Next Generation and misperceptions. Thirdly, for each energy source, we ran different Linear Probability Models (LPM); at the beginning, with only socio-demographic variables, and then with the factors found in the previous step and the socio-demographic variables jointly. In addition, we considered other LPMs taking into account the two age groups separately. The last two steps concern a Logit model in order to capture over-perception and the perception of Natural gas sources, because it is the only one that is in the range 25%-50% of market share, and finally, we used an Ordered logit model to investigate the bias intensity for each energy sources.
In the next subsections, we will explain the different analyses applied.

3.1. Factor Analysis

We first provided a Factor analysis to reduce the dimensionality of our analysis. This technique allows us to show that there is a statistical and interpretative association among our covariates. Generally, the obtained factors are not correlated and they can explain almost the same information embodied in the original variable; for this reason, Factor Analysis can help us to avoid multicollinearity problems. After running a factor test, we verified the feasibility of factor analysis through the Kaiser-Meyer-Olkin test (KMO)[3], and we considered 12 factors[4] with eigenvalue bigger than 1, each of them embodying variables

[3]The KMO is equal to 0.737, with a p-value equal to 0.000; therefore, we can reject the null hypothesis that variables are not inter-correlated.
[4]We obtained 14 factors but we considered only 12 factors because two of them embodied only one variable.

that capture similar determinants of misperception. In the appendix, we have table 11 which explains our factors, and we can notice that our Factor analysis is efficient because we have coherence in the obtained factors.

3.2. Correlation

We first estimated a correlation between each misperception and the factors obtained in the previous step, to consider only significant factors in the analysis. Moreover, we checked the correlation between all misperceptions of different energy sources. Table 5 it is shown the correlation with factors and Table 6 the correlation among misperceptions.
The robustness of these correlations will be checked in the linear probability model. An interesting aspect could be the study of correlation among misperceptions of different energy sources (Table 6), to try to capture how individuals consider these sources similar to each other. We have a positive correlation between biomass and all energy sources, and this leads us to understand that individuals do not have a good perception of biomass. For coal and natural gas, we have a positive correlation with nuclear; we can notice the peculiar position of nuclear power as a source that, despite its zero CO_2 emissions, it is perceived as similar to climate-altering sources individuals tend to misperceive the relative contribution of different energy sources to tackle greenhouse gas emission issue; probably, for this reason, they evaluate nuclear similar to natural gas in this context. This is in line with findings by Bickerstaff et al. (2008) who studies the "nuclear resurgence"(people tend to consider it negatively due to the eventual consequences). Finally, we can conclude with the correlation between misperceptions and both Generation Z and Millennials (Table 7). Overall, for the Generation Z category, we have a positive correlation with all energy misperceptions, except for coal which is not statistically significant. For the other category, we have an overall negative correlation with energy misperception except for hydroelectric power and natural gas (they are not statistically significant). From this analysis, we may aspect that, overall "Generation Z" has more misperceptions than "Millennial"; we will test it with a linear probability model.

Table 5. Correlation with factors

	F1	**F2**	**F3**	**F4**	**F5**	**F6**	**F7**	**F8**	**F9**	**F10**	**F11**	**F12**
Biomass	0.1048*	-0.0650*	0.0004	0.1114*	-0.0693*	-0.0884*	-0.0100	-0.0163	0.0817*	0.0065	-0.0386	0.0926*
Coal	0.0196	-0.0950*	0.0184	0.0760*	-0.0029	-0.0135	-0.0629*	-0.0015	0.0759*	0.0674*	0.0078	0.0606*
Hydroelectric power	0.0412*	-0.0298	-0.0721*	0.0764*	-0.1378*	-0.0827*	-0.0346	-0.0303	-0.0104	-0.0264	0.0764*	-0.0087
Natural Gas	0.0440*	0.0203	0.0598*	-0.0033	-0.0118	-0.0229	-0.1433*	0.0882*	0.0646*	0.1231*	0.0600*	0.0446*
Nuclear Power	0.1256*	-0.0016	-0.0963*	0.0820*	-0.0862*	-0.0233	0.0601*	-0.0693*	0.0329	0.0304	-0.0337	-0.0391
Solar Power	0.1416*	-0.0285	-0.0160	0.0191	-0.0297	-0.0547*	-0.0961*	-0.0157	-0.0144	0.1262*	0.0004	0.0715*
Wind Power	0.0911*	-0.0439*	-0.0471*	0.1150*	-0.0575*	-0.0895*	-0.0461*	-0.0780*	0.0976*	0.1041*	-0.0576*	-0.0180

Table 6. Correlation among mispreception

	Biomass	**Coal**	**Wind Power**	**Hydro**	**Natural Gas**	**Nuclear Power**	**Solar Power**
Biomass	1.000						
Coal	0.2221*	1.000					
Wind Power	0.1930*	0.0056	1.000				
Hydro	0.1982*	-0.001	0.3679*	1.000			
Natural Gas	0.1199*	0.1144*	0.0963*	0.0562*	1.000		
Nuclear Power	0.2212*	-0.1038*	0.1456*	0.1271*	0.0481*	1.000	
Solar Power	0.1897*	-0.0280	0.6125*	0.3671*	-0.0786*	0.0968*	1.000

Table 7. Correlation with GenZ and Millensial

	Generation Z	**Millennial**
Biomass	0.1274*	-0.1063*
Coal	-0.0243	0.0500*
Wind Power	0.1413*	-0.1279*
Hydro	0.0169	-0.0108
Natural Gas	0.0584*	-0.0321*
Nuclear Power	0.1040*	-0.0915*
Solar Power	0.1382*	-0.1388*

