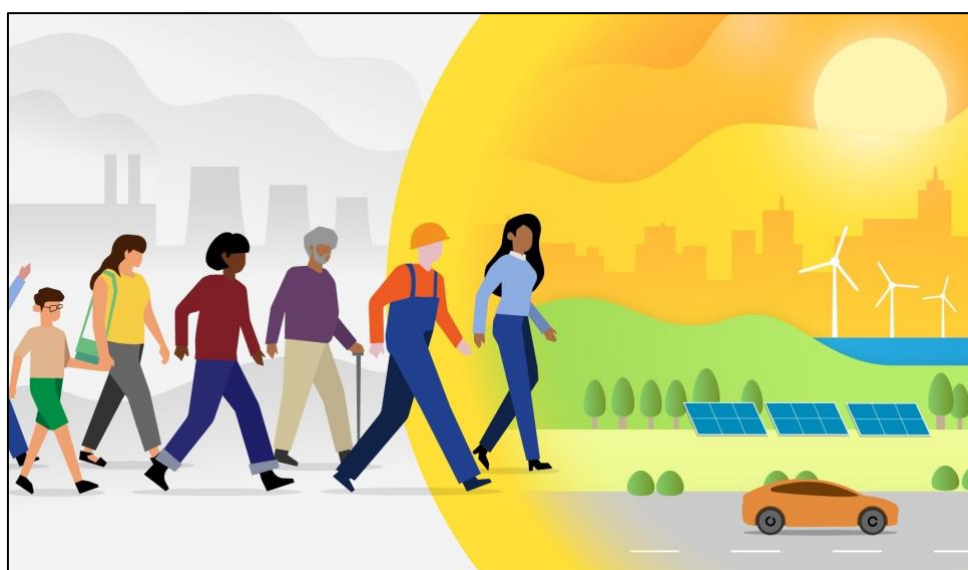# Public Perceptions and Attitudes Relating to Climate Change and the Just Transition in South Africa:

Results from a 2023 nationally representative survey

Report prepared for the
Presidential Climate Commission (PCC)

by

Human Sciences Research Council (HSRC)
Developmental, Capable & Ethical State (DCES) research division

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January 2025

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Acknowledgments

The team would like to express their appreciation to the following people who contributed to the successful completion of this study on tracking social norms and values among South Africans as a basis for developing a deeper understanding of the nature and dynamics of attitudes towards climate change and the just transition.

- The 3,112 South Africans who participated in the survey and shared their attitudes and behavioural preferences.

- The team responsible for managing the electronic data collection platform, most notably Mr Craig Schwabe, Mr Katiso Rachabane, and Mr Bob Currin.

- The Human Sciences Research Council (HSRC) project administrators who managed the contract and logistics, including Ms Koshen Govender, Ms Busisiwe Mamba, and Ms Deshanie Reddy.

- The Human Sciences Research Council (HSRC) team for conceptualising the study, collecting, processing and analysing the quantitative data, drafting the report, and managing the project. These included Dr Benjamin Roberts, Dr Jarè Struwig, Dr Thobeka Zondi, Dr Steven Gordon, Dr Shanaaz Dunn, Dr Emmanuel Fundisi, and Dr Simangele Dlamini, with executive oversight provided by Prof. Narnia Bohler-Muller.

- The eleven provincial supervisors and more than 100 fieldworkers who undertook the data collection.

- Dr Shanaaz Dunn for managing and cleaning the data.

- Dr Khangelani Zuma for weighting the data.

- The report writing team consisting of Dr Ben Roberts, Dr Jarè Struwig and Dr Thobeka Zondi from the HSRC.

- Ms Katie Ross and Ms Katie Connolly of World Resources Institute (WRI, Washington, D.C) and Ms Melissa Fourie, Mr Blessing Manale, Dr Crispian Olver, Mr Dipak Patel, and Mr Devan Pillay from the Presidential Climate Commission (PCC) for their valuable inputs and contributions to the conceptualisation of the survey content.

- Ms Yuri Ramkissoon and Mr Jurgen Olivier of the PCC for their review and inputs.

- The African Climate Foundation (ACF) for providing the financial support for the survey research on behalf of the PCC.

Acronyms

Agri SA	AgriCulture South Africa
CH_4	Methane
CO_2	Carbon Dioxide
ESS	European Social Survey
ERIC	European Research Infrastructure Consortium
GHGs	Greenhouse gases
HSRC	Human Sciences Research Council
IPCC	Intergovernmental Panel on Climate Change
ISSP	International Social Survey Programme
N_2O	Nitrous oxide
PCC	Presidential Climate Commission
REC	Research Ethics Committee
SAL	Small Area Layer
SASAS	South African Social Attitudes Survey
SPSS	Statistical Package for Social Sciences (data analysis software)
SSU	Secondary Sampling Unit
STATA	Statistics and Data (data analysis software)

Glossary of Terms

Attitudes: Individual opinions, beliefs, and emotional responses towards climate change, influencing support for policies and personal actions.

Awareness: The extent to which individuals perceive and understand climate change and related issues, including knowledge of its causes, impacts, and potential solutions.

Behaviour: Actions taken by individuals in response to their attitudes and awareness of climate change, including mitigation efforts and advocacy.

Bivariate analysis: The simultaneous analysis of two variables to explore the relationship between them. This type of analysis can help determine whether there is an association, correlation, or causal relationship between the two variables. This approach differs from multivariate analysis, which examines the relationships among three or more variables simultaneously.

Climate change scepticism: Doubt or denial of the scientific consensus on human-induced climate change and its impacts, often based on alternative interpretations of data or perceived uncertainties in climate science.

Climate shocks: Refers to extreme weather events or phenomena associated with climate change that have a significant impact on communities, such as droughts, floods, or heatwaves.

Correlation: Correlation or the correlation coefficient is a statistical measure of the strength of a linear relationship between two variables. Possible values of the correlation coefficient range from -1 to +1, with -1 indicating a perfectly linear negative correlation and +1 indicating a perfectly linear positive correlation. In the report, the absolute values of 0.0 to 0.2 are interpreted as a negligible association, 0.2 to 0.4 a weak association, 0.4 to 0.6 a moderate association, 0.6 to 0.8 a strong association, and above 0.8 a very strong association.

Environmental ethics: Moral principles guiding individual and collective responsibilities towards the environment, including stewardship and sustainability.

Environmental literacy: Knowledge and understanding of environmental issues, including climate change, promoting informed decision-making and sustainable practices.

Environmental sustainability: Practices and policies aimed at meeting current needs without compromising the ability of future generations to meet their own needs, encompassing economic, social, and environmental dimensions.

Extreme weather events: Severe and unusual weather occurrences, such as droughts, floods, and storms, attributed in part to climate change impacts.

Factor analysis: A statistical method used to identify underlying relationships between variables. In this context, it was used to categorize respondents into groups based on shared concerns and benefits related to the Just Transition.

Factor loadings: Coefficients that represent the relationship between observed variables and latent factors in factor analysis. They indicate how much a factor contributes to an observed variable. High factor loadings suggest a strong association between the variable and the factor, meaning the factor explains a large portion of the variable's variance. Factor loadings can be positive or negative, showing the direction of the relationship.

Greenhouse gas emissions: Gases that trap heat in the Earth's atmosphere, contributing to global warming and climate change, primarily carbon dioxide, methane, and nitrous oxide.

Intergovernmental Panel on Climate Change (IPCC): International body assessing climate science, impacts, and response strategies, providing authoritative guidance for policymakers.

Just Transition: A framework that aims to ensure a fair shift from a fossil fuel-based economy to a cleaner low-carbon economy, safeguarding workers and communities impacted by climate policies.

Logistic regression: A statistical technique used to examine the association between a dependent variable (e.g., approval of Just Transition) and one or more independent variables (e.g., socio-demographic factors).

Metropolitan areas: Large, densely populated urban regions that typically comprise a central city and its surrounding suburbs and exurbs. South Africa has eight metropolitan areas namely the City of Johannesburg, City of Tshwane (Pretoria), City of Ekurhuleni (East Rand), eThekwini (Durban), Nelson Mandela Bay (Port Elizabeth), Buffalo City (East London), Mangaung (Bloemfontein), and City of Cape Town.

Mitigation: Actions and policies aimed at reducing greenhouse gas emissions and minimizing the impact of climate change.

Multivariate analysis: A set of statistical techniques used to analyse data that involves multiple variables simultaneously. The goal is to understand the relationships between different variables and how they interact with each other. Multivariate analysis includes various methods such as multiple regression, factor analysis, cluster analysis, and multivariate analysis of variance (MANOVA). These techniques are essential in fields such as social sciences where complex data sets with multiple interrelated variables are common. Multivariate analysis thus help in identifying patterns, making predictions, and understanding the underlying structure of the data.

Ordered logistic regression: A statistical technique used for modelling ordinal response variables. Ordinal variables are categorical variables with a clear ordering of values but no fixed distance between categories. In ordered logistic regression, the probability of the response variable falling into a particular category or below is modelled as a function of predictor variables. This method assumes proportional odds, meaning the relationship between each pair of outcome groups is the same. It is commonly used in fields such as social sciences where levels of agreements are tested.

Public awareness campaigns: Initiatives aimed at increasing public knowledge and understanding of climate change, promoting informed decision-making and engagement in mitigation efforts.

Pro-environmental norms: Social standards and expectations that encourage behaviours aimed at protecting and preserving the environment. Pro-environmental norms influence individual and group actions by promoting environmentally friendly practices such as recycling, reducing energy consumption, and supporting sustainable products and policies. These norms are shaped by cultural values, education, public policies, and influential leaders or groups.

Renewable energy: Energy sources derived from natural processes that are constantly replenished, such as sunlight, wind, and geothermal heat, reducing reliance on fossil fuels.

Social norms: Collective beliefs and expectations regarding appropriate attitudes and behaviours towards climate change within society.

Socio-demographic variables: Characteristics of individuals or groups used to analyse how different factors like age, gender, education, income, and geographic location influence attitudes, knowledge, and behaviours related to climate change and the Just Transition.

Socio-economic factors: Economic and social conditions influencing perceptions, attitudes, and behaviours towards climate change, including income level, education, and employment status.

Statistical significance: Likelihood that an observed effect or relationship between variables is not due to random chance. It indicates whether the results are likely to be real and reproducible, based on a predetermined threshold (expressed in this report by a p-value). In the report, we report significance at the 95% (p<0.05 *), 99% (p<0.01 **) and 99.9% (p<0.001 ***) levels.

Statistical weighting: Adjustments made to survey data to ensure it accurately reflects the demographic and geographic characteristics of the population being studied.

Survey methodology: The approach used to collect data on public perceptions and attitudes towards climate change, including sampling design, data collection protocols, and ethical considerations.

Subgroup analysis: A detailed examination of specific segments within a larger population or dataset for instance certain age groups.

Urban towns: Urban towns are smaller (than metropolitan) urban areas that serve as significant local hubs of economic and social activity within a larger rural or suburban context. Unlike metropolitan areas, urban towns typically have a smaller population and a more localized economic base, but they still exhibit urban characteristics such as higher population density, diverse housing, and various services and amenities.

EXECUTIVE SUMMARY

Research methodology

The Climate Change and Just Transition survey was conducted on behalf of the Presidential Climate Commission (PCC) as part of the 2023 annual round of the Human Sciences Research Council's (HSRC) South African Social Attitudes Survey (SASAS) series, involving a representative sample of 3,500 adults aged 16 and older across South Africa's nine provinces. The sample excluded special institutions, recreational, and industrial areas. The sampling methodology involved three stages. In stage one, 500 Small Area Layers (SALs) were selected and formed the primary sampling units. In stage two, seven visiting points or dwellings were selected per SAL (secondary sampling units). In stage three, a single respondent aged 16 years and older was selected from each dwelling unit, thus totalling a drawn sample of 3,500 respondents. The fieldwork was conducted between August to October 2023, with a realised sample of 3,112 successfully completed interviews.

Relative importance of environmental issues

Surveys on climate change provide critical data that can influence a wide range of sectors as well as policy and governance. They are essential for understanding public perception, driving effective action, and fostering collaboration in addressing one of the most pressing issues of our time. The current survey is aimed at specifically understanding the views of South Africans on climate change but more specifically the Just Transition. From the survey we find that, despite the importance and urgency of climate change, environmental concerns rank low on the list of priorities for South Africans, overshadowed by issues such as unemployment, inflation, crime, corruption, and service delivery. Survey data from 2023 show that only 5% of South African adults consider environmental issues, including climate change, as one of the top three challenges facing the nation. This view was universal, regardless of socio-demographic characteristics. It is therefore critical to undertake surveys on this matter to investigate ways to increase awareness and concern and ultimately encourage pro-environmental actions.

Experience of extreme weather conditions

Findings from the report indicate that direct experiences with extreme weather events can enhance public awareness and concern about climate change, prompting pro-environmental attitudes and behaviours. A positive class bias was found with those in the top two asset quintiles feeling significantly more affected by extreme weather events than those in the bottom asset quintiles. This is somewhat counter-intuitive because wealthier individuals typically have higher adaptive capacity given their higher access to resources. Literature explains this by indicating that psychologically, wealthier individuals might have higher expectations for comfort, security, and the stability of infrastructure. When these expectations are disrupted, they may feel a greater sense of loss or inconvenience compared to poorer individuals who may already live with less reliable infrastructure or more frequent disruptions (Leichenko & Silva, 2014; Whitmarsh, et al., 2022). Those with a higher education also tended to experience extreme weather events as having a greater impact on them and their families. Education leads to heightened awareness of climate change and the dangers associated with it, which might make educated individuals more sensitive to extreme weather events (Whitmarsh, et al., 2022). Among the race groups, coloured respondents were significantly less likely to acknowledge that they have been affected by extreme weather events than black African adults. Regarding spatial variation, KwaZulu-Natal residents were significantly more inclined to report being impacted by extreme weather events than those residing in any other province. In contrast, Limpopo residents were least likely to acknowledge the effect of extreme weather events, followed by Western Cape residents.

CLIMATE CHANGE AWARENESS, BELIEFS, CONCERN AND NORMS

Climate change awareness

Between 2007 and 2017, awareness of climate change in South Africa increased significantly, with the proportion of people knowing 'a lot' or 'a fair amount' about it nearly doubling, and those knowing nothing at all more than halving from 45% to 19%. Between 2017 and 2023 awareness increased further, rising from 34% to 50%. Despite this, a notable 17% still state they know nothing about climate change. The analysis found that females were less likely to be aware of climate change than males. White respondents showed higher awareness compared to black African respondents. Better subjective health was slightly inversely related to awareness. Education, social media usage, and living in urban formal non-metropolitan areas positively influenced awareness. Ethnicity was significant, with Setswana and English speakers showing higher awareness compared to isiZulu speakers. Respondents from the Free State and KwaZulu-Natal also demonstrated higher awareness compared to those from the Western Cape. Occupation status affected awareness, with managers, professionals, and mid-level workers more likely to be aware than unemployed individuals. Exposure to extreme weather conditions strongly enhanced climate change awareness.

Climate change scepticism

In 2023, around 10% of South Africans denied any significant changes in global climate patterns, while 32% attributed observed weather changes to natural variability rather than human activity. This indicates that 42% of the public either denied climate change or believed it is not caused by human actions. Additionally, 31% thought climate change results from a mix of natural and human influences, showing partial scepticism about the extent of human impact. Only 17% primarily attributed climate change to human activities, aligning with the mainstream scientific consensus. About 11% were uncertain about the causes. This distribution highlights a significant level of climate change scepticism among the South African public. Almost half of South Africans could therefore be classified as either trend or attribution sceptics. A cross-national comparison of climate scepticism showed that among 29 countries surveyed as part of the International Social Survey Programme (ISSP) Environment module (2021), South Africa had the highest levels of climate sceptics among all counties.

The report indicates climate change scepticism is influenced by a combination of geographic, social, and experiential factors. Individuals from KwaZulu-Natal, those engaged in political activism, frequent social media users, those who have experienced extreme weather events, and those with higher climate change awareness are less likely to be sceptical about climate change. Conversely, residents of urban informal areas are more likely to exhibit climate change scepticism.

Concern about climate change

Almost half (45%) of South Africans who are aware of climate change were extremely or very worried about climate change in 2023. About a third (34%) expressed modest concern (were 'somewhat worried') about climate change. Conversely, only a small percentage of South Africans stated that they were 'not at all concerned' or 'not very concerned' (15%) about climate change. In addition, 6% expressed uncertainty. These results demonstrate that the majority of South Africans who are aware of climate change are concerned about climate change.

A strong positive relationship exists between experiencing extreme weather events and concern about climate change, indicating that direct experience with such events increases concern. Greater awareness of climate change also correlates significantly with higher concern, emphasizing the role of education in fostering public concern. Conversely, climate scepticism has a small negative impact on concern, suggesting that addressing scepticism through credible communication is crucial. Other socio-demographic and spatial variables like age and province also had an impact on concern. Concern

increased by age and residents of KwaZulu-Natal, Gauteng and Limpopo were less concerned than residents from the Western Cape.

Personal responsibility to protect the environment

Findings show that older individuals are more likely to feel a personal responsibility to try to protect the environment, referred to as a pro-environmental norm. Occupational status significantly affects this pro-environmental norm. Compared to unemployed individuals, managers and professionals have higher pro-environmental norms. The use of social media positively influences pro-environmental norms. Geographic location also significantly influences pro-environmental norms, with the Eastern Cape, Northern Cape, Free State, North West, and Mpumalanga provinces having higher levels of pro-environmental norms than the Western Cape. Compared to urban formal metropolitan areas (the reference category), urban informal areas, rural traditional authority areas, and rural farms have lower pro-environmental norms.

Experiencing extreme weather events has a positive effect on pro-environmental norms. Individuals who have experienced extreme weather events are more likely to adopt pro-environmental norms. Direct experience with the impacts of climate change can enhance environmental awareness and behaviour. Climate concern is a strong positive predictor of pro-environmental norms. Higher levels of concern about climate change are associated with higher pro-environmental norms. This underscores the importance of raising awareness about climate change to foster environmentally responsible behaviours.

The conceptual model: How exposure to extreme weather events, climate change awareness, scepticism, concern, and personal norms influence each other

In line with the conceptual framework, extreme weather events had an influence on climate scepticism, climate awareness, concern, and pro-environmental norms. The more an individual reported having been exposed to extreme weather events, the more likely they were to be less sceptical about climate change, be aware of climate change, concerned about climate change and willing to do something about it. Exposure to weather events was therefore a strong predictor of sensitive attitudes towards climate change and towards pro-environmental behaviour. Climate scepticism was negatively associated with awareness, implying that if you were sceptical about climate change, you were less knowledgeable or aware of the phenomenon. Increased awareness had an impact on concern. Higher levels of climate change awareness were associated with higher levels of concern. The strongest predictor of pro-environmental norms was climate concern. This implies that the conceptual model underpinning this study is applicable and highly relevant for understanding the elements of climate change behaviour.

JUST TRANSITION AWARENESS AND ATTITUDES

Awareness of the energy transition/just transition

In anticipation of the fact that many South Africans may be unfamiliar with the concept of the energy transition or just transition, respondents were provided with a simple, non-technical explanation that stated, 'most of South Africa's electricity currently comes from coal. There are now actions being taken to change from coal power to other sources of energy (like solar and wind),' and asked how much they have read or heard about these actions. Two-fifths (41%) of respondents reported having heard or read 'a little' about this shift, while 31% were familiar with it 'quite a bit' or 'a lot.' Nearly a quarter (23%) had never heard of the transition, and 5% were uncertain. Awareness varied significantly by socio-demographic factors: rural residents and those in informal urban areas had lower awareness, compared to urban dwellers. Regional differences were also notable, with the highest awareness in Gauteng and the Western Cape and the lowest in Limpopo, North West, and the Northern Cape. To test the assumption that not many South Africans know the term 'just transition', the specific term

was read out to the respondents, and they were then asked to indicate how familiar they were with it. Barely a tenth (9%) indicated that they understood the term. A significant portion of South Africans (65%) had never heard of the term, a tenth (13%) had heard of the term but did not understand what it meant, and 13% stated that they did not know how to respond. Education was positively linked to higher awareness levels, with individuals holding a matric or post-matric qualification showing the greatest awareness. Similarly, white and Indian/Asian respondents exhibited higher awareness, as did regular consumers of news media and those familiar with the concept of climate change. These results indicate that although there is some general awareness of the concept of the energy transition in South Africa, there is very little understanding of the specific term 'just transition.'

Approval of the just transition

About three-fifths (62%) of the public supported the transition in principle. A smaller percentage, 9%, expressed disapproval of the actions taken to transition from coal, while 4% strongly disapproved. A notable 20% neither approved nor disapproved, suggesting a segment of the population adopted a more neutral stance on the matter. Approval ratings differed significantly among different population groups, educational attainment levels, provincial populations, and geographic type groups. The most pronounced differences were among provincial populations. People from Limpopo, Western Cape and Eastern Cape were least supportive of the transition while people from Gauteng, Free State and Mpumalanga were most supportive. Adults from Indian and white minority groups exhibited significantly higher levels of approval compared to other groups. There was an educational attainment gradient observed with educated persons expressing higher levels of approval. People with a higher asset index were also more likely to support the just transition than those with a lower socio-economic status. In addition, supplementary analysis showed that residents of urban towns were more likely than people from metropolitan areas to approve of the just transition. No significant differences were found between genders or age groups. Support for the just transition was impacted by views on climate change scepticism, with those more sceptical less approving. Personal environmental norms were identified as a positive driver of approval for the shift away from coal. We discovered that social media usage was a good predictor of approval. The more time an individual spent on social media, the more likely they were to approve of the shift away from coal.

Concern about the impact of the just transition

A small share of the public (10%) was not worried at all about being negatively affected by the energy transition and another 15% felt it would not affect them at all. A significant portion of respondents (71%) acknowledged that there might be negative consequences associated with the just transition. There was, as may be expected, a correlation between the reporting of specific economic concerns relating to the just transition and the level of generalised concern about the perceived personal impact of the just transition. The most frequently mentioned concern (by a third of the public) was the possibility of higher electricity costs, indicating a fear of being exposed to high energy prices. A similar share (32%) was concerned about the possibility of job losses. Nearly a quarter (24%) of the public indicated that they were worried about the reliability and availability of electricity supply during the transition. A fifth of South Africans (19%) were specifically concerned about the potential harm to the local environment. Worries about negative health impacts were expressed by 17% of the public.

Specific perceived benefits of the just transition

The most mentioned benefit, referred to by just over half (51%) of the public, was that load shedding would reduce or end. This benefit stands out as the most significant, indicating a substantial envisaged improvement in the reliability of the electricity supply. Just about two-fifths (41%) of the public expected the just transition to have a positive impact on the economy, while a similar proportion felt that electricity prices might decrease because of it. Just under a third (30%) believed that it would lead to net job creation. A fifth thought that people's health would improve, and a similar share felt it would

lead to a decrease in air pollution. An equivalent share felt that it could benefit specific individuals, giving more opportunities to women and the youth. A relatively small share (13%) mentioned the health of the environment as a distinct benefit.

<div align="center">**JUST TRANSITION POLICY PREFERENCES**</div>

Support for specific Just Energy Transition policy measures

The policy option that received the highest level of support was 'improving education to facilitate the entry of individuals into new sectors.' Almost four-fifths (79%) supported this policy. A notable 77% of respondents supported initiatives targeted at assisting women, youth, and vulnerable groups in finding employment. Similarly, there was strong support, also at 77%, for policies aimed at supporting local businesses and creating job opportunities in areas affected by economic challenges. The majority of respondents expressed agreement with the idea of implementing training and skills programmes for workers who lose their jobs, with a substantial 75% in favour. Both short-term financial assistance for individuals struggling to secure new employment immediately after job loss, as well as a Basic Income Grant intended for all South Africans, received a solid 70% approval. This suggests strong support for addressing the transitional challenges workers may face and the need for a safety net that would provide financial safety to all South Africans. Interestingly, policies that were based on education and opportunities for employment and personal advancement were supported more than short-term solutions or social grants.

The analysis found that white adults, KwaZulu-Natal residents, and speakers of Siswati and isiNdebele, and Setswana and Tshivenda tended to support these policies more than people of other population groups, ethnicities and provinces. There is an observable negative correlation among age, religiosity, climate change scepticism, and worry that oneself and family will be negatively affected by the Just Energy Transition (JET). This suggests that older people, who are more religious, are sceptical of climate change, and worry about the negative outcomes of JET, are less supportive of policy.

Views on climate finance

South Africa has made a significant commitment to addressing climate change, emphasising the need for substantial finance to support its transition to a climate-resilient economy. The country has seen key developments, such as the Just Energy Transition Partnership (JETP) and the release of the Just Energy Transition Investment Plan, aiming to raise the necessary funds. However, despite these efforts, financial resources remain insufficient, with a significant shortfall in meeting the estimated R8.5 trillion needed by 2050. The survey explored South African opinions on whether the country should accept international financial assistance for the just transition and, if so, who should manage the funds.

Public opinion on accepting international climate finance was divided. While a majority supported the idea, there was disagreement over whether the South African government should manage these funds. About 64% of respondents supported accepting international climate finance, with the public split between those who trusted the government to manage the funds (30%) and those who preferred independent management (34%). This division highlights a trust deficit regarding government management of such funds. Further analysis revealed that support for government-managed climate finance was associated with stronger pro-environmental personal norms and African National Congress (ANC) support, while opposition to government management was more common among opposition party supporters, those with higher climate awareness, and white adults. There was also a notable portion of the population that opposed accepting international financial assistance altogether, particularly among black African adults, those with higher socio-economic status, and residents of metropolitan areas, North West province and KwaZulu-Natal, which again reflected diverse perspectives on the best approach to managing the country's climate transition. Individuals that were unsure or without an opinion tended to have lower political activism, socio-economic status, and climate awareness.

Responsibility for climate action and managing the just transition

The survey explored public perceptions of responsibility for addressing the climate crisis, revealing that most South Africans believe the government should take the lead. Over half of respondents (52%) identified the South African government as primarily responsible, particularly the national government, highlighting an expectation for comprehensive action at the national level. Additionally, 16% pointed to international governments, reflecting the global nature of the issue. Non-state actors were also recognised, with 34% assigning responsibility to environmental groups and 32% to large companies (rising to 40% if one included Eskom), indicating a belief in the role of advocacy, activism, and market forces in combating climate change.

Individual responsibility was mentioned by 19% of the public, showing that while collective action is prioritised, there is still a sense of personal accountability. A small percentage (5%) dismissed the severity of the problem, and 11% were unsure, reflecting a degree of uncertainty or scepticism among South Africans. The survey results underscore the complexity of public opinion, emphasising the need for a multifaceted approach to climate action involving governments, businesses, environmental groups, and individuals.

When it comes to views on the stakeholders that should be involved in the JET, nearly half (45%) of South Africans believed the national government should be involved, underscoring a preference for centralised leadership, followed by businesses (28%) and local government (27%). A significant minority (20%) favoured a multi-stakeholder committee, such as the PCC, highlighting interest in a balanced oversight structure. Preferences varied based on respondents' socio-demographic and attitudinal attributes: logistic regression analysis confirmed that support for each entity was influenced by factors like political affiliation, education, socioeconomic status, and geographic location, and variables such as climate change scepticism, concern, personal pro-environmental norms, and support for JET-related social policies. This indicates that preferences for managing the energy transition are shaped by social, political, and environmental beliefs.

Views on the entity most trusted to manage the transition also leaned towards government (26% national and 10% local). Among non-governmental options, 13% primarily trusted the private sector, 11% favoured non-governmental organisations (NGOs) and non-profit organisations (NPOs), 7% trusted trade unions, and another 7% supported community leaders, highlighting a significant role for civil society and private actors. Additionally, 13% preferred a multi-stakeholder committee similar to the PCC, while 12% were undecided. Regression analysis confirmed that trust patterns varied significantly by province, socio-economic status, political affiliation, and environmental attitudes. These findings point to a belief in the importance of inclusive and collaborative approaches to JET governance and decision-making across South Africa's diverse population.

SPATIAL ANALYSIS OF THE EFFECT OF PROXIMITY TO COAL MINES AND COAL-FIRED POWER STATIONS ON AWARENESS, ATTITUDES AND PREFERENCES

Additional spatial analysis was conducted exploring whether proximity to coal mines or coal-fired power stations in South Africa influenced attitudes and awareness regarding climate change and the just transition. Using geographic information system (GIS) software, distances from survey points to these facilities were calculated and integrated into a regression analysis. The findings revealed that living closer to coal-related facilities modestly increased climate change awareness and reduced climate scepticism, though these effects diminished when controlling for socio-demographic factors. While proximity had no significant impact on climate concern or personal pro-environmental norms, it was associated with stronger support for JET actions in principle as well as for specific policies aimed at mitigating negative consequences of the transition. However, the overall explanatory power of proximity was relatively small, indicating that while location near the coal belt influences certain climate attitudes, its effect appears limited from a national perspective.

CONCLUSION

The report highlights the critical need to prioritise climate change in South Africa, even as it competes with other pressing social issues like unemployment, crime, and service delivery challenges. Despite these concerns, the growing awareness of climate change among South Africans is encouraging. However, scepticism about the causes and severity of climate change persists, especially in specific socio-demographic groups. The findings suggest that efforts towards a JET are generally supported, but there is a need for clearer communication and education about what the transition entails to ensure broader engagement and support.

The analysis reveals significant differences in climate awareness and attitudes across socio-economic, geographic, and demographic lines, with education, exposure to extreme weather, and social media use playing key roles in shaping public perceptions. Tailored policy interventions are crucial to address spatial disparities and enhance climate education, particularly in less aware and more sceptical communities. The report underscores the importance of promoting pro-environmental norms and providing adequate social policy support during the transition. Ensuring transparency and inclusive decision-making will be vital for building trust and achieving equitable outcomes in South Africa's climate and energy transition.

1   INTRODUCTION

The world is significantly impacted by climate variability, and South Africa is no exception. Climate change exacerbates the country's triple challenges of poverty, unemployment, and inequality. Poorer communities disproportionately suffer from the effects of climate change, intensifying existing inequities. Addressing climate change in South Africa requires strengthening adaptation strategies to build resilience to immediate threats like extreme weather and disasters, as well as long-term changes affecting water availability, food security, and public health. At the heart of South Africa's climate policy is the concept of a just transition, which aims to shift the economy toward greener practices while ensuring that vulnerable populations are not left behind. This just transition narrative considers the dynamics of climate change together with the country's unique socio-economic conditions (PCC, 2024).

The climate change imperative

South Africa is highly vulnerable to climate change. As global temperatures rise, the country experiences more frequent and severe droughts, flooding, and extreme weather events. Agriculture, water resources, and biodiversity are at great risk. Climate change has already impacted food security and water availability, and threatened the livelihoods of millions, especially those in rural areas (Kwame, Danny, & Memory 2022). In response to these growing risks, South Africa is committed to playing a strong role in climate change mitigation and adaptation. As such, South Africa is honouring the Paris Agreement, which aims to reduce greenhouse gas emissions and limit global temperature rise to 1.5 degrees Celsius above pre-industrial levels. The country's Nationally Determined Contribution (NDC) has set ambitious targets for reducing emissions by transitioning from coal, which currently provides over 80% of its electricity, to renewable energy sources such as wind, solar, and hydroelectric power (PCC, 2024). However, moving away from coal presents significant economic and social challenges, particularly for workers in coal-dependent regions like Mpumalanga (Nel, Marais & Mqotyana, 2023).

The Just Transition: Ensuring equity in climate action

The just transition narrative emphasises that climate action must not exacerbate existing inequalities or create new ones. South Africa, a country still grappling with the legacies of apartheid, is deeply unequal, with high levels of unemployment, poverty, and income disparity. The challenge is to reduce carbon emissions while promoting social equity and protecting the livelihoods of workers and communities dependent on carbon intensive industries. For South Africa, this means a transition that is not only green but also inclusive, ensuring that the shift to a low-carbon economy is managed in a way that supports workers and promotes economic opportunities in new sectors.

In late 2020, the Presidential Climate Commission (PCC) was created to oversee and facilitate the country's just transition work, with an emphasis on building consensus through inclusive multistakeholder processes. The first major task of the PCC was to create the country's *Just Transition Framework* to bring coordination and coherence to just transition efforts around the country. The framework was developed in consultation with key stakeholder groups, including labour unions, industry, local communities, and civil society, and outlines key steps in the just transition, such as retraining workers, fostering green jobs, and supporting affected communities (PCC, 2022).

The just transition is at the core of South Africa's approach to climate change, focusing on placing people, particularly the most vulnerable, at the centre of climate response strategies. It ensures that those who are most impacted by the transition are protected, supported, and empowered. South Africa is shifting its climate action from merely setting targets to actively delivering on those commitments. This next phase prioritises the creation of strong government policies aimed at addressing climate change rapidly and equitably, with broad support from key stakeholders.

To support this process, the Just Transition Framework outlines three guiding principles (PCC, 2022):

1. **Procedural justice** – Emphasising collaboration with a wide range of stakeholders, this principle ensures that the voices of all affected groups, particularly marginalized ones, are included in decision-making processes.

2. **Distributive justice** – This principle calls for the fair distribution of both the risks and benefits of the transition, recognising the deep-seated inequalities based on race, gender, and class that persist in South Africa.

3. **Restorative justice** – A commitment to remedying past harms, this principle seeks to address historical injustices inflicted on both people and the environment, ensuring that future development is sustainable and inclusive.

Together, these principles aim to foster an inclusive approach to climate action, ensuring that the transition to a low-carbon economy benefits all segments of society, particularly those who have historically been marginalised or disproportionately affected by environmental degradation.

Public perception and the need for engagement

Public engagement is critical to the success of the just transition. Surveys indicate that, while climate change is an important issue, it ranks lower in priority for most South Africans compared to immediate socio-economic concerns like unemployment, crime, and service delivery. This reflects the need for stronger public education campaigns that link climate action to everyday concerns, such as job creation, energy security, and social justice. The government's ability to build public support for the just transition will depend on its capacity to demonstrate tangible benefits, such as reduced electricity costs, improved access to clean energy, and new economic opportunities. Civil society organisations, labour unions, and the private sector will also play key roles in mobilising communities and advocating for policies that ensure no one is left behind in the transition (Mirzania, et al., 2023).

The role of the Presidential Climate Commission

As an independent multistakeholder body working on climate action and the just transition, two key roles for the PCC are to: (i) prepare best-in-class evidence to support the country's climate and transition efforts, and (ii) foster inclusive multistakeholder engagement and communication. This survey supports fulfilling both mandates and will feed into the PCC's ongoing work.

Specifically, the PCC's monitoring and evaluation (M&E) working group set out to complete the first *State of Climate Action in South Africa*. The Just Transition Survey was first envisioned to serve as an input to this report, highlighting the status quo on public perceptions. The high-level findings are included as a chapter in the report and present a critical baseline from which to monitor how public understanding and perceptions toward the just transition evolve over time (PCC, 2024). The results can also point to priorities for the PCC's communications and engagement activities. Much work remains to be done in terms of educating the public on climate change and the just transition. The survey results indicate key gaps to be filled and audiences to engage.

Conclusion

The intersection of climate change and the just transition in South Africa is a complex but critical endeavour. As the country navigates the shift to a low-carbon economy, it must balance environmental sustainability with economic justice. The *Just Transition Framework* offers a pathway to achieving this balance, but it will require careful planning, robust public engagement, and strong international support. If successful, South Africa can emerge as a model for how developing countries can tackle climate change in a way that promotes social equity and economic inclusion.

2 METHODOLOGY

2.1 SAMPLE DESIGN

The just transition survey was administered as part of the 2023 annual round of the HSRC's South African Social Attitudes Survey (SASAS) series. In accordance with the SASAS research infrastructure's standard approach, the survey was designed to yield a representative sample of 3,500 adults aged 16 years and older.[1] The sample provided a geographic spread across the country's nine provinces and was restricted to households. Special institutions (such as hospitals, military camps, old-age homes, schools and university hostels), recreational areas, industrial areas and vacant small area layers (SALs) were excluded from the sample.

The SASAS series has three sampling stages as part of its design. SALs were the primary sampling units and, in the first stage, five hundred SALs were randomly drawn nationwide. (**Figure 1**). Estimates of the population numbers for various categories of census variables were obtained per SAL. Data for this stage were drawn from the 2011 census and updated using mid-year population estimates. Three explicit stratification variables were used to draw the SALs, namely province, geographic type, and majority population group.

