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ALLIANZ RESEARCH

ALLIANZ CLIMATE LITERACY SURVEY: TIME TO LEAVE CLIMATE NEVERLAND

27 October 2021

- 04 This crazy thing called climate
- 08 Why climate literacy matters: Actions speak louder than words
- 11 Living in climate Neverland
- 12 Epilogue: Teaching climate



EXECUTIVE SUMMARY



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- **Though the UN's climate change conference is the center of attention this week, climate literacy seems to be worryingly low in Germany, France, Italy, the UK and the US: Just 14.2% of respondents in our survey prove to be truly climate literate.** In October, we decided to survey a representative sample of 1,000 people in each of the five countries about their knowledge of the climate, climate policies and climate actions. While the results in the four European countries are quite similar, the US stands out with the proportion of those with low climate literacy (i.e. answering three or fewer questions correctly) almost twice as high as in Europe (56.3%). Only 4.9% of American respondents can be considered highly climate literate (answering seven out of 10 questions correctly). Moreover, we find that "the older, the wiser" does seem to apply to climate literacy overall: The proportion of respondents with a high level of climate literacy is highest among Boomers at 16.3%; Gen-Z only achieves 11.5%.
- **Actions speak louder than words: Those with high climate literacy are more than three times as likely to be actively making an effort to reduce their carbon footprints.** The likelihood of doing nothing drops to almost zero if respondents have at least average climate literacy. In contrast, among respondents with only low climate literacy, the share is 13.4%. We also find that it is primarily respondents from older generations who are actively combating climate change by making efforts to reduce their carbon footprints. More Gen-Z respondents say they do not actively engage in actions to tackle climate change (8.2% vs. 5.5% for Boomers).
- **Overall, most respondents seem to still live in climate Neverland, massively underestimating the extent of the measures needed and, above all, the speed with which they must be implemented.** Two-thirds of respondents are aware that a temperature increase of two degrees or more would have catastrophic consequences for nature and people. However, only slightly more than half are aware that harmful greenhouse gas emissions must be reduced substantially if such an outcome is to be prevented. And only a meagre 12.2% are aware of the enormous time pressure that climate policy is under: this is the share of respondents that understand that we can carry on as we are for only another eight years before the world reaches its climatic limits.
- **What does this mean for policymakers?** There are three dimensions to spread the climate gospel: engagement for the learner, excellence in material and equity for all. Promoting climate literacy, is creating hope for a world where citizens understand the issues we are facing and are actively involved in reshaping the future of our societies and economies. If we strive to build back better, we should build back literate.