3.3. Linear Probability model

We estimated different Linear probability models (LPM) for each energy source to detect if the sample of interest, Generation Z and Millennials, has a misperception, and which group has more misperception than the other. In the Appendix, we display the complete Linear probability models for each energy source, with and without all factors considered. This technique models the response probability as a function linear in parameters, and we use that because our dependent variable (all energy misperception) is binary. One of the drawbacks of the Linear Probability model is the heteroskedasticity problem that we solved using

robust standard errors. We first run an LPM considering the results for our two dummy variables of interest, Generation Z and Millennial, and not considering the third Generation X in our sample. Table 10 it is illustrated the results for both Generation Z and Millennials, and we may observe that the younger (Generation Z) have more misperception for renewable resources than less young, except for Hydroelectric power. Moreover, we find Millennial have more misperception of Coal than Generation Z; for Natural Gas, the less young have less misperception than younger; in the latter case, the coefficients for GenZ and Millennials are not statistically significant. We then run a second LPM considering separately the two age groups to identify what are the determinants of the misperception for both Generation Z and Millennials, and for avoiding a problem of heterogeneity between the two groups. In the Appendix, we show all regression tables[5]. The main results are that for Generation Z the determinants of misperception for non-renewable sources (Coal and Natural gas) are Factor 2 (Care about the environment and Climate Change, with a negative sign), Factor 3 (Trust and satisfaction, positive sign), Factor 7 (Opinion on climate change, negative sign) and Factor 9 (Individual feelings, positive sign), while for Millennial the main determinants are Factor 1 (Worried about energy issues, positive sign), Factor 2 (Care about the environment and Climate Change, negative sign), Factor 4 (Sensitive for social issues, negative sign), Factor 5 (Discrimination, negative sign), Factor 6 (Worried about being dependent on others and fossil fuel, positive sign), Factor 10 (Patriotism, positive sign) and Factor 12 (Politic/social well-being, negative sign).
Otherwise, the misperception of renewable sources for Generation Z depends on several factors, such as Factor 1 (worried about energy issues, positive sign), Factor 5 (Discrimination, negative sign), Factor 6 (Worried about being dependent on others and fossil fuel, negative sign), Factor 7 (Opinion on climate change, positive sign), Factor 9 (Individual feelings, positive sign), Factor 10 (Patriotism, positive sign) and Factor 12 (Politic/social well-being, negative sign). As concerned Millennials, the main determinants are Factor 1 (worried about energy issues, positive sign), Factor 4 (Sensitive about social issues, positive sign) and Factor 11 (Worried about Climate Change (ways for reducing climate change), positive sign).

Table 8. LPM

	Biomass	Coal	Hydro	NGas	Nuclear	Solar	Eolic
Generation Z	0.291***	0.210	0.160	0.0809	0.188***	0.206	0.163
	(2.91)	(1.51)	(1.14)	(0.56)	(2.65)	(1.43)	(1.32)
Millennials	0.242**	0.410***	0.241*	0.0368	0.0552	0.109	0.0335
	(2.10)	(2.75)	(1.57)	(0.25)	(0.70)	(0.71)	(0.26)
Observations	288	288	288	288	288	288	288

3.4. Logit Model

As we have seen in the previous Table 1, the Natural Gas source is the only one that is in the second quartile (25%-50%) and for this reason, we can investigate if Generation Z and Millennials have an under perception or an over-perception of this energy sources. For this purpose, we used a Logit model regression to capture the direction of bias for both groups; the main results are shown in Table 9 below.[6]
We can notice that the youngest people (GenZ) tend to overestimate the production level from Natural Gas source. We may conclude that not only does Generation Z shows a higher percentage of energy misperception concerning the older, but younger individual over-estimate the electricity production level, and not under-estimate it.

Table 9. Logit model to capture bias direction for Natural Gas

	(Over-perception)	(Under-perception)
Generation Z	.389**	-.460***
	(.126)	(.134)
Millennials	.351	-.387**
	(.279)	(.122)
Observations	288	288

[5]Misperception could be affected by media (newspapers, TV, Internet, etc.) and for this reason, we used a variable that shows if respondents use social media to share news about politics as a proxy, to avoid possible omitted variables bias. The results of our analysis do not change significantly.
[6]We interpreted the marginal effects.

3.5. Ordered Logit

Finally, since our dependent variable is defined as a categorical ordinal variable, for our last analysis we considered an Ordered logit regression, to identify the bias intensity for each different energy source, using the same previous covariates. In this case, our dependent variables are structured considering the distance from the real value (Well-perception) of each energy source and the different levels of misperceptions. We tested the parallel assumption with the Brant test and overall, we accept the null hypothesis with a p-value greater than 0.05; therefore, we can use the Ordered logit model. The main results are displayed in table 9 in the Appendix[7]. Overall, we found that the level of bias can be identified in the range between 25%-50% for both Generation Z and Millennials, except for the Coal source concerning Millennials; in this case, the intensity of bias is a little higher. An interesting result regards Nuclear power. We can notice that very few individuals have a strong misperception of Nuclear, specifically the older ones. Moreover, the intensity of bias for each level is not very consistent; this finding could be linked with the current situation in Italy. Italy closed its nuclear power plants in 1990, after the Chornobyl accident. The reluctance towards nuclear energy in Italy is confirmed when in 2008 Italian government tried to propose a new nuclear program in the Country, but this proposal, which it was established arrangements to generate 25% of the country's electricity from nuclear power by 2030, was rejected in a referendum in June 2011; therefore, we could aspect these results.
We can conclude that overall Generation Z shows a higher probability of over-perceive energy sources in the electricity energy mix in Italy. Otherwise, we can notice that the intensity of this bias for Generation Z is similar Millennials.