Figure 1: A graphical representation of the 500 sampled Small Area Layers
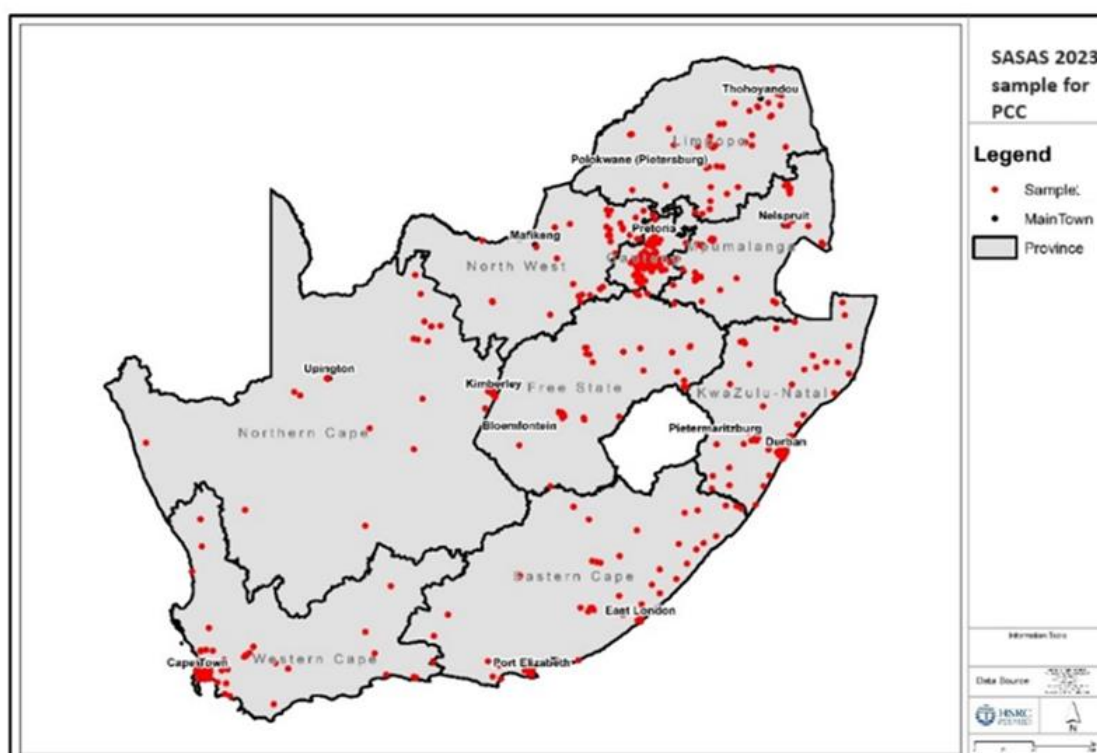
Dwelling units (also known as visiting points) in each SAL represented the secondary sampling unit (SSU). A dwelling unit is defined as 'separate (non-vacant) residential stands, addresses, structures, flats, homesteads, etc.' In the second stage, seven SSUs were selected per SAL. SSUs were drawn with equal probability in each of the selected SALs. SSUs were selected using a random starting point and counting an interval between households. The interval was calculated using the total number of

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[1] Although, according to law, an adult is a person who is 18 years and older, the SASAS survey includes 16- and 17-year-olds to capture the attitudes, opinions, and experiences of South African youth who are on the verge of transitioning to adulthood. This demographic group represents an important segment of the population with distinct generational perspectives and concerns.

households in the SAL. Finally, in the third sampling stage, a person was drawn with equal probability from all persons aged 16 years and older living at each selected visiting point. This person (i.e., the respondent) needed to be 16 years or older and have resided at the visiting point for at least 15 out of the past 30 days prior to interviewing. The fieldwork period started in August and ended in October of 2023.

2.2 DATA COLLECTION PROTOCOL

The HSRC subscribes to a strict internal Code of Ethics. The study design and research tools were submitted for approval by the HSRC's Research Ethics Committee. Each interview conducted by the HSRC is fielded only if the HSRC ethics committee has approved it. Before an interview was conducted, the following protocols were observed:

Adult respondents and informed consent (persons older than 18 years): All respondents aged 18 years and older were asked for informed consent. A digital consent form explained the purpose of the study, emphasised that participation is voluntary, and explained the likely duration of the interview. The form also explained how confidentiality is preserved, and offered an earnest appraisal of the risks/discomforts and benefits associated with participation in the study. Respondents were provided with details of the HSRC's toll-free ethics hotline and survey coordinator contacts.

Minors and written informed consent (persons <u>under</u> the age of 18 years): In instances where the selected research participant was a minor aged 16-17 years, the informed consent process followed adhered to the HSRC's Guidelines on Research with orphans and vulnerable children. A dual consent process was required, both from the minors and their parent/guardian.

Ensuring confidentiality of information: All personal information on the respondent was removed when the data were captured and analysed. Codes to identify respondents were used instead. Personal information is stored electronically with password-protection at the HSRC. The SASAS team is compliant with all relevant legislation that protects the data of respondents.

2.3 FIELDWORK PROCEDURES AND TRAINING

The following protocols guided the fieldwork process:

- Fieldworkers and supervisors were required to notify the relevant local authorities that they would be working in the specific area. The purpose was twofold: (i) to increase safety protocols for fieldworkers, and (ii) to reassure respondents, especially the elderly or suspicious, that the survey was official. Official letters describing the project, its duration, and relevant ethical issues were distributed to the authorities. This was done not only as a form of research and ethical protocol but also to ensure the safety of the fieldwork teams.

- Supervisors were advised to inform the local leader (e.g., the inkosi or induna) in a traditional authority area, whilst in urban formal or urban informal areas they had to report to the local police station. In some areas, they met with and informed the local councillor of the study prior to commencing work in the area.

- They were further advised that farms should be entered with caution and that they should report to the local AgriCulture South Africa (Agri SA) offices before doing so. Field supervisors were issued with 'Farm letters' which contained information on the purpose of the study and contact details in case they had queries.

- Consent forms (electronically) needed to be successfully completed prior to each interview.

- Fieldworkers were issued name tags and letters of introduction to be used in the field. The introduction letter was translated from English into six other languages.

- Fieldworkers had to present their identity cards when introducing themselves.

A network of locally based fieldwork supervisors in all parts of the country assisted in data collection. Competent fieldworkers with a thorough understanding of the local areas were employed as part of this project. Two-day training sessions were held in all provinces. The training session included lessons on the selection and sampling of households, fieldwork operating procedures, research protocol, and ethical considerations. The questionnaire was discussed in detail. As far as possible, the training was designed to be participatory, practical and interactive, and gave fieldworkers the opportunity to seek clarification. A training manual was also developed as part of the training toolkit. All relevant remarks and instructions discussed during the training session were included in the training manual.

Once the training sessions were completed, a navigational toolkit was provided to fieldwork teams. These toolkits were developed to assist the field teams in finding the selected SALs. These kits assisted the supervisors and fieldworkers to locate the exact SAL where the interviews were to take place. The navigational kits included:

- Route descriptions, to assist the teams to navigate their way into the selected enumerator areas.
- Maps that identified the exact geographic location of the enumerator areas to be sampled throughout the country, using aerial photographs as a base (see **Figure 2** for an example).
- More detailed maps that identified the exact area, pinpointing street names and places of interest such as schools, clinics, hospitals etc. These maps also included latitude-longitude, GPS coordinates indicating the centroid of the SAL.

HSRC researchers conducted random visits to selected areas and worked with the fieldworkers to ensure that they adhered to ethical research practices and that they understood the intent of the questions in the questionnaire. HSRC researchers also ensured that the correct selection protocols were followed to identify households and respondents in the household. The researchers also checked on procedures followed in administering the research instrument. Field backchecks were also conducted in all nine provinces. Telephonic backchecks were done on at least 10 % of the total sample.

Figure 2: Example of a Small Area Layer map used to assist the fieldwork teams to navigate to the correct areas

2.4   DATA CAPTURING AND WEIGHTING

The data were captured electronically using tablets and the Dooblo SurveyToGo software. The data were transmitted to a central database. Once all the data were collected, it was downloaded and converted into Statistics and Data (STATA) and Statistical Package for the Social Sciences (SPSS)

software formats, and the HSRC SASAS data manager embarked on a data-cleaning process. The data were checked and edited for logical consistency, for permitted ranges, for reliability on derived variables, and for filter instructions. The targeted and realised sample sizes by province are presented in **Table 1**.

Table 1: Sample realisation

Province	Number of SALs	Ideal Sample (N)	Realised Sample (N)	Realisation Rate (%)
Western Cape	65	455	323	71%
Eastern Cape	65	455	442	97%
Northern Cape	37	259	219	85%
Free State	38	266	244	92%
KwaZulu-Natal	93	651	611	94%
North West	37	259	212	82%
Gauteng	83	581	538	93%
Mpumalanga	38	266	256	96%
Limpopo	44	308	267	87%
Total	**500**	**3500**	**3112**	**89%**

The data were weighted to account for the fact that not all respondents included in the survey had the same probability of selection. The weighting reflected the relative selection probabilities of the individual at the three main stages of selection: (i) visiting point (address), (ii) household, and (iii) individual. In order to ensure representativity of smaller groups (e.g., Northern Cape residents or Indian/Asian people), weights needed to be applied. The marginal totals for the benchmark variables were obtained from mid-year population estimates as published by Statistics South Africa. The total number of people successfully interviewed for the SASAS 2023 round was 3112. When weighted, this total represents 42,486,164 South Africans aged 16 years and older. Key demographic characteristics of the final data set (unweighted and weighted) are presented in **Table 2**.

Table 2: Sample characteristics (unweighted and weighted), 2023

	Unweighted		Weighted	
	(N)	(%)	(N, 000)	(%)
South Africa	3112	100%	43 148	100%
Gender				
Male	1410	45%	20 784	48%
Female	1701	55%	22 363	52%
Age group				
16-19 years	141	5%	4 180	10%
20-29 years	629	20%	9 742	23%
30-39 years	727	23%	10 817	25%
40-49 years	551	18%	7 595	18%
50-64 years	681	22%	6 958	16%
65+ years	383	12%	3 855	9%
Population Group				
Black African	1923	62%	34 126	79%
Coloured	558	18%	3 897	9%
Indian/Asian	329	11%	1 256	3%
White	293	9%	3 869	9%
Geographic Type				
Metropolitan urban	1223	39%	18 778	44%
Non-Metropolitan urban	1119	36%	11 653	27%
Rural	770	25%	12 716	29%
Province				
Western Cape	323	10%	5 468	13%
Northern Cape	442	14%	4 367	10%
Eastern Cape	219	7%	918	2%

Free State	244	8%	2 061	5%
KwaZulu-Natal	611	20%	7 815	18%
North West	212	7%	2 967	7%
Gauteng	538	17%	12 338	29%
Mpumalanga	256	8%	3 357	8%
Limpopo	267	9%	3 858	9%

3   CONCEPTUAL FRAMEWORK

The HSRC has been collaborating with the European Social Survey (ESS) on issues related to climate change since the mid-2010s. The ESS is a cross-national European Research Infrastructure Consortium (ERIC) consisting of 31 European members and undertook extensive survey work on climate change and energy preferences as part of ESS Round 8 in 2016.[2] The ESS undertook a systematic and detailed comparison of public attitudes to climate change, energy security and energy preferences (Poortinga et al., 2014) and addressed critical components of the social transformation to a low-carbon Europe. This survey and questionnaire module conformed to a high standard of rigour and contained questions that are the best effective direct measures of the topics and concepts being examined. As such, some of the questions designed for this PCC survey project in South Africa replicated some of the items from the ESS Round 8 climate change module. In addition, the conceptual framework adopted by the ESS for this research also formed the foundation of the PCC study.

In line with the conceptual framework used by the ESS, the current survey used Stern's value-belief-norm (VBN) model (2000) as a general framework, covering the four broad areas of: (i) beliefs about climate change and the energy transition, (ii) concerns about climate change and the energy transition, (iii) personal norms, efficacy, and trust, and (iv) policy preferences. The VBN theory of environmentalism suggests that pro-environmental personal norms are influenced by the belief that environmental conditions pose a threat to the things that an individual places value on, and that an individual possesses the ability to reduce the threat. These personal norms influence an individual's behaviour. Behaviour-specific personal norms and other social-psychological factors, such as the perceived personal costs and benefits of an individual's action and beliefs about the efficacy of particular actions, may affect pro-environmental behaviours (Stern, 2000). According to the VBN model, pro-environmental personal (moral) norms are at the core of linking climate change concerns to energy-related preferences and behavioural choices (European Social Survey, 2016).

For the current study, the conceptual model was adapted (**Figure 3**) to align better with the aims of the research study, as well as the specific focus on the just transition. The study explored individual awareness and salience of climate change, beliefs focusing on the reality of climate change, perceived causes, and the envisaged impact of climate change, and then determine the degree to which these shape concern about climate change. The study then examined whether these constructs influence how South Africans feel about personal responsibility to take action to address climate change. According to the VBN model, these elements are important for understanding climate change perceptions and are seen as key variables that would subsequently motivate climate actions. In this instance, it was hypothesised that greater levels of climate awareness, concern, and personal responsibility would all influence awareness and beliefs relating to the just transition, and, by extension, promote support for specific just transition policy preferences.

The model recognises that an individual's circumstances and socio-political values impact the various dimensions measured in the model. For instance, employment prospects play a critical role in South Africa and beliefs about whether the just transition is likely to impede or enhance job prospects may significantly impact views on the just transition. To reflect this, the model considers the respondent's socio-economic status, educational level, socio-political values, and experience of climatic shocks.

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[2] For more information, see http://www.europeansocialsurvey.org/data/themes.html?t=climate

Figure 3: Conceptual framework for measuring public attitudes to climate change and just transition awareness, beliefs and preferences in South Africa
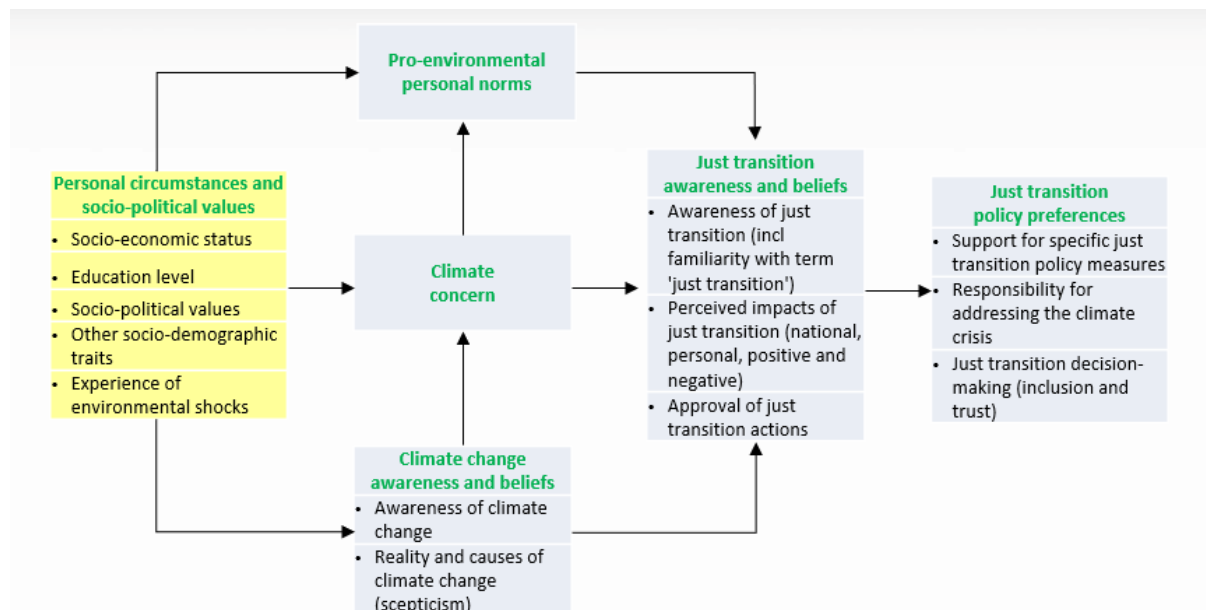
4   SURVEY RESULTS

4.1   CLIMATE CHANGE: ENVIRONMENTAL ISSUES AS A NATIONAL PRIORITY AND EXPERIENCE OF CLIMATIC SHOCKS

4.1.1   Relative importance of climate change among other national challenges

Climate change represents one of the most significant challenges of our time, with far-reaching consequences for the world and its diverse regions. South Africa, like many other nations, is vulnerable to the impacts of climate change. Despite this, nationally representative survey evidence suggests that the South African public tends to place environmental problems and climate change very low on the ranked list of priority issues facing the country. Instead, unemployment, cost of living/inflation, crime and corruption, and service delivery issues tend to be the highest ranked concerns (HSRC SASAS 2003-2023; Mpako and Govindasamy, 2023; Ipsos, 2024). In the current survey, only 5% of adults mention environmental issues (including climate change) as a priority issue relative to other pressing concerns (**Figure 4**). This was based on a survey question where respondents were specifically asked: "Please tell me what you think are the THREE MOST important challenges facing South Africa today?" and were required to mention up to three open-ended responses.

While economic, safety, and service delivery concerns are undoubtedly of critical importance and tend to be given high political priority, climate change is likely to impact these issues further and exacerbate many of South Africa's other existing challenges (Khine & Langkulsen, 2023). Addressing the challenges posed by climate change are therefore crucial and require a collective shift in attitudes and behaviour.

Figure 4: Relative priority of the environment in 2023 as a top national challenge (multiple response, percentage mentioning each priority)
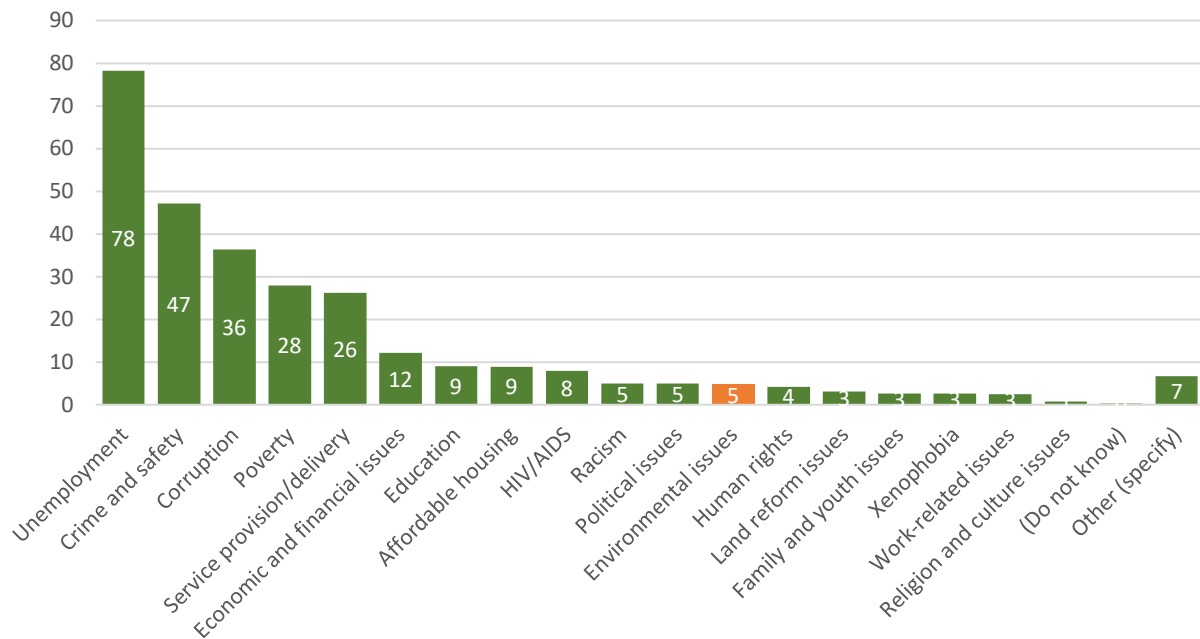
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

Environmental and climate change challenges are projected to have severe impacts globally and in developing countries and South Africa, particularly. Increasing awareness around climate change causes and impacts can help raise it as a priority among the public and key stakeholders (Bromley-Trujillo & Poe, 2020; Bouman et al., 2020; Roberts et al., 2022). This can also enable South Africans to take appropriate action to minimize and respond to the impacts of climate change. Individuals can also play a pivotal role in ensuring that climate change issues are addressed in a manner that addresses existing development concerns and equity issues, which is part of the just transition to a climate-resilient society. Given that people are at the centre of decision-making and actions relating to mitigation and adaptation strategies, it is crucial to understand the public's attitudes towards these issues. Public attitudes can influence political will and policy decisions (Hall & Lukey, 2023). Active engagement and advocacy for policies that promote climate change mitigation can potentially lead to faster action. This includes supporting regulations aimed at reducing greenhouse gas emissions, protecting natural habitats, and encouraging sustainable development. Attitudinal change is also closely linked to awareness and education. Promoting climate change awareness can lead to positive attitudinal change and empower individuals to make informed choices and advocate for sustainable practices within their communities (Perlaviciute & Squintani, 2020).

Apart from the advocacy role, raising awareness is also critical in developing equitable and climate-resilient societies. Climate change is expected to worsen and adapting to its inevitable impacts is critical. This involves fostering knowledge and attitudes towards climate change, which should enhance preparedness for climate-related disasters. This, in turn, will lead to more sustainable infrastructure and community collaboration to withstand and recover from extreme events. In the next section we determine to what extent South Africans perceive they have been affected by extreme weather events and which groups have been affected most.

4.1.2   Exposure to extreme weather events

Climate change has led to a rise in global temperatures and contributed to a myriad of environmental changes, including more frequent and severe weather events, rising sea levels, and disruptions to

ecosystems. The consequences have been witnessed across the globe, affecting agriculture, water resources, biodiversity, and human health. South Africa is no exception, with the impact of climate change increasingly evident. The country has been faced with increasing temperatures, changing precipitation patterns, and heightening extreme weather events, such as droughts and floods. (PCC, 2024). These impacts pose significant threats to key sectors of the economy, particularly agriculture, which is crucial for food security. In this section exposure to extreme weather events are interrogated. This is important given that conceptually it is envisaged that exposure to extreme weather events could potentially impact climate change awareness, beliefs, and concern, and, in turn, influence pro-environmental norms.

Figure 5: Exposure to extreme weather events (%)
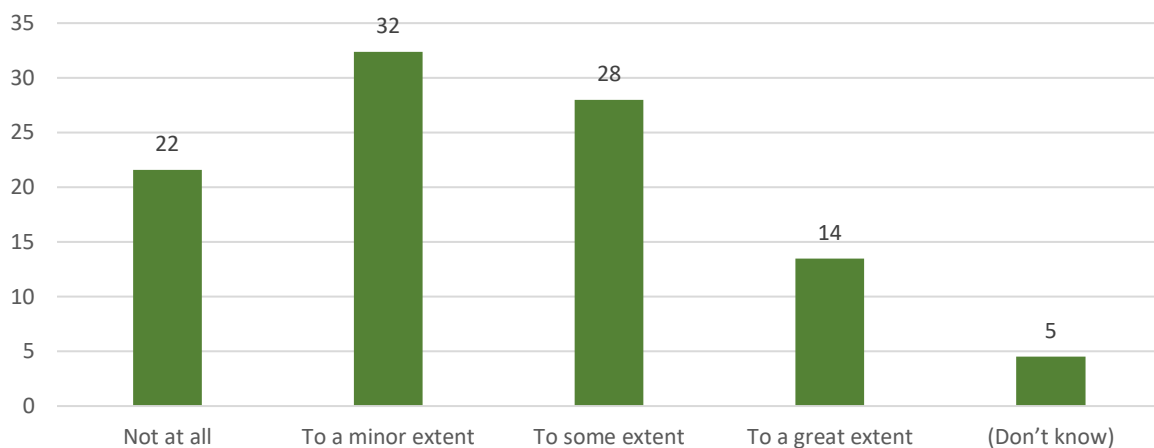
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

Figure 5 provides insight into the reported impact of extreme weather events on individuals and their families over the past decade. A significant portion (74%) of respondents experienced some level of impact, varying from being exposed 'to a great extent' (14%), 'to some extent' (28%) and 'to a minor extent' (32%). Just over a fifth (22%) reported never having experienced any form of extreme weather event. Additionally, a small share (5%) indicated uncertainty or a lack of knowledge regarding the impact of such events.

As expected, experiences of extreme weather events varied across different socio-demographic groups, as presented in **Table 3**. As is evident from the table, those aged 60 years and older tended to report feeling more affected by extreme weather events than younger age groups, while no differences were observed between males and females. A significant difference was found among race groups, with coloured and black African adults experiencing the effect of extreme weather events to a lesser extent than white adults. Indian/Asian respondents were most inclined to believe that extreme weather events had a significant impact on themselves and their families. Higher levels of education were also associated with experiencing extreme weather events as having greater impact on people and their families. Despite being less vulnerable, individuals in higher asset quintiles reported feeling significantly more affected by extreme weather events than people in lower asset quintiles. This finding is somewhat counterintuitive, but existing literature explains this by suggesting that wealthier individuals might have higher expectations for comfort, security, and stability of infrastructure. When these expectations are disrupted, they may feel a greater sense of loss or inconvenience compared to poorer individuals, who may already live with and are accustomed to less reliable infrastructure or more frequent disruptions. Their experiences may have conditioned them to expect and cope with such challenges, which can lead to a different emotional response when disruptions occur (Leichenko & Silva, 2014; Whitmarsh et al., 2022).

When looking at subgroup differences by type of geographical area, the results show that there is not a strong variation among South Africans living in different urban and rural geographical localities, with exposure scores varying between a low of 39 among rural farm residents to a high of 46 among those living in non-metropolitan urban areas. In terms of provincial variation, mean scores varied from a low of 32 in Limpopo to a high of 56 in KwaZulu-Natal. Responses of residents from KwaZulu-Natal were significantly higher than all other provinces and could possibly be linked to the devastating floods that impacted the province in 2022.

Looking at the impact of perceived extreme weather events on other related issues, it was found that a sense of being affected by weather conditions was positively associated with climate change awareness, concern about climate change and pro-environmental norms. The more people felt affected by extreme weather conditions, the more awareness and concern they exhibited in terms of the phenomenon. Notions of being affected by extreme weather conditions also prompted pro-environmental norms—in other words the inclination to want to do something about the situation.

To determine which of all the variables remain significant when put together, a multivariate analysis was used. Multivariate analysis considers more than two variables at once with the aim of finding patterns and correlations between several variables simultaneously, allowing for a much deeper, more complex understanding of a given scenario than compared to a bivariate analysis. For this specific analysis we use stepwise regression. Stepwise regression is a case of hierarchical regression in which statistical algorithms determine what predictors end up in a model. The approach used was backward elimination. All variables were included, and the model starts with all possible predictors and removes non-significant predictors until the stopping criteria is reached. The stepwise regression method combines forward and backward approaches, adding and removing predictors as it builds the model and eventually end up with the most significant predictors.

Table 3: Exposure to extreme weather events by select subgroups (mean score 0-100)

Socio-demographic		Mean score	Significance	Group differences[3]
Age	16-24	40	P<0,001***	16-59<60 and above
	25-34	43		
	35-44	40		
	45-59	44		
	60 and above	51		
Gender	Male	42	P=0,431 n.s	
	Female	43		
Race	Black African	43	P<0,001***	Coloured, black African <white<Indian/ Asian
	Coloured	35		
	Indian or Asian	61		
	White	47		
Children	No children	40	P<0,015 *	No children < children
	Children	44		
Socio-economic				
Education	Primary or no formal schooling	42	P<0,002 **	Primary, incomplete secondary, matric < post-matric
	Incomplete secondary	40		
	Matric or equivalent	44		
	Post-matric	47		
Subjective poverty status	Non-poor	44	P=0,213 n.s	
	Just getting by	42		
	Poor	44		
Asset quintile	Poorest quintile	40	P<0,001***	Poorest-middle quintile<fourth, richest quintile
	Second quintile	40		
	Middle quintile	41		
	Fourth quintile	47		

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[3] Group differences calculated using Tukey SHD (SPSS).

	Richest quintile	51		
Subjective health	Poor	50	P<0,001 ***	Poor, fair <Good, very good, excellent
	Fair	49		
	Good	42		
	Very good	42		
	Excellent	41		
Type of geographic location	Urban formal metropolitan	41	P<0,045*	Rural farm<Urban formal metro
	Urban formal non-metropolitan	46		
	Urban informal	42		
	Rural traditional authority area	43		
	Rural farm	39		
Province	Western Cape	34	P<0,001***	LP < WC < NC, NW, EC, FS < GP < MP < KZN
	Eastern Cape	41		
	Northern Cape	36		
	Free State	42		
	KwaZulu-Natal	56		
	North West	40		
	Gauteng	43		
	Mpumalanga	45		
	Limpopo	32		

Note: Significance at the 95%, 99% and 99.9% levels are denoted as follows: * p<0.05, **p<0.01, *** p<0.001. Lower p-values denote a more statistically significant finding.
Source: HSRC SASAS 2023 PCC module on attitudes towards Climate Change and the Just Transition.

The stepwise regression summary in **Table 4** shows a coefficient of -0.458 for coloured respondents, which is statistically significant at the 1% level (p<0.01) and reveals that coloured South Africans are significantly less likely to acknowledge that they have been affected by extreme weather events (the reference category being black African adults). The variable determining asset ownership, which is essentially a proxy for class, shows a coefficient of 0.172 and is highly significant at the 99.9% level (p<0.001). This positive coefficient indicates that higher asset ownership is associated with increased perceptions of the effect of being affected by extreme weather events. This is somewhat counterintuitive; one would have expected that those with lower asset ownership status would be more vulnerable and more inclined to acknowledge the effect of extreme weather events on them and their families. In terms of subjective health, the small negative coefficient suggests a slight inverse relationship between subjective health and exposure to extreme weather conditions, indicating that people experiencing poorer health are more likely to express that extreme weather conditions have had a large impact on them and their families.

The coefficient of 0.804 recorded for KwaZulu-Natal residents is statistically highly significant and suggests that KwaZulu-Natal residents are much more likely than Western Cape residents to acknowledge that extreme weather conditions had impacted them. In contrast, the negative coefficient -0.551 for Limpopo suggests that Limpopo residents are less likely to acknowledge the effect of extreme weather compared to Western Cape residents.

Table 4: Exposure to extreme weather events-summary of stepwise regression showing coefficients and significance and directions (positive=green; negative=red)

OUTCOME VARIABLE	Exposure to extreme weather conditions
PREDICTOR VARIABLES	
Population group (Ref: Black African)	
Coloured	-0.458**
Indian/Asian	…
White	…
Asset ownership	0.172***
Subjective health	-0.007**
Province (Ref: Western Cape)	…
Eastern Cape	…
Northern Cape	…
Free State	…
KwaZulu-Natal	0.804***
North West	…
Gauteng	…
Mpumalanga	…
Limpopo	-0.551**
Pseudo R-squared	0.0277

Notes: Significance at the 95%, 99% and 99.9% levels are denoted as follows: * $p<0.05$, **$p<0.01$, *** $p<0.001$. The symbol '…' indicates the variable is not included in the model. Analyses are weighted. Green shaded cells denote a significant positive association with climate change awareness, and red shaded cells a significant negative association.
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.[4]

4.2 CLIMATE CHANGE AWARENESS, BELIEFS, CONCERN AND NORMS

4.2.1 Climate change awareness

Overall, determining awareness of climate change is essential for building public support, driving action, and promoting effective responses to this global challenge. Research has found that climate change awareness can have both a direct and indirect (through climate change concern, norms, etc.) impact on behaviour change and policy support related to climate change. For environmental education and campaigning purposes, it is important to profile and chart levels of public awareness of climate change. Such information is critical for determining who most requires information regarding climate change to design targeted interventions that bolster public understanding. In this section we determine awareness of climate change and indicate the distribution of self-reported levels of knowledge about climate change among respondents. To evaluate how knowledgeable the South African public deems itself to be about climate change, respondents were asked the following question: '*How much, if anything, would you say you know about climate change or global warming?*'

Subjective knowledge, or an individual's self-reported understanding of a topic, differs from objective knowledge, which could be assessed through measures like quizzes or factual tests (e.g., on climate change). However, subjective knowledge is often considered a reliable proxy for objective knowledge, particularly in areas such as climate change, where misinformation and political biases can play a significant role (Fischer, Amelung & Said, 2019). This makes subjective knowledge questions especially

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[4] It should be noted that for the modelling presented in this regression table, and elsewhere in the report, the following were used as reference categories for the categorical variables used in the analysis: Male; black African; never worked for pay/not working; isiZulu speakers; television as a main information source; Western Cape; and urban formal metropolitan areas. These choices represent the default selection by the survey analysis programme (Stata) given that they were the first response option listed for each categorical variable.

valuable and popular in studies exploring the relationship between climate change knowledge, norms, values, and behaviour (Fischer & van den Broek, 2021). The specific question used in this study is a replication of a question included in the DST climate change module as part of the 2007 round of SASAS, with self-rated captured using a six-category scale: 'A lot', 'A fair amount', 'A little', 'Hardly anything', 'Nothing, but heard about it before', 'Have not heard about it before now'. This question was repeated in SASAS in 2017, 2022 and again as part of the 2023 PCC module. The fielding of this item over time provides a unique opportunity to gauge the extent to which awareness of climate change was altered over this period, and for whom.

Figure 6: Climate change awareness, 2007-2023 (%): How much, if anything, would you say you know about climate change?
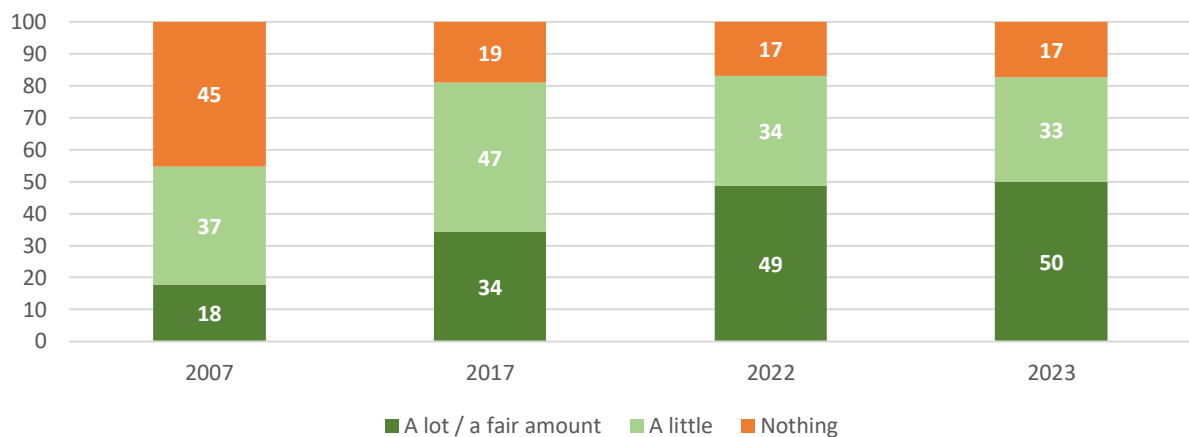
Source: HSRC SASAS 2007, 2017, 2022 and 2023.

As is evident from **Figure 6**, a significant shift in awareness occurred between 2007 and 2017, with the share of people knowing 'a lot' or 'a fair amount' about climate change almost doubling during that period. Conversely, those knowing nothing at all about this subject matter more than halved during the same period (from 45% to 19%). A smaller but significant increase in awareness also occurred between 2017 and 2022 (from 34% to 49%). No radical shifts in awareness were observed between 2022 and 2023, which is to be expected given that it was fielded only a year apart. Considering the most recent results from 2023, its shows that half of South Africans acknowledged having at least a fair amount of awareness of climate change. Of this proportion, a minority (17%) indicated an advanced level of knowledge, while a third (33%) indicated having 'a fair amount' of knowledge. A third of respondents declared possessing 'a little' understanding of climate change, collectively contributing to an accumulated knowledge base of 83%. The rest professed having no knowledge of climate change. These findings reveal a diversified spectrum of knowledge within the sampled population and shows some degree of familiarity with climate change, with varying degrees of depth in understanding.

In **Figure 7**, we investigate self-reported knowledge by selected subgroups for whom knowledge expanded over the periods 2007, 2017 and 2023. The first observation that can be made is that self-reported knowledge of climate change universally increased between 2007 and 2023. The greatest increase in climate change awareness from 2007 to 2023 occurred among 16–19-year-olds, for whom awareness increased dramatically from 19% in 2007 to 60% in 2023, a rise of 41 percentage points. Among 20–24-year-olds, awareness increased from 17% in 2007 to 52% in 2023, a rise of 35 percentage points. Among the poor, awareness grew from 8% in 2007 to 42% in 2023, a rise of 34 percentage points, and among those in urban informal areas it grew by 40% points from 10% in 2007 to 40% in 2023.

Figure 7: Proportion who have heard a lot or a fair amount about climate change across selected subgroups, 2007, 2017 and 2023
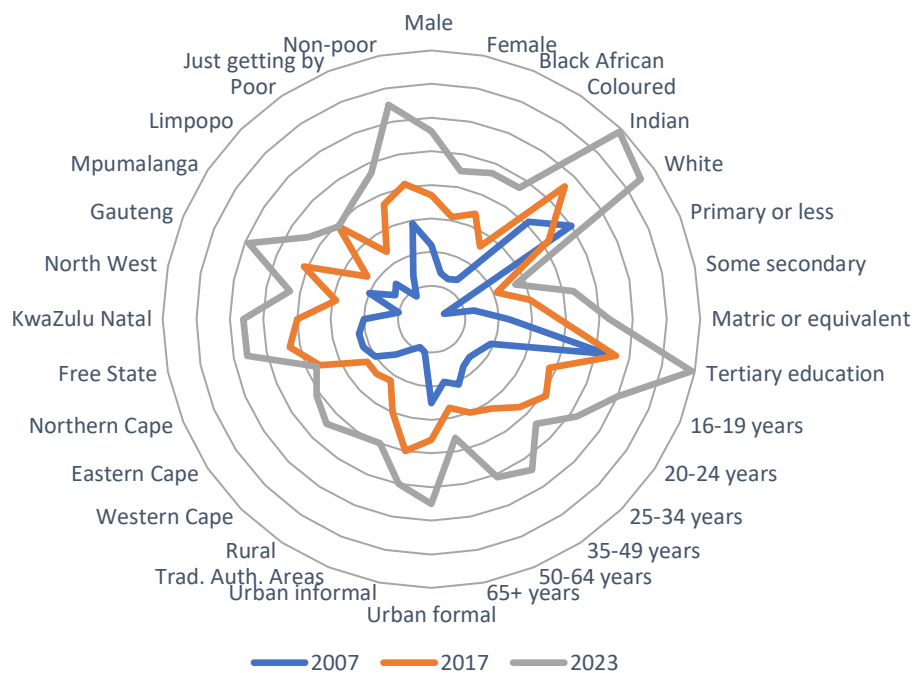
Source: HSRC SASAS 2007, 2017 and 2023.

Despite this increase among youngsters and the poor, it is evident that a socio-economic bias still exists when considering climate change awareness. Those with a tertiary education, Indian and white respondents as well as the non-poor registered the highest awareness scores in 2023. This is in contrast to those with less than a primary school education, those 65 years and older, those living in Northen Cape, Limpopo, Eastern Cape, and rural areas as well as the poor, who registered the lowest awareness levels.