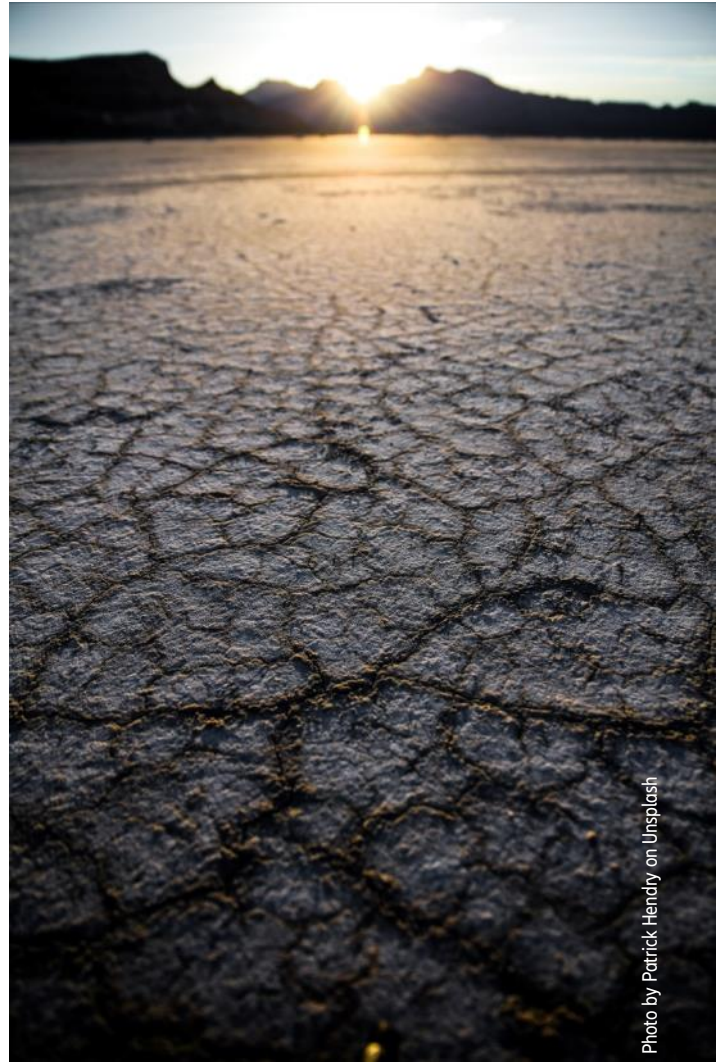


Photo by Patrick Hendry on Unsplash

14.2%

**Respondents in our survey who proved
to be truly climate literate.**

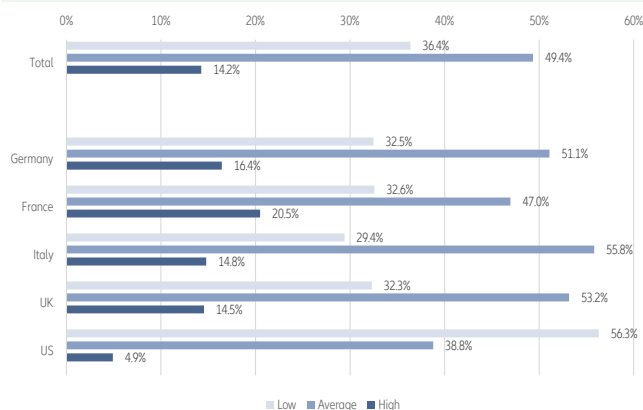
THIS CRAZY THING CALLED CLIMATE

Climate change is hardly a new crisis: The first world climate conference under the auspices of the UN took place as early as 1979. In 1992, the global Framework Convention on Climate Change was adopted in Rio de Janeiro. Since its entry into force, meetings of the signatory states, known as COPs (Conference of the Parties), have been held every year, with this year's conference taking place between 01-12 November in Glasgow. Given the long history and the media attention these meetings receive, knowledge about climate change – causes, effects and countermeasures – should therefore be widespread. But is it?

In the run up to COP26, we surveyed a representative sample of 1,000 people each in Germany, France, Italy, the UK and the US about their knowledge on the climate, climate policies and climate actions. The results are sobering¹: Only 14.2% of respondents proved to be truly climate literate, i.e. they were able to answer seven or more of ten questions correctly (see box for the methodology of measuring climate literacy). About half of the respondents had at best average climate knowledge (four to six correct answers), while a good third of the respondents had to be classified as climate illiterate (three or fewer correct answers, see Figure 1).

German and French respondents show the highest climate literacy, with 16.4% and 20.5%, respectively, categorized as highly climate literate. While the results in the four European countries are quite similar, the US is the major exception: only 4.9% of the American respondents can be considered highly climate literate. In fact, the proportion of those with only very low climate literacy is almost twice as high as in Europe, reaching 56.3%. With the climate issue playing a much smaller role in public debate, this underscores the Biden administration's difficulties in pushing through an ambitious climate program.

Figure 1: The level of climate literacy, in % of total respondents



Source: Allianz Climate Literacy Survey 2021.

¹ These are initial results. To deepen our understanding of climate literacy we plan to have follow-up studies, covering more countries and respondents.

Measuring climate literacy

To determine their climate literacy, respondents had to answer a total of ten questions covering both scientific aspects (What is the impact of the rise in temperature? How can the rise be effectively combated?) and political ones (What is COP26? What is the IPCC's task?). In addition, there were simple knowledge questions about the biggest "climate sinners". All ten questions and answers can be found in the appendix.

On average, the participants answered 4.2 questions correctly. With four or more correct answers, we therefore speak of "average climate literacy"; participants with more than seven correct answers are considered "highly climate literate"; three or fewer correct answers is accordingly considered "low climate literacy".

The distribution of the answers largely follows a (skewed) normal distribution. While 18% of the respondents gave four correct answers and 17.3% gave five correct answers, the percentage decreases significantly towards the edges. However, the percentage of participants with not a single correct answer (5.1%) was significantly higher than that of participants who were able to answer all ten questions correctly (0.2%). In Italy and the US, no participant managed to answer all questions correctly.

In view of this disappointing overall result, it is worth taking a closer look at the individual questions and answers.

About half of the respondents are informed about the political framework for combating climate change: They can correctly define COP26 and the IPCC (see Figure 2). However, the differences between countries are very pronounced. While 72.9% of French and 65.7% of British respondents choose the correct answer when asked about COP26, this share shrinks to a (very) modest 22.9% in the US. Somewhat surprisingly, this proportion is only marginally higher among German respondents (31.1%). Regarding the tasks of the IPCC, the dispersion of results is

smaller, but again it is noticeable that German respondents score poorly: Only 38.1% can assign the correct task to the IPCC compared to 50% or more in the other four countries. Could it be that this reflects a tendency toward German parochial politics, with German respondents thinking primarily of their own energy transition when it comes to combating climate change and paying less attention to international efforts?

More encouraging are the responses regarding the effects of climate change. Two-thirds of respondents are aware that a temperature increase of two degrees or more would have catastrophic consequences for nature and

people (see Figure 3). In view of the increasing weather disasters that have long since affected not only poorer countries in the Global South, but also rich countries in the temperate climate zone of the North – such as this year's flooding in Europe or the bush fires in California – this result is hardly surprising. As a result, even in the US, a majority of respondents are convinced of the fatal consequences of climate change. However, 31.2% of American respondents also believe that humans and nature can adapt to rising temperatures – even beyond three degrees – without major problems. This proportion is almost twice as high as the corresponding average for the four European countries.