4. Results

In this paper, the main goal is to investigate the energy misperception of the energy electricity mix in Italy, among "Next Generation". Specifically, we focused on two different groups: the younger ones Generation Z, and Millennials. We considered questions from the European Social Survey, a multi-country survey administered annually in 30 different European countries, between 2002 and 2018, and we conducted an online experiment through the Instagram platform. In the questionnaire administered, the subjects were asked to indicate their perception about how they perceive energy share among four different options: 1) 0%-25%, 2) 25%-50%, 3) 50%-75%, 4) 75%-100%, and in addition, they answered other several questions, to capture individual characteristics and attitudes, such as the propensity for environmental problem, attitude for helping people, their trust in general, trust in politics and people, and socio-demographic questions. The actual electricity mix is measured through "Our World in Data", and we considered the 2020 production in Italy.
To provide an answer to our research question, first, we run a factor analysis to reduce the dimensionality of the analysis, and we estimated the correlation between misperception for each energy source, misperception and the obtained factors, and finally the correlation between each energy sources misperception and both groups Generation Z and Millennial. After these steps, we implemented a linear probability model to compare both groups Generation Z and Millennials and to determine which group has more misperception. Then, we considered another linear probability analysis for trying to capture the possible determinants of misperception. For the natural gas source, because it is the only one that has a real value greater than 0-25%, we were able to implement a logit model to look into which group has more under-perception and over-perception; finally, we ran an Ordered logit to identify the measure of bias for both Generation Z and Millennial.
From the correlation analysis, we have argued that overall, people do not have a good perception of different energy sources; in fact, we can easily observe that individuals believe that these energy sources are similar to each other, and particularly that Generation Z has more misperception than Millennials. This is in line with the results by Bollani et al. (2019) who find Millennial students are sensitive to sustainability concerns (e.g., they believe in labelling and certification systems as communication tools to reduce environmental impact). In light of this, our estimate results lend support to our hypothesis that the younger have more misperception than the older, specifically in the Linear Probability Model we found that not only do both categories have energy misperception, but the Generation Z group has more misperception for renewable resources than non-renewable, except for Hydroelectric power.
As concerns the possible determinants of misperception we found that regarding non-renewable resources (e.g., Coal and Natural Gas), people that are concerned about protecting the environment and that they feel responsible for environmental conditions, therefore those who have a greater propensity against climate change, have less misperception on non-renewable resources. Pidgeon et al. (2008) in their analysis found that the perception of energy sources is related to climate policy goals. In their survey, respondents chose the use of renewable technologies as the best solution to climate change; therefore, people that have fewer attitudes and concerns on climate and environmental issues should have more misperception of non-renewable resources.
Regarding factor 3 (trust and satisfaction), it seems that individual who trusts politicians and policy, in general, shows a misperception of non-renewable resources. This could mean that the "Next generation" groups think that the policymakers do not follow pro-environmental practices. As suggested by Harring (2014), people perceive environmental policy instruments as less effective due to the high level of corruption in the public sector, and this suggests that well-functioning institutions are crucial for environmental policy support.
Moreover, individuals who are more sensitive to equity issues, are more inclined to be fair and could be prudent about energy transition, and therefore people may over-perceive non-renewable resources. This is in line with the findings of Islar et al. (2017) that argue decisions on energy processions may have social implications (for instance, some consequences could affect workers' employed status).
Concerning renewable resources, our findings show that individuals who are worried about energy issues, such as "security supplies", tend to misperceive some energy sources, like nuclear power. Pidgeon et al. (2008) affirmed that traditional sources

[7]Table is in the Appendix (Table 19. It shows marginal effects.

are perceived as more suitable to guarantee the security of supply, and this can be interpreted as more inclined attitudes of individuals to prefer local sources, or to consider and support banned sources (e.g., nuclear in Italy). In addition, we found that individuals who are more sensitive to equity issues are more inclined to be fair, and that have more propensity to the foreigner acceptance, tend to have a misperception of renewable resources.
Another determinant of misperception may be political orientation, that in our case is captured by attachment to country and EU (factor 10), which can affect the perception and judgment of different energy sources; specifically, in our study, we argued that people that are attached to country and EU have more misperception, both for renewable and non-renewable resources.
Finally, we should highlight how Nuclear energy source is not perceived as renewable sources; indeed, in our results, we have seen that people who feel responsible for reducing climate change, have a misperception of nuclear energy. Therefore, individuals can misperceive the relative contribution of energy sources to greenhouse gas emissions, indeed nuclear tends to be considered, for instance, similar to natural gas, because people perceive negative environmental consequences of nuclear power (e.g.explosions of nuclear power plants, radioactive waste.)
Another important step is represented by the identification of over-perception and under-perception of natural gas energy source, for both Generation Z and Millennials. We concluded that Generation Z tends to have more over-perception of natural gas and, on the other hand, Millennials have more under-perception of natural gas than Generation Z.
Finally, with the Ordered logit model, we have seen that, although the response percentage is different for each percentage range, the bias intensity is quite similar for both groups analysed.

5. Conclusion and Policy Implications

Based on empirical findings, our work points out that the Next generation in Italy does not have a real perception of the actual electricity energy mix, and this could be a hurdle which might not allow the necessary energy and sustainable transition. Young people between 17-25 years old usually move away from their households, and this inevitably increases their responsibility, developing opportunities for sustainable consumption habits (Kymäläinen et al. 2021), and therefore investigating their energy consumption habits and possible obstacles to sustainable transition is crucial. In light of this, to increase awareness in the Generation Z category, it may be useful to promote awareness-raising campaigns that focus on the possibility of having good job opportunities in the energy sector. This can be a good strategy because this generation has experienced an economic crisis, unlike the Millennials, and they strongly aspire to future stability. In addition, also information campaigns could be a helpful tool to increase individual awareness for those who have little knowledge, or for those who do not have any kind of knowledge about energy issues. in the literature, this is consistent with several studies about consumers' perceptions that highlight the presence of low levels of knowledge and awareness; this is crucial because increasing awareness could lead the individual to solve environmental and energy-consumption problems.