Having established that awareness has significantly increased over time it is prudent to consider differences between subgroups in more detail for the latest round of SASAS data to understand cleavages in awareness (

Table 5). It is encouraging to note that awareness of climate change is evident among the youngest age group with a higher-than-average mean score. Males also have higher awareness of climate change than females. A clear educational gradient is noted with those with a post-matric qualification significantly more aware of climate change than those with a matric (grade 12) or lesser qualification. Equally, those with a matric had significantly higher levels of awareness than those with an incomplete secondary qualification or less. Those with incomplete secondary education were also more aware than those with no formal schooling. Incrementally higher school levels therefore exhibit higher awareness.

Other socio-economic variables, such as subjective poverty status and asset quintiles, were also significant and positively associated with climate change awareness. Frequency of internet use also showed a positive correlation with awareness scores. Those with no internet access scored 44, rarely 47, sometimes 50, often 56, and very often 58, indicating that higher internet use is associated with higher climate change awareness.

Different ethnic groups showed varied scores. English speakers scored significantly higher, most likely due to a socio-economic and class bias. Conversely, isiXhosa and Sepedi linguistic groups had lower awareness levels. This suggests that language-based climate literacy programmes could be very beneficial in increasing climate change awareness among groups. Targeted efforts to deliver

information in multiple languages could help bridge the gap and ensure that critical messages about climate change reach all communities effectively.

Table 5: Climate change awareness by select subgroups, 2023 (mean scores 0-100)

Socio-demographics		Mean	Significance	Group difference
Age	16-24	52	P<0,005	25-34 < 60+ < 45-59 < 35-44 < 16-24
	25-34	47		
	35-44	52		
	45-59	49		
	60 and above	48		
Gender	Male	53	P<0,001	Female < Male
	Female	47		
Race	Black African	48	P<0,001	Coloured < black African < white, Indian/ Asian
	Coloured	45		
	Indian or Asian	71		
	White	65		
Children	No children	50	P=0,542 n.s	
	Children	50		
Socio-economic		**Mean**	**Significance**	**Group difference**
Education	Primary or no formal schooling (Less than Gr9)	33	P<0,001	Primary < incomplete secondary < matric < post-matric
	Incomplete secondary (Gr9-11/NCV 2/NCV 3)	45		
	Matric or equivalent (Gr12/ NCV 4)	52		
	Post-matric	68		
Subjective poverty status	Non-poor	59	P<0,001	Poor, just getting by < non-poor
	Just getting by	48		
	Poor	45		
Asset quintile	Poorest quintile	43	P<0,001	Poorest-middle quintiles<fourth< richest quintile
	Second quintile	48		
	Middle quintile	46		
	Fourth quintile	53		
	Richest quintile	68		
Internet access and use	No internet access/never use	44	P<0,001	Never, rarely < sometimes < often < very often
	Rarely	47		
	Sometimes	50		
	Often	56		
	Very often	58		
Socio-cultural				
Ethnicity	isiZulu	51	P<0,001	Sepedi, isiXhosa < Tshivenda & Xitsonga, Afrikaans, isiZulu, Setswana, Sesotho, Siswati & isiNdebele < English
	isiXhosa	42		
	Siswati & isiNdebele	53		
	Setswana	51		
	Sesotho	51		
	Sepedi	41		
	Tshivenda & Xitsonga	46		
	English	64		
	Afrikaans	49		
Spatial				
Geographic type	Urban formal metropolitan	53	P<0,001	Rural, urban informal < urban formal metro/ non-metro
	Urban formal non-metropolitan	54		
	Urban informal	46		
	Rural	44		
Province	Western Cape	43	P<0,001	LP, NC, EC, WC, NW, MP < GP, KZN, FS
	Eastern Cape	43		
	Northern Cape	42		
	Free State	57		
	KwaZulu-Natal	56		
	North West	45		
	Gauteng	56		
	Mpumalanga	48		
	Limpopo	40		

Impact of extreme weather events in last decade	Not at all	44	P<0,001	Not at all < to some extent, to a minor extent, to a great extent
	To a minor extent	53		
	To some extent	52		
	To a great extent	58		

Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

Spatial analysis showed that residents from rural and urban informal areas were much less aware of climate change than their counterparts living in urban formal metropolitan and non-metropolitan areas. This is again most likely a result of a socio-economic bias. Provincially, Gauteng, KwaZulu-Natal, and Free State on average had higher awareness than the other six provinces. These significant provincial differences underscore the importance of considering regional contexts when implementing policies or interventions. People who had been affected by extreme weather to some extent were more likely to be aware of climate change.

To determine which of all the variables remain significant when jointly considered, a multivariate analysis was again undertaken. For this specific analysis a stepwise regression was again used. The regression investigated the relationship between the various predictor variables and climate change awareness. **Table 6** shows that gender plays a role, with female respondents less likely to be aware of climate change than males, as indicated by a coefficient of -0.247 ($p < 0.05$). Population group differences were also evident, with white respondents showing higher awareness compared to black African respondents, reflected by a coefficient of 0.556 ($p < 0.01$).

Subjective health is inversely related to climate change awareness, with a coefficient of -0.004 ($p < 0.05$), suggesting that individuals with better health (subjectively evaluated) are slightly less likely to be aware of climate change. Education has a positive impact on awareness; each additional year of schooling increases awareness, indicated by a coefficient of 0.144 ($p < 0.001$). Frequent use of media correlates with higher climate change awareness, having a coefficient of 0.005 ($p < 0.01$). The type of geographic area of residence also influences awareness, with those living in urban formal non-metropolitan areas more likely to be aware of climate change (coefficient: 0.272, $p < 0.05$).

Table 6: Climate change awareness-summary of stepwise regression showing coefficients and significance and directions (positive=green; negative=red)

OUTCOME VARIABLE	Climate change awareness
PREDICTOR VARIABLES	
Female	-0.247*
Population group (Ref: Black African)	
Coloured	...
Indian/Asian	...
White	0.556**
Subjective health (low to high)	-0.004*
Years of education	0.144***
Social media usage (low to high)	0.005**
Geographic type (Ref: Urban formal metropolitan)	
Urban formal non-metropolitan	0.272*
Urban informal	...
Rural traditional authority areas	...
Rural farms	...
Ethnicity (ref=isiZulu)	
isiXhosa	...
Siswati & isiNdebele	...
Setswana	0.415*
Sesotho	...
Sepedi	...

Tshivenda & Xitsonga	...
English	0.742***
Afrikaans	...
Province (Ref=WC)	
Eastern Cape	...
Northern Cape	...
Free State	0.664**
KwaZulu-Natal	0.460**
North West	...
Gauteng	...
Mpumalanga	...
Limpopo	...
Occupation (Ref: Never worked for pay)	
Managers & professionals (ISCO 1-2)	0.509**
Mid-level worker categories (ISCO 3-5)	0.521**
Mid-low occupations (ISCO 6-8)	...
Elementary occupations (ISCO 9)	...
(Refused to answer) (Don't know)	...
Impact of extreme weather events (low to high)	0.007***

Note: Significance is denoted as follows: '...' not significant; * $p<0.05$, **$p<0.01$, *** $p<0.001$. Green shaded cells denote a significant positive association with climate change awareness, and red shaded cells a significant negative association.

Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

Ethnicity is another significant factor; respondents identifying with the Setswana ethnic group have a coefficient of 0.415 ($p < 0.05$), and those identifying with the English ethnic group have a coefficient of 0.742 ($p < 0.001$), both showing higher awareness compared to the isiZulu reference group. Provincial differences are notable, with respondents from the Free State (coefficient: 0.664, $p < 0.01$) and KwaZulu-Natal (coefficient: 0.460, $p < 0.01$) provinces demonstrating higher awareness compared to those from the Western Cape. Occupation status also impacts awareness. Managers and professionals (coefficient: 0.509, $p < 0.01$) and mid-level workers (coefficient: 0.521, $p < 0.01$) were more likely to be aware of climate change compared to unemployed individuals. Exposure to extreme weather conditions significantly enhance climate change awareness, with a strong positive association indicated by a coefficient of 0.007 ($p < 0.001$).

4.2.2 Climate change scepticism

The Intergovernmental Panel on Climate Change (IPCC), a leading international body that assesses climate science, has concluded that human activities are the dominant cause of the observed warming since the mid-20th century. This position is supported by credible scientific evidence with the majority of climate scientists agreeing that human activities are a major driver of climate change, supported by extensive research, data, and peer-reviewed publications (Yale Climate Connections, 2022). Human activities, such as the burning of fossil fuels (coal, oil, and natural gas) release greenhouse gases (GHGs) such as carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) into the atmosphere. GHGs get trapped in the earth's atmosphere, creating a warming effect commonly referred to as the greenhouse effect. In South Africa, the energy sector drives the country's GHG emissions, over half of which come from coal-powered electricity production. Other factors, such as natural climate variability, also play a role, but their influence is much smaller compared to human-induced factors.

Despite scientific consensus that climate change is predominantly driven by human activity, there is a school of thought that denies the extent of human influence on climate change or the severity of its potential impacts. The term 'climate change sceptics' is associated with those who reject or downplay the scientific consensus that human activities, particularly the burning of fossil fuels, contributes

significantly to global warming. Given that efforts to address climate change rely on human activity, it is critical that people acknowledge their role in the climate change phenomenon. Without this acknowledgement, there is likely to be no acceptance of personal responsibility, motivation, or urgency to change behaviour or policy.

Climate sceptics can generally be grouped in two main groups: trend sceptics and attribution sceptics (Rahmsdorf, 2004). Trend sceptics express the view that the world's climate is probably or definitely not changing while attribution sceptics maintain that the climate is changing but that it can entirely or mainly by attributed to natural processes. Individuals who ascribe to views related to trend or attribution scepticism are likely to be less inclined to have a desire to change their behaviour, given that they do not view climate change as a function of human activity nor as reality. To determine how common climate scepticism is among South Africans, four statements relating to climate scepticism were presented to respondents. **Figure 8** shows that a tenth of respondents exhibit views that align with those of climate change trend sceptics, denying any significant alterations in global climate patterns. A third (32%) of the public attributed observed weather changes to natural variability rather than human-induced factors, thus ascribing to the attribution philosophy. This implies that, in 2023, a large cluster of South Africans (42%—a figure that increases further if "don't know" responses are omitted) either denied the reality of climate change or ascribed it to natural causes, thus believing that it is not a function of human actions. Almost half of South Africans could therefore be classified as either trend or attribution sceptics.

Figure 8: Climate scepticism, 2020 and 2023 compared (%)
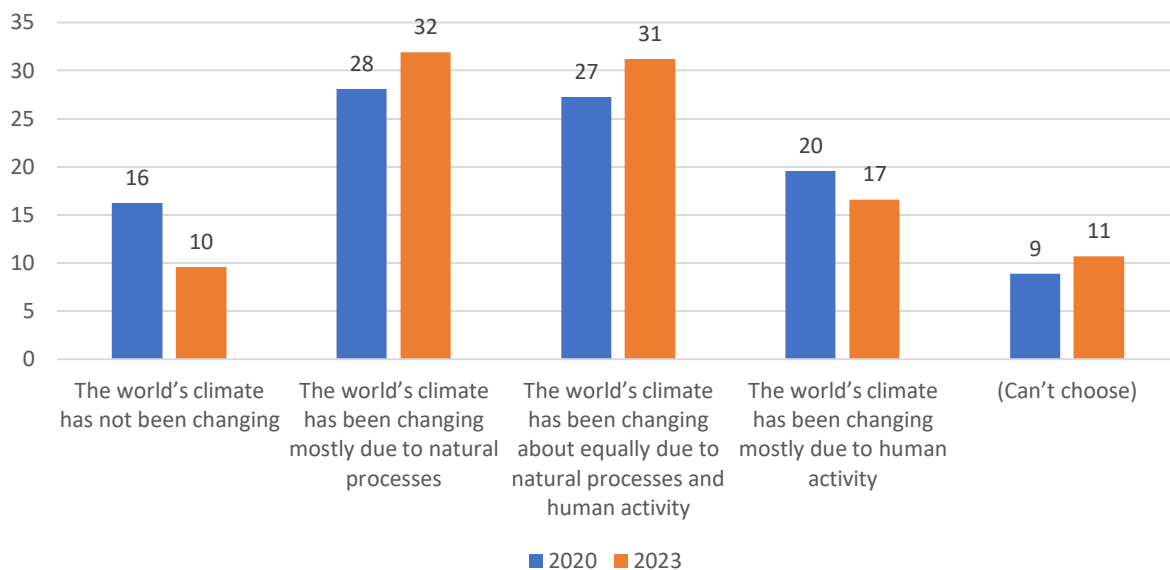
Source: HSRC SASAS 2020 and 2023.

Another substantial segment (31%) believed that climate change is a combination of natural and human influences. This perspective may resonate with individuals who acknowledge some impact from human activities but remain sceptical about the true extent of the human contribution. Only a fifth (17%) attributed climate change primarily to human activity. This group is less sceptical and more aligned with the mainstream scientific consensus, acknowledging the role of human actions in driving climate change. About 11% of respondents expressed indecision or uncertainty about the causes of climate change. The varying attributions to natural processes, human activity, or a combination of both suggest that scepticism exists and is the dominant narrative, reflecting a concerning tendency among the South African public.

To determine whether South Africans are exceptional in their views regarding climate scepticism, the 2020 South African results were compared to 28 other countries (**Figure 9**). The data derives from the

Environmental module of the 2020 International Social Survey Programme (ISSP). The ISSP is a cross-national survey programme which collects data on a variety of topics to compare regions and countries with each other. As is evident from Figure 9, the dominant response for most countries in Europe as well as New Zealand, Japan, Thailand, Australia, the USA, and India is that the climate has been changing mostly due to human activity. In contrast, countries such as Taiwan, Croatia, South Korea, the Philippines, Russia, China, and Slovakia mostly believe that the climate is changing because of both natural processes and human activity. South Africa is atypical in that it is the only country whose dominant response is that climate change is mostly a function of natural processes (28%). Of all countries, South Africa also has the highest proportion of trend sceptics (16%), which is more than double that of the Philippines (7%), the country that has the second highest proportion of trend sceptics. In addition, South Africa also has the third highest proportion of people who were uncertain about the issue and could not choose a category.

This comparative analysis indicates that South Africans are, relative to other countries, poorly educated about the causes of climate change. It has the highest proportion of attribution and trend sceptics of all countries included in this analysis, which indicates that a notable segment of the South African population does not fully recognize the severity or reality of climate change. Given that the proportion of South Africans who attribute climate change mostly to human activity has decreased between 2020 and 2023, it is paramount that public education and awareness campaigns informing people about their role in climate change be intensified. Policymakers would face challenges actioning and implementing climate action measures if a significant portion of the population does not acknowledge the human contribution to climate change. The relatively lower belief in human-caused climate change may therefore serve as a barrier to any efforts to reduce greenhouse gas emissions and implement sustainable practices.

Figure 9: Climate scepticism: South Africa in comparison to ISSP countries, 2020 (%), ranked low to high
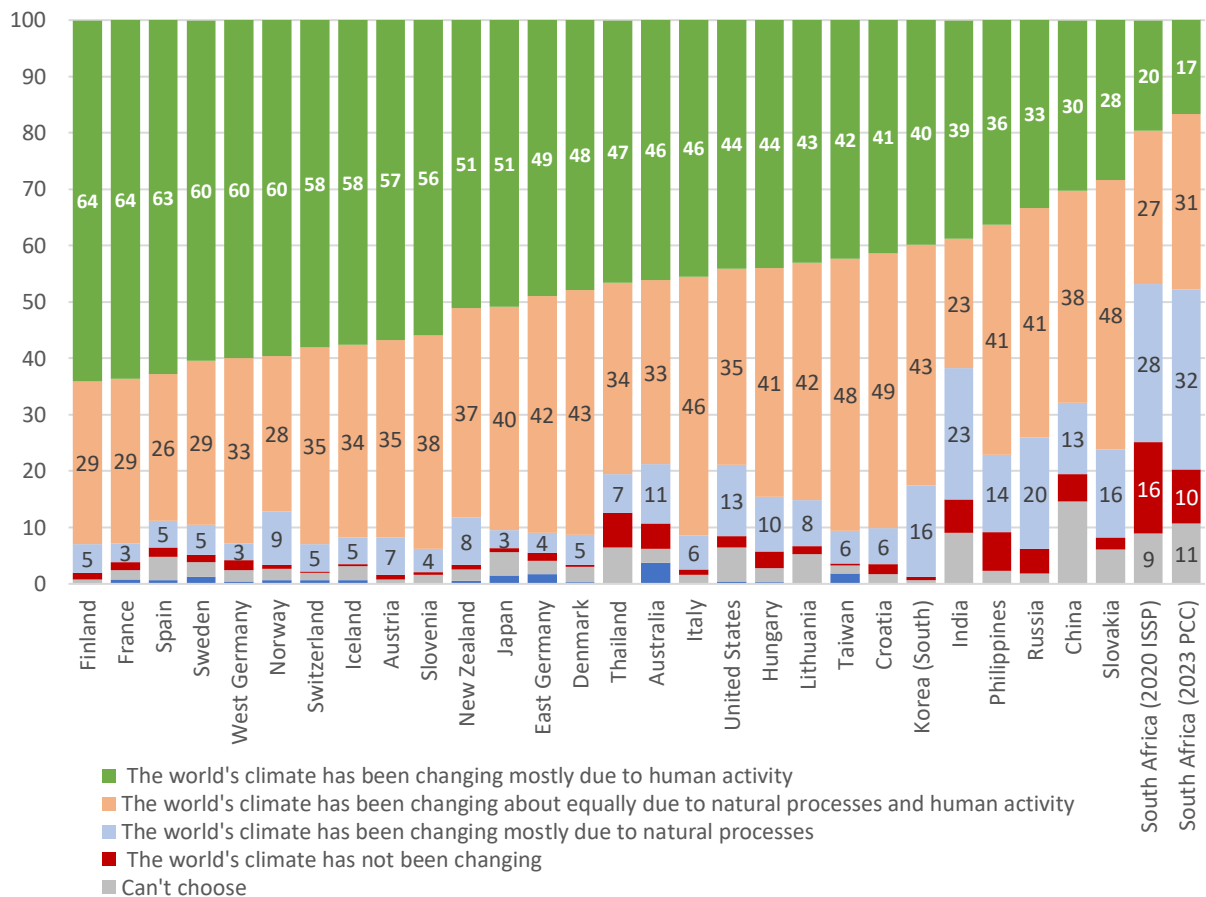
In **Table 7**, *trend* scepticism (the belief that the climate is not changing) and *attribution* scepticism (the belief that climate change is caused by natural processes) are examined by select socio-demographic attributes to determine which subgroups of society are most likely to be climate sceptics. As can be observed, the prevalence of climate change sceptics differs by age group, showing a gradual increase with age, and peaking in the 45-59 age group before decreasing among those aged 60 and above. Gender analysis showed that females have slightly higher attribution scepticism than males. Turning to race, we notice disparities across different population groups. Coloured respondents had the highest proportion of trend sceptics while black African adults had the highest proportion of attribution sceptics. Interestingly, educational or socio-economic status did not impact climate change scepticism beliefs linearly.

Table 7: Climate change scepticism by select subgroups (%)

		World's climate has not been changing (Trend sceptics)	Changing mostly due to natural processes (Attribution sceptics)	Total sceptics
Age of respondent	16-24	7	28	35
	25-34	9	30	39
	35-44	13	31	44
	45-59	11	40	51
	60 and above	7	32	38
Sex of respondent	Male	9	30	39
	Female	10	33	44
Population group of respondent	Black African	10	34	44
	Coloured	16	24	41
	Indian or Asian	2	20	21
	White	6	25	31
Level of education	Primary or no formal schooling	7	38	45
	Incomplete secondary	11	31	42
	Matric or equivalent	8	30	39
	Post-matric	11	35	46
Subjective poverty status	Non-poor	10	32	42
	Just getting by	10	32	43
	Poor	8	31	39
Asset index quintiles (polychoric PCA)	Poorest quintile	10	35	44
	Second quintile	11	34	45
	Middle quintile	11	29	40
	Fourth quintile	7	31	38
	Richest quintile	8	28	36
How often you spent time looking at social media websites in past month?	Never	14	38	52
	Rarely	13	32	44
	Sometimes	14	28	42
	Often	8	35	43
	Very often	7	25	32
Respondent ethnicity	isiZulu	2	33	35
	isiXhosa	13	37	50
	Siswati & isiNdebele	12	20	32
	Setswana	11	36	47
	Sesotho	14	37	51
	Sepedi	10	34	43
	Tshivenda & Xitsonga	21	36	56
	English	3	22	25
	Afrikaans	17	26	43
Geographic type	Urban formal metropolitan	11	28	39

		World's climate has not been changing (Trend sceptics)	Changing mostly due to natural processes (Attribution sceptics)	Total sceptics
	Urban formal non-metropolitan	8	33	41
	Urban informal	17	41	58
	Rural	8	33	41
Province	Western Cape	25	16	41
	Eastern Cape	5	46	50
	Northern Cape	14	29	43
	Free State	9	43	52
	KwaZulu-Natal	1	32	34
	North West	9	35	44
	Gauteng	9	35	45
	Mpumalanga	5	25	30
	Limpopo	15	25	40
Climate concern	Not at all worried	31	20	50
	Not very worried	10	34	44
	Somewhat worried	8	38	46
	Very worried	10	36	46
	Extremely worried	5	26	31
Personal pro-environmental norms	Low	23	30	49
	Mid-range	16	40	45
	High	10	42	39
Impact of extreme weather events in last decade	Not at all	17	32	49
	To a minor extent	11	38	49
	To some extent	7	32	39
	To a great extent	3	25	28

Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

To visually present the findings and make it easier to comprehend which proportion of the different subgroups are climate sceptics, a ranked bar chart was created showcasing climate sceptics (both trend and attribution) among the subgroups. This is essentially a graphical representation of Table *7*. As seen in the ranked bar chart in **Given that** climate change scepticism is not clearly linked to a particular socio-demographic or socio-economic demographic, and considering the variation among subgroups, it was deemed important to determine which variables remain significant when all socio-demographic variables are combined. To do so, a multivariate analysis (stepwise regression) was undertaken with scepticism as the dependent variable and socio-demographics as the independent variables. In addition to testing the socio-demographics, political activism, exposure to extreme weather events, and awareness of climate change were also added to the model. This was done to determine the relative strength of socio-demographics when considering other factors. Results reveal (**Table 8**) that the respondent's province remains significant and plays a substantial role in shaping climate change scepticism. Using the Western Cape as the reference category, the coefficient for KwaZulu-Natal is -0.549 ($p < 0.001$), indicating that respondents from KwaZulu-Natal were significantly less likely to be sceptical about climate change compared to those from the Western Cape. The type of geographic area where a person resides also influenced scepticism. Compared to urban formal metropolitan areas (the reference category), respondents from urban informal areas had a coefficient of 0.844 ($p < 0.001$), indicating a significantly higher level of climate change scepticism. Political activism was found to be a significant negative predictor of climate change scepticism. The coefficient of -0.010 ($p < 0.001$) indicates that higher levels of political activism are associated with lower levels of climate change scepticism. This suggests that individuals who are more politically active are less likely to be climate sceptics and therefore more attuned with the reality of climate change.

Figure *10*, the highest proportion of sceptics are found among people living in urban informal areas, speakers of Tshivenda and Xitsonga, residents of the Free State, and those who are never on social media. In contrast, those subgroups who have the least scepticism are those that are extremely worried about climate change, reside in Mpumalanga, who have been severely impacted by extreme weather events, and who speak English or are Indian/Asian.

Given that climate change scepticism is not clearly linked to a particular socio-demographic or socio-economic demographic, and considering the variation among subgroups, it was deemed important to determine which variables remain significant when all socio-demographic variables are combined. To do so, a multivariate analysis (stepwise regression) was undertaken with scepticism as the dependent variable and socio-demographics as the independent variables. In addition to testing the socio-demographics, political activism, exposure to extreme weather events, and awareness of climate change were also added to the model. This was done to determine the relative strength of socio-demographics when considering other factors. Results reveal (**Table 8**) that the respondent's province remains significant and plays a substantial role in shaping climate change scepticism. Using the Western Cape as the reference category, the coefficient for KwaZulu-Natal is -0.549 ($p < 0.001$), indicating that respondents from KwaZulu-Natal were significantly less likely to be sceptical about climate change compared to those from the Western Cape. The type of geographic area where a person resides also influenced scepticism. Compared to urban formal metropolitan areas (the reference category), respondents from urban informal areas had a coefficient of 0.844 ($p < 0.001$), indicating a significantly higher level of climate change scepticism. Political activism was found to be a significant negative predictor of climate change scepticism. The coefficient of -0.010 ($p < 0.001$) indicates that higher levels of political activism are associated with lower levels of climate change scepticism. This suggests that individuals who are more politically active are less likely to be climate sceptics and therefore more attuned with the reality of climate change.

Figure 10: Climate change trend and attribution sceptics ranked by select subgroups (%)
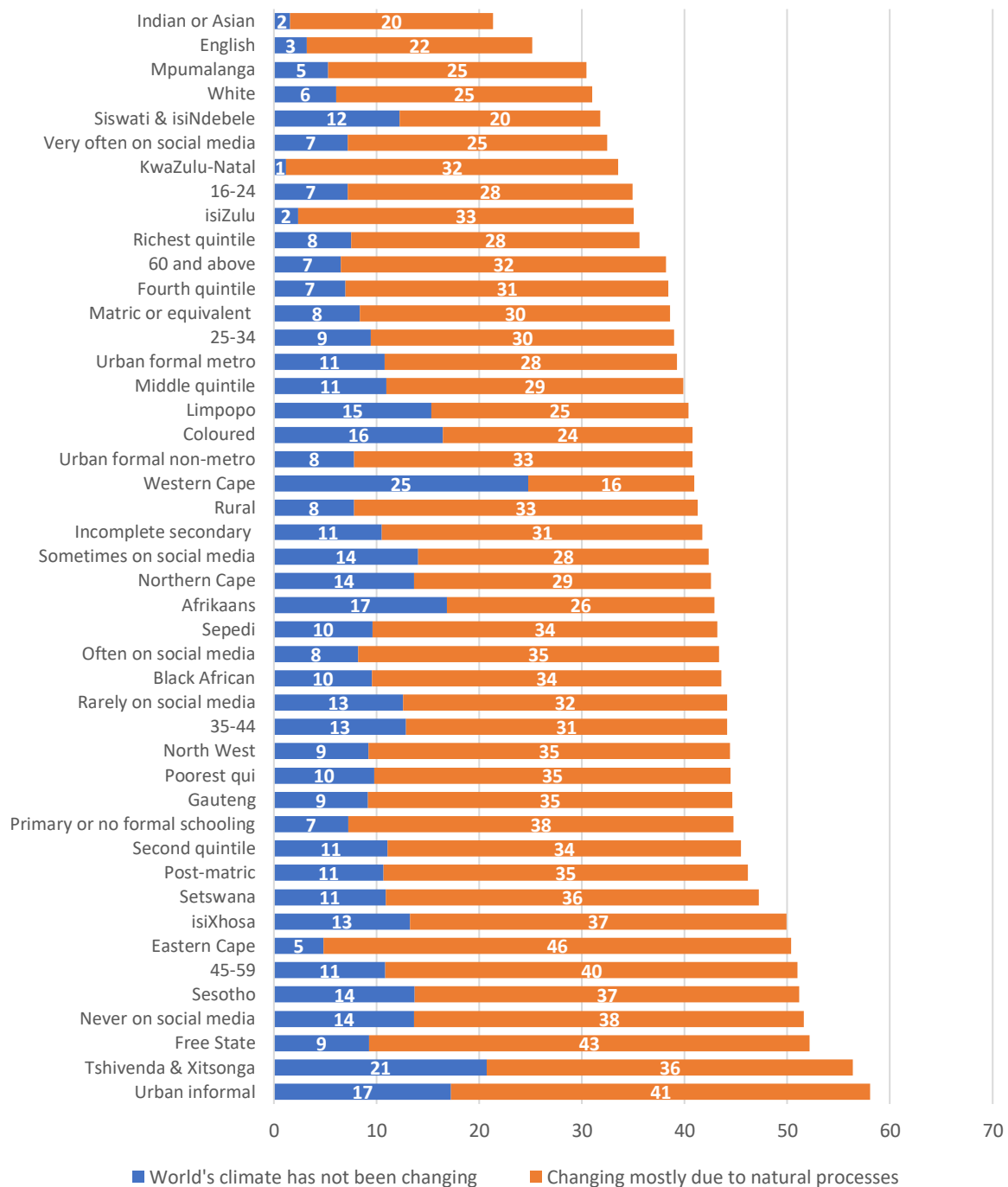
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition

The use of social media impacts climate change scepticism. With a coefficient of -0.105 (p < 0.01), increased social media usage is associated with decreased levels of climate change scepticism. This finding highlights the potential role of social media as a platform for disseminating information about climate change and reducing scepticism. Experiencing extreme weather events has a significant negative effect on climate change scepticism. The coefficient of -0.007 (p < 0.001) suggests that individuals who have experienced extreme weather events are less likely to be sceptical about climate change. This indicates that personal experiences with extreme weather can heighten awareness and concern about the reality of climate change. Awareness of climate change is another crucial factor

influencing scepticism. The coefficient of -0.013 (p < 0.001) demonstrates that higher levels of climate change awareness are associated with lower levels of scepticism. This underscores the importance of educational and awareness-raising initiatives in combating climate change scepticism.

Table 8: Climate change scepticism: A summary of stepwise regression showing coefficients and significance and directions (positive=green; negative=red)

OUTCOME VARIABLE	Climate Change Scepticism
PREDICTOR VARIABLES	
Province (Ref: Western Cape)	
Eastern Cape	…
Northern Cape	…
Free State	…
KwaZulu-Natal	-0.549***
North West	…
Gauteng	…
Mpumalanga	…
Limpopo	…
Geographic type (Ref: Urban formal metropolitan)	
Urban formal non-metropolitan	…
Urban informal	0.844***
Rural traditional authority areas	…
Rural farms	…
Political activism index (low to high)	-0.010***
Social media usage (low to high)	-0.105**
Impact of extreme weather events (low to high)	-0.007***
Climate change awareness (low to high)	-0.013***

Note: Significance is denoted as follows: '…' not significant; * p<0.05, **p<0.01, *** p<0.001. Green shaded cells denote a significant positive association with the dependent variable, and red shaded cells a significant negative association.
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

In summary, the analysis reveals that climate change scepticism is influenced by a combination of geographic, social, and experiential factors. Individuals from KwaZulu-Natal, those engaged in political activism, frequent social media users, those who have experienced extreme weather events, and those with higher climate change awareness are less likely to be sceptical about climate change. Conversely, residents of urban informal areas are more likely to exhibit climate change scepticism. These findings highlight the need for targeted interventions that consider these diverse factors to effectively address and reduce climate change scepticism.

4.2.3   Concern about climate change

Researching climate change concern is essential for effectively addressing this pressing global challenge (Brosch, 2021). It provides critical insights that inform policy, guide communication strategies, support educational initiatives, drive behavioural change, and foster international cooperation. (Bouman, et al., 2020; Gregersen, 2020). By understanding and leveraging public concern, society can mobilize more effectively to mitigate and adapt to the impacts of climate change. Given the importance of climate change concern, the survey included a question on this topic, which provides valuable insights into the varied levels of concern among South Africans. The same question was fielded in 2017, 2022, and 2023, and we are thus able to track changes in concern over this period.

As is evident from the aggregated totals in **Figure 11**, 45% of South Africans who agree that the climate is changing were extremely or very worried about climate change in 2023. Interestingly, this figure declined by 5% between 2022 and 2023, which seems somewhat counter-intuitive given that more

extreme weather patterns have been experienced in South Africa in the last 5 years. Of this proportion, 14% expressed an acute level of concern, identifying themselves as extremely worried about climate change. About a third (34%) expressed modest concern (were 'somewhat worried') about climate change.   Conversely, only a small percentage of South Africans stated that they were 'not at all concerned' or 'not very concerned' (15%) about climate change, indicating that a notable minority segment of the population is not worried about the issue. In addition, 6% expressed uncertainty. These results demonstrate that the majority of South Africans who are aware of climate change display concern, albeit to varying degrees.

Figure 11: Concern about climate change (excluding trend sceptics)
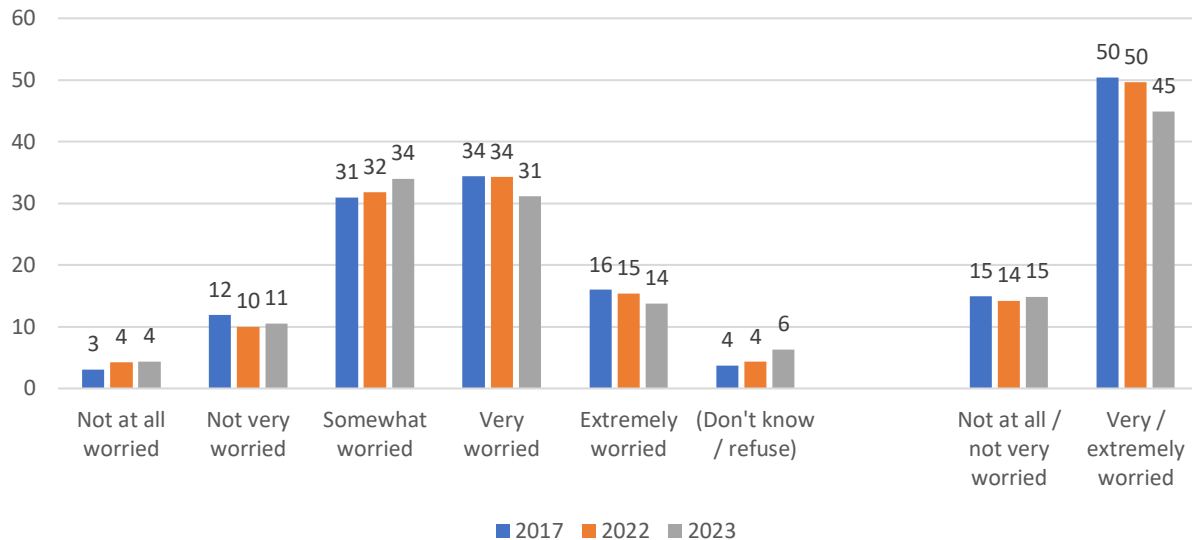
Source: HSRC SASAS 2017, 2022, and the 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

When considering climate concern from a relative perspective, we find that South Africans rate very high in terms of concern levels when compared to other European countries. Data points for 2017, 2022 and 2023 show that South Africans rate significantly higher than the European average and that out of the 25 countries listed, South Africa occupies the top three positions (below Germany and Portugal) for all rounds surveyed.

To determine which individuals exhibit more concern about climate change, concern was disaggregated by select socio-demographic, socio-economic, socio-cultural, and related variables. **Table 9** shows that concern about climate change varies across age groups with those aged between 25 and 44 registering lower concern than the other age groups. Racial differences were pronounced (P<0.001) with black African and coloured individuals registering significantly lower concern about climate change than Indian/Asian or white respondents. The presence of children had no significant effect on concern levels.

Education had a significant influence on climate change concern (P<0.004). Those with primary or no formal schooling or incomplete secondary education had significantly lower concern than those with matric or post-matric qualifications. Education therefore impacted climate change concern. Economic status showed significant differences (P<0.001) with the non-poor being more concerned than the poor and those just getting by. This was also confirmed using the asset quintile variable where the wealthiest quintile was significantly more concerned than any other quintile. Interestingly, health status was a significant factor (P<0.001). Those with vulnerable health status were significantly more concerned about climate change than those who classified their health as excellent.   Frequency of internet use correlated with concern levels (P<0.001). Those who rarely use the internet were

significantly less concerned than those who use the internet very often. Language differences were significant (P<0.001). Tshivenda and Xitsonga speakers had the lowest concern among all the ethnic groups whilst Siswati and isiNdebele scored the highest. Climate change concern also varied by geographic subtype with those residing in urban informal areas much less concerned about climate change than residents in any other geographic subtype. Provincial differences were significant (P<0.001). Limpopo residents seemed less concerned about climate change followed by North West and Gauteng, Western Cape, Eastern Cape, Northern Cape, Free State, KwaZulu-Natal and Mpumalanga.