Figure 2: What are the COP26 and the IPCC? Right answers in %

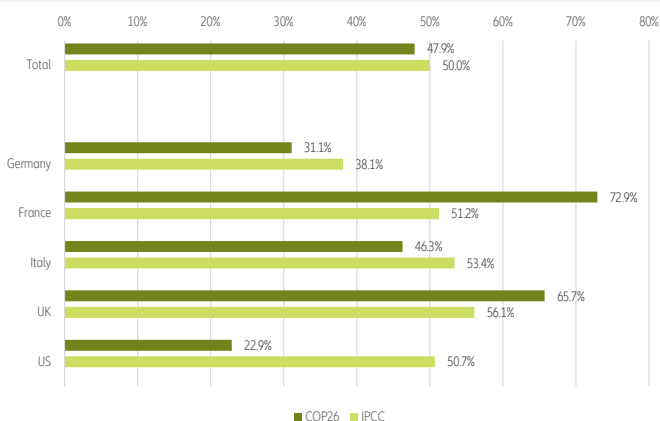
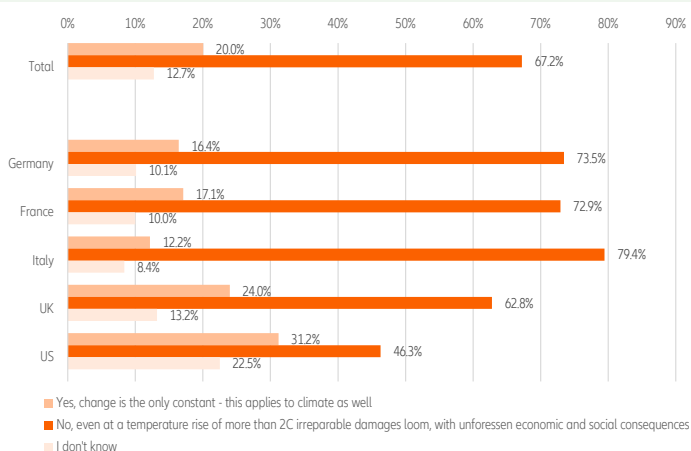


Figure 3: Rising temperatures are not a drama. Even if the rise exceeds 3° C, humans and nature can adapt. Do you agree with this statement? Answers in %



Source: Allianz Climate Literacy Survey 2021.

Source: Allianz Climate Literacy Survey 2021.

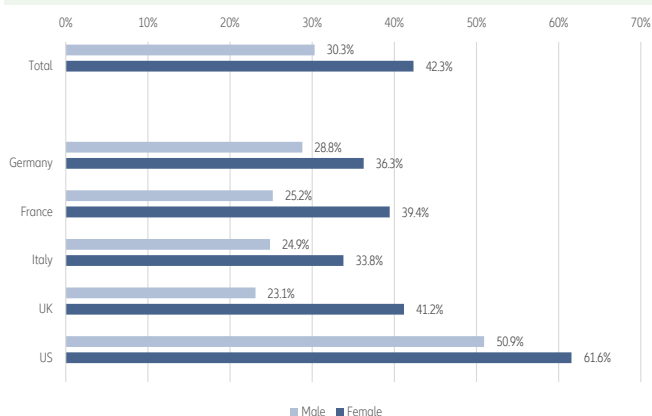
Going deeper into the details, we find some interesting differences, first by gender: We find a large gender gap in all the countries surveyed, with the proportion of respondents with low climate literacy 12pp higher among women overall, at 42.3%. This gap is smallest in Germany (7.5pp) and highest in the UK (18.1pp, see Figure 4). Mirroring this, the proportion of those with high climate knowledge is significantly lower among women (10.6% vs 18.0%).

What are the causes of this surprising gender gap? It is certainly not due to different levels of education, interests or risk preferences. These aspects should rather speak for a higher climate literacy among women. The ex-

planation is more likely to be found in the fact that female respondents much more often choose the answer option "I don't know" – thus automatically depriving themselves of the chance of randomly hitting the right answer. Male respondents, on the other hand, seem to have greater confidence in their own knowledge, which also increases the likelihood of correct answers. Thus, the discernible gender gap does not necessarily reflect higher knowledge among male respondents but could be due primarily to differences in lack of self-confident behavior when completing questionnaires, as also proposed by other studies².

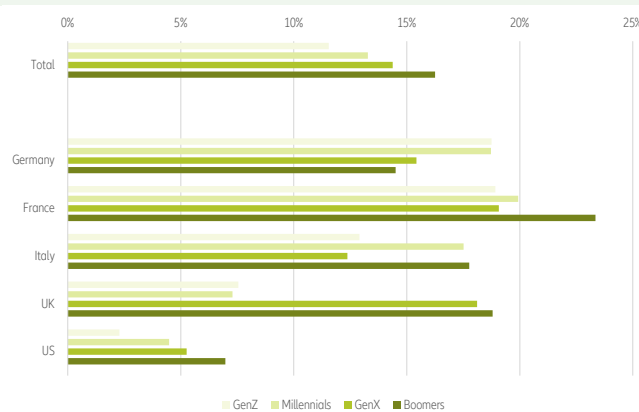
Does age make a difference? Against the backdrop of the recent climate protests, which have been largely supported by younger people, we also consider whether younger people are not only climate-minded³, but also better informed. However, contrary to popular belief, climate knowledge seems to increase with age: The proportion of respondents with a high level of climate literacy is highest among Boomers at 16.3%; Gen-Z only achieves 11.5% (see Figure 5). The result for low climate literacy is mirrored. Thus, "the older, the wiser" also seems to apply to the climate.