In the proposed online experiment, the considered sample is not heterogeneous because we did not want to consider different population groups. For this reason, it might be notable to detect how different skilled individuals could respond to our investigation. An interesting extension could be comparing the perception of our sample with the "Experts" category, such as academic professors, researchers, assistants, associate lecturers, and so on. Therefore, the first step could be first to expand our current sample on "Next Generation", and then collect a new sample for the "Experts" category; in this way, not only we will be able to compare "Next generation" with "Experts", but we may consider other "age-category" such as "Generation X", thus people between 41-56 years old, and "Boomers" those between 57-66 years old. Finally, it might be interesting to extend our research to other EU countries, to improve our findings and investigate how energy perception among different European countries changes.
In addition, this work analyses the act of individual attitudes but our results are limited, due to our main purpose; however, it is crucial to emphasize the importance of applying an approach that considers human and behavioural dimensions of the individual, to better understand the psychological factors that most influence energy behaviour and, consequently, a sustainable energy transition.

References

T. Aalberg and Z. Strabac. Media use and misperceptions: Does tv viewing improve our knowledge about immigration? *Nordicom Review*, 31(1):35–52, 2010.

H. Allcott. Consumers' perceptions and misperceptions of energy costs. *American Economic Review*, 101(3):98–104, 2011.

H. Allcott and M. Greenstone. Is there an energy efficiency gap? *Journal of Economic Perspectives*, 26(1):3–28, 2012.

A. Appolloni, I. D'Adamo, M. Gastaldi, E. D. Santibanez-Gonzalez, and D. Settembre-Blundo. Growing e-waste management risk awareness points toward new recycling scenarios: The view of the big four's youngest consultants. *Environmental Technology & Innovation*, page 101716, 2021.

J. Axsen, B. Langman, and S. Goldberg. Confusion of innovations: mainstream consumer perceptions and misperceptions of electric-drive vehicles and charging programs in canada. *Energy research & social science*, 27:163–173, 2017.

K. Bickerstaff, I. Lorenzoni, N. F. Pidgeon, W. Poortinga, and P. Simmons. Reframing nuclear power in the uk energy debate: nuclear power, climate change mitigation and radioactive waste. *Public understanding of science*, 17(2):145–169, 2008.

L. Bollani, A. Bonadonna, and G. Peira. The millennials' concept of sustainability in the food sector. *Sustainability*, 11(10): 2984, 2019.

H. S. Boudet. Public perceptions of and responses to new energy technologies. *nature energy*, 4(6):446–455, 2019.

K. Boulding. E., 1966, the economics of the coming spaceship earth. *New York*, 1966.

A. R. Cardoso, A. Loviglio, and L. Piemontese. Misperceptions of unemployment and individual labor market outcomes. *IZA Journal of Labor Policy*, 5(1):1–22, 2016.

J. I. de Groot, E. Schweiger, and I. Schubert. Social influence, risk and benefit perceptions, and the acceptability of risky energy technologies: an explanatory model of nuclear power versus shale gas. *Risk Analysis*, 40(6):1226–1243, 2020.

P. Devine-Wright. Beyond nimbyism: towards an integrated framework for understanding public perceptions of wind energy. *Wind Energy: An International Journal for Progress and Applications in Wind Power Conversion Technology*, 8(2):125–139, 2005.

F. E. Fox, M. Morris, and N. Rumsey. Doing synchronous online focus groups with young people: Methodological reflections. *Qualitative health research*, 17(4):539–547, 2007.

A. Gorodzeisky and M. Semyonov. Perceptions and misperceptions: actual size, perceived size and opposition to immigration in european societies. *Journal of Ethnic and Migration Studies*, 46(3):612–630, 2020.

D. M. Gromet, H. Kunreuther, and R. P. Larrick. Political ideology affects energy-efficiency attitudes and choices. *Proceedings of the National Academy of Sciences*, 110(23):9314–9319, 2013.

N. Harring. Corruption, inequalities and the perceived effectiveness of economic pro-environmental policy instruments: A european cross-national study. *Environmental Science & Policy*, 39:119–128, 2014.

M. Islar, S. Brogaard, and M. Lemberg-Pedersen. Feasibility of energy justice: Exploring national and local efforts for energy development in nepal. *Energy Policy*, 105:668–676, 2017.

A. Karaeva, L. I. Cioca, G. Ionescu, E. R. Magaril, and E. C. Rada. Renewable sources and its applications awareness in educational institutions. In *2019 International Conference on ENERGY and ENVIRONMENT (CIEM)*, pages 338–342. IEEE, 2019.

J. Kim, D. Jeong, D. Choi, and E. Park. Exploring public perceptions of renewable energy: Evidence from a word network model in social network services. *Energy Strategy Reviews*, 32:100552, 2020.

J. Kulin and I. Johansson Sevä. Who do you trust? how trust in partial and impartial government institutions influences climate policy attitudes. *Climate Policy*, pages 1–14, 2020.

T. Kymäläinen, A. Seisto, and R. Malila. Generation z food waste, diet and consumption habits: A finnish social design study with future consumers. *Sustainability*, 13(4):2124, 2021.

E. Lee, M. Kang, J. Song, and M. Kang. From intention to action: Habits, feedback and optimizing energy consumption in south korea. *Energy Research & Social Science*, 64:101430, 2020.