Figure 12: Concern about climate change (among climate change believers): South Africa in comparison to Europe, ranked high to low based on the % that are very or extremely worried about climate change, 2017, 2021, 2023(%)
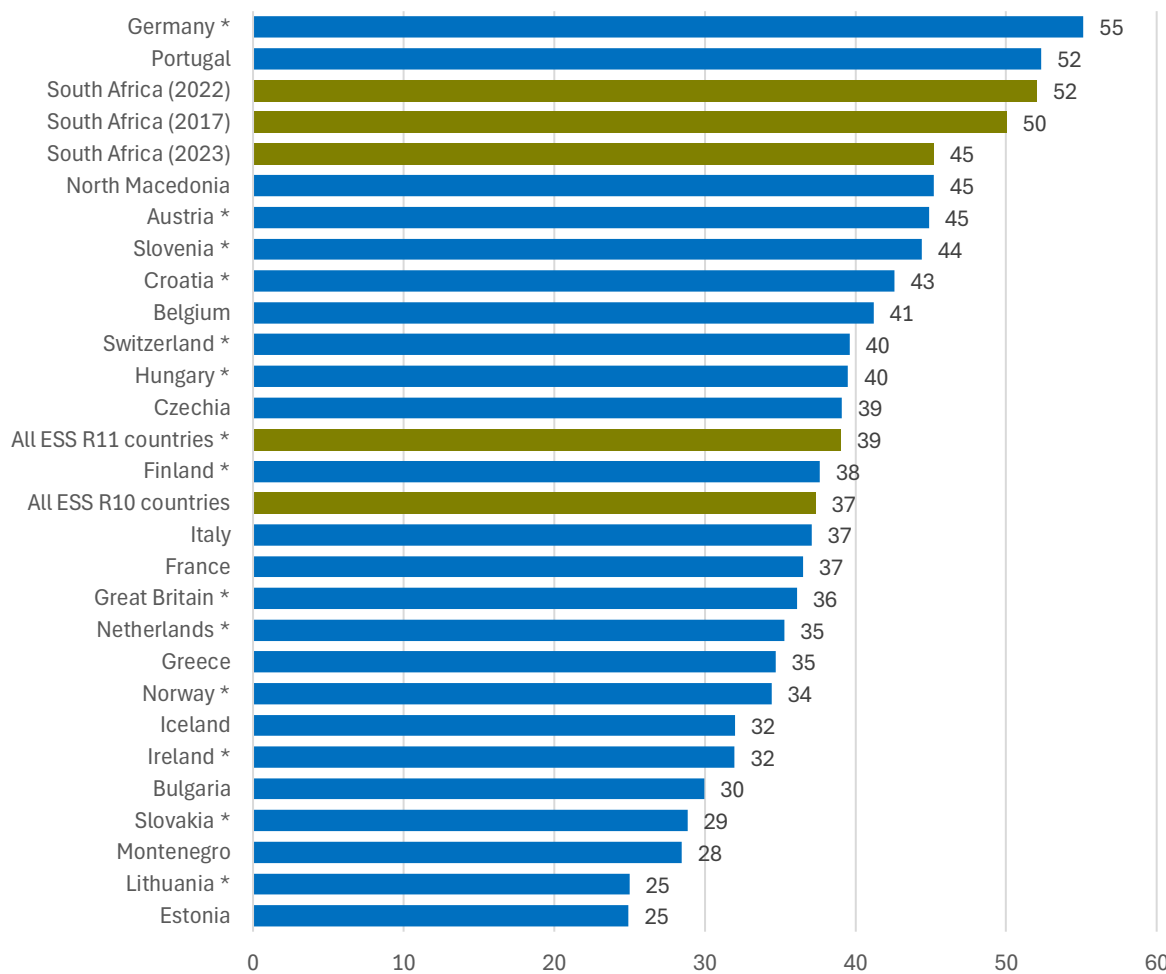
Source: ESS R10 2021; ESS R11 2023 (indicated by *); HSRC SASAS 2017, HSRC SASAS 2022; HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

In terms of socio-political factors, results showed that political ideology impacts concern levels. While the dominant narrative in literature is that a left-wing political ideology is mostly associated with higher concern about climate change (Gregersen, et al., 2020; Ballew, 2020), the opposite is true in South Africa, where a right-wing political orientation is associated with greater concern about climate change. This finding likely reflects the unique intersection of socio-economic, agricultural, and political realities faced by this group. Traditionally associated with rural areas and agricultural sectors, this group may be more attuned to the direct impacts of climate change on their economic stability, as changes in weather patterns, land use, and resource availability directly affect farming and rural

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livelihoods. Additionally, right-wing groups, which are often aligned with business interests and traditional industries, may recognize the potential for climate change to disrupt economic activities. Their general scepticism of the government's ability to effectively manage these issues could further heighten their concern.

Pro-environmental norms were also significantly associated with concern ($P<0.001$). Those with low pro-environmental norms were much less concerned about climate change than those with high pro-environmental norms. These findings illustrate the complex interplay of socio-demographic, socio-economic, socio-cultural, spatial, and socio-political factors in shaping individuals' concern about climate change.

Table 9: Concern about climate change by select subgroups in 2023 (mean scores 0-100)

Socio-demographic		Mean	Significance	Group difference
Age	16-24	59	P<0,005	25-34, 35-44 < 45-49, 16-24, 60+
	25-34	56		
	35-44	56		
	45-59	58		
	60 and above	62		
Gender	Male	57	P<0,427	
	Female	58		
Race	Black African	57	P<0,001	Coloured, black African < white, Indian/Asian
	Coloured	55		
	Indian or Asian	69		
	White	66		
Children	No children	58	P<0,684	
	Children	58		
Socio-economic		Mean	Significance	Group difference
Education	Primary or no formal schooling	57	P<0,004	Incomplete, primary or no formal schooling < matric, post-matric
	Incomplete secondary	56		
	Matric or equivalent	59		
	Post-matric	61		
Subjective poverty status	Non-poor	61	P<0,001	Poor, just getting by < non-poor
	Just getting by	57		
	Poor	56		
Asset quintile	Poorest quintile	57	P<0,001	Second < poorest, middle, fourth < richest quintile
	Second quintile	55		
	Middle quintile	58		
	Fourth quintile	59		
	Richest quintile	62		
Subjective health	Excellent	57	P<0,001	Good, very good, excellent < fair, poor
	Very good	57		
	Good	56		
	Fair	62		
	Poor	65		
Internet access	No internet access/never use	57	P<0,001	Rarely < no internet, rarely, often, sometimes, very often
	Rarely	51		
	Sometimes	58		
	Often	58		
	Very often	62		

Socio Cultural					
Language	isiZulu	60	P<0,001	Tshivenda & Xitsonga < Sepedi, Setswana, Sesotho, IsiXhosa, Afrikaans < isiZulu, English < Siswati & isiNdebele
	isiXhosa	57		
	Siswati & isiNdebele	67		
	Setswana	55		
	Sesotho	55		
	Sepedi	52		
	Tshivenda & Xitsonga	48		
	English	62		
	Afrikaans	59		
Spatial					
Geographic type	Urban formal metropolitan	59	P<0,001	Urban informal < rural, urban formal metro and non-metro
	Urban formal non-metropolitan	60		
	Urban informal	50		
	Rural	57		
Province	Western Cape	58	P<0,001	LP < NW, GP < WC, EC, NC < FS < KZN, MP
	Eastern Cape	59		
	Northern Cape	60		
	Free State	63		
	KwaZulu-Natal	63		
	North West	54		
	Gauteng	55		
	Mpumalanga	64		
	Limpopo	47		
Socio Political					
Ideological self-placement	Left	52		Left < right < centre
	Centre	60		
	Right	57		
Pro-environmental norm	Low	43	P<0,001	Low < mid-range < high
	Mid-range	55		
	High	66		

Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

To determine which of all the variables remain significant when considered together, a multivariate analysis was undertaken. For this specific analysis, a stepwise regression was again used which showed that several predictor variables influence the level of concern individuals have about climate change. As is evident from **Table 10**, the relationship between age and climate change concern shows a small but significant (P<0.037) positive effect. This indicates that as individuals age, their concern about climate change slightly increases.

One's province of residence plays a significant role in shaping climate change concern. Individuals from KwaZulu-Natal showed significantly less concern about climate change compared to those from the Western Cape (P<0.042). Residents of Gauteng exhibited even lower levels of concern (P<0.000), whilst the lowest concern about climate change was observed in Limpopo (P<0.000). This significant negative relationship may reflect regional socio-economic factors or levels of environmental education. Mid-level worker categories (ISCO 3-5) showed significantly lower concern about climate change compared to unemployed individuals (P<0.016). This might reflect the vulnerability of the unemployed to the reality of climate change.

A strong positive relationship was found between the perceived impact of extreme weather events and climate change concern (P<0.000). Individuals who have experienced extreme weather events were more likely to be concerned about climate change. This aligns with the idea that direct experiences with climate-related phenomena can heighten awareness and concern. Unsurprisingly, higher levels of awareness about climate change were significantly associated with greater concern (P<0.000) underscoring the importance of education and information dissemination in fostering public concern and motivating action. There was a small but significant negative effect of climate scepticism on climate change concern (P<0.009). Individuals who were more sceptical about climate change

tended to be less concerned about it. Addressing scepticism through credible scientific communication and engagement efforts would therefore be critical in order to increase public concern and support for climate action. In summary, age, regional differences, occupation, personal experiences with extreme weather events, awareness, and scepticism all play significant roles when considering climate change concern. These insights can inform targeted strategies to enhance public concern and drive collective action against climate change. For instance, region-specific educational campaigns, addressing occupational priorities, and combating climate scepticism through effective communication can be pivotal steps in this direction.

Table 10: Climate change concern-summary of stepwise regression showing coefficients and significance and directions (positive=green; negative=red)

OUTCOME VARIABLE	Climate Change Concern
PREDICTOR VARIABLES	
Age (years)	0.008*
Province (Ref: Western Cape)	
Eastern Cape	…
Northern Cape	…
Free State	…
KwaZulu-Natal	-0.289*
North West	…
Gauteng	-0.731***
Mpumalanga	…
Limpopo	-0.940***
Occupation (Ref: unemployed)	
Managers & professionals (ISCO 1-2)	…
Mid-level worker categories (ISCO 3-5)	-0.528*
Mid-low occupations (ISCO 6-8)	…
Elementary occupations (ISCO 9)	…
(Refused to answer)	…
(Don't know, inadequate response)	…
Impact of extreme weather events (low to high)	0.018***
Climate change awareness (low to high)	0.018***
Climate scepticism (low to high)	-0.005**

Note: Significance is denoted as follows: '…' not significant; * $p<0.05$, **$p<0.01$, *** $p<0.001$. Green shaded cells denote a significant positive association with the dependent variable, and red shaded cells a significant negative association.

Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

4.2.4   Personal responsibility to protect the environment

Having established the pattern of climate concern in the country, it was important to determine to what extent South Africans felt some obligation to do something about climate change. Respondents were asked to indicate the extent to which they feel a personal responsibility to try and protect the environment. Responses were captured using a 0-10 scale, with 0 representing little to no sense of personal responsibility for environmental protection, and 10 indicating a strong sense of personal responsibility. Results showed that the average score for South Africans on this scale was 6.23, suggesting that, in general, respondents felt a moderate to strong sense of personal responsibility for environmental protection.

When pro-environmental norms from South Africans are compared to other European countries (Figure 13), it is evident that there is diversity in attitudes across different regions, with some Eastern European nations lagging behind Western and Northern Europe. South Africa's position near the

middle-upper range places it in a relatively progressive stance compared to much of Eastern Europe, but still behind the highest-scoring Western nations.

Figure 13: Pro environmental norms: South Africa in comparison to Europe, mean scores (0-10) ranked high to low, 2021, 2023(%)
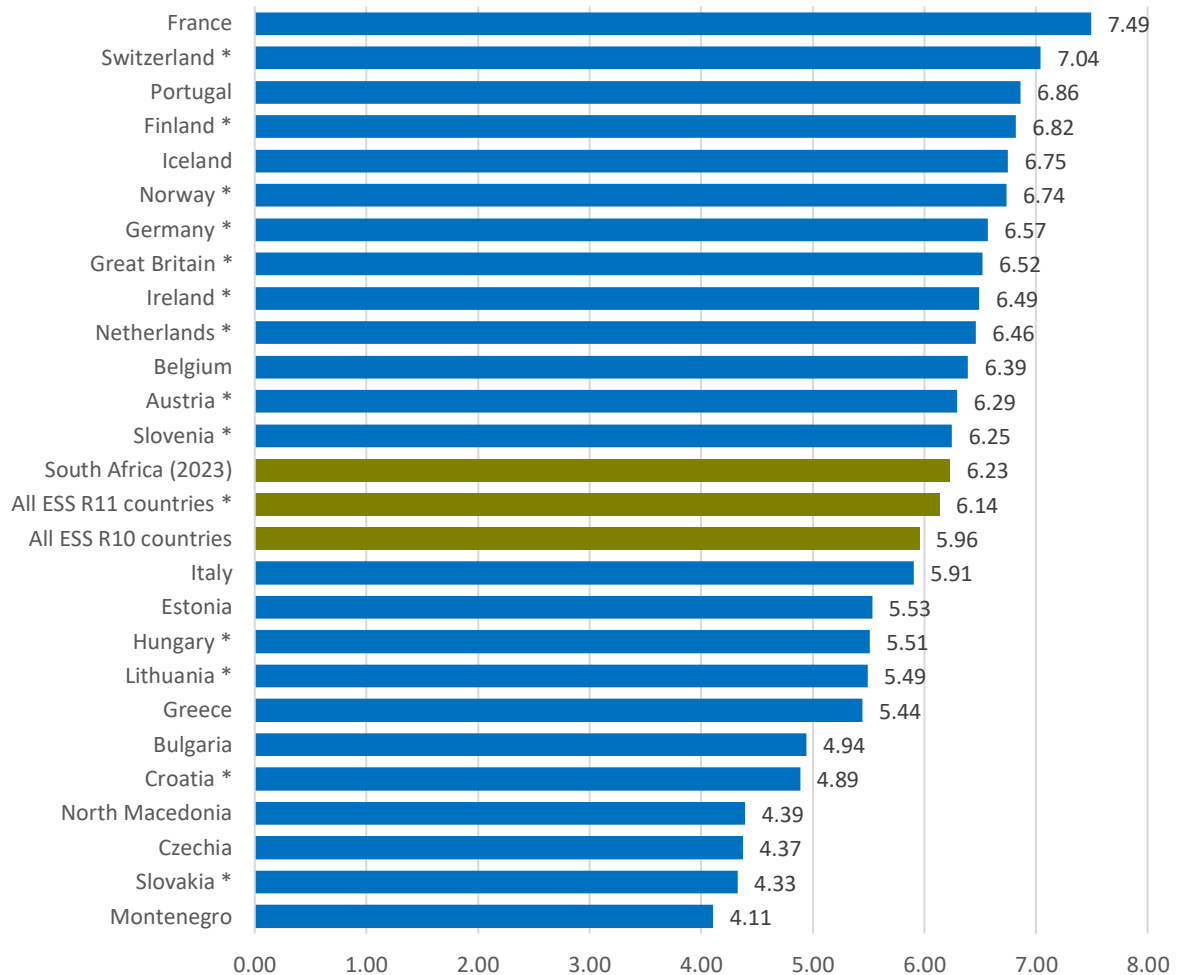
Source: ESS R10 2021; ESS R11 2023 (indicated by a *); HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

Figure 14 shows that around a quarter (25%) of South Africans have a very high sense of responsibility to try and reduce climate change. Another third (34%) have a high sense of responsibility. Taken together, just over half of South Africans feel a sense of urgency to do something about climate change. In contrast, a fifth of South Africans have a medium sense of responsibility while another fifth have a low sense of responsibility. A large proportion of South Africans therefore have no urgency in terms of feeling a personal responsibility towards doing something about climate change.

Figure 14: Personal responsibility to protect the environment (0-10 scale)
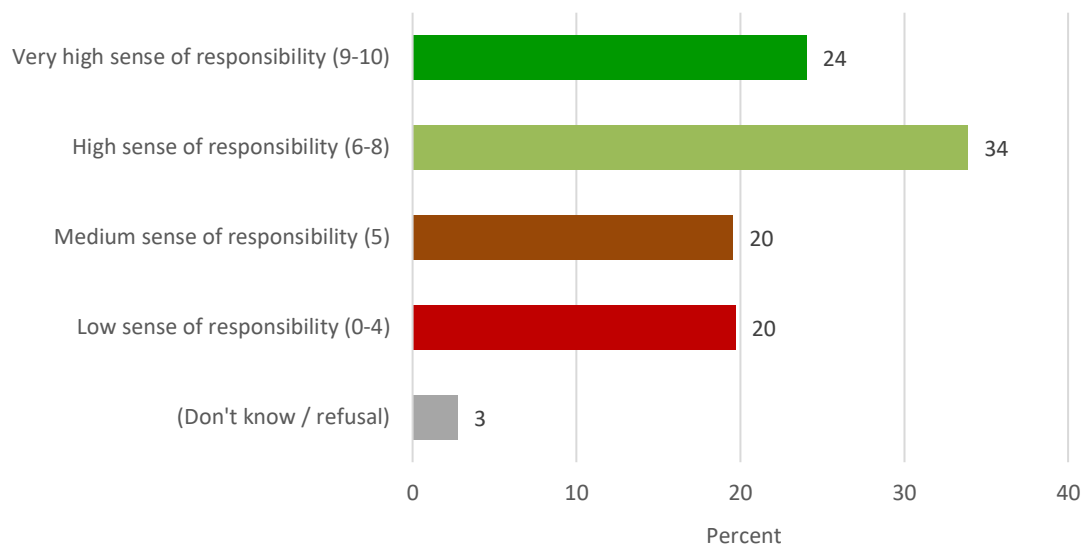
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

As shown in **Table 11**, younger adults (16-24) and older adults (60 and above) had the highest mean scores for pro-environmental norms (63 and 67, respectively) while the middle age groups (25-34, 35-44, 45-59) had lower mean scores, with a noticeable dip in the 35-44 age range (mean value 60). Males and Females had similar pro-environmental mean scores. Indian or Asian individuals had the highest mean score, indicating the strongest pro-environmental norms compared to other race groups. Black African adults had the lowest mean score with coloured individuals also lower compared to white and Indian or Asian. Having or not having children did not affect pro-environmental norms. Education did influence pro-environmental norms as did socio-economic status with higher levels of education, and the non-poor or those in the highest asset quintile exhibited higher pro-environmental norms.

Table 11: Pro-environmental norm by select subgroups in 2023 (mean scores 0-100)

Socio-demographics		Mean	Significance	Group difference
Age	16-24	63	P<0,003**	25-34, 35-44 < 16-24,45-59, 60+
	25-34	61		
	35-44	60		
	45-59	63		
	60 and above	67		
Gender	Male	63	P<0,114 n.s.	
	Female	62		
Race	Black African	62	P<0,001**	Coloured, black African <white, Indian/Asian
	Coloured	61		
	Indian or Asian	73		
	White	66		
Children	No children	62	P=0,936 n.s.	
	Children	62		
Level of education (collapsed)	Primary or no formal schooling	61	P<0,001**	Incomplete secondary< primary, post-matric, matric or equivalent
	Incomplete secondary	59		
	Matric or equivalent	65		
	Post-matric	64		
Subjective poverty status (collapsed scale)	Non-poor	65	P<0,004**	Poor, just getting by<non-poor
	Just getting by	62		
	Poor	61		

Socio-demographics (continued)		Mean	Significance	Group difference
Asset index quintiles (polychoric PCA)	Poorest quintile	58	P<0,001**	Poorest & second poorest < middle, fourth < richest quintile
	Second quintile	62		
	Middle quintile	63		
	Fourth quintile	63		
	Richest quintile	68		
Frequency of use of internet	No internet access/never use	60		Rarely, no internet access<sometimes, often<very often
	Rarely	57		
	Sometimes	63		
	Often	63		
	Very often	67		
Socio Cultural				
Ethnicity	isiZulu	62	P<0,001**	Sepedi< Tshivenda & Xitsonga, Setswana, isiZulu, Afrikaans, isiXhosa, Siswati & isiNdebele, Sesotho, English
	isiXhosa	64		
	Siswati & isiNdebele	65		
	Setswana	61		
	Sesotho	66		
	Sepedi	50		
	Tshivenda & Xitsonga	60		
	English	67		
	Afrikaans	64		
Spatial				
Geographic type	Urban formal metropolitan	65	P<0,001**	Urban informal<rural<rural trad auth area, urban formal
	Urban formal non- metropolitan	66		
	Urban informal	52		
	Rural	59		
Province	Western Cape	60	P<0,001**	LP< WC, GP, KZN, NW, NC, MP < FS, EC
	Eastern Cape	69		
	Northern Cape	66		
	Free State	69		
	KwaZulu-Natal	62		
	Northwest	65		
	Gauteng	62		
	Mpumalanga	68		
	Limpopo	48		
Environmental		Mean	Significance	Group difference
Concern about climate change	Not at all worried	45	P<0,001**	Not at all worried; not very worried<Somewhat worried< Very worried; extremely worried
	Not very worried	53		
	Somewhat worried	59		
	Very worried	70		
	Extremely worried	72		
Impact of extreme weather events in last decade	Not at all	58	P<0,001**	Not at all, to a minor extent, to some extent<To a great extent
	To a minor extent	59		
	To some extent	64		
	To a great extent	74		

Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

Higher internet use correlated with higher pro-environmental norms. The range in scores across different ethnicities varied with English speakers having the highest mean score and Sepedi speakers the lowest. Type of geographic location impacted pro-environmental norms, with those residing in urban formal areas having higher mean scores compared to those in urban informal and rural areas. Limpopo residents scored lowest on this metric while Eastern Cape and Free State scored highest.

Pro-environmental norms increase with the level of concern about climate change. Those who are extremely worried have the highest pro-environmental scores, while those who are not worried at all have the lowest. Higher perceived impact from extreme weather events correlates with higher pro-environmental norms.

In order to determine which of all the variables remain significant when put together, a multivariate analysis was again undertaken. For this specific analysis a stepwise regression was again used. The analysis examined the predictors of pro-environmental norms, focusing on demographic, occupational, social, geographic, and environmental factors (**Table *12***). Results reveal that age is a positive predictor of pro-environmental norms ($p < 0.05$). The coefficient of 0.010 indicates that as individuals age, their pro-environmental norms tend to increase. This suggests that older individuals are more likely to adopt behaviours and attitudes that are environmentally friendly. Occupational status significantly affects pro-environmental norms. Compared to unemployed individuals (the reference category), managers and professionals ($p < 0.05$) have higher pro-environmental norms. The use of social media positively influences pro-environmental norms.

Table 12: Pro-environmental norms -summary of stepwise regression showing coefficients and significance and directions (positive=green; negative=red)

OUTCOME VARIABLE	Pro-environmental norms
PREDICTOR VARIABLES	
Age (years)	0.010*
Occupation (Ref: unemployed)	
Managers and professionals	0.285*
Mid-level worker categories (ISCO 3-5)	…
Mid-low occupations (ISCO 6-8)	…
Elementary occupations (ISCO 9)	…
(Refused to answer)	…
Social media usage (low to high)	0.141**
Province (Ref: Western Cape)	
Eastern Cape	0.610***
Northern Cape	0.439*
Free State	0.670**
KwaZulu-Natal	…
North West	0.762***
Gauteng	…
Mpumalanga	0.598**
Limpopo	…
Geographic type (Ref: Urban formal metropolitan)	
Urban formal non- metropolitan	…
Urban informal	-0.681**
Rural trad, Auth area	-0.345**
Rural farms	-0.737**
Impact of extreme weather events (low to high)	0.005*
Climate concern (low to high)	0.017***
Pseudo R-squared	0.0369

Note: Significance is denoted as follows: '…' not significant; * $p<0.05$, **$p<0.01$, *** $p<0.001$. Green shaded cells denote a significant positive association with the dependent variable, and red shaded cells a significant negative association.

Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

With a coefficient of 0.141 ($p < 0.01$), increased social media usage is associated with higher pro-environmental norms. This finding suggests that social media can be an effective platform for promoting environmental awareness and encouraging pro-environmental behaviours. Geographic location significantly influences pro-environmental norms. Using the Western Cape as the reference category, several provinces show higher pro-environmental norms namely the Eastern Cape, Northern Cape, Free State, North West, and Mpumalanga. The type of geographic area also influences pro-

environmental norms. Compared to urban formal metropolitan areas (the reference category), urban informal areas, rural traditional authority areas, and rural farms have lower pro-environmental norms.

Experiencing extreme weather events has a positive effect on pro-environmental norms. The coefficient of 0.005 ($p < 0.05$) suggests that individuals who have experienced extreme weather events are more likely to adopt pro-environmental norms. This indicates that direct experience with the impacts of climate change can enhance environmental awareness and behaviour. Climate concern is a strong positive predictor of pro-environmental norms. With a coefficient of 0.017 ($p < 0.001$), higher levels of concern about climate change are associated with higher pro-environmental norms. This underscores the importance of raising awareness about climate change to foster environmentally responsible behaviours.

The analysis highlights the complex interplay of demographic, occupational, social, geographic, and environmental factors in shaping pro-environmental norms. Older individuals, managers and professionals, frequent social media users, and those with higher climate concern and experience of extreme weather events are more likely to exhibit pro-environmental norms. Conversely, residents of urban informal areas, rural traditional authority areas, and rural farms tend to have lower pro-environmental norms. These insights are crucial for developing targeted strategies to promote pro-environmental behaviours across different segments of the population.

4.3   JUST TRANSITION AWARENESS AND ATTITUDES

4.3.1   Awareness of energy transition/just transition

The second section of the survey module focused more specifically on perceptions towards the just transition, especially the JET. According to the PCC, people must be at the heart of the climate change response and the notion of the just transition entails 'seizing the opportunities and managing the risks associated with climate change, with an overarching goal of improving the lives and livelihoods of ALL South Africans, particularly those most impacted' (PCC, 2022:3). More specifically, the PCC states further that the JET 'focuses on the transition of South Africa's energy sector as the country navigates the shift away from coal towards cleaner sources of energy', and that achieving this will require 'ensuring that the lives and communities that are tied to high-emitting energy industries (e.g., coal) are not left behind in the shift towards a low emissions economy.' The Commission places a strong emphasis on the fact that the energy transition must be 'fair and perceived to be fair', and that it can stimulate the creation of new and better employment opportunities, while advancing national development priorities such as poverty reduction and social justice.

Figure 15: How much have you read or heard about the Just Transition actions? (2023, %)
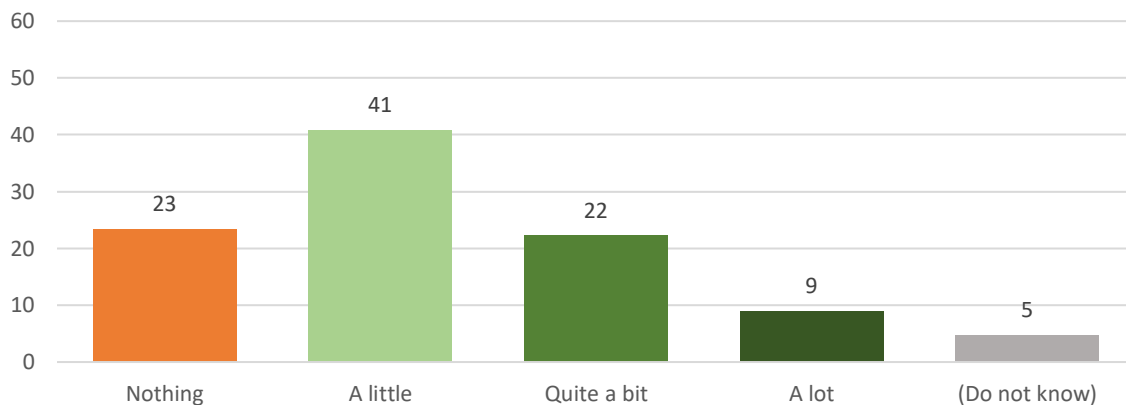
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

In anticipation of the possibility of low awareness of the terms 'just transition' or 'Just Energy Transition', respondents were introduced to the concept more generally as 'moving away from coal to other renewable energy sources.' The specific introductory statement was the following: 'Most of South Africa's electricity currently comes from coal. There are now actions being taken to change from coal power to other sources of energy (like solar and wind).' The first question posed to respondents was whether they had heard or read about any of these efforts. As **Figure 15** shows, the most common response provided by the public (41%) was that they had read or heard 'a little' about this, while a further 31% responded that they knew 'quite a bit' or 'a lot' about this subject. At the time of surveying, almost three-quarters of South Africans had therefore heard or read something about the energy transition. It is however concerning that almost a quarter (23%) had never heard of it and another 5% provided 'don't know' responses.

Figure 16: How much have you read or heard about Just Transition action for different subgroups (2023)

Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

It was expected that self-reported awareness of the shift away from coal would differ by socio-demographic grouping. To test this thesis, an examination of how different subgroups answered the just transition awareness question depicted in Figure 15 was conducted. A detailed analysis of how various socio-demographic groups responded to the question is presented in **Figure 16.** These findings highlight the spectrum of familiarity with the Just Transition within the adult population, ranging from complete unawareness to substantial exposure. These findings are invaluable for designing targeted

educational campaigns and policy interventions aimed at enhancing understanding and engagement with energy transition initiatives. Persons living in rural areas were less likely to be aware of the change than urban dwellers. Examining the urban population, levels of awareness were found to be comparatively low for those residing in informal areas. Substantial attitudinal differences by province of residence were also identified. Awareness was lowest among Limpopo residents, followed by the North West and the Northern Cape. Awareness was highest in Gauteng and the Western Cape.

Reviewing **Figure 16**, it was clear that one of the most significant predictors of public awareness was educational attainment. Those with post-secondary education were the most likely to have read or heard about the change from coal to other cleaner energy sources. More than half of persons with a post-secondary education had read or heard quite a bit (37%) or a lot (13%) about it. Additional statistical testing confirmed the link between awareness and formal educational attainment. Differences in awareness levels were noted amongst population groups in the figure. Adult members of the country's racial minorities had much higher levels of awareness than their counterparts in the black African group. Looking at the black African population more closely, the groups with the lowest levels of awareness were the Xhosa, Pedi, Venda, and Tsonga. Persons who were in paid work reported higher levels of awareness than those not working. Further analysis showed, perhaps unsurprisingly, that managers, professionals, and mid-level workers were more likely to be aware than other workers.

Table 13: Mean self-reported knowledge of the actions being taken to change from coal to other energy sources (0-100) by a range of different subgroups

Socio-demographic			Mean	Significance	Group differences[5]
Age	16-24		36	P=0,006 **	60 and above < 25-34
	25-34		40		
	35-44		39		
	45-59		37		
	60 and above		34		
Gender	Male		39	P=0,002 **	Female < Male
	Female		36		
Race	Black African		35	P<0,001 ***	Indian/ Asian > Black African, coloured.
	Coloured		41		White > Indian/ Asian, black African, coloured.
	Indian or Asian		48		
	White		50		
Socio-demographic			**Mean**	**Significance**	**Group differences**
Education	Primary or no formal schooling		25	P<0,001 ***	Post-matric > Primary, Incomplete, Matric
	Incomplete secondary		30		Matric > Primary, Incomplete
	Matric or equivalent		43		
	Post-matric		51		
Geographic					
Geographic type	Urban formal metropolitan		44	P<0,001 ***	Metro > urban formal non-metro, urban informal, Rural trad. auth., Rural farms. Urban formal non-metro > Rural trad. auth., Rural farm
	Urban formal non- metropolitan		39		
	Urban informal		31		
	Rural traditional authority area		30		
	Rural farm		30		
Province	Western Cape		42	P<0,001 ***	WC > NC, NW, LP; GP > EC, NC, NW, LP; LP < KZN, FS, WC, EC; FS > NC
	Eastern Cape		34		
	Northern Cape		30		
	Free State		41		
	KwaZulu-Natal		36		
	North West		31		
	Gauteng		43		
	Mpumalanga		35		
	Limpopo		25		

Note: Significance is denoted as follows: * p<0.05, **p<0.01, *** p<0.001.

Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

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[5] Group differences calculated using Tukey SHD (SPSS)

To verify the results shown in Figure 16, Analysis of Variance (ANOVA) tests were performed to assess whether there were statistically significant differences among the various subgroups listed in that figure. These tests are especially useful for comparing multiple groups or conditions at once. The categorical variable depicted in Figure 16 was converted to a scale of 0 to 100, where a higher score reflects greater knowledge about the 'just transition'. As can be observed in **Table 13**, the ANOVA tests confirmed significant differences across population groups and educational attainment levels. There were also notable variations among provinces and geographic type categories. Differences among age and gender groups were statistically significant but relatively minor. In conclusion, the supplementary ANOVA tests performed here supported the findings presented in Figure 16.

Based on the subgroup analysis discussed earlier, a stepwise correlation analysis was conducted to pinpoint the key variables affecting self-reported knowledge about the shift away from coal. Climate change knowledge, climate scepticism, climate concern, and pro-environmental norms were examined along with several background control variables. The forward selection method was employed, using an entry criterion of $p<0.050$ and a removal criterion of $p>0.100$. The results of the correlation model are presented in **Table 14**; a positive coefficient in the table reflects greater knowledge of the change from coal to other energy sources. Consistent with what was seen in the subgroup analysis, formal education was positively associated ($r=0.094$; SE=0.019) with knowledge in the model. Climate change knowledge ($r=0.008$; SE=0.002), climate concern ($r=0.015$; SE=0.003), and personal environmental norms ($r=0.008$; SE=0.003) were also identified as positive determinants of self-reported knowledge. News media usage ($r=0.007$; SE=0.002) was a positive predictor of attitudes here. The more often a person listened to the news, the more likely they were to be aware of the 'just transition'. In addition, model outputs showed that climate change scepticism (-0.006; SE=0.002) had a negative impact on self-reported knowledge.

Table 14: Stepwise correlation for an ordered logistic regression of self-reported knowledge of the actions being taken to change from coal to other energy sources

OUTCOME VARIABLE	Knowledge of energy transition efforts
PREDICTOR VARIABLES	
Age	…
Gender (ref. male)	…
Population group (ref. black African)	
Coloured	…
Indian or Asian	…
White	0.675 **
Years of schooling	0.094***
Asset index (polychoric)	…
Geographic type (ref. Urban formal)	
Urban informal	…
Rural	…
News media usage	0.007***
Climate change knowledge	0.008***
Climate change scepticism	-0.006**
Climate concern	0.015***
Personal pro-environmental norms	0.008**

Note: 1. Significance is denoted as follows: * $p<0.05$, **$p<0.01$, *** $p<0.001$. Green shaded cells denote a significant positive association with the dependent variable, and red shaded cells a significant negative association. Statistically insignificant variables are not displayed; 3. Number of observations is 2,848; 4. Model controls for province of residence; and 5. Wald chi^2(15)= 241.50; Prob>chi^2 = 0.000; Log pseudolikelihood = -44789468; Pseudo R^2 = 0.094.
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

To test the assumption that not many South Africans know the term 'just transition', the specific term was read out to the respondents, and they were then asked to indicate how familiar they were with it. In line with the study's assumption, the results presented in **Figure 17** confirm that a significant portion

of South Africans (65%) had never heard of the term, a tenth (13%) had heard of the term but did not understand what it meant, and 13% stated that they did not know how to respond. Less than a tenth (9%) indicated that they understood the term. This essentially points to a broad-based lack of understanding of the term 'just transition'. This therefore reveals that although there is general awareness of the concept of the energy transition in South Africa, there is very little understanding of the specific term 'just transition'.

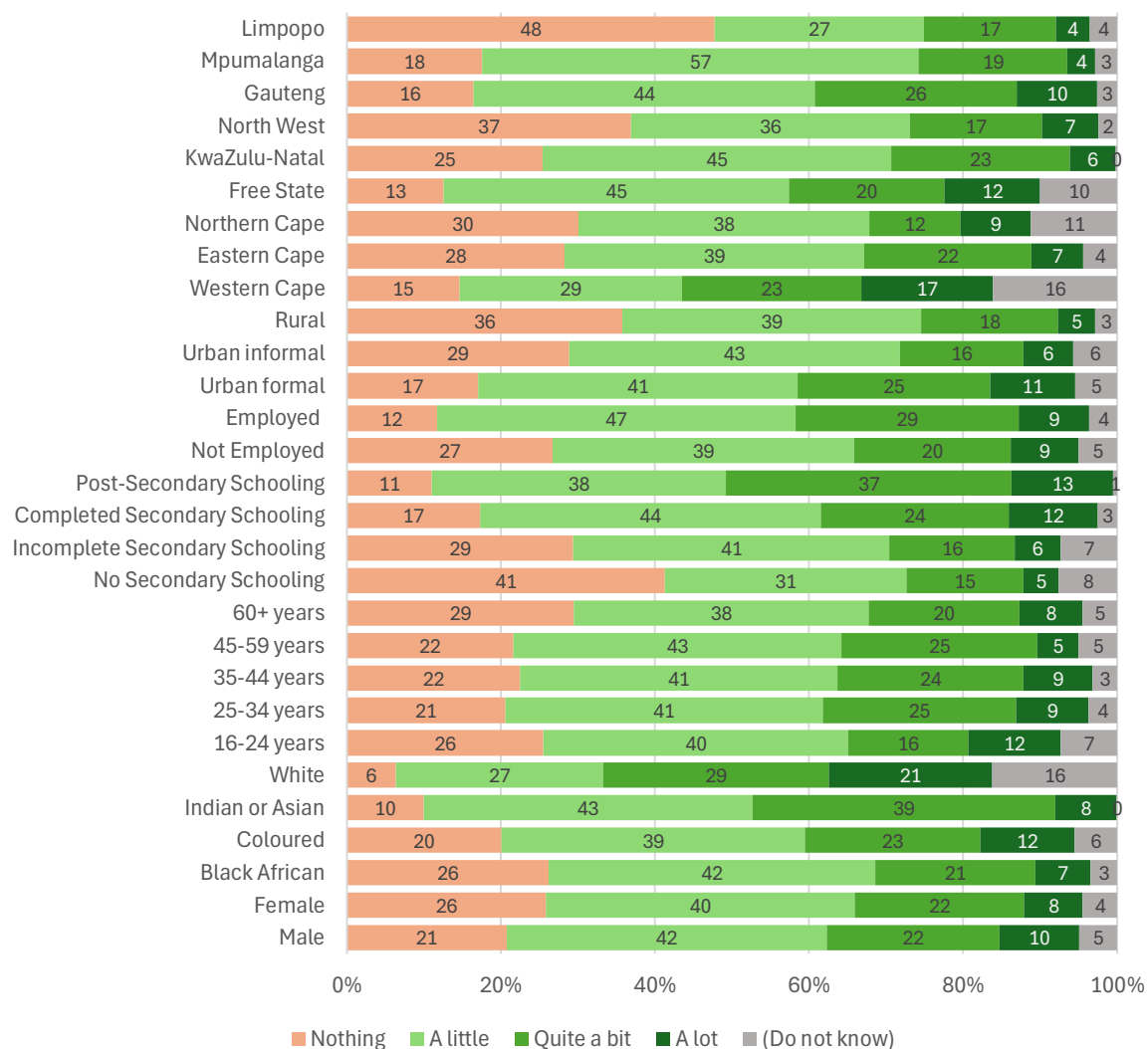**Figure 17: Have you heard of the term 'just transition'? (2023, %)**
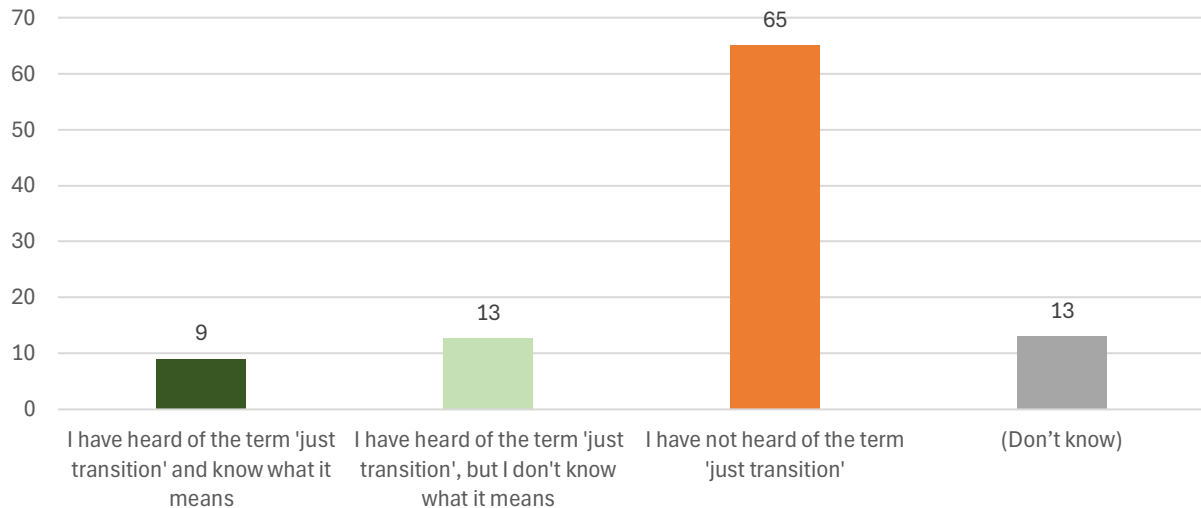
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

The pairwise correlation test was conducted to examine the relationship between knowledge and awareness. The correlation coefficient produced was 0.179 (statistically significant at p<0.050); this outcome suggests a positive linear relationship between the two variables. But this result, while indicating a positive relationship, suggests that the correlation is not strong. In other words, knowledge and awareness do not have a very pronounced linear relationship. Consider that only a minority of those who had read or heard a lot about the transition away from coal had either just heard the term 'just transition' (24%) or understood the term (16%). People who knew about climate change were more likely to know the term 'just transition' than people who did not. More than a third (34%) of those who had a lot of knowledge of climate change were aware of the term 'just transition'. Interestingly, we did not find a linear relationship between climate change scepticism and awareness of the term. Awareness levels were similar for those who thought the world's climate was changing and for those who did not.