Figure 4: By gender, % of respondents with low level of climate literacy



Source: Allianz Climate Literacy Survey 2021.

Figure 5: By generation, % of respondents with high level of climate literacy*



*Gen-Z: age cohort 1997 to 2010; Millennials: age cohort 1981 to 1996; Gen-X: age cohort 1965 to 1980; Boomers: age cohort 1946 to 1964.

Source: Allianz Climate Literacy Survey 2021.

This age pattern is particularly pronounced in the UK and the US. But even in France and Italy, the Boomers, the oldest generation in the sample, have the highest proportion of participants with high climate competence. Only Germany seems to conform to the cliché that it is primarily the younger generation that is concerned about the climate and is informed accordingly: Here, the younger generations, GenZ and Millennials, are clearly ahead in questions of climate competence.

The climate crisis is often stylized as a generational conflict, with the older cohorts bearing responsibility for high greenhouse gas emissions of the past, and primarily the younger ones who have to shoulder the consequences in the form of higher climate-related damages as well as costs for the required transition. In our survey, this supposed antagonism of the generations does not come into play. On the contrary, it is precisely the older generations that acknowledge their responsibility and are correspondingly prepared to share in the costs. In contrast, the

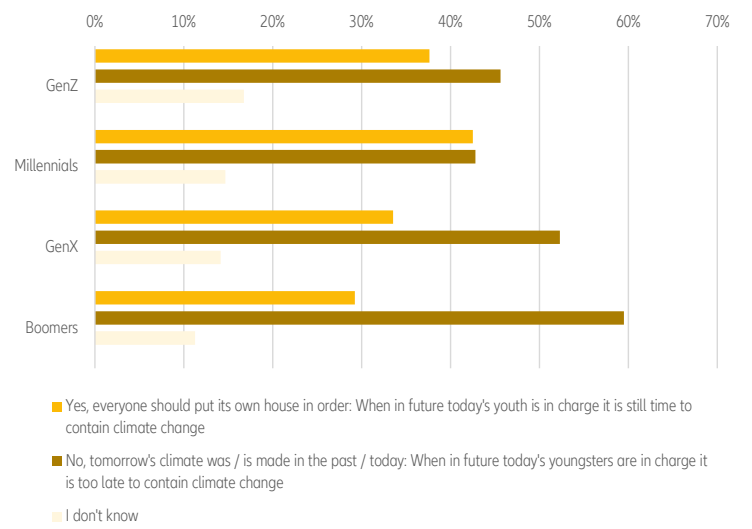
younger generations are more willing to release the older generations from their responsibility (see Figure 6). It is difficult to say whether this reflects youthful exuberance – according to the motto, once we are in power, we will rock the boat – or rather the resignation that many of the older generations will not live to see the potentially fatal consequences of climate change. In any case, the mutual willingness to show consideration and forbearance is not an indication of a strong generational conflict.

² Alessie, Rob, [Tabea Bucher-Koenen](#), Annamaria Lusardi und Maarten van Rooij (2018), *Fearless Girl! Women, Confidence, and Financial Literacy*, Discussion Paper 2018

³ See for example C. Hickman et al. (2021), *Young people's voices on climate anxiety, government betrayal and moral injury: a global phenomenon*, University of Bath. This recent and international survey underlines how deeply young people are affected by the climate crisis.



Figure 6: Younger generations are particularly concerned with climate change. Should older generations be exempt from the responsibility of containing climate change? Answers in % by generation*



*Gen-Z: age cohort 1997 to 2010; Millennials: age cohort 1981 to 1996; Gen-X: age cohort 1965 to 1980; Boomers: age cohort 1946 to 1964.

Source: Allianz Climate Literacy Survey 2021.

WHY CLIMATE LITERACY MATTERS: ACTIONS SPEAK LOUDER THAN WORDS

Our survey shows that the likelihood of actively making an effort to reduce carbon footprints increases with climate literacy. And quite dramatically. We clustered the sample and asked them whether they were actively trying to contribute to a greener society. If they were not actively doing any of the seven measures that we suggested, they were self-reported “Not actively green”. If they reported actively participating in one to four measures, we deemed them “moderately active”. Lastly, if they reported to actively doing from five to seven measures, we classified them as “highly active”. In fact, the likelihood of doing nothing drops to almost zero if respondents have at