T. Marghetis, S. Z. Attari, and D. Landy. Simple interventions can correct misperceptions of home energy use. *Nature Energy*, 4(10):874–881, 2019.

H. Mei, Y. Li, C. Suo, Y. Ma, and J. Lv. Analyzing the impact of climate change on energy-economy-carbon nexus system in china. *Applied Energy*, 262:114568, 2020.

W. Miller and M. Senadeera. Social transition from energy consumers to prosumers: Rethinking the purpose and functionality of eco-feedback technologies. *Sustainable cities and society*, 35:615–625, 2017.

E. Moxnes. Overexploitation of renewable resources: The role of misperceptions. *Journal of Economic Behavior & Organization*, 37(1):107–127, 1998.

S. Ntanos, G. Kyriakopoulos, M. Chalikias, G. Arabatzis, and M. Skordoulis. Public perceptions and willingness to pay for renewable energy: A case study from greece. *Sustainability*, 10(3):687, 2018.

T. R. Peterson, J. C. Stephens, and E. J. Wilson. Public perception of and engagement with emerging low-carbon energy technologies: A literature review. *MRS Energy & Sustainability*, 2, 2015.

N. F. Pidgeon, I. Lorenzoni, and W. Poortinga. Climate change or nuclear power—no thanks! a quantitative study of public perceptions and risk framing in britain. *Global Environmental Change*, 18(1):69–85, 2008.

A. Pondorfer. The perception of climate change: Comparative evidence from the small-island societies of bougainville and palawan. *Environmental Development*, 30:21–34, 2019.

E. Pronin. Perception and misperception of bias in human judgment. *Trends in cognitive sciences*, 11(1):37–43, 2007.

B. D. Solomon and K. Krishna. The coming sustainable energy transition: History, strategies, and outlook. *Energy Policy*, 39 (11):7422–7431, 2011.

B. K. Sovacool and M. H. Dworkin. Energy justice: Conceptual insights and practical applications. *Applied Energy*, 142: 435–444, 2015.

A. Spence, W. Poortinga, N. Pidgeon, and I. Lorenzoni. Public perceptions of energy choices: The influence of beliefs about climate change and the environment. *Energy & environment*, 21(5):385–407, 2010.

L. Steg, G. Perlaviciute, and E. van der Werff. Understanding the human dimensions of a sustainable energy transition. *Frontiers in psychology*, 6:805, 2015.

F. J. Van Rijnsoever and J. C. Farla. Identifying and explaining public preferences for the attributes of energy technologies. *Renewable and sustainable energy reviews*, 31:71–82, 2014.

M. Werthschulte and A. Löschel. Cost misperceptions and energy consumption: Experimental evidence for present bias and biased price beliefs. Technical report, CAWM Discussion Paper, 2019.

S. Williams and J. Robinson. Measuring sustainability: an evaluation framework for sustainability transition experiments. *Environmental Science & Policy*, 103:58–66, 2020.

A. Appendix

Fig. 1. Questionnaire

1. What is your country of origin?
2. Number of inhabitants of city of residence
3. Sex
4. Age
5. Are there children/young people in your household?
6. Please indicate a score from 0 to 10. 0 means that you do not trust at all, and 10 means that you trust completely. You can be trusted:
    - Most people
    - About your country's government
    - Politicians and political parties
7. Which party did you vote for in that election?
8. Have you posted or shared anything about politics online, for example on blogs, via email or on social media such as Facebook or Twitter?
9. In politics people sometimes talk about 'left' and 'right': where would you place yourself considering this scale, where 0 means left and 10 means right?
10. To what extent do you think your country should allow people of the different ethnic group to come and live here?
11. Would you say it is generally bad or good for your country's economy that people come to live here from other countries?
12. Would you say that it is a behaviour that can always be justified, never justified, or something in between that of cheating on taxes to be paid if you have the chance?
13. How is your health in general?
14. Choose a number from 0 to 10, where 0 means 'not at all emotionally attached' and 10 means 'very emotionally attached':
    - Your Country
    - To Europe
15. Regardless of whether you belong to a particular religion, how religious would you say you are?
16. If you were to buy a large electrical appliance for your home, how likely is it that you would buy one of the most energy efficient ones?
17. There are somethings that can be done to reduce energy use, such as switching off appliances that are not being used,walking for short journeys, or only using the heating or air conditioning when really needed. In your daily life, how often do you do things to reduce your energy use?
18. Overall, how confident are you that you could use less energy than you do now?
19. What extent you agree or disagree that social benefits and services in your country:
    - Place too great a strain on the economy
    - Lead to a more equal society
20. How much of the electricity used in your country do you perceive is generated by:
    - Biomass
    - Coal
    - Hydroeletric power
    - Natural gas
    - Nuclear
    - Solar
    - Wind
21. How worried are you that:
    - May be power cuts in your country
    - Power too expensive for many people
    - Being too dependent on energy imports from other countries
    - your country being too dependent on using energy generated by fossil fuels such as oil, gas and coal
22. How worried are you that energy supplies could be interrupted by:
    - Natural disasters
    - Extreme weather
    - Technical failures
    - Insufficient power being generated
    - Terrorist attacks
23. You may have heard the idea that the world's climate is changing due to increases in temperature over the past 100 years. What is your personal opinion on this? Do you think the world's climate is changing?
24. Do you think that climate change is caused by natural processes, human activity, or both?
25. To what extent do you feel a personal responsibility to try to reduce climate change?
26. How worried are you about climate change?
27. To what extent are you in favour or against the following policies in your country to reduce climate change:
    - Increasing taxes on fossil fuels, such as oil, gas and coal
    - Using public money to subsidise renewable energy
    - Law banning the sale of the least energy efficient household appliances
28. Are there children/young people in your household?
29. Now I will briefly describe some people. Please listen to each description and tell me how much each person is or is not like you:
    - It is important to her/him to be rich. She/he wants to have a lot of money and expensive things.
    - It is important to her/him to listen to people who are different from her/him. Even when she/he disagrees with them, she/he still wants to understand them.
    - It is important to her/him always to behave properly. She/he wants to avoid doing anything people would say is wrong.
    - She/he thinks it is important that every person in the world should be treated equally. She/he believes everyone should have equal opportunities in life.
    - It's very important to her/him to help the people around her/him. She/he wants to care for their well-being.
    - She/he strongly believes that people should care for nature. Looking after the environment is important to her/him.