Based on the results shown in Figure 16, it was anticipated that self-reported knowledge of the 'just transition' would vary significantly across different socio-demographic groups. To evaluate this hypothesis, a review of how various subgroups responded to the question illustrated in Figure 17 was conducted. A comprehensive analysis of the responses from different socio-demographic groups is provided in **Figure 18**. These results reveal a wide range of familiarity with the term among the public. In contrast with what was seen in Figure 16, male adults reported somewhat higher levels of knowledge than their female counterparts. About 11% of men said that they understood the term while only 7% of women gave the same answer. When compared to those in urban areas, individuals living in rural areas were less likely to be knowledgeable about the term. When compared to those living in formal urban areas, knowledge was notably lower among residents of informal settlements. This geographic dissimilarity is consistent with what was observed with respect to familiarity with the concept of moving away from coal generally (Figure 16). Employment status effectively predicted

understanding of the term. Looking at the matter further, it was apparent that certain types of workers had greater levels of understanding than others[6].

Figure 18: Proportion of different subgroups who had heard the term 'just transition' (2023)

Subgroup	Heard the term and know what it means	Heard the term but don't know what it means	Never heard the term	(Do not know)
Limpopo	4%	7%	77%	12%
Mpumalanga	3%	9%	70%	18%
Gauteng	13%	19%	58%	10%
North West	9%	14%	64%	14%
KwaZulu-Natal	9%	9%	73%	9%
Free State	10%	14%	64%	12%
Northern Cape	12%	11%	57%	19%
Eastern Cape	5%	18%	67%	9%
Western Cape	10%	5%	60%	25%
Rural	3%	8%	78%	11%
Urban informal	6%	15%	67%	12%
Urban formal	12%	15%	59%	14%
Employed	15%	15%	57%	13%
Not Employed	7%	12%	67%	13%
Post-Secondary Schooling	22%	24%	47%	7%
Completed Secondary Schooling	9%	12%	66%	13%
Incomplete Secondary Schooling	6%	12%	69%	14%
No Secondary Schooling	3%	3%	77%	16%
60+ years	12%	7%	69%	12%
45-59 years	9%	13%	66%	13%
35-44 years	9%	19%	61%	11%
25-34 years	9%	13%	65%	13%
16-24 years	7%	10%	67%	16%
White	22%	15%	43%	19%
Indian or Asian	41%	12%	42%	4%
Coloured	15%	8%	59%	18%
Black African	6%	13%	69%	12%
Female	7%	11%	69%	13%
Male	11%	14%	61%	13%

Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

In Figure 18, we can identify significant attitudinal knowledge differences based on the province of residence. Knowledge was highest among residents of Gauteng; 32% of this group had heard of the term including 13% who also knew what the term meant. Levels of knowledge were, conversely, lowest amongst residents of Mpumalanga, Limpopo and the Western Cape. Examining the data shown in Figure 18, educational attainment emerged as one of the most significant predictors of knowledge. Individuals with post-secondary education were the most likely to be familiar with the term. Nearly half of adults with a post-secondary education had either just heard of the term (24%) or had a clear understanding of it (22%). Substantial population group differences were seen in the figure. Members of the Indian minority were much more knowledgeable about the term than other groups. About two-fifths of Indian respondents understood the term compared to 22% of white, 15% of coloured, and 6% of the black African respondents. Amongst the black African respondents, awareness was highest amongst the Sotho, Swati, and Ndebele.

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[6] Managers and professionals had much higher levels of understanding than other groups of workers. Nearly half of this group had either heard of the term (28%) or understood it (17%).

To confirm the results illustrated in Figure 18, ANOVA tests were conducted to determine if there were statistically significant differences amongst the socio-demographic groups depicted in the figure. The percentage of individuals who understood the term 'just transition' was analysed. The results, detailed in **Table 15**, reveal significant differences across genders, population groups, levels of educational attainment, provinces, and geographic type categories. However, as anticipated, differences among age groups were not statistically significant. The largest variations in the table were found among population groups. The data analysis presented in the table reinforces the interpretation of the subgroup findings described above.

Table 15: Percentage who understood what is meant by the term 'just transition' by a range of different subgroups

Socio-demographic		%	Significance	Group differences[7]
Age	16-24	7	P=0,094 n.s	
	25-34	9		
	35-44	9		
	45-59	9		
	60 and above	12		
Gender	Male	11	P<0,001 ***	Female < Male
	Female	7		
Race	Black African	6	P<0,001 ***	Black African < Indian/ Asian, white, coloured.
	Coloured	15		
	Indian or Asian	41		White < Indian/ Asian
	White	22		
Education	Primary or no formal schooling	3	P<0,001 ***	Primary < Matric, Post-matric
	Incomplete secondary	6		Post-matric > Incomplete, Matric
	Matric or equivalent	9		
	Post-matric	22		
Geography				
Geographic type	Urban formal metropolitan	14	P<0,001 ***	Urban formal metro > Rural trad. auth, Rural farms
	Urban formal non- metropolitan	10		Rural farms < Urban formal metro,
	Urban informal	6		
	Rural traditional authority area	3		
	Rural farm	3		
Province	Western Cape	10	P<0,001 ***	GP > EC
	Eastern Cape	5		
	Northern Cape	12		
	Free State	10		
	KwaZulu-Natal	9		
	North West	9		
	Gauteng	13		
	Mpumalanga	3		
	Limpopo	4		

Note: Significance is denoted as follows: * p<0.05, **p<0.01, *** p<0.001.
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

Building on the previously discussed subgroup analysis, a multivariate stepwise correlation regression was carried out to identify the primary variables influencing the understanding of the term 'just transition'. Climate change knowledge, climate scepticism, climate concern, and pro-environmental norms were assessed alongside various background control variables. The forward selection method was used with an entry criterion of p<0.050 and a removal criterion of p>0.100. The results, shown in **Table 16**, indicate that a positive coefficient corresponds to a higher likelihood of understanding 'just transition'. In line with the subgroup analysis discussed above, years of schooling was positively correlated (r=0.148; SE=0.043) with understanding the term. Additionally, climate change knowledge

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[7] Group differences calculated using Tukey SHD (SPSS)

(0.019; SE=0.003) also had a positive impact. Population group differences were statistically significant drivers of awareness in the table. Belonging to a racial minority significantly increased the log odds of understanding what the term 'just transition' meant.

Table 16: Stepwise correlation for a logistic regression of understanding what is meant by the term 'just transition'

| OUTCOME VARIABLE	Understanding of the term 'Just Transition'
PREDICTOR VARIABLES	
Age	…
Gender (ref. male)	…
Population group (ref. black African)	…
Coloured	1.148***
Indian or Asian	1.933***
White	1.118**
Years of schooling	0.148**
Socio-economic status (asset index)	…
Geographic type (ref. Urban formal)	
Urban informal	…
Rural	…
News Media Usage	…
Climate change knowledge	0. 019***
Climate change scepticism	…
Climate concern	…
Personal pro-environmental norms	…

Notes: 1. Significance is denoted as follows: * p<0.05, **p<0.01, *** p<0.001. 2. Green shaded cells denote a significant positive association with the dependent variable, and red shaded cells a significant negative association. 3. Statistically insignificant variables are not displayed; 4. Number of observations is 2,848; 5. Model controls for province of residence; and 6. Wald chi2(5)= 103.49; Prob>chi2 = 0.000; Log pseudolikelihood = -10342568; Pseudo R^2 = 0.150.
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

4.3.2   Approval of just transition actions

SASAS included a question on whether respondents approved or disapproved of the current actions being taken to transition from coal to other energy sources. A significant portion (21%) of the mass public strongly approved of the actions being taken to shift from coal to alternative energy sources (**Figure 19**). Furthermore, a substantial segment of the population (41%) expressed moderate approval, further indicating widespread support for efforts to transition to alternative energy sources. Therefore, the majority (more than three-fifths or 62%) of the public supported the shift, while a minority (9%) expressed disapproval of the actions and 4% strongly disapproved. A notable 20% neither approved nor disapproved, suggesting a segment of the population adopted a more neutral stance on the matter. Those who chose this option were generally less informed about the phenomenon of climate change.

To understand how approval for the change from coal to other energy sources may differ among discrete socio-demographic groupings, a subgroup analysis was conducted. The results of the analysis are presented in **Figure 20** and show that most subgroups approve of the transition away from coal. Noteworthy provincial differences could be observed in the figure. Residents of Gauteng showed the highest approval for the transition compared to those from other provinces. When judged against other provincial populations, Limpopo residents were the least supportive of these actions. Only about two-fifths (43%) of this population approved of the change while 18% disapproved. The remainder were either neutral (30%) or did not know how to answer (9%). Levels of approval were found to be lower in rural areas than in urban areas. Roughly half (52%) of adult rural dwellers approved of the change, lower than what was observed in formal (66%) or informal (63%) urban areas. In addition, supplementary analysis showed that residents of urban towns were more likely than people from

metropolitan areas to approve of the just transition. No significant differences were found between genders or age groups in the figure.

Figure 19: Approve of actions being taken to change from coal to other energy sources? (2023, %)
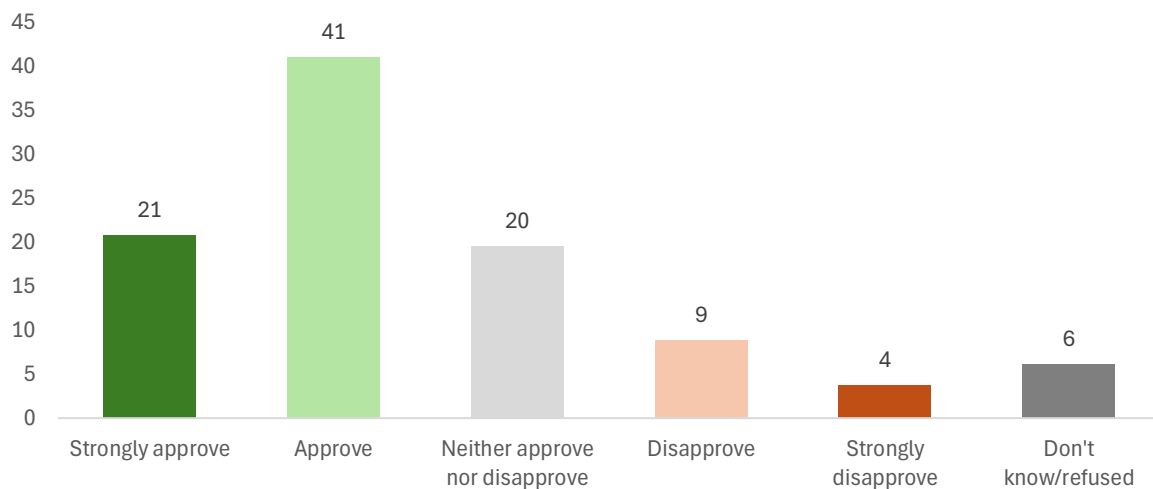
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

Variations in approval levels were observed among different population groups, as shown in **Figure 20**. Adults from Indian and white minority groups exhibited significantly higher levels of approval compared to other groups. An educational attainment gradient was observed in the figure, with educated persons expressing higher levels of approval than their less educated peers. It was discovered that 75% of those with post-secondary education approved of the change. This can be unfavourably compared to those with completed secondary (66%), incomplete secondary (56%), or no secondary education (52%). Employment status was not a good predictor of attitudes here. A supplementary assessment found that occupational status was also not a good predictor. Further data analysis showed that approval levels differed by socio-economic status. A relationship between asset ownership and support for change was detected. People with a higher asset index were more likely to support the Just Transition than those with a lower socio-economic status.

There was a positive relationship between self-reported knowledge of the transition away from coal and approval of the Just Transition. Approximately three-quarters (72%) of persons who had read or heard a lot about the transition said that they approved. A similar linear association was also noted between self-reported knowledge of climate change and approval. The more a person knew about climate change, the more likely they were to approve of the transition away from coal. But it is important to acknowledge here that even those who are sceptical about whether the climate is changing support the transition. About two-thirds (66%) of those who thought that the climate was not changing approved of the transition. This finding confirms that many people support the transition away from coal for reasons other than concern about climate change.

Figure 20: Subgroup differences in approval and disapproval of actions being taken to change from coal to other energy sources

Legend: ■ Approve ■ Neutral ■ Disapprove ■ (Do not know)

Subgroup	Approve	Neutral	Disapprove	(Do not know)
Limpopo	43	30	18	9
Mpumalanga	67	14	15	4
Gauteng	79	13	7	0
North West	62	21	13	4
KwaZulu-Natal	56	23	17	4
Free State	71	10	15	4
Northern Cape	55	28	7	10
Eastern Cape	50	24	18	8
Western Cape	49	22	8	21
Rural	52	23	18	7
Urban informal	63	19	16	2
Urban formal	66	18	10	6
Employed	65	19	11	4
Not Employed	61	20	13	7
Post-Secondary Schooling	75	14	10	1
Completed Secondary Schooling	66	22	9	3
Incomplete Secondary Schooling	56	18	17	9
No Secondary Schooling	52	22	15	11
60+ years	60	20	14	6
45-59 years	58	21	16	6
35-44 years	66	16	12	6
25-34 years	62	22	11	5
16-24 years	62	19	11	8
White	70	11	3	16
Indian or Asian	71	16	13	0
Coloured	53	28	10	9
Black African	62	20	14	5
Female	62	18	14	6
Male	62	21	11	6

Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

To assess whether there were statistically significant differences amongst the socio-demographic groups in Figure 20, a series of ANOVA tests were performed. In this analysis, the percentage of individuals who supported the transition from coal to alternative energy sources was examined. Test results are presented in **Table 17** and show significant differences among population groups, educational attainment levels, provincial populations, and geographic type groups. Observed differences for age groups as well as gender groups were, by contrast, not statistically significant. The most pronounced differences in the table were among provincial populations. In closing, the data analysis presented in the table supports the prior interpretation of the subgroup.

Table 17: Percentage who approved of actions being taken to change from coal to other energy sources by a range of different subgroups

Socio-demographic		%	Significance	Group differences[8]
Age	16-24	62	P<0,035 *	45-59 < 35-44
	25-34	62		
	35-44	66		
	45-59	58		
	60 and above	60		
Gender	Male	62	P=0,085 n.s	
	Female	62		
Race	Black African	62	P<0,003 **	Coloured; black African < white, Indian/ Asian
	Coloured	53		
	Indian or Asian	71		
	White	70		
Education	Primary or no formal schooling	52	P<0,001 ***	Primary; incomplete secondary; matric < Post matric
	Incomplete secondary	56		
	Matric or equivalent	66		
	Post-matric	75		
Asset quintile	Poorest quintile	54	P<0,001 ***	Poorest quintile < second quintile; fourth quintile; <middle quintile< richest quintile
	Second quintile	60		
	Middle quintile	65		
	Fourth quintile	60		
	Richest quintile	75		
Geography				
Geographic type	Urban formal metropolitan	66	P<0,001 ***	Rural trad. auth. < Urban formal metro, Urban formal non-metro, Rural farm
	Urban formal non- metropolitan	67		
	Urban informal	63		
	Rural traditional authority area	51		
	Rural farm	54		
Province	Western Cape	49	P<0,001 ***	WC < GP, FS, MP; EC < GP, FS, MP; KZN < FS; NC, KZN, NW < GP; LP < FS, MP;
	Eastern Cape	50		
	Northern Cape	55		
	Free State	71		
	KwaZulu-Natal	56		
	North West	62		
	Gauteng	79		
	Mpumalanga	67		
	Limpopo	43		

Note: Significance is denoted as follows: * p<0.05, **p<0.01, *** p<0.001.
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

In light of the subgroup analysis presented above, a stepwise correlation analysis was produced to identify the most relevant variables influencing popular support for the transition. Alongside a set of background controls, the variables under consideration were climate change knowledge, climate scepticism, climate concern, awareness of the transition, and pro-environmental norms. The forward selection method was applied, with an entry criterion of p<0.050 and a removal criterion of p>0.100. The results of the correlation model are presented in Table 17; a positive coefficient in the table reflects an approval for the change from coal to other energy sources. Model outputs show that support for the Just Transition was reduced by climate change scepticism (r=-0.005; SE=0.002). Personal environmental norms, on the other hand, were identified as a positive driver of approval for the shift away from coal. It was discovered that social media usage was a good predictor of attitudes here (r=0.158; SE=0.044). The more time an individual spent on social media, the more likely they were to approve of the shift away from coal.

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[8] Group differences calculated using Tukey SHD (SPSS)

Table 18: Stepwise correlation for an ordered logistic regression of popular approval and disapproval for actions being taken to change from coal to other energy sources

OUTCOME VARIABLE	Understanding of the term 'Just Transition'
PREDICTOR VARIABLES	
Age	...
Gender (ref. male)	...
Population group (ref. black African)	
Coloured	...
Indian or Asian	...
White	...
Years of schooling	...
Socio-economic status (asset index)	...
Geographic type (ref. Urban formal)	
Urban informal	...
Rural	...
News Media Usage	...
Social Media Usage	0. 158***
Climate change knowledge	...
Climate change scepticism	-0. 005*
Climate concern	...
Personal pro-environmental norms	0. 016***
Awareness of Just Transition	...

Notes: 1. Significance is denoted as follows: * p<0.05, **p<0.01, *** p<0.001. 2. Green shaded cells denote a significant positive association with the dependent variable, and red shaded cells a significant negative association. 3. Statistically insignificant variables are not displayed; 4. Number of observations is 2,748; 5. Model controls for province of residence; and 6. Wald chi2(8)= 123.42; Prob>chi2 = 0.000; Log pseudolikelihood = -48384373; Pseudo R2 = 0.057.
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

4.3.3 Overall concern about the impact of the just transition

To gauge concern about the possible negative impacts of the energy transition on individuals and their families, respondents were initially asked the following broad question: 'How worried are you that you and your family will be negatively affected by the change from coal to other energy sources (like solar and wind)?' From **Figure 21**, it is evident that only a relatively small share of the public (10%) was not worried at all about being negatively affected by the energy transition or did not think the transition would affect them at all (15%). This implies that only a relatively marginal segment of society felt secure in terms of these changes at the time of the survey. A slightly larger group (13%) expressed low levels of concern, demonstrating a sense of confidence or minimal anticipated impact on themselves and their families. The largest percentage (29%) opted for the category of 'somewhat worried'. This suggests that a significant portion of respondents acknowledge that there might be negative consequences, but do not appear to perceive the potential impact as severe.

Figure 21: Worry about the impact of the energy transition personally and on family?
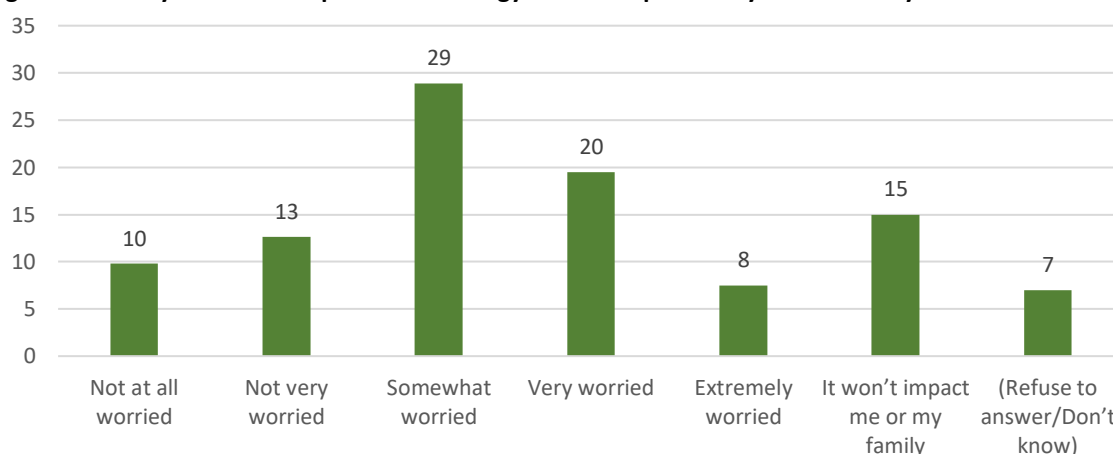
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

A notable share of the public (20%) reported a high level of worry about the potential personal negative effects of the energy transition. A smaller but significant 8% expressed extreme worry. The responses in Figure 21 reveal a diverse range of perceptions regarding the potential negative effects of the energy transition, with varying degrees of worry amongst the general population. More than half (56%) were either somewhat, very, or extremely worried about this issue. Localised community engagement and education efforts could be beneficial in addressing concerns and ensuring that the public is well-informed about the goals and benefits of the energy transition. Based on the answers provided in Figure 21, an abridged categorical variable that measured concern about the personal impact of the transition was created. The categories were as follows: Not worried/no impact (25%); Low (13%); Medium (29%); High (27%) and 'Don't know' (7%).

Figure 22: Level of anxiety that the energy transition would negatively impact an individual and their family by different subgroups
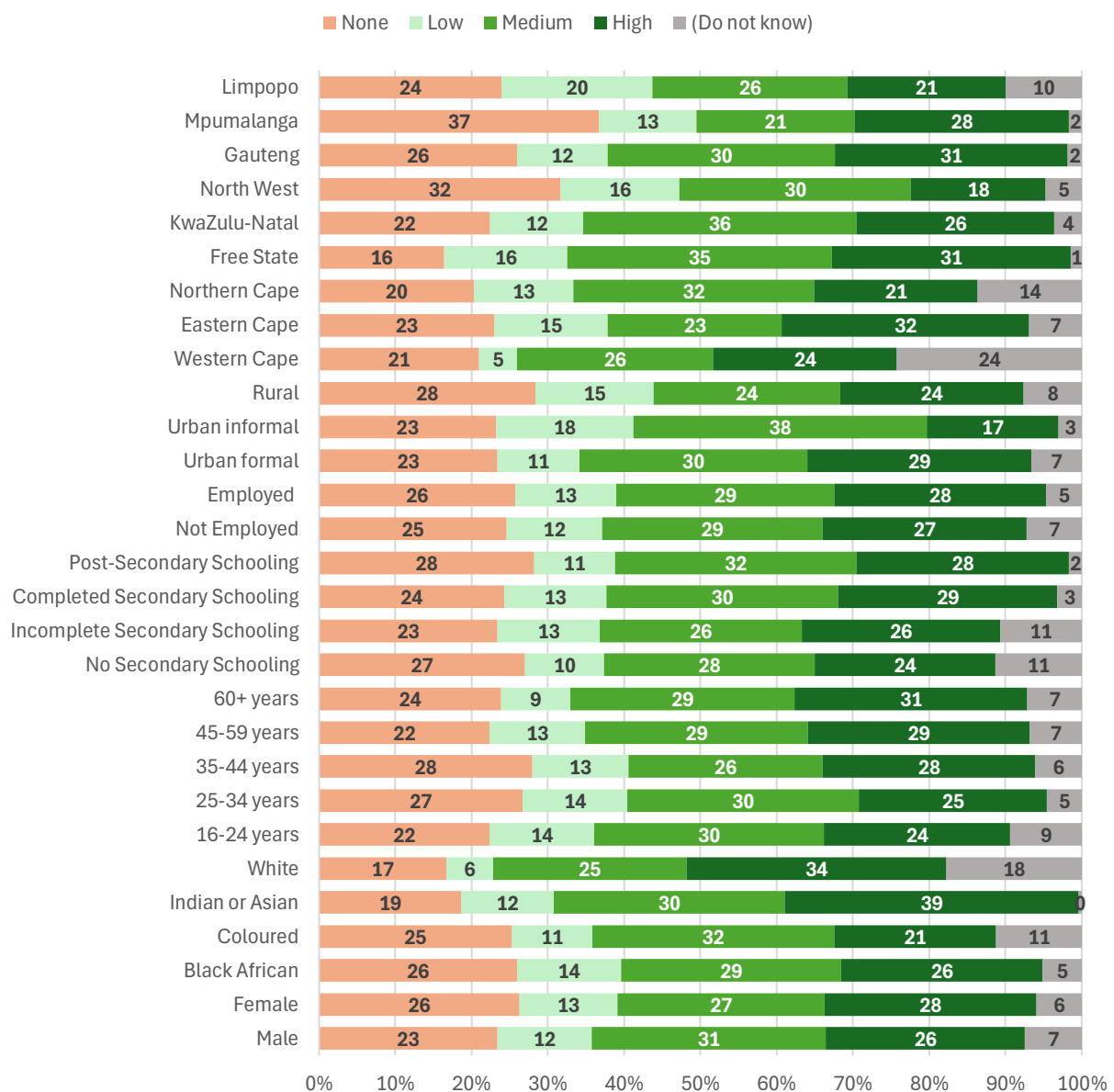
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

To understand how responses to the new abridged variable varied among different socio-demographic groups, subgroup analysis was carried out. The findings of this analysis are illustrated in **Figure 22** and showed a notable degree of diversity amongst the subgroups under consideration. There were no large

variations between rural and urban dwellers on this issue. Yet, further analysis showed that persons who lived in large cities were much more concerned about the personal impact than those who lived in small towns or rural areas. Comparatively large provincial variations could be discerned in the figure. The provincial population that was most concerned about the change was the Free State, followed by KwaZulu-Natal and Gauteng. On the other hand, concern was found to be lowest in Limpopo and the North West. As can be observed from the figure, employment status did not effectively predict approval. Additional exploratory analysis revealed that approval levels did not differ significantly by occupational status.

Figure 22 shows variations in concern levels among different population groups. Adults from Indian and white minority groups demonstrated significantly higher levels of concern compared to other groups. There were no significant differences in the level of concern between genders or age groups here. The figure illustrates a moderate gradient in educational attainment, with more educated individuals expressing higher levels of concern. This may be due to the fact that less educated persons were more likely to respond 'don't know' when asked about whether the change would personally affect them. But the educational gradient could also be related to the close association between self-reported knowledge of the change and concern. Persons who had heard about the change were less likely to be concerned than those who had read or heard nothing about it.[9]

As a robustness check of the results presented in Figure 22, a series of ANOVA tests were conducted. To perform this test, the categorical variable depicted in Figure 21 was placed onto a 0 to 100 scale. A high score on the scale, indicates a high level of concern about the negative impact of the 'just transition' (**Table 19**). These tests confirmed our prior interpretation and showed that there were statistically significant differences between educational attainment groups as well as population groups. Notable variances were also observed for provincial populations as well as geographic type groups. But the level of difference observed between these subgroups was, on the whole, quite modest. The differences observed between age groups and gender groups in the table were not statistically significant.

Table 19: Mean concern about the impact of the energy transition personally and on family (0-100) by a range of different subgroups

Socio-demographic		Mean	Significance	Group differences[10]
Age	16-24	39	P=0,373 n.s	
	25-34	39		
	35-44	40		
	45-59	42		
	60 and above	42		
Gender	Male	41	P=0,652 n.s	
	Female	40		
Race	Black African	40	P<0,004 **	Indian/ Asian > black African, coloured.
	Coloured	36		
	Indian or Asian	49		
	White	44		
Education	Primary or no formal schooling	36	P<0,008 **	Primary > Matric
	Incomplete secondary	39		
	Matric or equivalent	42		
	Post-matric	42		
Geography				
Geographic type	Urban formal metropolitan	44	P<0,001	

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[9] As a robustness test, an ordered logistic regression analysis of approval for the transition was conducted to test the effect of transition awareness and concern about the personal effects. The model included selected socio-demographic variables as predictors. A one-unit increase in the awareness scale reduced the log odds of being concerned about the transition by 0.340 (SE=0.075). This finding held even when controlling for educational attainment and socio-economic status.

[10] Group differences calculated using Tukey SHD (SPSS)

	Urban formal non- metropolitan	40	***	Urban formal metro > Rural trad. auth
	Urban informal	37		
	Rural traditional authority area	37		
	Rural farm	39		
Province	Western Cape	35	P<0,001	WC < FS
	Eastern Cape	43	***	NW < FS
	Northern Cape	38		
	Free State	47		
	KwaZulu-Natal	42		
	North West	33		
	Gauteng	43		
	Mpumalanga	38		
	Limpopo	36		

Note: Significance is denoted as follows: * p<0.05, **p<0.01, *** p<0.001.
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

A stepwise correlation analysis was performed to pinpoint the main variables influencing concerns that the 'just transition' would negatively impact individuals and their families. In addition to several background control variables, climate change knowledge, climate scepticism, climate concern, awareness of the transition, and pro-environmental norms were examined. The forward selection method was applied with an entry criterion of p<0.050 and a removal criterion of p>0.100. The results, displayed in **Table 20**, show that a positive coefficient indicates a higher level of concern. Consistent with the subgroup analysis, living in a rural area was negatively correlated (r=-0.350; SE=0.125) with anxiety about negative impacts. Furthermore, climate change scepticism (r=0.004; SE=0.002) and climate concern (r=0.014; SE=0.003) positively influenced attitudes here. Awareness of the 'just transition' had a statistically significant and negative correlation (r=-0.007; SE=0.002) in the table. Awareness, in other words, helped reduce concerns about the impact of the transition away from coal. News media usage (r=-0.003; SE=0.002) was a negative predictor in the table. The more frequently a person followed the news, the less likely they were to be concerned about the impacts of the 'just transition'.

Table 20: Stepwise correlation for an ordered logistic regression of the anxiety that the energy transition would negatively impact an individual and their family

| OUTCOME VARIABLE	Concern about negative impacts of the 'just transition' on oneself and family
PREDICTOR VARIABLES	
Age	...
Gender (ref. male)	...
Population group (ref. black African)	
Coloured	...
Indian or Asian	...
White	...
Years of schooling	...
Socio-economic status (asset index)	...
Geographic type (ref. Urban formal)	
Urban informal	...
Rural	-0.350**
News Media Usage	-0.003*
Climate change knowledge	...
Climate change scepticism	0.004*
Climate concern	0.014***
Personal pro-environmental norms	...
Awareness of Just Transition	-0.007**

Notes: 1. Significance is denoted as follows: * p<0.05, **p<0.01, *** p<0.001. 2. Green shaded cells denote a significant positive association with the dependent variable, and red shaded cells a significant negative association. 3. Statistically insignificant variables are not displayed; 4. Number of observations is 2,832; 5. Model

controls for province of residence; and 6. Wald chi^2(5)= 56.63; Prob>chi^2 = 0.000; Log pseudolikelihood = -57638013; Pseudo R^2 = 0.023.
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

As may be expected, there was a correlation between concern about the personal impact of the transition and whether a person approved of the actions taken to shift away from coal. The more concerned an individual was about the personal impact of the transition, the less they approved. To substantiate this finding, an ordered logistic regression analysis that looked at the influence of personal concern on popular support for the just transition was performed. The model contained a range of background variables (e.g., age, race, gender, education, socio-economic status, province, and geographic residence). The results show that a one-unit increase on the personal concern scale reduced the log odds of supporting the transition by 0.134 (SE=0.045). This suggests that support for the transition is informed by a person's perceptions of the personal impact of the just transition. This could stem from concerns about economic impacts, job losses, or other factors associated with the shift away from coal-dependent industries. Specific concerns about the negative consequences of the just transition will be explored in the next subsection.

Specific personal concerns relating to the just transition

Survey respondents were read a list of potential impacts and asked whether they were concerned that any of these might affect them and their families due to the transition from coal power to other forms of energy. This was administered in the form of a multiple response question, wherein respondents could select one or more of the listed options. The pattern of responses is presented in **Figure 23**, ranked in descending order from the most to the least mentioned option. The concern that was most frequently mentioned (by a third of the public) was the possibility of higher electricity costs, indicating a fear of being exposed to high energy prices. A similar share (32%) was concerned about the possibility of job losses. These concerns are legitimate, and policies need to be considered that would help mitigate increases in electricity prices and support economic stability.

Figure 23: Perceived negative elements of the just transition (2023, %)
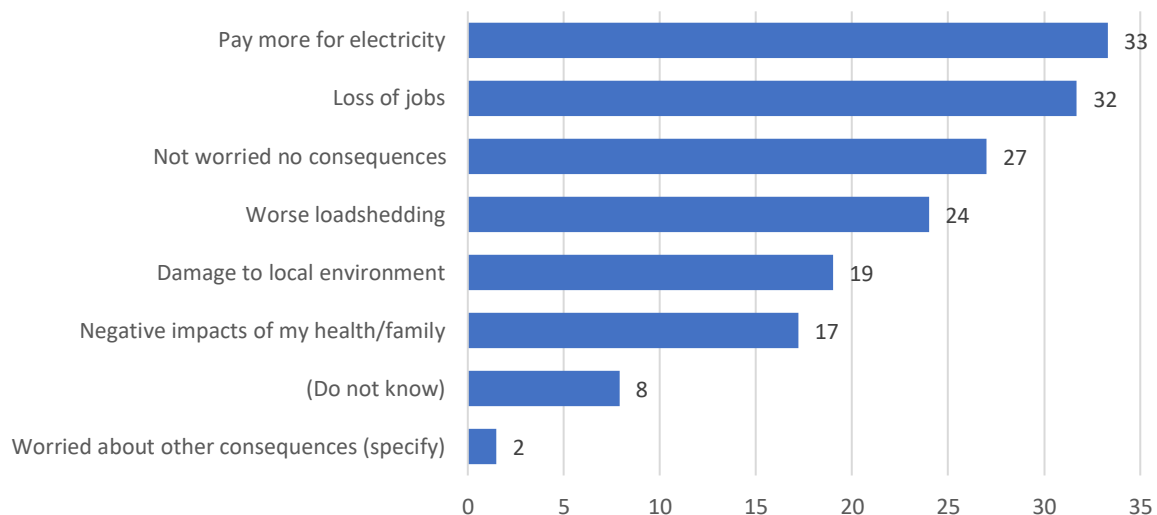
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

A substantive proportion (24%) of the general public indicated that they were worried about the reliability and availability of electricity supply during the transition. This finding highlights the need for ensuring a smooth transition to more sustainable energy sources without compromising energy security. It also points to the impact that the experience of load shedding has had on public confidence in the reliability of the energy supply. A fifth of South Africans (20%) were specifically concerned about

the potential harm to the local environment. This was somewhat surprising given that the primary reason for the global energy transition is due to environmental concerns. Worries about negative health impacts were expressed by 17% of the public. This underscores the importance of prioritising public health considerations and implementing measures to safeguard community well-being. Environmental and health worries may also highlight a lack of understanding of the just transition and its projected impacts, given that a move away from coal is generally seen as benefitting public health and the environment.

Approximately a quarter (27%) of the public did not express concern about any potential personal consequences from the transition. This could indicate either confidence in the transition process or a lack of awareness about potential impacts. Approximately a tenth (8%) indicated uncertainty or lack of knowledge about potential consequences of the transition. This group could benefit from transparent communication and accessible information, ensuring that people are well-informed and engaged in the transition process. A minority of respondents (2%) expressed concerns about other consequences of the transition. Overall, these responses reflect a range of concerns and priorities among stakeholders regarding the transition to a more sustainable energy system. Addressing these concerns requires a comprehensive approach that balances economic, social, and environmental considerations, while ensuring equity, resilience, and inclusivity throughout the transition process. Education and outreach efforts indicating how all these issues will be dealt with will be critical in engaging the public and addressing any possible misconceptions.

The kinds of attitudes depicted in Figure 23 reflect underlying dimensions. Factor analysis was used to uncover these dimensions, providing a clearer understanding of the structure and components of the perceived negative elements of the just transition. By grouping related variables into factors, factor analysis ensures that the constructs being measured are valid representations of the underlying attitudes. This enhances the reliability and validity of the measurements, leading to more accurate and meaningful conclusions. Two factors were identified from the answers provided in Figure 23: (i) economic impacts, and (ii) health and pollution. The latter reflects concerns about the health and pollution effects of the transition while the former concerns the negative economic effects (e.g., jobs or electricity prices). Each of these factors was placed onto a 0 to 100 scale with the higher score reflecting the greater level of mention.