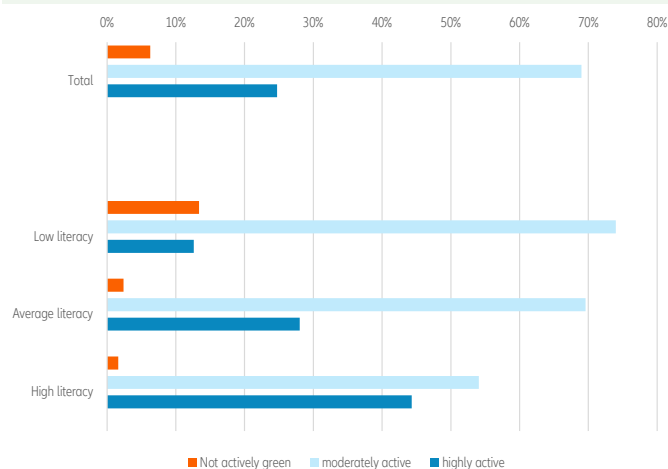
least average climate literacy. In contrast, among respondents with only low climate literacy, 13.4% are not actively green⁴. On the other hand, those with high climate literacy are more than three times as likely to be found in the “highly active” group: the share is 44.3%, against 12.6% for those respondents with low climate literacy; among those participants with average climate literacy the share is 28.0% (see Figure 7). The willingness to take personal action to protect the climate thus increases almost linearly with knowledge about climate change.

Our survey also dispels another prejudice about generational attitudes to climate change: It is primarily respon-

dents from older generations – rather than younger ones – who are actively combating climate change themselves by making efforts to reduce their carbon footprints. Surprisingly, and contrary to what we expected, Gen-Z was not the most climate-active portion of the population. In fact, it is the generation of our sample that showed the highest climate-inactive proportion (8.2%) of our sample. At the same time, the share of respondents of the Boomer generation classified as “highly active” is almost twice as high as the corresponding share of Gen-Z: 31.8% vs 16.4% (see Figure 8).

⁴The general low level of climate inactive respondents echoes the survey of the EIB where roughly three quarters of respondents believe that their actions make a difference in tackling climate change. See EIB (2021), The EIB climate survey, Luxembourg.

Figure 7: Are there any actions* you are personally taking to combat climate change? Select all that apply. Answers in % by level of climate literacy



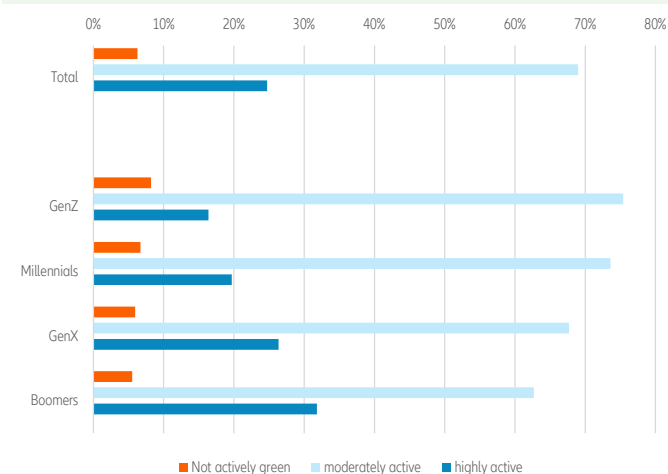
* Seven actions:

- 1 I recycle & repurpose
 - 2 I drive less or limit air travel
 - 3 I limit my consumption or buy "green" alternatives (clothes, furniture, repurposed or vintage objects)
 - 4 I limit my energy consumption (heating and lighting around the household)
 - 5 I am "greening" my food consumption (cutting the beef and dairy, eat locally-produced foods, etc.)
 - 6 I take care of my water use
 - 7 I advocate within my network/community for action against climate change
- I don't actively try to limit my CO2 emissions

Source: Allianz Climate Literacy Survey 2021.

In some ways, these results are reassuring. The supposed generational conflict over climate does not exist in this form. Climate protection and policy are not a prerogative of the young, but a broad social concern that touches all generations. Nevertheless, it is somewhat irritating to note that the younger generation lags behind the older generation in both knowledge and action on climate issues. Apparently not all young people are climate-minded by any means. Or to put it more positively: The age composition of the climate movement is much more diverse than is often assumed.

Figure 8: Are there any actions* you are personally taking to combat climate change? Select all that apply. Answers in % by generation**



* Seven actions:

- 1 I recycle & repurpose
 - 2 I drive less or limit air travel
 - 3 I limit my consumption or buy "green" alternatives (clothes, furniture, repurposed or vintage objects)
 - 4 I limit my energy consumption (heating and lighting around the household)
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 - 7 I advocate within my network/community for action against climate change
- I don't actively try to limit my CO2 emissions