Table 10. Descriptive correlation analysis between misperception and energy sources

ENERGY SOURCES	FACTORS
Biomass	○ Positive correlation with "Worried about energy issues" (F1), "Sensitive for social issues" (F4), "Individual feelings" (F9) and "Politic\social" (F12). ○ Negative correlation with "Care about environment and climate change" (F2), "Discrimination" (F5), "Worried about being dependent on others and fossil fuel" (F6).
Coal	○ Positive correlation with "Sensitive for social issues" (F4), "Individual feelings" (F9), "Patriotism" (F10), and "Politic\Social" (F12). ○ Negative correlation with "Care about environment and climate change" (F2) and "Opinion on climate change" (F7).
Eolic power	○ Positive correlation with "Worried about energy issues" (F1), "Sensitive for social issues" (F4), "Individual feelings" (F9) and "Patriotism" (F10). ○ Negative correlation with "Care about environment and climate change" (F2), "Trust and Satisfaction" (F3), "Discrimination (F5), "Worried about being dependent on others and fossil fuel" (F6), "Opinion on climate change" (F7), "Social sensitive" (F8), and "Worried about climate change (ways for reducing climate change)" (F11).
Hydroelectric power	○ Positive correlation with "Worried about energy issues" (F1), "Sensitive for social issues" (F4), and "Worried about climate change (ways for reducing climate change)" (F11). ○ Negative correlation with "Trust and Satisfaction" (F3), "Discrimination (F5), and "Worried about being dependent on others and fossil fuel" (F6).
Natural gas	○ Positive correlation with "Worried about energy issues" (F1), "Trust and Satisfaction" (F3), "Social sensitive" (F8), "Individual feelings" (F9), "Patriotism" (F10), and "Worried about climate change (ways for reducing climate change)" (F11), and "Politic\social" (F12). ○ Negative correlation with "Opinion on climate change" (F7).
Nuclear power	○ Positive correlation with "Worried about energy issues" (F1), "Sensitive for social issues" (F4), and "Opinion on climate change" (F7). ○ Negative correlation with "Trust and Satisfaction" (F3), "Discrimination" (F5), and "Social sensitive" (F8).
Solar	○ Positive correlation with "Worried about energy issues" (F1), "Patriotism" (F10), and "Politic\Social" (F12). ○ Negative correlation with "Worried about being dependent on others and fossil fuel" (F6), and "Opinion on climate change" (F7).

Table 11. Factor analysis

FACTORS	***Questions***
F1 Worried about energy issues	*How much individuals are worried about energy may be subject to power cuts/may be too expensive for many people/ energy supplies could be interrupted by natural disasters/ energy supplies could be interrupted by insufficient power being generated /energy supplies could be interrupted by technical failures/ energy supplies could be interrupted by terrorist attack/ Extreme weather.*
F2 Care about environment and Climate Change	*If you were to buy a large electrical appliance for your home how likely is it that you would buy one of the most energy efficient ones? / Importance to care for nature and environment/ Individual's opinion about the possibility that limitation of their own energy use would help reduce climate change / Individuals' thoughts about their responsibility to spread the climate change across the world/worried about climate change.*
F3 Trust and satisfaction	*People trust in other individuals/Government/ politicians.*
F4 Sensitive for social issues	*Political attitude (right/left)/ Social benefits/services lead to a more equal society/ How much individuals agree with this statement: For fair society, differences in standard of living should be small/ importance to be fair.*
F5 Discrimination	*To allow people of the different ethnic group to come and live in their country/ bad or good for your country's economy that people come to live in their country from other countries.*
F6 Worried about being dependent on others and fossil fuel	*How much individuals are worried being too dependent on energy imports/ being too dependent on using energy generated by fossil fuels such as oil, gas and coal.*

F7 Opinion on climate change	*To what extent individuals feel a personal responsibility to try to reduce climate change/ Individual's opinion about climate change cause.*
F8 Social sensitive	Social benefits only for people with lowest incomes/ *When should immigrants obtain rights to social benefits/services?*
F9 Individual feelings	Important to behave properly/ *tendency to be empathetic/ Important to help people and care for others well-being*
F10 Patriotism	*How much an individual is emotionally attached to his/her country/ how much an individual is emotionally attached to his/her country/ how much an individual is religious.*
F11 Worried about Climate Change (ways for reducing climate change)	*To what extent are individuals in favour or against the following policies in their country to reduce climate change with:* Subsidise on renewable energy/ *Law banning the sale of the least energy efficient household appliances.*
F12 Politic/social well-being	*Did you vote in the last country national election? / Important to be rich, have money and expensive things.*