The mean score for the 'health and pollution' dimension is 31 (SE=0.687) while the 'economic impacts' mean score is 43 (SE=0.901). A positive relationship was discerned between these two dimensions and concern about the personal impact of the transition. Persons who were concerned about the personal impact tended to score higher on these two dimensions than those who were not concerned. A pairwise correlation test showed that the 'economic impacts' dimension (r(3059) =0.421, p<0.001) had a much stronger association with personal concern than the 'health and pollution' dimension (r(3059) =0.294, p<0.001). This finding suggests that the personal concern about the transition (discussed in the previous subsection) is more about economic conditions than health or safety concerns. To comprehend how mean scores on the two dimensions varies across different socio-demographic groups, a subgroup analysis was performed.

Mean scores for the 'economic impacts' dimension are presented across different subgroups in **Table 21**. Age was not associated with how a person scored on this dimension while gender and educational attainment showed only a minor effect. Population group differences could be noted in the table; Indian (M=52; SE=4.064) and white (M=49; SE=3.980) respondents scored higher on this dimension compared to other groups. Noteworthy differences were discovered between urban and rural dwellers in the table. Rural residents had a lower mean score than their urban counterparts. Closer analysis found that people living in metropolitan urban areas had higher mean scores on this dimension than those who lived in non-metropolitan areas. Large provincial differences in mean scores could also be detected in the table. Mean scores on the 'economic impacts' dimension were highest in KwaZulu-Natal (M=52; SE=2.212) and the Free State (M=49; SE=2.109). In contrast, mean scores were lowest in Mpumalanga (M=29; SE=2.492).

Table 21: Mean scores on the 'economic impacts' dimension of the perceived negative impacts of the 'just transition' by a range of different subgroups

| Socio-demographic		Mean	Significance	Group differences[11]
Age	16-24	42	P=0,456 n.s	
	25-34	43		
	35-44	41		
	45-59	44		
	60 and above	45		
Gender	Male	44	P=0,028 *	Male > Female
	Female	42		
Race	Black African	42	P<0,004 **	Indian/ Asian, white > black African., coloured.
	Coloured	40		
	Indian or Asian	52		
	White	49		
Education	Primary or no formal schooling	39	P<0,028 *	Primary < Post-matric
	Incomplete secondary	43		
	Matric or equivalent	44		
	Post-matric	45		
Geography				
Geographic type	Urban formal metropolitan	48	P<0,001 ***	Urban formal metro > Rural trad. auth , Rural farm
	Urban formal non- metropolitan	41		
	Urban informal	40		
	Rural traditional authority area	39		
	Rural farm	41		
Province	Western Cape	36	P<0,001 ***	WC < FS, KZN; EC < NC, KZN, GP; MP < NC, FS, KZN, NW; LP < FS, KZN;
	Eastern Cape	38		
	Northern Cape	45		
	Free State	49		
	KwaZulu-Natal	52		
	North West	40		
	Gauteng	47		
	Mpumalanga	29		
	Limpopo	38		

Note: Significance is denoted as follows: * p<0.05, **p<0.01, *** p<0.001.
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

A stepwise correlation analysis was conducted to identify the key variables affecting scores on the 'Economic Impacts' dimension discussed above. Climate change knowledge, climate scepticism, climate concern, awareness of the transition, concern about the impact of the transition, and pro-environmental norms were examined along with various background control variables. The forward selection method was employed with an entry criterion of p<0.050 and a removal criterion of p>0.100. The results, portrayed in **Table 22**, show that a positive coefficient corresponds to a high score on the dimension. The data showed that socio-demographic factors were not good predictors of the 'economic impacts' dimension. Climate change knowledge (r=0.116; SE=0.002) positively impacted how people scored on the 'economic impacts' dimension. Concern about the impact of the 'just transition' also showed a statistically significant and positive correlation (r=0.398; SE=0.027). Conversely, climate concern was negatively correlated (r=-0.103; SE=0.033) with attitudes in this context.

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[11] Group differences calculated using Tukey SHD (SPSS)

Table 22: Stepwise correlation for the 'economic impacts' dimension of the perceived negative impacts of the 'just transition'

OUTCOME VARIABLE	Perceived negative 'economic' impacts of the 'just transition'
PREDICTOR VARIABLES	
Age	...
Gender (ref. male)	...
Population group (ref. black African)	
Coloured	...
Indian or Asian	...
White	...
Years of schooling	...
Socio-economic status (asset index)	...
Geographic type (ref. Urban formal)	
Urban informal	...
Rural	...
News Media Usage	...
Climate change knowledge	0.116**
Climate change scepticism	...
Climate concern	-0.103**
Personal pro-environmental norms	...
Worried about the Just Transition	0.398***
Awareness of Just Transition	...

Notes: 1. Significance is denoted as follows: * p<0.05, **p<0.01, *** p<0.001. 2. Green shaded cells denote a significant positive association with the dependent variable, and red shaded cells a significant negative association. 3. Statistically insignificant variables are not displayed; 4. Number of observations is 2,832; 5. Model controls for province of residence; and 6. Prob>chi^2 = 0.000; Root MSE=26.2;R^2 = 0.241.

Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

Mean scores from the subgroup analysis of the 'health and pollution' dimension are presented in **Table 23**. There were no significant gender and age differences in mean scores for this dimension. However, notable differences emerged between urban and rural residents, with rural dwellers scoring lower on average compared to their urban counterparts. Further analysis revealed that individuals in metropolitan areas had slightly higher mean scores compared to those in non-metropolitan regions. This is similar to what was observed for the 'economic impacts' dimension. Provincial variations in mean scores were also evident, with Gauteng showing the highest average score (M=35; SE=1.772). Conversely, Mpumalanga (M=25; SE=1.6534), the Western Cape (M=26; SE=1.551), and the North West (M=27; SE=1.621) had the lowest mean scores. Population group differences could be noted in the table; members of the Indian minority (M=41; SE=3.767) scored higher on this dimension than other groups.

Table 23: Mean scores on the 'health and pollution' dimension of the perceived negative impacts of the 'just transition' by a range of different subgroups

Socio-demographic		%	Significance	Group differences[12]
Age	16-24	29	P=0,445 n.s	
	25-34	31		
	35-44	32		
	45-59	31		
	60 and above	31		
Gender	Male	31	P=0,212 n.s	
	Female	30		
Race	Black African	30	P<0,001 ***	Indian/ Asian, white > black African, coloured.
	Coloured	28		White < Indian/ Asian
	Indian or Asian	41		
	White	34		

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[12] Group differences calculated using Tukey SHD (SPSS)

Education	Primary or no formal schooling	27	P<0,033 *	Primary < Post-matric
	Incomplete secondary	31		
	Matric or equivalent	31		
	Post-matric	34		
Geography				
Geographic type	Urban formal metropolitan	34	P<0,001 ***	Rural trad. auth <, Urban formal metro , Urban formal non-metro, Urban informal, Rural farms
	Urban formal non- metropolitan	31		
	Urban informal	34		Rural farms < Urban formal metro, Urban informal
	Rural traditional authority area	26		
	Rural farm	26		
Province	Western Cape	26	P<0,001 ***	WC < GP
	Eastern Cape	32		
	Northern Cape	31		
	Free State	32		
	KwaZulu-Natal	31		
	North West	27		
	Gauteng	35		
	Mpumalanga	25		
	Limpopo	29		

Note: Significance is denoted as follows: * p<0.05, **p<0.01, *** p<0.001.
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

Table 24: Stepwise correlation for the 'health and pollution' dimension of the perceived negative impacts of the 'just transition'

OUTCOME VARIABLE	Perceived negative 'health and pollution' impacts of the 'just transition'
PREDICTOR VARIABLES	
Age	…
Gender (ref. male)	…
Population group (ref. black African)	
Coloured	…
Indian or Asian	…
White	…
Years of schooling	…
Socio-economic status (asset index)	…
Geographic type (ref. Urban formal)	
Urban informal	…
Rural	-5.046***
News Media Usage	…
Climate change knowledge	0.116**
Climate change scepticism	0.077***
Climate concern	…
Personal pro-environmental norms	…
Awareness of Just Transition	0.074**
Worried about the Just Transition	0.198***

Notes: 1. Significance is denoted as follows: * p<0.05, **p<0.01, *** p<0.001. 2. Green shaded cells denote a significant positive association with the dependent variable, and red shaded cells a significant negative association. 3. Statistically insignificant variables are not displayed; 4. Number of observations is 2,832; 5. Model controls for province of residence; and 6. Prob>chi2 = 0.000; Root MSE=23.0 ; R2 = 0.128
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

A stepwise correlation analysis was performed to pinpoint the main variables influencing scores on the 'Health and Pollution' dimension. Climate change knowledge, climate scepticism, climate concern, awareness of the transition, concern about impact of the transition, and pro-environmental norms were evaluated in addition to several background control variables. The forward selection method was utilized with an entry criterion of p<0.050 and a removal criterion of p>0.100. The results, showcased in **Table 24**, indicate that a positive coefficient corresponds to a higher score on the dimension. In line

with the findings from the subgroup analysis, residing in a rural area was negatively correlated (r=-5.046; SE=1.344) with the dependent variable. Climate change knowledge (r=0.116; SE=0.033) had a positive influence on scores in this dimension. Additionally, climate change scepticism was positively correlated (r=0.077; SE=0.022) with these attitudes. Concern about the impact of the 'just transition' (r=0.198; SE=0.021) and awareness of the 'just transition' (r=0.074; SE=0.023) also showed statistically significant and positive correlations.

4.3.4 Specific perceived benefits

In the previous subsection, we looked at how people responded to the question on what negative impacts the just transition could potentially have for the country. As a counterpoint to that question, the current subsection will examine a SASAS question on what the positive impacts of the transition away from coal would be. This was again structured in the form of a multiple response question in which respondents could select all the apply. The responses are presented in **Figure 24** in descending order. The most mentioned benefit, referred to by just over half of the public, was the reduction or end of load shedding. This benefit stands out as the most significant, indicating a substantial envisaged improvement in the reliability of the electricity supply. Just about two-fifths (41%) of the public expected it to have a positive impact on the economy, while a similar proportion felt that electricity prices might decrease as a result of the transition. Just under a third (30%) believed that it would lead to net job creation. A fifth thought that people's health would improve, and a similar share felt it would lead to a decrease in air pollution. An equivalent share felt that it could benefit specific individuals, giving more opportunities to women and youth. A relatively small share (13%) mentioned the health of the environment as a distinct benefit.

Figure 24: Perceived positive elements of the just transition

Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

Reflecting on the answers depicted in Figure 24, analysis shows that the majority (66%) were likely to select more than one option (on average between two and three options) with a third selecting only one option. It therefore shows that the just transition offers a range of interconnected perceived benefits and potential impacts, but with energy and economic impacts being the most salient. In a fashion similar to what was observed in the previous subsection, the attitudes shown in the figure represent deeper dimensions. We employed factor analysis to reveal these dimensions, which clarifies the structure and components of the perceived positive elements of the just transition. The benefits illustrated in the figure can be grouped into three categories: (i) health and nature, (ii) service delivery, and (iii) economic opportunities. The first category focuses on benefits related to health (e.g., less air

pollution) from the transition while the third one comprises the positive economic effects (e.g., job growth). The 'service delivery' dimension is concerned with improvements in energy supply and more affordable services (e.g., reduced load shedding and electricity price decrease). Each factor was scaled from 0 to 100, with higher scores indicating more frequent mentions. These factors offer a detailed view of the underlying attitudes, making it easier to interpret and convey the results of the analysis.

The mean score for the 'health and nature' dimension is 21 (SE=0.726) while the 'economic opportunities' mean score is 34 (SE=0.855). The 'service delivery' dimension has a higher score (M=54; SE=1.007) than the other two dimensions. A pairwise correlation matrix shows that these three dimensions have a positive (albeit moderate) association with support for the transition away from coal. The tests show that the 'service delivery' dimension has the strongest association (r(3069) =0.291, p<0.001) with support for the transition, followed by the 'economic opportunities' (r(3069) =0.214, p<0.001) and the 'health and nature' (r(3069) =0.145, p<0.001) dimensions. This result indicates that backing for the transition is primarily influenced by electricity supply factors rather than concerns related to health or the environment. To understand how support for the average scores on the three dimensions differs among various socio-demographic groups, we conducted a subgroup analysis.

Table 25: Mean scores on 'health and nature' dimension of the perceived positive impacts of the 'just transition' by sources by a range of different subgroups

Socio-demographic		Mean	Significance	Group differences[13]
Age	16-24	21	P=0,604 n.s	
	25-34	22		
	35-44	21		
	45-59	21		
	60 and above	20		
Gender	Male	21	P=0,565 n.s	
	Female	21		
Race	Black African	21	P<0,001 ***	Indian/Asian > black African, coloured, white
	Coloured	20		
	Indian or Asian	34		
	White	24		
Education	Primary or no formal schooling	16	P<0,001 ***	Primary < Incomplete, Matric, Post-matric
	Incomplete secondary	20		
	Matric or equivalent	23		
	Post-matric	23		
Geography				
Geographic type	Urban formal metropolitan	20	P<0,002 **	Urban formal metro < Urban formal non-metro
	Urban formal non- metropolitan	24		
	Urban informal	21		
	Rural traditional authority area	21		
	Rural farm	18		
Province	Western Cape	17	P<0,001 ***	KZN > WC, EC, NC, FS; MP > WC, EC, NC, FS; KZN > GP, LP;
	Eastern Cape	18		
	Northern Cape	13		
	Free State	17		
	KwaZulu-Natal	27		
	North West	23		
	Gauteng	21		
	Mpumalanga	26		
	Limpopo	16		

Note: Significance is denoted as follows: * p<0.05, **p<0.01, *** p<0.001.
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

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[13] Group differences calculated using Tukey SHD (SPSS)

Mean results on the 'health and nature' dimension are presented across a selected range of socio-demographic groups in **Table 25**. It was clear from the data presented that there was an educational attainment gradient here. Persons without secondary schooling scored lower than other educational attainment groups on this dimension. But education group differences were quite weak for the 'health and nature' dimension. Noteworthy age group dissimilarities could not be identified in the table. There were significant (if moderate) differences between urban and rural residents. Rural inhabitants had a lower average score than their urban counterparts. Population group differences were less substantial than expected but some interesting dissimilarities could be discerned. Indian respondents reported higher scores on this dimension than other groups. Reviewing the data, it is apparent that substantial levels of provincial variation were evident here. Residents of the Northern Cape (M=13; SE=1.641) had the lowest mean scores on this dimension, followed by Limpopo (M=16; SE=1.316). Adults living in KwaZulu-Natal (M=27; SE=1.705) and Mpumalanga (M=26; SE=2.475) had, by contrast, the highest.

A stepwise correlation analysis was conducted to identify the key variables affecting scores on the 'health and nature' dimension. Climate change knowledge, climate scepticism, climate concern, awareness of the transition, concern about the transition, and pro-environmental norms were assessed together with several background control variables. The forward selection method was used with an entry criterion of p<0.050 and a removal criterion of p>0.100. The results, exhibited in **Table 26**, indicate that a positive coefficient corresponds to a higher score on this dimension. The findings showed that socio-demographic factors were generally weak predictors of the 'health and nature' dimension. However, consistent with the subgroup analysis, years of formal education were positively correlated (r=0.542; SE=0.205) with the dependent variable. Climate concern (r=0.090; SE=0.028) positively influenced how people scored on this dimension, while climate change scepticism was negatively correlated (r=-0.123; SE=0.0242) with how people scored. Additionally, as may have been expected, concern about the impact of the 'just transition' (r=-0.100; SE=0.025) had a statistically significant and negative relationship with the 'health and nature' dimension.

Table 26: Stepwise correlation for the 'Health and Nature' dimension of the perceived positive impacts of the 'just transition'

OUTCOME VARIABLE	Perceived positive 'health and nature" impacts of the 'just transition'
PREDICTOR VARIABLES	
Age	…
Gender (ref. male)	…
Population group (ref. black African)	
Coloured	…
Indian or Asian	7.584*
White	…
Years of schooling	0.542**
Socio-economic status (asset index)	…
Geographic type (ref. Urban formal)	
Urban informal	…
Rural	…
News Media Usage	…
Climate change knowledge	…
Climate change scepticism	-0.123***
Climate concern	0.090**
Personal pro-environmental norms	…
Worried about the Just Transition	-0.100***
Awareness of Just Transition	…

Notes: 1. Significance is denoted as follows: * p<0.05, **p<0.01, *** p<0.001. 2. Green shaded cells denote a significant positive association with the dependent variable, and red shaded cells a significant negative association. 3. Statistically insignificant variables are not displayed; 4. Number of observations is 2,832; 5. Model controls for province of residence; and 6. Prob>chi2 = 0.000; Root MSE=24.1; R2 = 0.079.
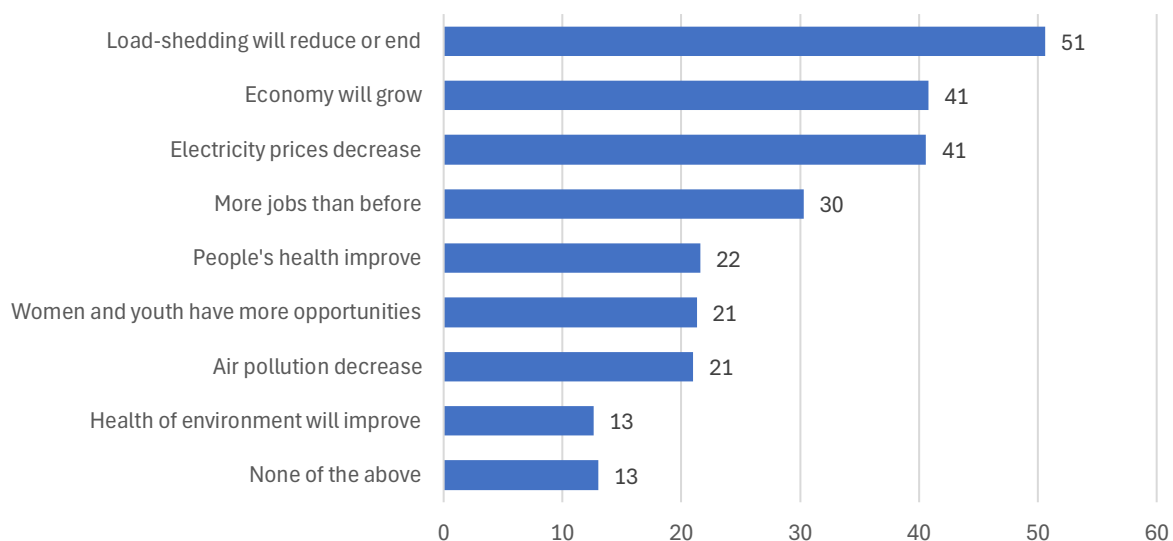Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

The mean results for the subgroup analysis of the 'service delivery' dimension are shown in **Table 27**. Notable differences among educational attainment groups were observed in the table. Individuals without secondary schooling had lower scores compared to other attainment groups on this dimension. Educational dissimilarities were more pronounced for the 'service delivery' dimension than for the 'health and nature' dimension. Although population group differences were less significant than anticipated, some interesting variations were found. Indian respondents reported higher scores on the 'service delivery' (M=67; SE=3.640) dimension compared to other groups. Significant disparities were also observed between urban and rural residents, with rural inhabitants scoring lower than their urban counterparts. Furthermore, urban residents living in informal settings scored higher (M=64; SE=3.302) on this dimension compared to those in formal urban areas. There was notable provincial variation for the 'service delivery' dimension, with the lowest mean scores recorded for populations in the Western Cape (M=39; SE=3.836), Eastern Cape (M=43; SE=1.768), and Northern Cape (M=44; SE=2.434). Gauteng residents had the highest mean scores (M=65; SE=1.762) on this dimension.

Table 27: Mean scores on 'service delivery' dimension of the perceived positive impacts of the 'just transition' by sources by a range of different subgroups

Socio-demographic		%	Significance	Group differences[14]
Age	16-24	50	P<0,001	16-24 < 25-34, 45-49
	25-34	57	***	60 and above < 25-34, 45-59
	35-44	55		
	45-59	57		
	60 and above	51		
Gender	Male	54	P=0,381	
	Female	55	n.s	
Race	Black African	55	P<0,001	Indian/ Asian,> black African, coloured, white.
	Coloured	51	***	
	Indian or Asian	67		
	White	51		
Education	Primary or no formal schooling	44	P<0,001	Primary < Incomplete, Matric, Post-matric
	Incomplete secondary	52	***	
	Matric or equivalent	59		Incomplete < Matric, Post-matric
	Post-matric	58		
Geographic				
Geographic type	Urban formal metropolitan	54	P<0,001	Urban informal > Urban formal metro
	Urban formal non- metropolitan	57	***	
	Urban informal	64		Rural trad. auth <, Urban formal non-metro, Urban informal
	Rural traditional authority area	50		
	Rural farm	47		Rural farms < Urban formal metro, Urban formal non-metro , Urban informal
Province	Western Cape	39	P<0,001	WC < FS, KZN, NW, MP, LP; GP > WC, EC, NC, FS, KZN ; EC < KZN, NW, MP, LP; NC < KZN, NW, LP ;
	Eastern Cape	43	***	
	Northern Cape	44		
	Free State	50		
	KwaZulu-Natal	56		
	North West	57		
	Gauteng	65		
	Mpumalanga	54		
	Limpopo	55		

Note: Significance is denoted as follows: * p<0.05, **p<0.01, *** p<0.001.
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

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[14] Group differences calculated using Tukey SHD (SPSS)

A stepwise correlation analysis was conducted to identify the main variables influencing scores on the 'service delivery' dimension. In conjunction with a number of background control variables, we examined climate change knowledge, climate scepticism, climate concern, awareness of the transition, and pro-environmental norms. The forward selection method was applied with an entry criterion of p<0.050 and a removal criterion of p>0.100. The model outputs, shown in **Table 28**, indicate that a positive coefficient corresponds to a higher score on this dimension. The findings revealed that urbanization was a strong predictor of the 'service delivery' dimension, with living in rural areas reducing the likelihood of a high score. Consistent with the subgroup analysis, years of formal education were positively correlated (r=0.838; SE=0.319) with the dependent variable. Personal pro-environmental norms (r=0.136; SE=0.035) also positively influenced attitudes. Perhaps surprisingly, media usage and awareness of the 'just transition' were not statistically significant correlates in the model.

Table 28: Stepwise correlation for the 'service delivery' dimension of the perceived positive impacts of the 'just transition'

OUTCOME VARIABLE	Perceived positive 'service delivery" impacts of the 'just transition'
PREDICTOR VARIABLES	
Age	…
Gender (ref. male)	…
Population group (ref. black African)	
Coloured	…
Indian or Asian	6.385**
White	…
Years of schooling	0.838**
Socio-economic status (asset index)	…
Geographic type (ref. Urban formal)	
Urban informal	7.374*
Rural	-5.051**
News Media Usage	…
Climate change knowledge	…
Climate change scepticism	…
Climate concern	…
Personal pro-environmental norms	0.136***
Worried about the Just Transition	…
Awareness of Just Transition	…

Notes: 1. Significance is denoted as follows: * p<0.05, **p<0.01, *** p<0.001. 2. Green shaded cells denote a significant positive association with the dependent variable, and red shaded cells a significant negative association. 3. Statistically insignificant variables are not displayed; 4. Number of observations is 2,832; 5. Model controls for province of residence; and 6. Prob>chi2 = 0.000; Root MSE=26.1; R2 = 0.110.
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

The mean results for the 'economic opportunities' dimension are portrayed by selected socio-demographic groups in **Table 29**. No significant differences among age groups were found. Individuals lacking secondary education had lower scores compared to other educational attainment groups for this dimension. Differences among educational groups were more pronounced for the 'service delivery' dimension than for 'economic opportunities'. Although population group differences were less notable than expected, some interesting variations emerged. Indian (M=37; SE=3.224) and white (M=38; SE=4.849) respondents reported higher scores on this dimension compared to other groups. No significant differences were observed between urban and rural residents concerning 'economic opportunities'. Notable provincial variation was found, with the lowest mean scores in Limpopo (M=27; SE=2.193), Mpumalanga (M=28; SE=2.014), and the Eastern Cape (M=29; SE=1.770). Conversely, KwaZulu-Natal residents had the highest mean scores (M=37; SE=2.013) on this dimension.

Table 29: Mean scores on 'economic opportunities' dimension of the perceived positive impacts of the 'just transition' by sources by a range of different subgroups

Socio-demographic		%	Significance	Group differences[15]
Age	16-24	32	P=0,082 n.s	
	25-34	35		
	35-44	35		
	45-59	33		
	60 and above	35		
Gender	Male	36	P<0,001 ***	Female < Male
	Female	32		
Race	Black African	33	P<0,001 ***	Black African > coloured, white
	Coloured	37		
	Indian or Asian	37		
	White	38		
Education	Primary or no formal schooling	29	P<0,001 ***	Primary, Incomplete < Matric, Post-matric
	Incomplete secondary	30		
	Matric or equivalent	37		
	Post-matric	38		
Geographic				
Geographic type	Urban formal metropolitan	35	P<0,004 **	
	Urban formal non- metropolitan	33		
	Urban informal	38		
	Rural traditional authority area	32		
	Rural farm	31		
Province	Western Cape	33	P<0,001 ***	EC < KZN, GP; KZN > MP, LP
	Eastern Cape	29		
	Northern Cape	36		
	Free State	31		
	KwaZulu-Natal	37		
	North West	34		
	Gauteng	38		
	Mpumalanga	28		
	Limpopo	27		

Note: Significance is denoted as follows: * p<0.05, **p<0.01, *** p<0.001.
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

A stepwise regression analysis was performed to determine the key variables affecting scores on the 'economic opportunities' dimension of the perceived positive impacts of the 'just transition'. Climate change knowledge, climate scepticism, climate concern, awareness of the transition, concern about the transition, and pro-environmental norms were evaluated along with several background control variables. The forward selection method was used with an entry criterion of p<0.050 and a removal criterion of p>0.100. The results, presented in **Table 30**, show that a positive coefficient indicates a higher score on this dimension. The analysis revealed that gender was a significant predictor for the 'economic opportunities' dimension, with being female negatively correlated (r=-4.967; SE=1.659) with the dependent variable. Conversely, years of formal education were positively correlated (r=0.864; SE=0.267) with the 'economic opportunities' dimension. Additionally, personal pro-environmental norms (r=0.066; SE=0.032) had a positive impact on attitudes. Interestingly, media usage and awareness of the 'just transition' were not found to be statistically significant correlates in the model.

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[15] Group differences calculated using Tukey SHD (SPSS)

Table 30: Stepwise regression for the 'economic opportunities' dimension of the perceived positive impacts of the 'just transition'

OUTCOME VARIABLE	Perceived positive 'economic opportunities' impacts of the 'just transition'
PREDICTOR VARIABLES	
Age	...
Female (ref. male)	-4.967**
Population group (ref. black African)	
Coloured	...
Indian or Asian	5.350*
White	...
Years of schooling	0.864**
Socio-economic status (asset index)	...
Geographic type (ref. Urban formal)	
Urban informal	...
Rural	...
News Media Usage	...
Climate change knowledge	...
Climate change scepticism	...
Climate concern	...
Personal pro-environmental norms	0. 066*
Worried about the Just Transition	...
Awareness of Just Transition	...

Notes: 1. Significance is denoted as follows: * p<0.05, **p<0.01, *** p<0.001. 2. Green shaded cells denote a significant positive association with the dependent variable, and red shaded cells a significant negative association. 3. Statistically insignificant variables are not displayed; 4. Number of observations is 2,832; 5. Model controls for province of residence; and 6. Prob>chi2 = 0.000; Root MSE=23.0 ; R2 = 0.128.
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

4.4 JUST TRANSITION POLICY PREFERENCES

4.4.1 Support for specific policy measures to mitigate possible negative effects emanating from the just transition

South Africans were presented with six policy options that could be enacted to help mitigate potential negative impacts from the transition. They had to indicate to what extent they agreed or disagreed with each policy option using a standard five-point agreement scale. In response to the dynamic challenges facing the South African workforce, a comprehensive set of policies was proposed, aiming to address the multifaceted issues surrounding unemployment, skills development, and social support. The data reflects public sentiment on these proposed policies, based on the entire response scale (**Figure 25**).

The policy option that received the highest level of support was 'Improving education to facilitate the entry of individuals into new sectors'. Almost four-fifths (79%) supported this policy, reflecting an understanding of the role of education in preparing the workforce for emerging industries and the need for continuous investment in educational infrastructure. A notable 77% of respondents supported initiatives targeted at assisting women, youth, and vulnerable groups in finding employment. This indicated a commitment to targeted interventions to ensure inclusive economic participation. Similarly, there was strong support, also at 77%, for policies aimed at supporting local businesses and creating job opportunities in areas affected by economic challenges. The majority of respondents (75%) agreed with implementing training and skills programmes for workers who lose their jobs.

Figure 25: Preference for policy options to mitigate negative impacts of Just Transition (2023, percentage)
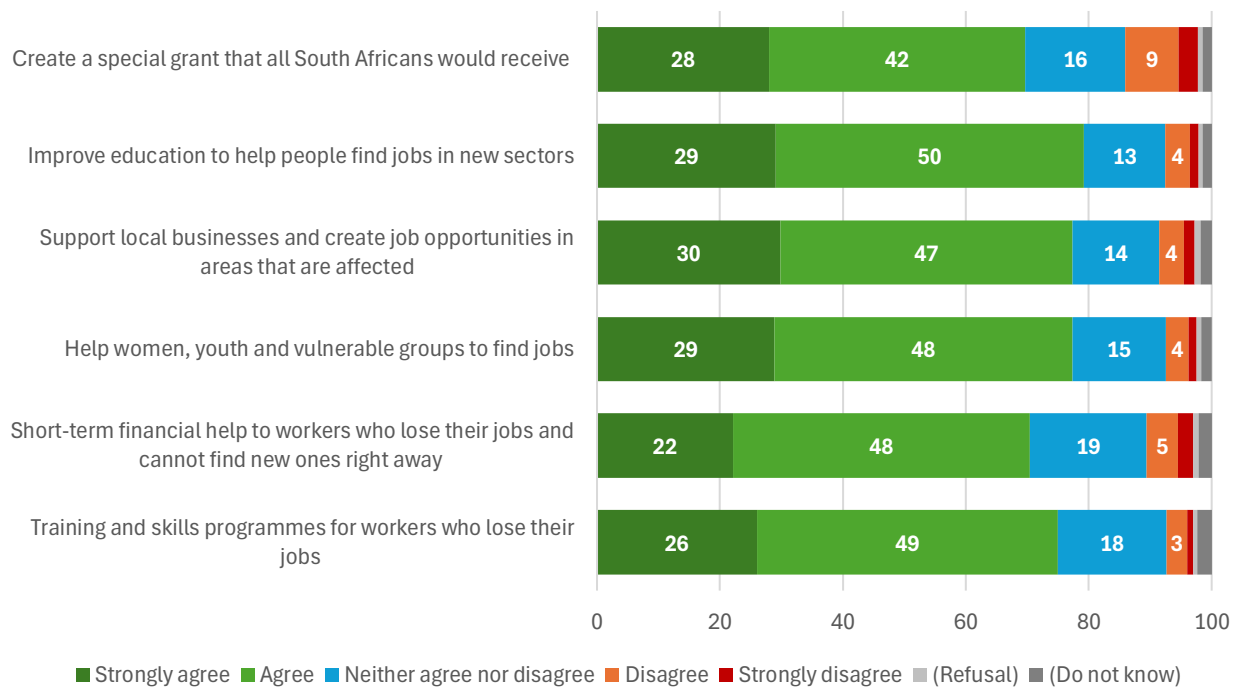
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

Short-term financial assistance for individuals struggling to secure new employment immediately after job loss, as well as a Basic Income Grant intended for all South Africans, both received a solid 70% approval. This suggests an understanding of the transitional challenges workers may face and the need for a safety net that would provide financial safety to all South Africans. Interestingly, policies that were based on education and opportunities for employment and personal advancement were supported more than short-term solutions or social grants. While the majority of respondents expressed agreement with the proposed policies, a notable proportion remained neutral or in disagreement, ranging between 19% and 28% across the six policy measures. To determine if there was consistency in responses between these policies, a correlation analysis was undertaken.

When interpreting the correlation analysis of these policy support variables, it was apparent that the six items were correlated (a correlation coefficient of between 0.37 and 0.58). The fact that these items were correlated indicate that responses tended to be consistent across the different policies. This implies that respondents' opinions or stances across policies tend to be similar rather than different (e.g. strong support or lack of support across all policy options). Further testing of the items showed that they work well together (Cronbach α coefficient=0.84) and could be combined to create an index. An index was subsequently created, combining all the policies, and was then transformed into a 0-100 score, where 0 referred to strong policy opposition and 100 strong policy support. This was done to determine which attitudes, socio-demographic attributes, and other characteristics tend to align with higher or lower levels of support for these policy preferences.

To identify the characteristics of the groups who were more or less likely to have higher levels of support for policy, we produced the mean support for policy index scores across the basic set of socio-demographic and socio-cultural variables. In **Figure 26,** the average level of support among the public is presented based on these attributes, ranked from highest to lowest support scores. One-way ANOVA tests were performed to test for the statistical significance of mean score differences for the subgroups presented in the bar chart. Apart from gender, the bar graph displays statistically significant categories. The highest support for policy was observed among respondents from specific ethnic groups such as the Tshivenda, Xitsonga, Siswati, isiNdebele, Setswana and isiZulu, Indian or Asian adults, younger

adults or those aged 16-24 years, older adults or those aged 60 years and older, and those with 4 or more children. The lowest support for policy was observed among the isiXhosa, Afrikaans and Sepedi public, coloured adults, as well as those aged 35-44 years.

Figure 26: Level of policy support by select socio-demographic and socio-cultural attributes (2023, mean score based on 0-100 scale)
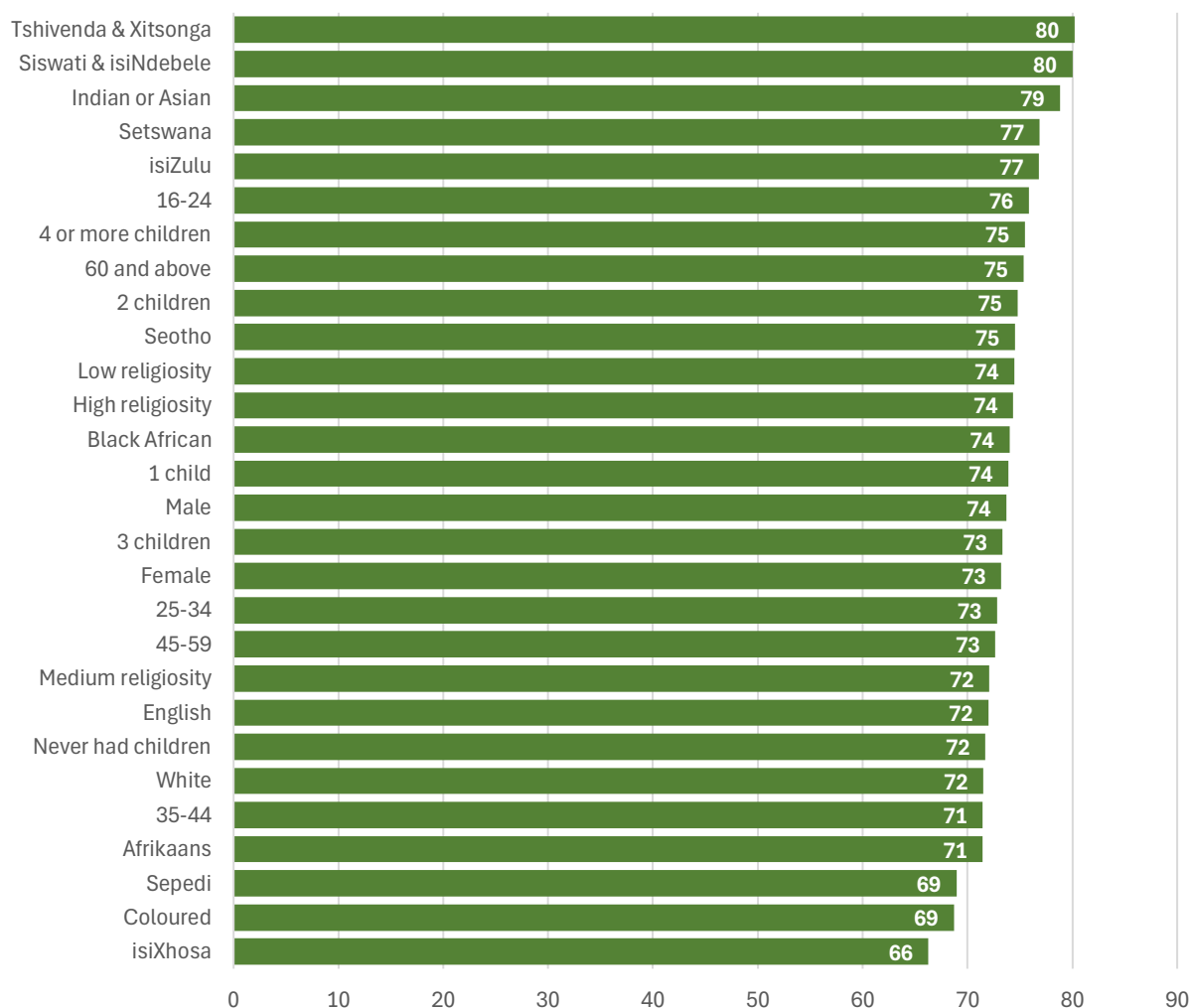
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

To identify the characteristics of the groups who were more or less likely to have higher levels of support for policy, we also examined a set of socio-economic and spatial attributes. In Figure 25 the average level of support among the public is presented based on these attributes, ranked from highest to lowest support scores. ANOVA tests were performed to test for the statistical significance of mean score differences for the subgroups presented in the bar chart. Apart from level of education, the bar graph displays statistically significant categories. The highest support for policy was observed among residents of KwaZulu-Natal, Mpumalanga, and the North West, rural traditional authority area residents, those who are part of mid and low-level worker categories, those who are within the richest socio-economic quintile, and those who reported having excellent health. The lowest support for policy was observed among those specific provincial residents such as the Eastern Cape, Western Cape, Northern Cape and the Free State as well as urban informal residents (**Figure 27**).