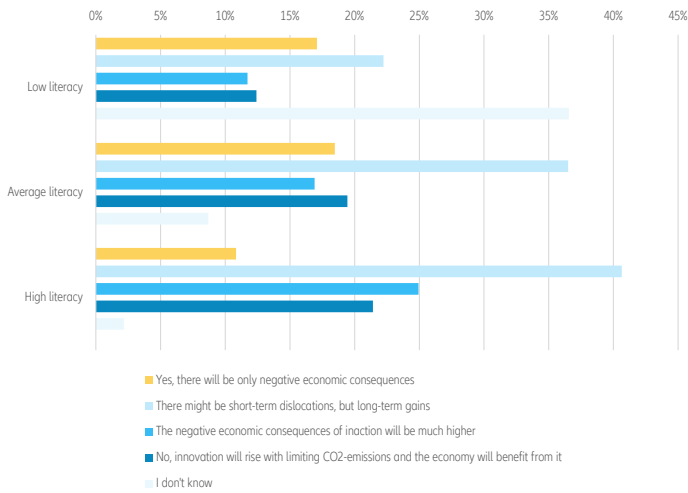
**Gen-Z: age cohort 1997 to 2010; Millennials: age cohort 1981 to 1996; Gen-X: age cohort 1965 to 1980; Boomers: age cohort 1946 to 1964.

Source: Allianz Climate Literacy Survey 2021.

We also find that high climate literacy seems to go hand in hand with the expectation that the necessary transformation will also pay off economically. This becomes particularly clear in a direct comparison of the two groups with low and high climate literacy. Among the latter, about twice as many respondents each say that decarbonization will bring long-term benefits, that the costs of doing nothing would be far higher and that efforts to avoid emissions will include an innovation dividend. Conversely, the proportion

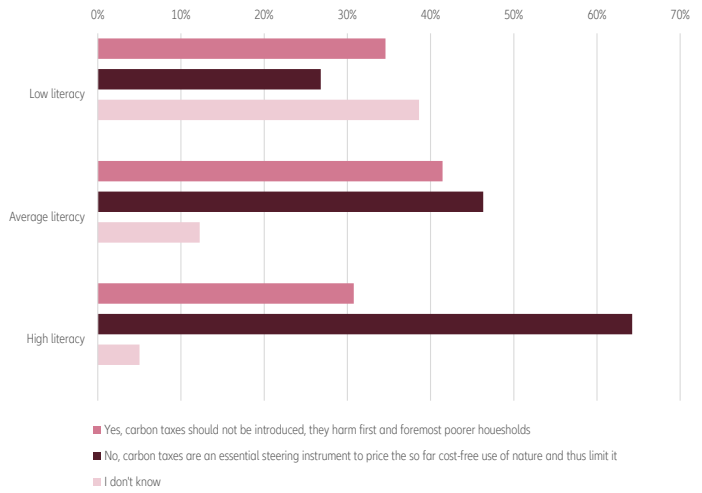
among respondents with average and low climate literacy who see only downsides for the economy is significantly higher (see Figure 9). In part, however, these differences in the assessment of economic consequences are also due to the high proportion of undecideds ("I don't know") among respondents with low climate literacy: Not surprisingly, lower knowledge leads to uncertainty in judgment.

Figure 9: Do you think that limiting CO2-emissions will cause economic damage? Answers in % by level of climate literacy



Source: Allianz Climate Literacy Survey 2021.

Figure 10: Carbon taxes are just another instrument to generate additional revenues (which the state desperately needs after Covid-19). Do you agree with this statement? Answers in % by level of climate literacy



Source: Allianz Climate Literacy Survey 2021.

Attitudes toward a carbon tax are also influenced by the level of climate literacy. Among respondents with high climate literacy, the percentage of those who see a carbon tax as an essential means of climate protection reaches 64.2%, compared to only 26.8% among

those with low climate literacy; respondents with average climate literacy are again in the middle (46.3%, see Figure 10). However, even among respondents with high climate literacy, opposition to a carbon tax is surprisingly high at 30.8%. This once again underscores

our earlier findings that this tax is unpopular⁵. Given the current record-high energy prices⁶, this is unlikely to change in the foreseeable future. Instead, the unpopularity a carbon tax is likely to increase further.

⁵ See our report [Allianz Pulse 2021: Old beliefs die hard](#)

⁶ See our reports [Energy prices in Europe: A costly winter is coming](#) and [Energy prices & inflation: Backwardation keeps inflation expectations anchored](#)

LIVING IN CLIMATE NEVERLAND

Although there is widespread understanding of the potentially existential threat posed by climate change, this does not necessarily apply to the actions that must follow. Only slightly more than half of those surveyed are aware that harmful greenhouse gas emissions must be reduced substantially if a catastrophic rise in temperature is to be prevented. Just under a third, on the other hand, believe that preserving the status quo would be sufficient (see Figure 11). In the US, this view is shared by the majority of respondents (39.8%). Only 31.0% of respondents are aware of the need to reverse the trend; in Ger-

many, this proportion is twice as high at 62.7%. In view of these discrepancies, it is clear how difficult it will be to implement a truly global climate policy.

This is also underlined by the answers to the question about the time remaining to act. Only 12.2% of respondents are aware of the enormous time pressure that climate policy is under: it is literally one minute to twelve. The fact that in this respect the answers are more or less in the same ballpark in all five countries is no consolation. Even in France – the country with the highest proportion of respondents with high climate literacy – more participants

(12.8%) are convinced that we can carry on as we are for another 30 years before the world reaches its climatic limits. In fact, however, the right answer is just eight years (which only 10.7% of French respondents ticked, see Figure 12).