Table 12. LPM for Biomass with Robust Standard errors

	LPM(1)	LPM(2)
Generation Z	0.313***	0.291***
	(6.04)	(2.91)
Millennials	0.296***	0.242**
	(3.76)	(2.10)
Sex	-0.149***	-0.0655
	(-3.41)	(-1.05)
Child	0.0369	0.0404
	(0.86)	(0.71)
Not good health	0.559***	0.621
	(2.65)	(1.45)
Pretty good health	0.476***	0.451***
	(8.01)	(5.02)
Good health	0.458***	0.419***
	(10.69)	(6.18)
Very good Health	0.472***	0.371***
	(9.94)	(5.12)
Worried about energy issues		0.0281
		(0.95)
Care about environment and climate change		-0.0319
		(-1.14)
Trust and Satisfaction		0.0183
		(0.63)
Sensitive for social issues		0.0417
		(1.37)
Discrimination		-0.0253
		(-0.90)
Worried about being dependent on others and fossil fuel		-0.0449*
		(-1.64)
Opinion on climate change		0.00156
		(0.05)
Social sensitive		0.00664
		(0.22)
Individual feelings		0.0397
		(1.47)
Patriotism		-0.0116
		(-0.41)
Worreid about climate change (ways for reducing climate change		-0.0309
		(-1.09)
Vote/Political social		0.0273
		(0.88)
_cons	-0.331***	-0.305***
	(-5.47)	(-2.69)
Observations	288	288

Table 13. LPM for Coal with Robust Standard errors

	LPM (1)	LPM (2)
Generation Z	0.171	0.210
	(1.54)	(1.51)
Millennials	0.325***	0.410***
	(2.72)	(2.75)
Sex	-0.0698*	0.00896
	(-1.66)	(0.15)
Child	-0.0394	-0.0704
	(-0.94)	(-1.28)
Not good health	-0.176	-0.0780
	(-1.09)	(-0.71)
Pretty good health	-0.282***	-0.271***
	(-5.04)	(-2.80)
Good health	-0.291***	-0.342***
	(-7.32)	(-4.37)
Very good health	-0.307***	-0.285***
	(-6.64)	(-3.26)
Worried about energy issues		-0.00843
		(-0.29)
Care about environment and climate change		-0.0616**
		(-2.32)
Trust and Satisfaction		0.0232
		(0.85)
Sensitive for social issues		0.0295
		(1.08)
Discrimination		0.0101
		(0.36)
Worried about being dependent on others and fossil fuel		-0.0125
		(-0.49)
Opinion on climate change		-0.0277
		(-1.01)
Social sensitive		0.0187
		(0.64)
Individual feelings		0.0371
		(1.30)
Patriotism		0.0258
		(0.95)
Worreid about climate change (ways for reducing climate change		0.000351
		(0.01)
Vote/Political social		0.0159
		(0.48)
_cons	0.849***	0.815***
	(7.35)	(5.30)
Observations	288	288

Table 14. LPM for Hydroelectric power with Robust Standard errors

	LPM (1)	LPM (2)
Generation Z	0.167	0.160
	(1.61)	(1.14)
Millennials	0.222*	0.241
	(1.86)	(1.57)
Sex	-0.113**	-0.0369
	(-2.56)	(-0.59)
Child	0.0491	0.0235
	(1.11)	(0.40)
Not good health	-0.630***	-0.633**
	(-3.51)	(-2.04)
Pretty good health	-0.269***	-0.289***
	(-4.56)	(-3.24)
Good health	-0.349***	-0.384***
	(-7.87)	(-5.59)
Very good health	-0.346***	-0.426***
	(-7.22)	(-5.77)
Worried about energy issues		-0.0253
		(-0.83)
Care about environment and climate change		-0.0197
		(-0.65)
Trust and Satisfaction		-0.0303
		(-1.07)
Sensitive for social issues		0.0131
		(0.41)
Discrimination		-0.0616**
		(-2.23)
Worried about being dependent on others and fossil fuel		-0.0477*
		(-1.70)
Opinion on climate change		-0.00778
		(-0.25)
Social sensitive		0.00574
		(0.20)
Individual feelings		-0.00642
		(-0.22)
Patriotism		-0.0223
		(-0.72)
Worreid about climate change (ways for reducing climate change		0.0327
		(1.11)
Vote/Political social		-0.0114
		(-0.36)
_cons	0.808***	0.845***
	(7.33)	(5.68)
Observations	288	288

Table 15. LPM for Natural gas with Robust Standard errors

	LPM(1)	LPM(2)
Generation Z	0.0657	0.0809
	(0.59)	(0.56)
Millennials	0.0752	0.0368
	(0.59)	(0.25)
Sex	-0.119***	-0.0976
	(-2.66)	(-1.54)
Child	-0.00781	-0.00459
	(-0.18)	(-0.08)
Not good health	-0.130	0.0331
	(-0.92)	(0.31)
Pretty good health	-0.344***	-0.278***
	(-5.92)	(-3.11)
Good health	-0.394***	-0.373***
	(-9.62)	(-5.11)
Very good health	-0.322***	-0.256***
	(-7.12)	(-3.30)
Worried about energy issues		0.0154
		(0.54)
Care about environment and climate change		0.00409
		(0.13)
Trust and Satisfaction		0.0525*
		(1.70)
Sensitive for social issues		-0.00278
		(-0.09)
Discrimination		-0.00696
		(-0.24)
Worried about being dependent on others and fossil fuel		-0.00355
		(-0.12)
Opinion on climate change		-0.0635**
		(-2.43)
Social sensitive		0.0440
		(1.47)
Individual feelings		0.0247
		(0.86)
Patriotism		0.0535*
		(1.83)
Worreid about climate change (ways for reducing climate change		0.0167
		(0.58)
Vote/Political social		0.0127
		(0.38)
_cons	0.938***	0.868***
	(8.09)	(5.65)
Observations	288	288