Figure 27: Level of policy support, by select socio-economic and spatial attributes (2023, mean score based on 0-100 scale)
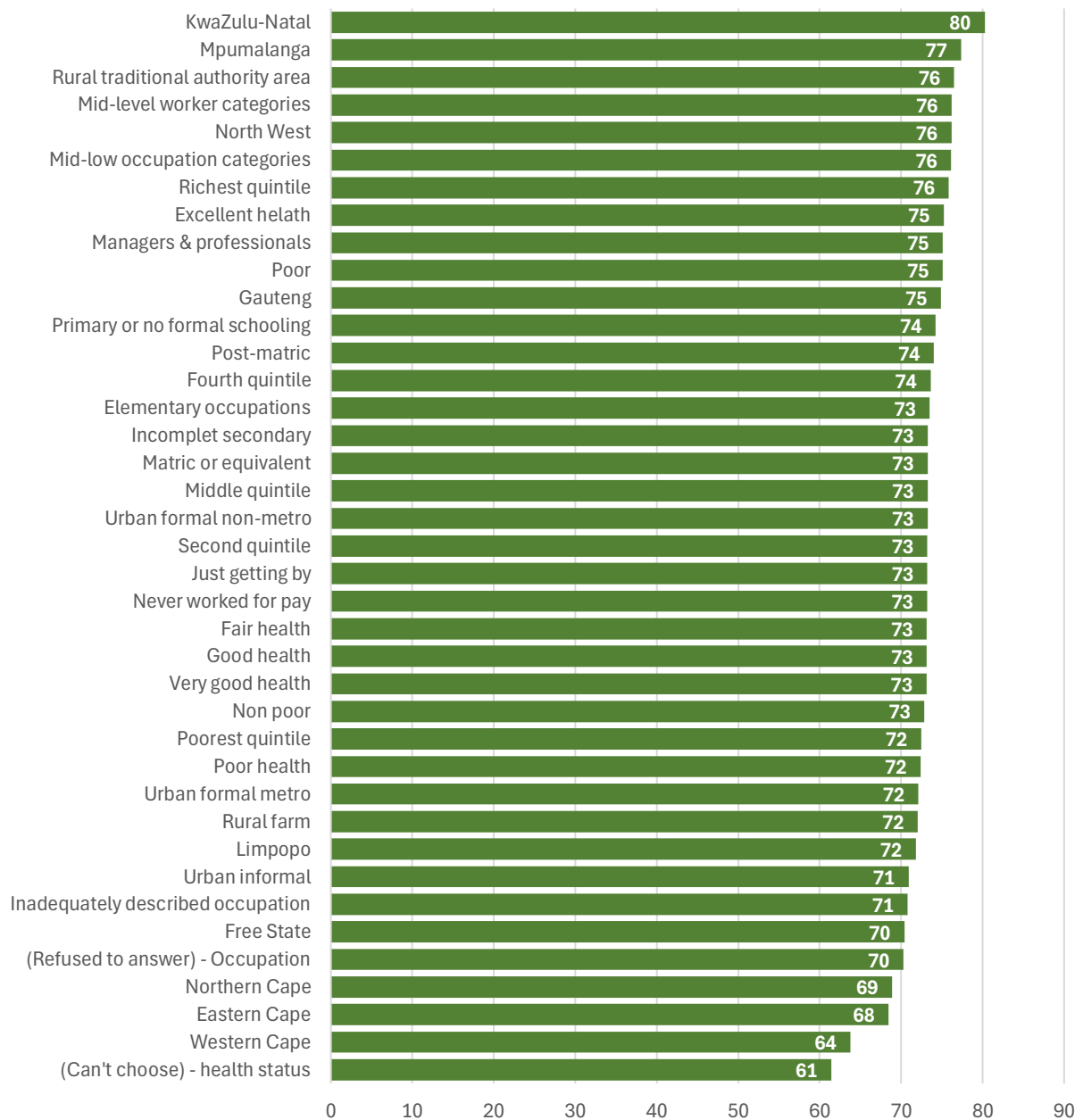
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

To identify the characteristics of the groups who were more or less likely to have higher levels of support for the policy, a set of information and political attributes were examined. In **Figure 28**, the average level of support among the public is presented based on these attributes, ranked from highest to lowest support scores. ANOVA tests were performed to test for the statistical significance of mean score differences for the subgroups presented in the bar chart. The bar graph displays statistically significant categories. The highest support for policy was observed among those who have very high trust in the government, often spend time on social media, and never use the media for political news but also those who do so several times a day. The lowest support for policy was observed among those who use other sources or the newspaper to receive information and have medium trust in the government.

Figure 28: Level of policy support by select information and political attributes (2023, mean score based on 0-100 scale)
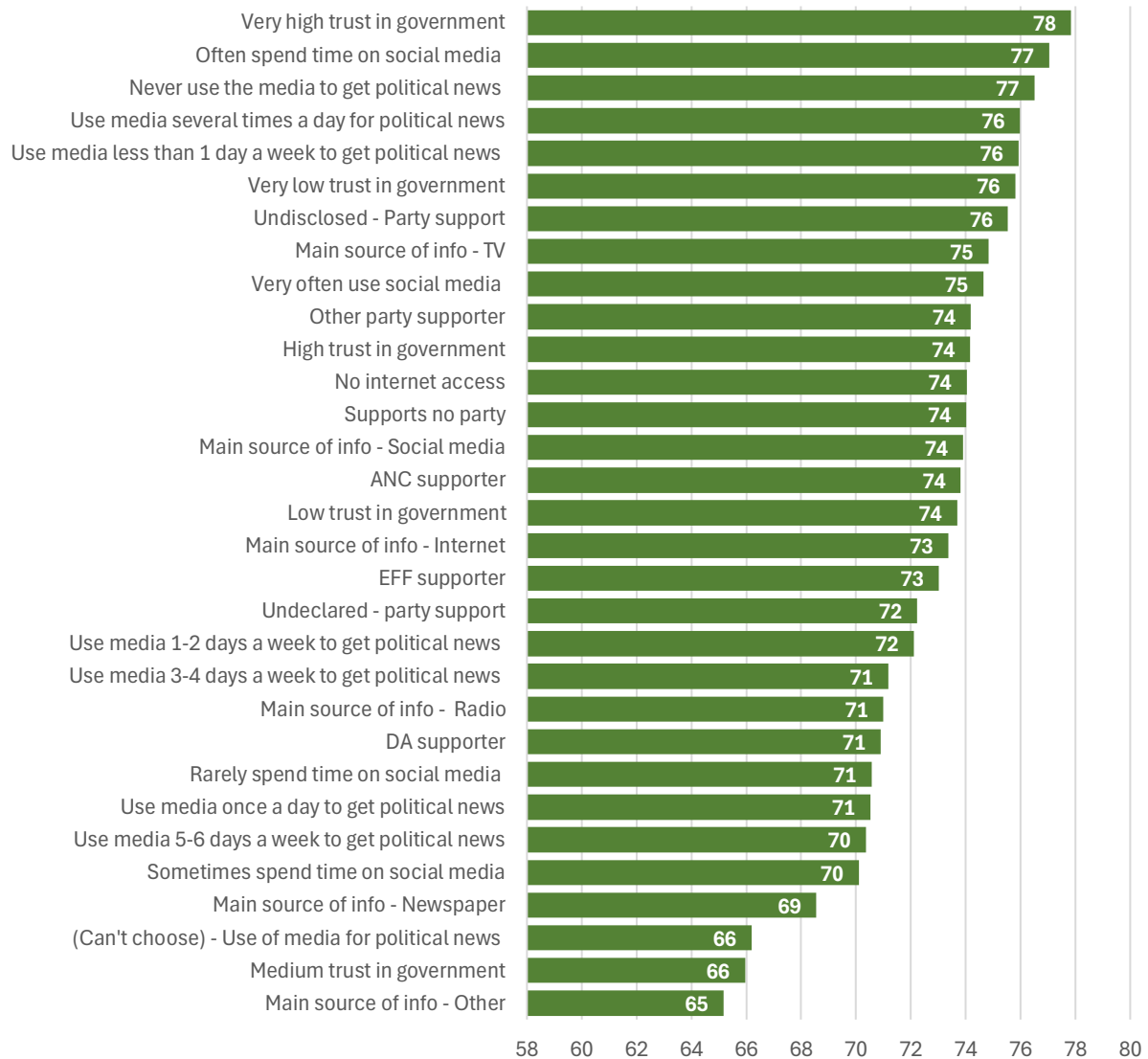
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

To more specifically determine which group-based differences were significant, ANOVA Scheffe post-hoc multiple comparisons testing was undertaken as part of the ANOVA. A summary of the statistically significant results is presented in **Table 31**. Our analysis indicates that there were no statistically significant differences between the different categories of gender, education, and subjective health status.

Table 31: Significant group-based differences of policy support, based on one-way ANOVA tests (2023, mean score differences based on 0-100 scale)

Socio-demographic				
Age	16-24	76	P<0,001	35-44; 45-59<16-24.
	25-34	73		
	35-44	71		35-44< 60 and above.
	45-59	73		
	60 and above	75		
Gender	Male	74	P=0,432	
	Female	73		
Race	Black African	74	P<0,001	Coloured < black African; white < Indian
	Coloured	69		
	Indian or Asian	79		
	White	72		
Children	Never had a child	72	P<0,001	Never had a child < 2 children; 4 or more children
	1 Child	74		
	2 Children	75		
	3 Children	73		
	4 or more children	75		
Socio-economic				
Education	Primary or no formal schooling	74	P=0,695	
	Incomplete secondary	73		
	Matric or equivalent	73		
	Post-matric	74		
Occupation	Never worked for pay/not working	73	P<0.01	Refused to answer < Managers and professionals; Mid-level worker categories.
	Managers and Professionals (ISCO 1-2)	75		
	Mid-level worker categories (ISCO 3-5)	76		
	Mid-low occupational categories (ISCO 6-8)	76		
	Elementary occupation (ISCO 9)	73		
	Refused to answer	70		
	Don't know	71		
Subjective poverty status	Non-poor	73	P<0,05	Just getting by; Non-poor < Poor
	Just getting by	73		
	Poor	75		
Asset quintile	Poorest quintile	72	P<0,05	Poorest quintile < Richest quintile
	Second quintile	73		
	Middle quintile	73		
	Fourth quintile	74		
	Richest quintile	76		
Subjective health	Excellent	75	P<0,01	No significant differences between groups.
	Very good	73		
	Good	73		
	Fair	73		
	Poor	72		
Socio-Cultural				
Language	isiZulu	77	P<0,001	isiXhosa < Sepedi; English; Afrikaans < isiZulu; Siswati & isiNdebele; Setswana Tshivenda & Xitsonga.
	isiXhosa	66		
	Siswati & isiNdebele	80		
	Setswana	77		
	Sesotho	75		
	Sepedi	69		
	Tshivenda & Xitsonga	80		
	English	72		
	Afrikaans	71		
Religiosity	Low religiosity	74	P<0,01	Medium religiosity < Low; High religiosity.
	Medium religiosity	72		
	High religiosity	74		

Spatial		

Geographic type	Urban formal metropolitan	72	P<0,001	Urban formal metro; urban formal non-metro; urban informal < Rural traditional authority areas.
	Urban formal non- metropolitan	73		
	Urban informal	71		
	Rural traditional authority	76		
	Rural farms	72		
Province	Western Cape	64	P<0,001	WC < EC; NC;FS LP < GT; NW; MP < KZN
	Eastern Cape	69		
	Northern Cape	69		
	Free State	70		
	KwaZulu-Natal	80		
	North West	76		
	Gauteng	75		
	Mpumalanga	77		
	Limpopo	71		
Socio Political				
Party support	ANC Supporter	74	P<0,05	DA Supporter < Undisclosed.
	DA Supporter	71		
	EFF Supporter	73		
	Other party supporter	74		
	Supports no party	74		
	Undisclosed	76		
	Undeclared	72		
Trust in the government	Very low trust in the government	76	P<0,001	Medium trust in the government < very low and low trust in the government; high and very high trust in the government
	Low trust in the government	74		
	Medium trust in the government	66		
	High trust in the government	74		
	Very high trust in the government	78		
Information				
Frequency of media use to ger political news/information	Several times a day	76	P<0,001	Once a day; 5-6 days a week; 3-4 days a week; 1 day a week < Never; several times a day; less than 1 day a week
	Once a day	71		
	5-6 days a week	70		
	3-4 days a week	71		
	1-2 days a week	72		
	Less than 1 day a week	76		
	Never	76		
	Can't choose	66		
Main source of information	TV	75		
	Radio	71	P<0,001	Radio; Newspaper; Other < TV; Internet; Social media.
	Newspaper	69		
	Internet	73		
	Social Media	74		
	Other	65		
Time spent looking at social media sites in past month	No internet	74	P<0,001	Rarely; sometimes < no internet < Often; very often
	Rarely	71		
	Sometimes	70		
	Often	77		
	Very often	75		

Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

Using a stepwise regression model **(Table 32**), a number of statistically significant variables were found that contributed to an increase in the approval of these policies (using the policy index as the dependent variable). In the analysis, only statistically significant variables are retained in the model. The model demonstrates good fit with an R-squared of 0.35, indicating that approximately 35% of the variance in the dependent variable is explained by the model. The analysis found that white adults, KwaZulu-Natal residents, and those of specific ethnicity—namely Siswati and isiNdebele, as well as Setswana and Tshivenda — tended to support these policies more than people of other population groups, ethnicities, and provinces. There is an observable negative correlation among age, religiosity, climate change scepticism, and worry that one's own self and family will be negatively affected by JET.

This suggests the older people, who are more religious, are sceptical of climate change, and worry about the negative outcomes of JET, are less supportive of these policies.

Table 32: Stepwise regression analysis of support for Just Transition policies

OUTCOME VARIABLE: SUPPORT FOR JUST TRANSITION POLICIES	Coefficient	P-value	Significance
Age (years)	-0.0719	0.013	*
Population group (ref. black African)			
Coloured	…	…	…
Indian or Asian	…	…	…
White	3.5633	0.023	*
Number of children	0.6005	0.019	*
Province (Ref: Western Cape)	…	…	…
Eastern Cape	…	…	…
Northern Cape	…	…	…
Free State	…	…	…
KwaZulu-Natal	6.8508	0.000	***
North West	…	…	…
Gauteng	…	…	…
Mpumalanga	…	…	…
Limpopo	…	…	…
Ethnicity (ref=isiZulu)			
isiXhosa	…	…	…
Siswati & isiNdebele	6.2846	0.000	***
Setswana	4.1657	0.001	**
Sesotho	…	…	…
Sepedi	…	…	…
Tshivenda & Xitsonga	7.8728	0.000	***
English	…	…	…
Afrikaans	…	…	…
Religiosity	-0.5136	0.001	**
Conservative values index	0.4265	0.000	***
Climate change scepticism	-0.0285	0.032	*
Personal pro-environmental norms	0.0625	0.000	***
Support for JET-related actions	0.0869	0.000	***
Worry that self and family will be negatively affected by JET	-0.0661	0.000	***

Notes: *** p<.001; ** p<.01; * p<.05. The regression coefficients displayed in the models are standardised Betas.
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

4.4.2   Views on climate finance to support the Just Energy Transition

South Africa has made a strong commitment to tackling climate change and facilitating a just transition in the country. Significant finance is required for these national objectives to be realised and progress achieved within a reasonably short timeframe. The *National Climate Change Response White Paper* (RSA, 2011) recommended a balanced approach to climate finance, which would involve leveraging both international and domestic finance to support South Africa's transition to a climate-resilient economy, with a strong focus on reducing dependency on external sources while fostering local capabilities and regional cooperation (Department of Environmental Affairs, 2011). Various noteworthy developments have occurred since 2020 in relation to climate finance for the country. For instance, in 2021, South Africa became the first country to agree to a JETP valued at US$8.5 billion with the European Union, United Kingdom, the United States, and France. This has subsequently risen to US$11.6 billion with the support of Denmark and the Netherlands under the JETP and other climate finance from Spain, Canada, and Switzerland. This was followed in 2022 by the release of the Just Energy Transition Investment Plan by the Presidential Climate Finance Task Team. This investment plan indicated that the country needed approximately R1.5 trillion between 2023 and 2027 to support the decarbonisation of the economy, particularly in the areas of electricity, green hydrogen and new energy vehicles. In late 2023, a comprehensive Just Energy Transition Implementation Plan was

approved by the Cabinet and presented at COP28 in December 2023 by President Cyril Ramaphosa. Building on the 2022 JETP, the implementation plan included a key focus on the three JETP priority areas as well as on skills development and economic diversification in the coal-dominated Mpumalanga province.

Despite this array of activity, according to the 2024 State of Climate Action Report (PCC, 2024), the financial resources that have been provisioned to support South Africa's climate change efforts and a just transition are currently insufficient to meet the country's needs. The total estimated cost for decarbonisation, adaptation, and just transition measures until 2050 is approximately R8.5 trillion (World Bank 2022). While there has been distinct growth in climate finance flows, these fall short of the annual requirements to achieve South Africa's climate targets. Between 2019 and 2021, annual climate finance averaged R131 billion, appreciably below the estimated annual need of R334-R535 billion (de Aragão Fernandes et al. 2023). Most climate finance that was tracked between 2019-2021 came from domestic sources, with only 9% provided by international sources. Most funding came from private actors, including commercial sources, corporations, philanthropists or donors, NGOs, and households (de Aragão Fernandes et al. 2023). The overwhelming majority of funding (88%) was allocated to mitigation projects, especially clean energy projects, with only a modest share (12%) provisioned for adaptation projects. This has resulted in adaptation projects being unevenly distributed across the country, with most concentrated in the Western Cape and KwaZulu-Natal. Given this picture, increased concessional and grant funding, as well as blended finance, will be required in coming years to meet national targets, while also recognising the need for greater investments in adaptation measures to reduce vulnerability to the effects of climate change and the just transition.

The survey included a single policy-focused question regarding climate finance. The item examined opinions on whether South Africa should accept international financial assistance for the just transition and, if so, whether the government should manage such funds. The specific phrasing was as follows: 'Wealthy countries have promised to give money to South Africa to help make the change from coal to other energy sources like solar and wind. Which of the following statements comes closest to your opinion on this?' Four pre-coded options were provided to respondents. The first two options related to variations of support for accepting international financial assistance: one favouring and one rejecting government management of the funds. The third option expressed opposition to accepting climate finance from wealthy nations, while the last option conveyed a lack of opinion on this matter. The national responses to the question are presented in **Figure 29**.

Diverse perspectives within the adult population again came to the fore: a significant portion, 30%, supported the idea that South Africa should accept financial help, and that the government should be given responsibility for managing those funds. This perspective likely reflects a belief in the government's role in overseeing and allocating resources. A slightly larger share of the public, 34%, believed that South Africa should accept financial assistance but prefers that the government not directly manage the funds. Combining these two 'acceptance' options, close to two-thirds (64%) favoured the acceptance of international climate finance. This is in line with President Ramaphosa's appeal at COP28, when he stated: 'We are calling for more countries to participate, as our Just Energy Transition Plan requires much more funding, so that we can enable a more effective and positively impactful transition, particularly with respect to communities that are going to be affected as we transit from fossil fuel sources of energy to renewables' (The Presidency, 2023). The lingering challenge remains one of a trust deficit, with a large share expressing doubt about government's ability to manage these large-scale funds, and instead appealing for an alternate independent management arrangement.

Figure 29: Climate finance - Which of the following statements comes closest to your opinion?
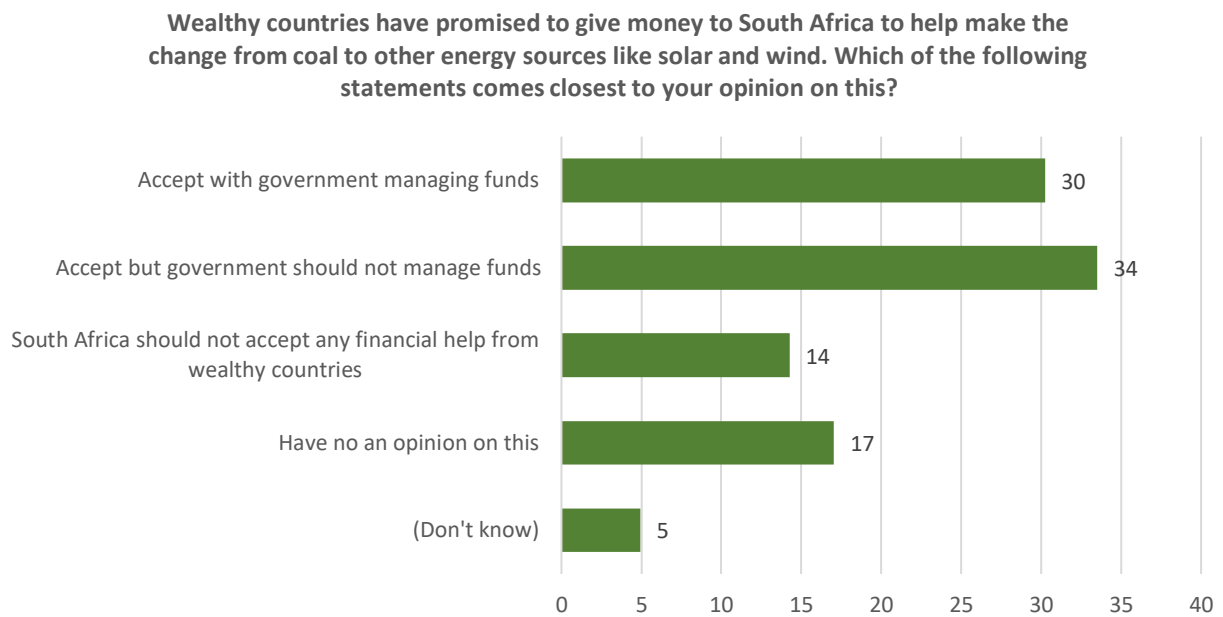
Wealthy countries have promised to give money to South Africa to help make the change from coal to other energy sources like solar and wind. Which of the following statements comes closest to your opinion on this?

Source: HSRC SASAS 2023 PCC module on attitudes towards Climate Change and the Just Transition.

A notable share (14%) was of the opinion that South Africa should not accept international financial help at all. A significant portion (17%) did not have a clear opinion on the matter, indicating a level of uncertainty regarding this matter. A further 5% provided 'don't know' responses, suggesting a level of uncertainty or lack of knowledge about the best course of action.

Regression analysis was performed on the measure to provide a deeper understanding of the predictors of climate finance preferences. For this, the four response options plus the 'don't know' answers were converted into a set of five dichotomous (yes/no) variables, and stepwise logistic regression analysis was performed. The significant predictors associated with selecting the different climate finance positions are presented in **Table 33**. Variables that were not significant in any of the five models and are not presented in the table include: age, gender, number of children, years of education, religiosity, traditional values, climate scepticism, just transition awareness and approval, and concern about personal just transition impacts.

Support for accepting funds with government management: Those who chose this option were more likely to have a stronger sense of personal responsibility toward environmental protection (indicating pro-environmental personal norms). This was one of two strong associations from regression Model I. Another significant finding was that individuals who had never worked for pay were less inclined, on average, to support government-managed climate finance. Apart from these dominant effects, there was a slight tendency to favour this option among African National Congress (ANC) supporters compared to Democratic Alliance (DA) supporters, those reporting higher social media usage, and those living in metropolitan areas (relative to those in informal urban settlements).

Support for accepting funds but opposing government management: From Model II, it is apparent that this stance was more commonly supported by followers of the Economic Freedom Fighters (EFF) and DA than by ANC supporters, reflecting possible concerns among opposition party supporters about the government's capability to effectively manage large-scale funds for transitioning to a low-carbon economy. This message was reflected in the trust in political institutions index, with those exhibiting higher political trust less likely to support non-government management of climate finance. Furthermore, white adults (relative to black African adults) and individuals who had never been in paid employment were more inclined to favour this option.

Table 33: Stepwise logistic regressions profiling the predictors of different international climate finance preferences, 2023

Stepwise logistic regressions:	Model I	Model II	Model III	Model IV	Model V
OUTCOME VARIABLE	Accept and government should manage funds [30%]	Accept but government should not manage funds [34%]	Should not accept financial help from wealthy countries [14%]	Have no opinion on this [17%]	(Don't know) [5%]
PREDICTOR VARIABLES					
Population group (Ref: black African)					
Coloured	...	...	...	...	...
Indian/Asian	...	...	-2.192***	...	...
White	...	0.676**	-1.148**	...	...
Socio-economic status (low to high)	...	...	0.266**	-0.128*	-0.571**
Occupation (Ref: Never worked for pay)					
Managers & professionals (ISCO 1-2)	...	...	...	...	...
Mid-level worker categories (ISCO 3-5)	...	...	...	...	...
Mid-low occupations (ISCO 6-8)	...	...	...	-0.771*	-3.303**
Elementary occupations (ISCO 9)	...	...	...	...	-1.665*
(Refused to answer)	0.934***	-0.847**	...	-1.131***	...
(Don't know, inadequate response)	-1.204*	...	...	...	...
Subjective health (low to high)	...	-0.005*	-0.009**	...	...
Party identification (Ref=ANC supporter)					
DA supporter	-0.462*	0.570*	...	...	...
EFF supporter	...	0.868***	...	...	...
Other party supporter	...	...	...	...	...
Supports no party	...	...	...	0.576*	-1.434*
Undisclosed	...	...	...	...	-1.205*
Undeclared	...	...	...	...	-1.671**
Political trust index (low to high)	...	-0.009**	...	0.008*	...
Political activism index (low to high)	...	...	0.007*	-0.012**	...
Frequency use media to access political news or information (low to high)	...	...	-0.005*	...	...
Social media usage (low to high)	0.101*	-0.098*	...	...	...
Province (Ref=WC)					
Eastern Cape	...	0.580***	...	-1.327***	...
Northern Cape	...	0.706**	...	-1.537***	...
Free State	...	...	0.738*	-0.643*	...
KwaZulu-Natal	...	...	0.620**	-0.633**	...
North West	...	...	0.852**	-0.597*	...
Gauteng	...	...	...	...	1.774***
Mpumalanga	...	...	...	...	...
Limpopo	...	...	...	...	...
Geographic type (Ref: Urban formal metro)					...
Urban formal non- metropolitan	...	0.312*	-0.535**	...	...
Urban informal	-0.820*	...	...	...	...
Rural traditional authority areas	...	...	...	...	...
Rural farms	...	...	...	...	...
Impact of extreme weather events (low to high)	...	-0.004*	...	...	...
Climate change awareness (low to high)	...	0.006**	...	...	-0.016*
Climate concern (low to high)	...	...	...	-0.009*	...
Sense of personal responsibility for climate action (low to high)	0.010***	...	-0.013***	...	...
Pseudo R-Squared	**0.039**	**0.059**	**0.065**	**0.080**	**0.198**
N	2785	2785	2785	2785	2785

Note: [1] the following predictors were not significant in any of the models, and are therefore not presented: age in years, gender, number of children, years of education, religiosity scale, traditional values index, climate scepticism, Just Transition awareness and approval, as well as concern about personal Just Transition impacts. [2] Significance is denoted as follows: '...' not significant; * p<0.05 (95% level); ** p<0.01 (99% level); *** p<0.001 (99.9% level). Green-shaded cells represent a

positive association on the dependent variable, and red-shaded cells a negative association. The numbers in the cells are Beta coefficient values from the regression analysis.
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

Spatially, residents of the Northern Cape and Eastern Cape showed a greater tendency for non-state management compared to those in the Western Cape. A significant positive effect was also observed for climate change awareness, with individuals reporting higher self-rated climate awareness being more supportive of this approach. This was the only climate change and just transition measure that proved statistically significant. Other minor influences included living in urban towns (relative to metropolitan areas), lower social media usage, poorer self-rated health, and being less impacted by extreme weather events, all of which slightly increase the likelihood of supporting non-government-managed climate finance.

Opposition to financial assistance from wealthy nations: We now turn from the two options favouring acceptance of international climate finance to profile the factors associated with the third option, which expressed scepticism or rejection of such international assistance. There is a strong racial effect, with black African adults significantly more likely to reject international climate financial assistance than Indian and white adults. Controlling for other variables, opposition to international climate finance was higher among those with a greater socio-economic status and poorer self-reported health. This view was more common in metropolitan areas relative to urban towns, as well as among residents of North West province and KwaZulu-Natal compared to those in the Western Cape. Those with a lower sense of personal responsibility for climate action were significantly more inclined to favour this option. Engaging in higher levels of political activism and reporting lower accessing of political news and information had a weak influence on the selection of this preference.

No opinion and don't know responses: Those voicing no opinion on international climate finance assistance were significantly more likely to be living in the Western Cape than in the Northern Cape, Eastern Cape, and KwaZulu-Natal. Those who have never been in paid employment and exhibiting lower levels of political activism were also more inclined to express no opinion. A marginal positive association with this option was found among those lacking party support (relative to ANC supporters), a lower socio-economic status, a lower level of climate concern, and a higher level of trust in political institutions. The 5% who were unable to answer the question tended to never have been in paid employment, reside in Gauteng, and reported lower socio-economic status. They were marginally more likely to be ANC supporters compared to those lacking or uncertain about party identification and have lower climate change awareness.

In summary, South Africans on average tend to display a predominant preference for the country to draw on international climate finance, though polarisation about who should be responsible for managing such funds was evident. Further analysis of these climate finance preferences revealed key predictors for the four different positions presented to survey respondents. For government-managed climate finance, those with stronger pro-environmental personal norms were more supportive, with the never employed being less supportive. Those that were ANC supporters, had higher social media usage, and were residing in formal urban metropolitan areas were slightly more inclined to favour this climate finance option. The traits of those who supported international climate finance but were opposed to government management of the funds included those with higher climate awareness and lower levels of political trust. A greater preference for this climate finance option was also observed among EFF and DA supporters, those with higher climate awareness, white adults, residents of the Northern and Eastern Cape, and those who have never been in paid employment. Scepticism towards international assistance was stronger among those with a lower sense of personal responsibility for climate action. It was also more common among black African adults compared to Indian and white adults, those with higher socio-economic status and poorer health, and particularly among residents of metropolitan areas as well as both North West and KwaZulu-Natal provinces. Individuals with no opinion were more common among residents in the Western Cape and those with lower political activism and socio-economic status, while those who were unsure were often from Gauteng and

possess lower climate awareness. Variables like age, gender, and education were not significant predictors, controlling for other factors.

4.4.3   Responsibility for addressing the climate crisis

Individual responsibility for climate action has been, and remains, a core focus of educational and public awareness campaigns on climate change. However, the collective nature of climate change has also led to a primary focus on the responsibility of collective agents for climate action, most notably national governments and regional organisations. Over the past decade, the United Nations Framework Convention on Climate Change has further broadened its focus from the development of national emissions targets towards a model that includes a wider group of actors, including cities, sub-national governments, and businesses (Hale, 2016; Hormio, 2023). Against this background of individual and collective responsibility for climate action, the survey asked respondents who they believed should bear the most responsibility over actions to prevent climate change from worsening. A list of 11 options was presented to respondents, touching on government responsibility (South Africa and other nations), market responsibility (large companies and corporations), environmental group responsibility, and individual responsibility. In addition, an option for 'nobody' was provided to capture a sense that climate change is not considered serious enough to warrant action. The question was administered in a multiple response format, with respondents informed that they could select up to three options.

Figure 30: Most responsible for addressing the climate crisis (% that mentioned each option) (2023)
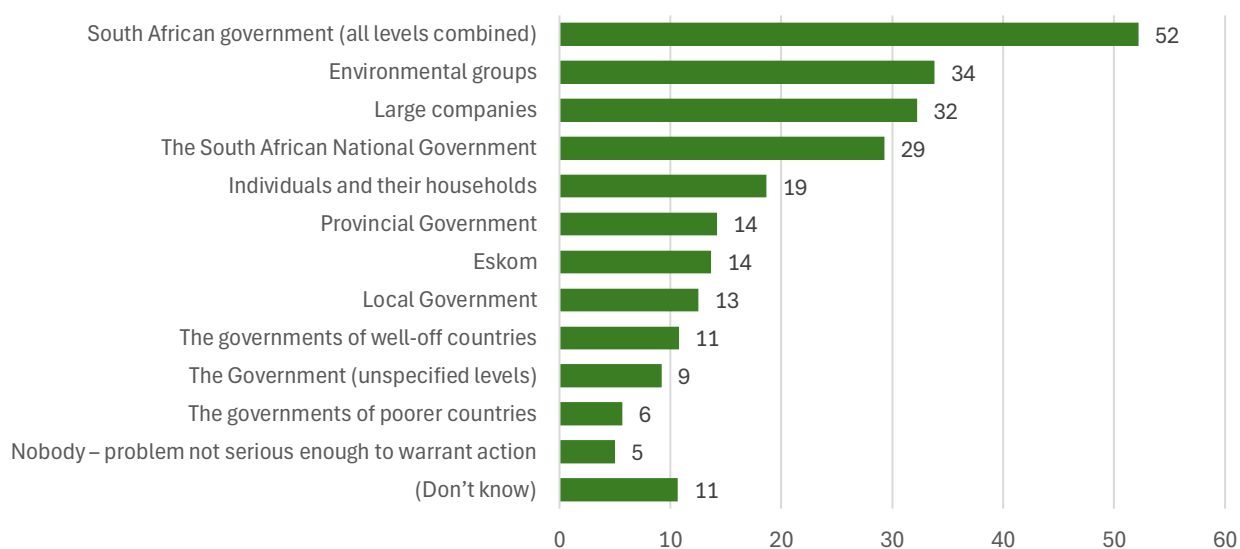
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

As reflected in **Figure 30**, the South African government was the most mentioned actor that the public regarded as being primarily responsible for addressing climate change. The government was selected by 52% of adults, but this category is a combination of four of the 11 categories (national, provincial, and local government as well as government without specification). Of the different government categories, a significant proportion, 29%, perceived national government as primarily responsible, which may indicate a strong expectation for comprehensive national-level action. Provincial government and local government were mentioned by a little over a tenth (14% and 13% respectively), while general reference to the South African government without specification of sphere was selected by 9%. These findings suggest that while national government is regarded as the sphere of government most responsible for addressing climate change, there is nonetheless recognition of the significance of regional and localised efforts.

Keeping with the government responsibility focus, a tenth (11%) of the public felt that it should be the responsibility of well-off countries to address climate change, while 6% believed that the responsibility lies with the governments of economically less affluent nations. Combining these two categories, 16% referred to international governments having a role to play in addressing climate change, perhaps signifying the perceived global nature of the issue for a sizeable minority share of the population.

Turning to non-state actors, environmental groups received the most support as the entity that South Africans believed should be most responsible for addressing climate change. Just over one-third (34%) saw environmental groups as having a crucial role, potentially reflecting a belief in the influence of advocacy, activism, and environmental science in addressing climate issues. The next highest option, supported by 32%, believed that large companies should bear the most responsibility, while 14% mentioned the national electricity supplier, Eskom. This indicates a recognition of market responsibility in addressing in addressing climate change, including the role of energy producers.

In addition to the collective actors outlined above, a fifth (19%) placed responsibility on individuals and their households, highlighting a complementary belief in personal accountability for addressing climate change. Finally, a small percentage of respondents, representing 5%, indicated that the problem is not severe enough to warrant immediate attention, while slightly over a tenth (11%) were unsure how to respond to the question. Taken together, the pattern of responses to the question of responsibility for climate action suggests a multifaceted perception of responsibility for climate change, with significant roles assigned to governments at various levels, non-state actors, and individuals. This highlights the complexity of public opinion on climate action and the need for an inclusive, multi-stakeholder approach.

To provide greater insight into the attributes associated with different categories of responsibility for climate action, stepwise logistic regression analysis was again performed. The 11 categories were reduced to six groups: South African government responsibility (combining all four government options), international government responsibility (combining wealthy and poor nations), market responsibility (large companies and Eskom), environmental group responsibility, individual responsibility, and nobody is responsible. For each of these clusters, a dichotomous variable was produced indicating whether the category was selected or not by respondents. The same set of predictor variables was included, and those that were statistically insignificant across all models were not displayed in the table of results (**Table 34**).

South African government responsibility. Among the 52% that selected the South African government (irrespective of level) as responsible for climate action, the dominant factors associated with this choice on aggregate were socio-economic status (as measured by asset index) and province of residence. Those with a higher relative socio-economic status were more likely to opt for South African government responsibility compared to those with a lower socio-economic standing. Furthermore, those living in the Western Cape were less likely to cite South African government responsibility relative to those living in all other provinces, especially KwaZulu-Natal, Northern Cape, the Eastern Cape, and Mpumalanga. None of the other demographic, socio-economic, political, informational, or environmental factors were statistically significant.

International government responsibility. For the 16% that referred to international governments (both richer and poorer nations) as responsible for climate action, the strongest predictor associated with this choice was years of education. Those with more years of education tended to recognise that international governments have some responsibility for climate action compared to those with fewer years of education. Those with less traditional values were also more inclined to select international government responsibility. A weak spatial effect was observed, with those living in Mpumalanga and KwaZulu-Natal more likely to have selected this category than those living in the Western Cape, controlling for other factors.