Given the dimension of the climate crisis and the length of time that politicians have been trying to combat climate change, this result is shameful – and frightening. Most respondents still massively underestimate the extent of the measures and, above all, the speed with which they must be implemented.

Figure 11: If the world manages to stabilize CO2 emissions at pre-Covid-19 levels, damaging consequences of climate change can be avoided. Answers in %

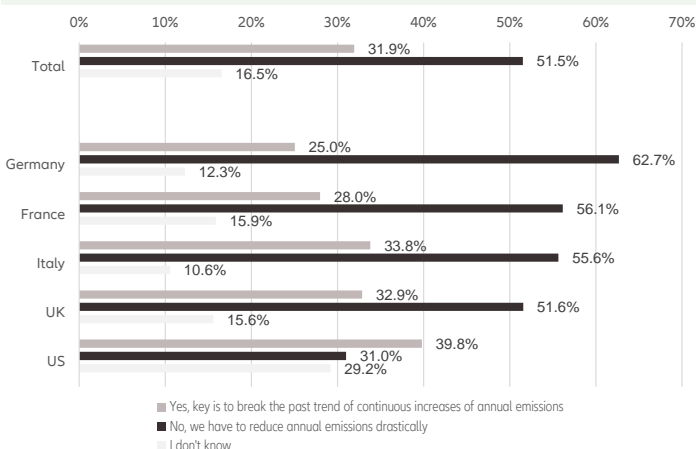
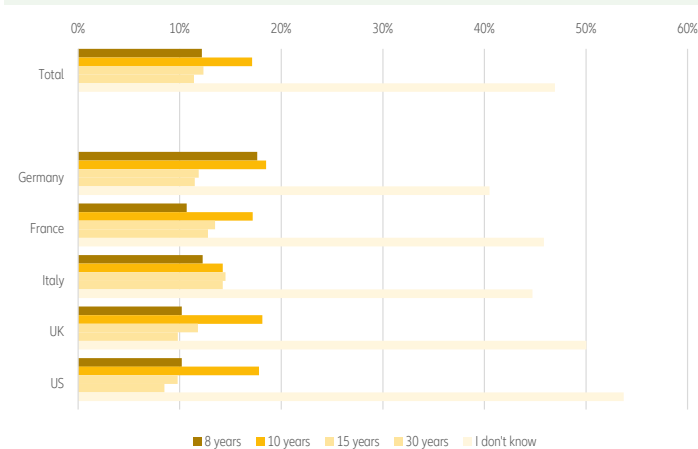


Figure 12: At pre-Covid-19 rates, after how many years we will have burnt our CO2 budget to limit the temperature rise to 1.5°C? Answers in %



Source: Allianz Climate Literacy Survey 2021.

Source: Allianz Climate Literacy Survey 2021.

EPILOGUE: TEACHING CLIMATE

All in all, our results prove that climate literacy is by no means just an abstract concept but has tangible consequences. The probability of acting against climate change increases significantly with high climate literacy. At the same time, expectations of the economic consequences are significantly more positive, including the need for a carbon tax. These are crucial parameters for a successful climate policy. After all, it is a misconception to assume that decarbonization is primarily a technical problem, a question of rapidly expanding renewable energy sources. At least as important are the corresponding behavioral changes, without which effective climate protection is inconceivable: climate policy begins with each individual. And the psychological component cannot be underestimated. Only if a sufficiently large majority has a positive connotation of the green transformation will they also be willing to tackle the necessary changes actively and personally.

The climate crisis is an issue all countries can agree on, climate change stops neither for the developed, nor the developing nations. And the Covid-19 pandemic did not slow its advance: much like economic activity, carbon emissions are rapidly recovering from the lockdowns and we are no closer

than we were before to the reduction targets. Rising global temperatures and extreme weather are creating devastation around the world. But too many seem to lack the tools to understand the degree of climate Armageddon we will face in our lifetime if we do not take decisive action.

In economic development, literacy plays an important role in transforming societies and creating socially engaged citizens. It is not simply about being able to read and write, but to be able to keep up with current events, communicate effectively and understand the issues that are shaping our world and threatening our future. Much like in education, literacy skills are used to meet future demands in climate action. Climate literacy skills are enabling factors that promote climate engagement.

In public choice theory, there is a concept called a median voter, which follows the premise that voters try to direct resources to themselves. In turn, politicians in a representative democracy maximize votes by aligning positions with the preferences of the median voter. This underlines the importance of having climate literate voters. As voters play, for example, an important role in decreasing inequality and in setting education policies⁷, a similar factor

could come into play for climate preferences and policymaking. It is therefore crucial that voters understand what is at stake in terms of climate if they have the ability to influence resource allocation by electing representatives whose priorities align with their preferences.