Table 16. LPM for Nuclear power with Robust Standard errors

	LPM(1)	LPM(2)
Generation Z	0.175***	0.188***
	(6.52)	(2.65)
Millennials	0.150***	0.0552
	(2.85)	(0.70)
Sex	-0.0980***	-0.0680
	(-2.75)	(-1.34)
Child	-0.0183	-0.0400
	(-0.53)	(-0.85)
Not good health	-0.300	-0.487
	(-0.79)	(-1.49)
Pretty good health	-0.230	-0.281
	(-0.65)	(-0.87)
Good health	-0.253	-0.303
	(-0.72)	(-0.95)
Very good health	-0.260	-0.232
	(-0.74)	(-0.72)
Worried about energy issues		0.0352
		(1.34)
Care about environment and climate change		-0.00254
		(-0.10)
Trust and Satisfaction		-0.0232
		(-0.89)
Sensitive for social issues		0.0361
		(1.35)
Discrimination		-0.0268
		(-1.21)
Worried about being dependent on others and fossil fuel		-0.00690
		(-0.27)
Opinion on climate change		0.0322
		(1.30)
Social sensitive		-0.0152
		(-0.59)
Individual feelings		0.00725
		(0.32)
Patriotism		0.00536
		(0.21)
Worreid about climate change (ways for reducing climate change		-0.0187
		(-0.78)
Vote/Political social		-0.0419
		(-1.62)
_cons	0.334	0.374
	(0.95)	(1.16)
Observations	288	288

Table 17. LPM for Solar power with Robust Standard errors

	LPM(1)	LPM(2)
Generation Z	0.274**	0.206
	(2.57)	(1.43)
Millennials	0.136	0.109
	(1.12)	(0.71)
Sex	-0.167***	-0.0713
	(-3.79)	(-1.15)
Child	0.0897**	0.0401
	(2.04)	(0.67)
Not good health	0.0935	0.491
	(0.25)	(1.45)
Pretty good health	0.201	0.270
	(0.61)	(0.88)
Good health	0.207	0.174
	(0.63)	(0.58)
Very good health	0.152	0.0943
	(0.46)	(0.31)
Worried about energy issues		0.0548*
		(1.90)
Care about environment and climate change		-0.00480
		(-0.16)
Trust and Satisfaction		0.00395
		(0.13)
Sensitive for social issues		-0.0138
		(-0.43)
Discrimination		-0.0104
		(-0.34)
Worried about being dependent on others and fossil fuel		-0.0279
		(-0.96)
Opinion on climate change		-0.0324
		(-1.15)
Social sensitive		0.00913
		(0.29)
Individual feelings		-0.00342
		(-0.12)
Patriotism		0.0445
		(1.52)
Worreid about climate change (ways for reducing climate change		-0.0109
		(-0.37)
Vote/Political social		0.0261
		(0.76)
_cons	0.181	0.250
	(0.53)	(0.76)
Observations	288	288

Table 18. LPM for Eolic power with Robust Standard errors

	LPM(1)	LPM(2)
Generation Z	0.251***	0.163
	(2.95)	(1.32)
Millennials	0.126	0.0335
	(1.26)	(0.26)
Sex	-0.159***	-0.127**
	(-3.55)	(-2.01)
Child	0.0499	0.0171
	(1.14)	(0.30)
Not good health	0.582***	1.120***
	(3.06)	(8.77)
Pretty good health	0.644***	0.608***
	(10.61)	(6.74)
Good health	0.569***	0.528***
	(12.74)	(7.63)
Very good health	0.494***	0.384***
	(10.00)	(5.17)
Worried about energy issues		0.0214
		(0.72)
Care about environment and climate change		-0.00410
		(-0.15)
Trust and Satisfaction		-0.00875
		(-0.30)
Sensitive for social issues		0.0289
		(0.93)
Discrimination		-0.0290
		(-0.97)
Worried about being dependent on others and fossil fuel		-0.0404
		(-1.51)
Opinion on climate change		-0.00370
		(-0.14)
Social sensitive		-0.0314
		(-1.00)
Individual feelings		0.0540*
		(1.93)
Patriotism		0.0311
		(1.14)
Worreid about climate change (ways for reducing climate change		-0.0436
		(-1.56)
Vote/Political social		-0.00786
		(-0.24)
_cons	-0.276***	-0.137
	(-2.99)	(-1.04)
Observations	288	288

Table 19. Intensity of bias for Generation Z and Millennials

		Generation Z			
		(0%-25%)	**(25%-50%)**	**(50%-75%)**	**(75%-100%)**
Misperception	*Biomass*	60.5%***	**24.7%*** **	12.8%***	1.9%*
	Coal	29.3%***	**34.4%*** **	29.7%***	6.5%***
	Eolic	55.3%***	**29.6%*** **	11.2%***	3.9%**
	Hydroelectric	35.6%***	**45.34%*** **	14.02%***	5.05%***
	Nuclear	76.8%***	**13.4%*** **	8%***	1.6%**
	Solar	39.6%***	**42.7%*** **	11.7%***	5.8%***
		Millennials			
		(0%-25%)	**(25%-50%)**	**(50%-75%)**	**(75%-100%)**
Misperception	*Biomass*	71.4%***	**19.2%*** **	8.3%***	1.14%*
	Coal	24.7%***	33.5%***	**33.6*** **	8.2%**
	Eolic	68.5%***	**22.5%*** **	2.4%**	2.12%**
	Hydroelectric	35.02%***	**45.51%*** **	14.3%***	5.2%**
	Nuclear	91.8***	**5.3%** **	2.4*	0.4%
	Solar	46.03%***	**40%*** **	9.5%***	4.5%**