The three dimensions to spread the climate gospel should be: engagement for the learner, excellence in the material and equity for all. Promoting climate literacy is creating hope for a world where citizens understand the issues we are facing and are actively involved in reshaping the future of our societies and economies. Ultimately, what we would strive for with climate literacy is to create a behavioral change: While nudges can also be used, they are not sustainable to create long-term behavioral change. Additionally, when the nudged become aware of the nudge, they feel betrayed and this might produce an adverse effect. So if we strive to build back better, we should also build back literate.

⁷ Sean Corcoran & William N. Evans, 2010. "Income Inequality, the Median Voter, and the Support for Public Education," NBER Working Papers 16097, National Bureau of Economic Research, Inc.

APPENDICES

1. Survey Data

Overall responsibility for methods:

Allianz Research, Allianz SE

Planning and drawing the sample:

Qualtrics

Target groups surveyed:

- French resident population, age 18 and over in France
- German resident population, age 18 and over in the Federal Republic of Germany
- Italian resident population, age 18 and over in Italy
- UK resident population, age 18 and over in UK
- US resident population, age 18 and over in US

Number of respondents:

- 5,179 persons (1,001 from France, 1,010 from Germany, 1,109 from Italy, 1,059 from the UK, 1,000 from the US)

Sampling method:

- Representative quota sampling
- Qualtrics was given quotas for how many people to survey and which criteria to use in selecting respondents. The quotas were distributed in accordance with official statistics among sex, age groups and education.

Representativeness:

A comparison with official statistics shows that the survey data on the whole corresponds to the total population age 18 and over in the three countries.

Type of survey:

Web-based survey

Date of survey execution:

30.09.2021– 10.10.2021

2. Statistics

Sex (in % of respondents)

	Total	France	Germany	Italy	UK	US
Total Count (All)	5,179	1,001	1,010	1,109	1,059	1,000
Male	49.4%	48.0%	52.3%	49.0%	49.5%	48.3%
Female	50.2%	51.9%	47.2%	50.7%	50.2%	51.0%
Diverse	0.4%	0.1%	0.5%	0.4%	0.3%	0.7%

Age (in % of respondents)

	France	Germany	Italy	UK	US
Generation (ages)	1,001	1,010	1,109	1,059	1,000
Silent (76 - 93)	1%	2%	1%	3%	3%
Boomers (75 - 57)	26%	26%	23%	24%	26%
GenX (56 - 41)	35%	35%	44%	36%	27%
Millennials (40 - 25)	28%	28%	23%	27%	31%
GenZ (24 - 11)	11%	10%	8%	10%	13%

Education (in % of respondents)

	France	Germany	Italy	UK	US
Total Count (All)	1,001	1,010	1,109	1,059	1,000
Primary (less than High school)	4%	13%	3%	2%	6%
Secondary (High school)	46%	53%	65%	48%	38%
Tertiary (University or comparable)	50%	34%	32%	50%	57%

3. Climate literacy questions

What is the COP26?

- an UN initiative fighting Covid-19
- **this year's UN Climate Change Conference**
- an EU initiative against organized crime
- I don't know

What does Net-Zero mean?

- monetary strategy of reducing interest rate
- no greenhouse gas emission by a specific date, normally 2050
- **stabilization of greenhouse gas concentrations in the atmosphere by a specific date, normally 2050**
- I don't know

The Intergovernmental Panel on Climate Change (IPCC) plays an important role in global climate policy. Which one?

- **providing objective scientific information relevant to understanding climate change**
- setting the global carbon prize
- arbitrating climate disputes between states
- I don't know

Rising temperatures are not a drama. Even if the rise exceeds 3°C, humans and nature can adapt. Do you agree with this statement?

- yes, change is the only constant - this applies to climate as well
- **no, even at a temperature rise of more than 2C irreparable damages loom, with unforeseen economic and social consequences**
- I don't know

Climate change cannot be stopped. Average temperatures will continue to increase in the near future. The only thing we can do is to limit the increase to 1.5°C, if possible.

- **that's true, past CO2-emissions remain in the atmosphere and heat the climate**
- that's not true, if we reduce CO2-emissions now, there will be no further rise in temperatures
- I don't know

If the world manages to stabilize CO2 emissions at pre-Covid-19 levels, damaging consequences of climate change can be avoided.

- yes, key is to break the past trend of continuous increases of annual emissions
- **no, we have to reduce annual emissions drastically**
- I don't know

By how much should renewable energies like wind and solar be scaled up in the coming ten years in order to limit the temperature rise to 1.5°C?

- **factor 4, annual additions of wind and solar energy have to ramped up massively**
- factor 2, annual additions of wind and solar energy need to double
- factor 0, it's sufficient to keep the current pace of annual additions
- I don't know

At pre-Covid-19 rates, after how many years we will have burnt our CO2-budget to limit the temperature rise to 1.5°C?

- **8 years**
- 10 years
- 15 years
- 30 years
- I don't know

Which country/region causes the highest absolute CO2 emissions per year?

- **China**
- USA
- EU
- India
- I don't know

Which of the four countries causes the highest per-capita CO2 emissions per year?

- China
- **USA**
- EU
- India
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