Table 34: Stepwise logistic regressions for responsibility for preventing climate change from worsening, 2023

Stepwise logistic regressions:						
	Model I	**Model II**	**Model III**	**Model IV**	**Model V**	**Model VI**
OUTCOME VARIABLE	South African government [52%]	International governments [16%]	Market responsibility [40%]	Environmental groups [34%]	Individuals and their households [19%]	Nobody – problem not serious enough [5%]
PREDICTOR VARIABLES						
Population group (Ref: black African)						
Coloured	…	…	…	0.498*	0.804**	…
Indian/Asian	…	…	…	…	…	…
White	…	…	…	…	…	…
Years of education	…	0.114***	0.087***	…	…	…
Socio-economic status (low to high)	0.096**	…	…	0.142**	0.154**	…
Occupation (Ref: Never worked for pay)						
Managers & professionals (ISCO 1-2)	…	…	…	…	…	…
Mid-level worker categories (ISCO 3-5)	…	…	0.505*	…	…	…
Mid-low occupations (ISCO 6-8)	…	…	…	…	…	…
Elementary occupations (ISCO 9)	…	…	0.673**	…	…	…
(Refused to answer)	0.567*	…	…	…	…	…
(Don't know, inadequate response)	…	-1.683*	…	…	…	…
Subjective health (low to high)	…	…	-0.006*	…	…	0.013*
Religiosity scale (low to high)	…	…	…	0.068**	…	…
Party identification (Ref=ANC supporter)						
DA supporter	…	…	…	…	…	…
EFF supporter	…	…	…	…	…	…
Other party supporter	…	…	…	-0.568**	…	…
Supports no party	…	…	…	…	…	…
Undisclosed	…	…	…	…	…	…
Undeclared	…	…	…	…	…	…
Political trust index (low to high)	…	…	-0.007*	…	…	…
Traditional values index (low to high)	…	-0.016**	-0.010*	…	…	…
Political activism index (low to high)	…	…	0.006*	…	…	…
Frequency use media to access political news or information (low to high)	…	…	…	0.006**	…	…
Social media usage (low to high)	…	…	0.126*	…	…	…
Province (Ref=WC)						
Eastern Cape	1.072***	…	-1.314***	0.793***	0.824**	…
Northern Cape	1.369***	…	-1.205***	…	…	…
Free State	1.055***	…	…	…	1.070**	…
KwaZulu-Natal	1.380***	0.584*	…	1.125***	1.446***	…
North West	0.820**	…	…	…	0.849*	…
Gauteng	1.042***	0.629*	-0.505**	0.952***	1.207***	…
Mpumalanga	1.066***	…	0.550*	…	1.748***	…
Limpopo	1.775**	…	-1.679***	0.497*	…	1.363***
Geographic type (Ref: Urban formal metro)						
Urban formal non- metropolitan	…	…	…	0.799***	…	…
Urban informal	…	…	…	0.737*	…	…
Rural traditional authority areas	…	…	…	0.726***	…	…
Rural farms	…	…	…	…	…	…
Impact of extreme weather events (low to high)	…	…	…	…	…	-0.013**
Climate change awareness (low to high)	…	…	…	…	-0.005*	…
Climate scepticism (low to high)	…	…	…	…	-0.008**	0.010*
Climate concern (low to high)	…	…	…	…	0.011***	…
Sense of personal responsibility for climate action (low to high)	…	…	0.007**	…	…	…
Just transition awareness (low to high)	…	…	0.006*	…	…	-0.019**
Just transition approval (low to high)	…	…	0.006*	…	…	…

Concern about personal Just Transition impacts (low to high)	…	…	…	-0.009***	-0.010***	…
R-squared / Pseudo R-Squared	**0.028**	**0.045**	**0.119**	**0.068**	**0.077**	**0.123**
N	2785	2785	2785	2785	2785	2785

Note: [1] the following predictors were not significant in any of the models, and are therefore not presented in the table: age in years, gender, number of children, ethnicity, religiosity scale. [2] Significance is denoted as follows: '…' not significant; * p<0.05 (95% level); ** p<0.01 (99% level); *** p<0.001 (99.9% level). Green-shaded cells represent a positive association on the dependent variable, and red-shaded cells a negative association. The numbers in the cells are Beta coefficient values from the regression analysis.
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

Market responsibility. Those that mentioned market actors, such as large companies and Eskom, as being responsible for climate action, were characterised by higher educational attainment, a stronger sense of personal pro-environmental behaviour, and higher likelihood of residing in the Western Cape than Limpopo, the Eastern Cape, and the Northern Cape. Those living in Mpumalanga were marginally more likely than those in the Western Cape to have selected market responsibility. A number of other weaker associations were observed, including lower political trust, less traditional values and poorer self-reported health as well as higher social media usage and political activism. Higher just transition awareness and approval had a weak but positive effect on the likelihood of recognising market responsibility for climate action.

Environmental group responsibility. The third of the public that favoured a role for environmental groups in taking climate action was clearly concentrated in specific geographic areas. They were more likely to be based in KwaZulu-Natal, Gauteng, and the Eastern Cape than the Western Cape, as well as in non-metropolitan urban and rural areas, or informal urban settlements. They were also less concerned about the personal impacts of the just transition. Those with higher socio-economic status, religiosity, and more regular media usage, as well as ANC supporters (relative to smaller party supporters), were moderately more likely to believe that environmental groups have a responsibility to assist in preventing climate change from worsening.

Individual responsibility. Those supporting personal responsibility for climate action tended to reside in Mpumalanga, KwaZulu-Natal, and Gauteng than the Western Cape, and were on average more concerned about climate change and less worried about the personal impacts of the just transition. This personal responsibility was also common among those with lower climate scepticism, coloured adults, and those with a higher socio-economic status.

Nobody's responsibility. Finally, the small share that believed no one should assume responsibility for climate action as the problem was not serious enough were typically from Limpopo, less likely to have been impacted by climatic shocks, and had lower just transition awareness levels. They were also marginally more inclined to display climate scepticism.

4.4.4   Who should be involved in managing the Just Energy Transition?

Apart from views on responsibility for addressing the climate crisis, respondents were also asked about who they believed should be involved in decisions about the JET. The phrasing was as follows: 'Which of the following groups should be involved in decisions about the change from coal to other energy sources (like solar and wind)?' A pre-coded list of entities was presented, including national government, local government, businesses, trade unions, NGOs or NPOs, community leaders, and a multi-stakeholder committee established by the president (essentially the PCC). Respondents were informed that they could select as many entities as they felt were relevant. **Figure 31** shows that almost half (45%) of South Africans wanted the national government to be involved in managing the transition, underscoring the perceived importance of national leadership in coordinating the shift to alternative energy. Local government involvement was also a popular choice, with just over a quarter (27%) supporting their involvement in the transition. The strong support for both national and local government reflects a broad expectation that various levels of government should play active roles in

guiding this transition. Almost a third of South Africans (28%) wanted businesses or the private sector to have a stake in managing the transition. The involvement of NGOs and NPOs was supported by around a fifth of South Africans, while a further 17% supported the involvement of trade unions and community leaders in just transition decision-making processes. A multi-stakeholder body established by the President, such as the PCC, was favoured by 20% of South Africans.

Figure 31: Entities that should be involved considering Just Transition decision-making
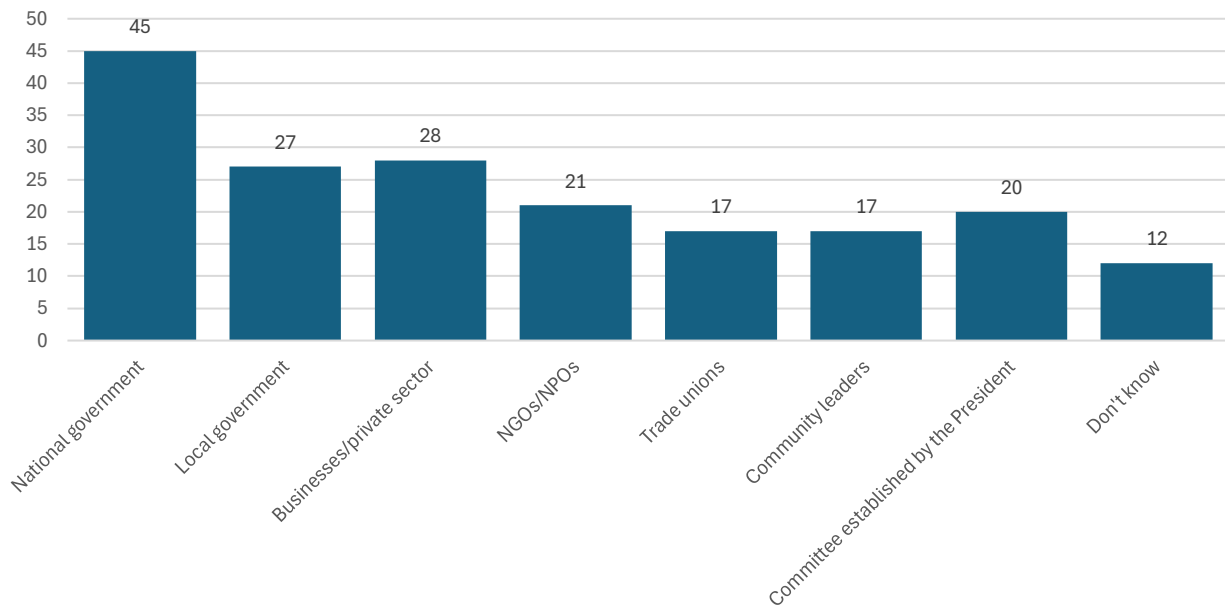
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

It was expected that the preference for the involvement of different entities would differ based on the socio-demographic attributes of respondents and their specific views on climate change and the just transition. To test this, the multiple response data presented in Figure 31 was analysed by: (i) different personal social and demographic traits, (ii) geographic location, and (iii) select climate change and just transition measures. A summary of the characteristics associated with the strongest and weakest support for the different government, non-state, and multi-stakeholder options is presented in **Table 35**.

Those favouring ***national government involvement*** in just transition decision-making tended to be male, aged 35-44 years, and Indian/Asian adults. They also tended to be individuals with higher education and income levels, in mid-level occupations, and EFF supporters. This group also included residents of urban informal settlements and those living in the Free State and Gauteng. However, older adults (60+), those without political affiliation, and those residing in the Western Cape, Eastern Cape, and Northern Cape as well as some rural traditional authority areas were more opposed to national government involvement. Similar attributes were observed among those expressing support for ***local government involvement*** in just transition decision-making, including better-educated and better-resourced professionals, with the added inclusion of younger adults aged 25-34 years and those who distrust national government. Those less partial to a role for this sphere of government were young adults aged 16-24 years, those with no clear party identification, and those living in Mpumalanga and Limpopo.

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Table 35: Socio-demographic, spatial, and environmental attributes by preferred source for decision-making

	GOVERNMENT		NON-STATE ACTORS				MULTI-STAKEHOLDER BODY
	National government	**Local government**	**Trade unions**	**Business / private sector**	**NGOs / NPOs**	**Community leaders**	**Presidential committee (PCC)**
In favour of involvement	• Male • 35-44 years • Indian/Asian adults • Matric or higher education • Richest quintile • Mid-level and mid-low level occupational categories • EFF supporters • Free State, Gauteng and urban informal residents	• 25-34 years • Indian/Asian and white adults • Post-matric level of education • Richest quintile • Managers and professionals • Strongly distrust the national government • Eastern Cape, Northern Cape, North West and Gauteng residents	• Coloured, Indian/Asian and white adults • Post-matric • Richest quintile • Non-poor • Managers and professionals • Western Cape and KwaZulu-Natal residents	• Female • 45-59 years • Indian/Asian and white adults • Incomplete secondary education • Non-poor • Mid-level and elementary worker categories • EFF supporters • Strongly distrust national government • KwaZulu-Natal, Gauteng, Mpumalanga, urban formal and rural farm residents	• 25-34 years • Indian/Asian and white adults • Post-matric education • Richest SES quintile • Non-poor • Managers and professionals • Other party supporters • KwaZulu-Natal, Gauteng, and rural traditional authority area residents	• 60+ years • Coloured adults • Primary or no education • Middle quintile • Just getting by • Elementary occupations • ANC supporters • Strongly trusts national government • Western Cape, Northern Cape, Free State and urban informal residents	• 16-24 years • Matric • Fourth and richest quintile • Mid-low occupation workers • Other party supporters • Strongly distrust national government • Northern Cape, KwaZulu-Natal, Limpopo, and rural farm residents
Opposing involvement	• 60+ years • White adults • Support no political party • Western Cape, Eastern Cape, Northern Cape and Limpopo and rural traditional authority area residents	• 16-24 years • Supports no political party • Mpumalanga and Limpopo residents	• Fourth quintile • Poor • EFF supporters • Supports no political party • Northern Cape, Free State and North West and rural farm residents	• Primary or no education • Strongly trust the national government • Western Cape, North West, Limpopo and urban informal residents	• 60+ years • Coloured adults • Primary or no education • Middle quintile • Just getting by • Elementary occupations • ANC supporters • Strongly trust national government • Western Cape, Northern Cape, Free State, and urban informal residents	• 16-24 years • Middle quintile • Just getting by • EFF supporters • Strongly trust or trust national government • Western Cape and urban formal, non-metro residents	• Indian/Asian residents • Primary or no education • Second and middle quintile • Never worked • ANC and EFF supporters • Neutral trust in national government • Western Cape, Free State, North West and urban formal metro residents

Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

Turning to *non-government entities*, which include trade unions, businesses, and the private sector, NGOs/NPOs, and community leaders, a few similarities as well as distinct variations were observed. For instance, gender differences were observed, with female respondents favouring the non-government sector more than males, particularly businesses and the private sector. Middle-aged respondents (35-59 years) were also more likely to select business and private sector as their preferred actors to be involved in decision-making. Older persons (60+ years) were more inclined towards community leaders, as were ANC supporters and those in rural traditional authority areas and

KwaZulu-Natal. A clear class effect was visible, with those in the higher quintiles indicating an above-average preference for non-governmental entities generally, although lower quintile respondents tended to favour community leaders. Geographical attributes varied, with distinctive preferences emerging from KwaZulu-Natal and Gauteng. Trust in national government was inversely associated with support for non-government actors as preferred decision-makers in the just transition: those with higher government trust levels were less likely to select specific non-state actors, especially businesses, NGOs, and community leaders.

Those advocating for a *multi-stakeholder committee* established by the President (a PCC-type arrangement) were characteristically younger adults (16-24 years) with a matric education, often in the first or second richest socio-economic quintile, and working in mid-level occupations. They tended to express strong distrust of the national government, which suggests that they may perceive multi-stakeholder committees as providing balanced, representative oversight in decision-making. This preference indicates an openness to collaborative governance structures, where diverse voices, including government, private sector, and civil society, can shape transition policies. Conversely, those that did not select this multi-stakeholder option were more likely to be older adults with lower education levels, those with strong affiliations to political parties (especially ANC and EFF supporters), and those with neutral levels of trust in national government. Their lack of support for involving a multistakeholder committee may reflect a preference for more traditional or direct government-led approaches rather than hybrid governance models. This divide highlights the differing levels of trust in new governance structures, as well as variations in perceptions about who should lead South Africa's transition away from coal.

The predictors of preferences regarding just transition decision-making
To better understand which characteristics were most strongly associated with each of the entities mentioned by the public, we conducted a stepwise logistic regression analysis for each entity. The value of this approach lies in its ability to simultaneously consider multiple socio-demographic, spatial, and attitudinal variables, identifying which are the most prominent predictors for each model. **Table 36** presents the regression outcomes for each model**Error! Reference source not found.**, with only statistically significant variables shown in the models.

When examining **Model I (national government),** only a few significant socio-demographic and spatial attributes were observed. Gender and type of geographical area emerged as relevant factors. Females were less likely than men to favour national government involvement in the JET, as were individuals residing in rural traditional authority areas and farms compared to those in formal urban metropolitan areas. Interestingly, environmental attributes did not show any significant association with support for national government involvement.

In the model focused on **local government (Model II)**, predictors of support were distinct from that of national government. A sense of personal responsibility for the environment was strongly associated with the belief that local government should play a role in managing the transition. Additionally, individuals in managerial positions, those with less traditional values, and residents of the North West province were more likely to support local government involvement. In contrast, residents of Mpumalanga were less likely to support local government involvement in JET. Support for local government involvement was higher among ANC supporters and among those with higher climate scepticism, though these effects were only weakly significant.

Preferences for **trade union involvement (Model III)** were positively associated with being in managerial or professional roles relative to those who have never been in paid employment. Greater climate concern was associated with stronger support for the involvement of trade unions, as was support for social policies to offset potentially negative just transition impacts. Interestingly, however, concern about the personal impacts of the just transition had a negative association with supporting union involvement, controlling for other factors. A series of weaker effects could also be observed, with support marginally higher among white adults, ANC supporters, those with greater climate

scepticism, and those residing in Limpopo. Additionally, Northern Cape residents and those reporting being more greatly impacted by climate change exhibited lower support for trade union involvement.

Table 36: Stepwise logistic regressions profiling involvement in managing the just transition, 2023

Stepwise logistic regressions:	Model I	Model II	Model III	Model IV	Model V	Model VI	Model VII	Model VIII
OUTCOME VARIABLE	National govt	Local govt	Trade unions	Business / private sector	NGOs / NPOs	Community leaders	PCC	(Don't know)
PREDICTOR VARIABLES	...	...	...	...	...	...	...	...
Age (in years)	...	...	...	...	...	0.0247***	...	...
Female (Ref: Male)	-0.4222**	...	...	...	...	...	...	...
Population group (Ref: black African)	...	...	...	...	...	...	...	...
Coloured	...	...	...	...	...	...	0.6060*	...
Indian/Asian	...	...	...	...	...	...	-1.3941***	...
White	...	...	0.4887*	...	...	...	...	...
Year of schooling	...	...	...	0.0572**	0.0785**	...	...	-0.1238***
Socio-economic status (low to high)	...	...	...	...	...	...	0.1730**	...
Occupation (Ref: Never worked)	...	...	...	...	...	...	...	...
Managers/ professionals	...	0.5518**	0.9271***	...	0.6993**	...	...	-1.1060**
Mid-level worker categories	...	...	...	...	...	...	...	...
Mid-low occupations	...	...	...	...	...	...	...	...
Elementary occupations	...	...	...	...	...	...	...	-0.6439*
(Refused to answer)	...	...	...	-0.6255*	...	...	...	...
(Don't know, inadequate response)	...	-1.0897*	...	...	...	...	...	...
Subjective health (low to high)	...	...	...	...	-0.0053*	...	...	...
Party identification (Ref=ANC supporter)	...	...	...	...	...	...	...	...
DA supporter	...	...	...	...	...	...	...	...
EFF supporter	...	...	...	...	...	...	...	...
Other party supporter	...	...	...	...	...	...	...	...
Supports no party	...	-0.5569*	-0.8734*	...	...	-0.6832*	...	...
Undisclosed	...	...	...	0.7430***	...	-0.7360**	...	...
Undeclared	...	...	...	...	...	-0.4494*	...	...
Political trust index (low to high)	...	...	...	...	...	...	...	...
Stepwise logistic regressions:	Model I	Model II	Model III	Model V	Model IV	Model VI	Model VII	Model VIII
OUTCOME VARIABLE	National govt	Local govt	Trade unions	Business / private sector	NGOs / NPOs	Community leaders	PCC	(Don't know)
Traditional values index (low to high)	...	-0.0116**	...	...	...	...	...	...
Political activism index (low to high)	...	...	...	...	-0.0071*	...	...	-0.0120*
Use media to access political news or info (low to high)	...	...	...	...	...	...	-0.0059**	...
Social media usage (low to high)	...	...	...	...	...	...	...	0.2435**
Province (Ref=WC)	...	...	...	...	...	...	...	...
Eastern Cape	...	...	...	...	0.4494*	...	0.6224*	-1.2775**
Northern Cape	...	...	-1.4634**	...	...	...	0.9790**	-1.0182*
Free State	...	...	...	...	...	...	...	-0.8674*
KwaZulu-Natal	...	...	...	0.9178***	0.6154**	...	1.4814***	-1.3464***
North West	...	0.6809**	...	...	...	...	...	-1.3714**
Gauteng	...	...	...	0.5769**	0.5882**	...	0.6540*	-1.3834**

Mpumalanga	...	-0.7261**	...	0.8037**	...	...	...	-1.1276**
Limpopo	...	...	0.5119*	...	...	...	1.2938***	...
Geographic type (Ref: Urban formal metropolitan)	...	...	...	...	...	...	...	...
Urban formal non-metro	...	...	...	...	...	...	...	...
Urban informal	...	...	...	...	...	...	...	...
Rural traditional authority areas	-0.4509**		...	...	0.4991**	...	...	...
Rural farms	-0.6311*	...	...	...	...	...	...	...
Impact of extreme weather events (low to high)	...	...	-0.0079**	-0.0048*	...	...	...	...
Climate change awareness (low to high)	...	...	...	...	...	...	...	...
Climate change scepticism (low to high)	...	0.0059*	0.0076**	...	...	...	-0.0086**	...
Climate concern (low to high)	...	...	0.0101**	...	...	-0.0063*	...	...
Sense of personal responsibility for climate action (low to high)	...	0.0116***	...	...	0.0070*	...	...	...
Awareness of JT (low to high)	...	...	...	...	...	...	...	...
Approval of the JT (low to high)	...	...	...	...	...	...	0.0086*	...
Concern about personal JT impacts (low to high)	...	...	-0.0057*	...	...	-0.0054*	...	...
Just Transition policy support index (low to high)	...	...	0.0144**	...	...	...	0.0324***	...
Constant	0,2665	-1,2064	-3.1630	-1,9891	-2,6674	-1,5169	-4.4035	-0,1594
Pseudo R-Squared	0.0174	0.0451	0.0612	0.0458	0.0456	0.039	0.1263	0.0937
N	2785	2785	2785	2785	2785	2785	2785	2785

Note: [1] Significance is denoted as follows: '…' not significant; * p<0.05 (95% level); ** p<0.01 (99% level); *** p<0.001 (99.9% level) [2] Green-shaded cells represent a positive association on the dependent variable, and orange-shaded cells a negative association. [2] Only coefficients of significant predictors are shown.
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

Support for **business or private sector involvement (Model IV)** in JET decision-making was higher among those with more years of schooling, and among individuals in KwaZulu-Natal, Gauteng, and Mpumalanga. Additionally, those who chose not to disclose their political party affiliation were also more likely to demonstrate a greater preference for private sector involvement. As with support for trade union involvement, those reporting being more greatly impacted by climate change exhibited lower support for private sector involvement.

Support for the **involvement of NGOs and NPOs (Model V)** was found among individuals with higher education levels and those in managerial roles. Support for these entities was also higher among people living in KwaZulu-Natal, Gauteng, the Eastern Cape, and rural traditional authority areas. Furthermore, individuals with a stronger sense of personal responsibility towards the environment, worse self-reported health, and lower political activism were more inclined to support NGO and NPO involvement in the transition, though these effects tended to be weaker in strength.

Regarding **community leader involvement (Model VI)**, age was the dominant factor, with older adults tending to favour community leaders in managing the just transition. Support was also higher among ANC supporters relative to those with no party identification or who did not disclose their affiliation. Weaker inverse effects were found in relation to climate and a sense of personal responsibility for the environment, with high concern and a sense of responsibility generally showing less support for community leader involvement.

The preference for a **multi-stakeholder committee (PCC-type arrangement) (Model VII)** was stronger among black African adults (relative to Indian adults), individuals with higher socio-economic status, and residents of KwaZulu-Natal, Limpopo, and Northern Cape. It was also higher among those who were more approving of the just transition and social policies at mitigating its potential negative

consequences. Conversely, individuals with higher levels of climate change scepticism and more frequent political news consumption were less likely to support this arrangement.

Lastly, individuals expressing **uncertainty or indecision (Model VIII)** about just transition decision-making were likely to have lower education levels, have never been in paid employment (relative to those in elementary or mid-level occupations), report less political activism, and be more regular social media users. Additionally, those residing in the Western Cape were more likely to express uncertainty than all other provinces apart from the Limpopo.

The pattern of these regression results highlights that preferences relating to the management arrangements of the JET in South Africa are shaped by varying factors across different demographics, values, and beliefs. Certain institutions, like the PCC and community leaders, have unique trust predictors tied to environmental issues, geographic location, and socio-cultural values, while institutions like local government and trade unions draw support from specific professional and occupational characteristics among the public.

### 4.4.5 Who is most trusted to manage the Just Energy Transition?

As a follow-up question, respondents were asked to identify which one of the previously listed entities they most placed their confidence in to manage the JET. The question was phrased as follows: 'Who do you most trust to manage this change from coal to other energy sources (like solar and wind)?' The responses indicate that national government was regarded as the most trusted entity, with approximately a quarter (26%) selecting it as their preferred option to oversee the just transition. A further 10% opted for local government, meaning that government oversight accounted for a little over a third of all responses provided.

Of the non-government entities, 13% placed their trust in the business or private sector. Approximately 7% expressed trust in trade unions to manage the transition, which might reflect a belief in the need for workers' rights and fair labour practices to feature in efforts to ensure that the transition is 'just'. Just over a tenth (11%) supported NGOs/NPOs the most to manage the process, while 7% selected community leaders, signifying a perceived role for civil society and communities in advocating in just transition decision-making. Collectively, 38% opted for one of the four non-government entities. In addition to this, 13% gave first preference to a multi-stakeholder arrangement in a form akin to the PCC to manage the transition. A notable 12% of respondents provided 'don't know' responses, highlighting a degree of uncertainty and perhaps a lack of a clear preference regarding the most trusted entity to manage the transition.

The diverse pattern of these survey results highlights the complexity of public trust in managing the shift from coal to other renewable energy sources, emphasising the need for inclusive and collaborative approaches in policy and decision-making processes that bring together national authorities, private sector actors, civil society, and community representatives.

The findings suggest that an almost equivalent share of South Africans primarily vested trust in government (this includes national and local) and non-government entities (this includes businesses, the private sector, NGOs, community leaders, and trade unions) to manage the transition, estimated at 36% and 38%, respectively. A smaller share indicated that they most trusted a multi-stakeholder committee (13%), with the remaining 12% displaying uncertainty regarding who they trusted.

Figure 32: Most trusted entities categorised
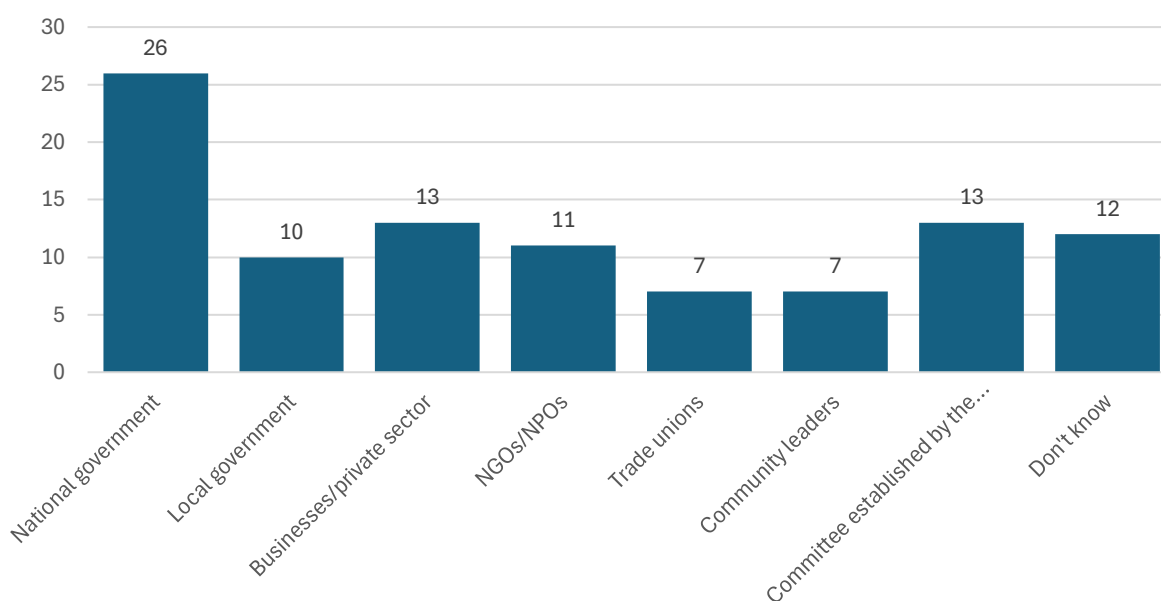
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

To better understand variations in trust in just transition management within South African society, sub-group analysis was again undertaken, focusing on differences across select socio-demographic, spatial, and environmental attributes (**Table 37**). The sub-group analysis is presented using a collapsed categorisation of the survey question response options into four categories, namely government, non-government entities, and a multi-stakeholder committee (those expressing uncertainty are excluded). Each of these groups has specific characteristics linked to the demographic and environmental context, showing significant differences in how various populations perceive the government, businesses, and other influential bodies as preferred leads in the just transition.

Government trust. Regarding **trust in national government** to primarily oversee the JET, this preference was more commonly expressed by younger adults (16-24 years), those with elementary occupations, individuals living in urban informal settlements and rural farm areas, and residents of the Free State and Mpumalanga. Trust was also higher among those who voiced lower climate concern, a high level of personal responsibility for climate-related issues, strong opposition to the JET in principle, but strong support for JET-related social policies. They also reported significant impacts from extreme weather in the past decade. Trust in national government management of the transition was lowest among those with low support for just transition social policies, residents of North West and Limpopo provinces, those reporting strong climate concern, those with a lower sense of personal responsibility for climate action, and those who strongly oppose the JET in principle. It was also lower among those who are more ambivalent about whether to trust national government and supporters of smaller opposition parties.

Confidence in **local government** to manage the just transition was much lower than national government on average across the personal attributes examined. This choice was more common among individuals from the North West, Eastern Cape, and Northern Cape; those in managerial and professional occupations; and individuals who are extremely concerned about the negative personal effects of the JET and strongly supportive of JET-related social policies. In contrast, those of the richest SES quintile, and have very strong support for JET-related actions in principle as well as JET-related social policies are least inclined to trust the local government with this transition mandate. It is also lower than average among those living on rural farms, and in Mpumalanga and Limpopo.

Table 37: Socio-demographic, spatial and environmental attributes by most trusted sources

	GOVERNMENT		NON-STATE ACTORS				MULTI-STAKEHOLDER BODY
	National government	**Local government**	**Trade unions**	**Business / private sector**	**NGOs / NPOs**	**Community leaders**	**Presidential committee (PCC)**
Highest trust	• 16-24 years; • Free State, Mpumalanga, big city, urban informal and rural farm residents • Elementary occupations • Somewhat worried about negative JET impact • No climate concern • Very strong opposition to JET in principle • Great impact extreme weather events in past decade • Very high personal responsibility • Trust national government	• Very low and low policy support • North West, Eastern Cape, Northern Cape residents • Extremely worried negatively affected by JET • Managers and professionals • Strong support JET-related actions	• Western Cape residents • Other party supporters • Strongly trust national government • Managers and professionals • Post-matric education • No impact extreme weather events in past decade • Coloured adults • High policy support • Middle SES quintile	• Mpumalanga, Northern Cape, and big city residents • Indian/Asian adults • Extremely concerned about climate change • Support no political party • High knowledge about climate change • Mid-level worker categories • Low personal responsibility	• Low-medium policy support • Strong opposition for JET-related actions • Managers and professionals • Post-matric education • Richest SES quintile • Not very or somewhat concerned about climate change • KwaZulu-Natal residents • Minor impact of extreme weather events • Moderate climate change knowledge • Low concern about personal JET impact	• North West residents • Very low and low policy support • Very strong opposition • Not very concerned about climate change • Mid-level worker categories • Poorest SES quintile • Strongly distrust national government • ANC supporters	• Limpopo, KwaZulu-Natal, and suburban residents • Mid-low occupational categories • Very high policy support • Low personal responsibility • No scepticism about climate change • Very strong support for JET-related actions • Richest and fourth SES quintile • DA supporters • 60+ years • White adults
Lowest trust	• Very low and low policy support • North West and Limpopo residents • Extremely concerned about climate change • Neutral trust in the government • Strong opposition JET-related actions • Low personal responsibility	• Mpumalanga, Limpopo, and rural farm residents • Very strong support JET-related actions • Mid-level workers • 16-24 years • Richest SES quintile • White adults • Very high policy support • Not very concerned about climate change • Not at all worried about being negatively affected by JET • Supports no party	• Gauteng, suburb, and urban informal residents • Low and medium policy support • Support no political party • Very low personal responsibility • Indian/Asian and white adults • Poor	• Limpopo, Western Cape, Free State, and rural traditional authority areas residents • Strongly trust national government • DA and ANC supporters • Low knowledge about climate change • Very low and low policy support • Managers and professionals • Poor	• Strongly trust national government • Great impact of extreme weather events in past decade • Northern Cape, Western Cape and rural farm residents • High knowledge of climate change • Extremely concerned about climate change • Supports no party • Very strong opposition JET-related actions • Middle SES quintile • 16-24 years	• Northern Cape, Free State, Western Cape and big city residents • Managers and professionals • Mid-low occupation categories • Strongly trust national government • 16-24 years • High knowledge of climate change • No concern about climate change • No impact of extreme weather events • Coloured and white adults • Fourth and richest SES quintile • High policy support	• Western Cape, North West, Free State, Eastern Cape, Norther Cape and Mpumalanga residents • Low and medium policy support • Coloured adults • No impact extreme weather events • Primary or no education • High scepticism of climate change • Second SES quintile

Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

Trust in non-government entities. Examining trust to manage the JET among this cluster of entities, which includes trade unions, businesses and the private sector, NGOs, and community leaders (but excluding a multi-stakeholder committee), reveals that support across the set of attributes examined varied between a low of 25% among those with strong trust in national government to a high of 52% among those residing in the North West. The strongest support for non-state actor management of the transition was found among individuals residing in the North West, Mpumalanga, and KwaZulu-Natal; Indian adults; those with a post-matric education; mid-level occupation categories; and those with strong distrust of national government. It was also strong among those with lower levels of climate change concern, support for the just transition in principle, and JET-related social policies. In these instances, trust in non-governmental actors exceeded trust in government by at least 10 percentage points. The lowest share placing their trust in the non-state cluster were those with strong trust in national government; those with low climate change awareness; those residing in the Free State, Limpopo, and Western Cape; white adults; and Democratic Alliance (DA) supporters.

Examining trust in non-state actors as a cluster has the potential to mask some of the distinctive attributes associated with preferences for each of the four entities (trade unions, business/private sector, NGOs/NPOs, and community leaders) in managing the JET in South Africa. While there are some common attributes, trust in both trade unions and NGOs/NPOs is higher among the better-educated, especially among those with post-matric qualifications, as well as managers and professionals. In addition, those reporting limited impact by extreme weather events also tend to exhibit higher levels of trust in these entities. However, the differences tend to outweigh the commonalities, as can be observed in **Table 37**.

Multi-stakeholder committee. In terms of socio-demographic characteristics, the preference for oversight by a presidential multi-stakeholder committee was evident among older adults, especially those aged 60 years and older, those in mid-to-high occupational categories (such as managers and professionals), and the richest socio-economic quintiles. As for spatial attributes, residents of Limpopo, KwaZulu-Natal, and Gauteng were more inclined than average to regard a multi-stakeholder committee as the most trusted option. Environmental-related traits associated with this preference included having very high support for both the just transition in principle and JET-related social policies, as well as a lack of climate scepticism, but a relatively low sense of personal responsibility for climate action.

On the lower end of the trust spectrum, we observe that those with medium or low JET-related social policy support as well as those reporting no personal impact of extreme weather events were less inclined than average to identify a multi-stakeholder committee as their most trusted source for managing the JET. It was also less commonly selected by residents of the Western Cape, North West, Free State, Eastern Cape, and Northern Cape, as well as coloured adults and those with primary or no formal education.

Regression analysis

To better understand which attributes were significantly associated with a particular entity being most trusted to oversee the JET, separate logistic regression models were run for each individually listed entity. Using a stepwise approach, the models estimate the likelihood of trusting each specific entity (e.g., national government, local government, trade unions, private sector, etc.) based on a variety of socio-demographic, economic, political, and environmental predictors. In this analysis, only statistically significant variables are retained in the models (**Table 38**).

From **Model I**, it is evident that **trust in national government** to manage the transition from coal to renewable energy sources was positively associated with being in an elementary occupation, residing in the Free State province, and being an ANC supporter (relative to undeclared political affiliation). Meanwhile, a weaker association was found among individuals reporting a greater personal impact of extreme weather events. Negative associations were observed among those residing in Limpopo,

North West, and KwaZulu-Natal provinces as well as in urban formal non-metropolitan areas, and among those with lower awareness of the just transition. These findings suggest clear spatial variation in trust in national government to oversee the transition, while socio-demographic and environmental factors hardly feature, pointing to a fairly generalised preference for this option across demographic groups.

Table 38: Stepwise logistic regressions of the most trusted source to manage the Just Transition, 2023

Stepwise logistic regressions:	Model I	Model II	Model III	Model IV	Model V	Model VI	Model VII	Model VIII
OUTCOME VARIABLE	National govt	Local govt	Trade unions	Business / private sector	NGOs / NPOs	Community leaders	PCC	(Don't know)
PREDICTOR VARIABLES								
Age (in years)	…	…	…	…	…	0.0178*	…	…
Female (Ref: Male)	…	…	…	…	…	…	…	…
Population group (Ref: black African)	…	…	…	…	…	…	…	…
Coloured	…	…	…	…	…	…	…	…
Indian/Asian	…	…	…	…	…	…	-0.7649*	…
White	…	…	…	…	…	…	…	…
Year of schooling	…	…	…	…	…	…	0.0639*	-0.1520***
Socio-economic status (low to high)	…	-1.1921**	…	…	…	…	0.1706**	…
Occupation (Ref: Never worked)	…	…	…	…	…	…	…	…
Managers/ professionals	…	0.7711*	…	-0.8703**	0.7120**	…	…	-0.7098*
Mid-level worker categories	…	…	…	…	…	…	…	…
Mid-low occupations	…	…	…	…	…	…	…	…
Elementary occupations	0.4990*	…	…	…	…	…	…	-1.2198**
(Refused to answer)	-0.6404*	…	…	…	…	…	…	0.8365*
(Don't know, inadequate response)	…	-3.0473***	-3.3818**	1.7026**	…	…	…	…
Subjective health (low to high)	…	-0.0069*	…	…	…	…	-0.0090*	
Party identification (Ref=ANC supporter)	…	…	…	…	…	…	…	…
DA supporter	…	…	…	…	…	…	…	…
EFF supporter	…	…	…	…	…	…	…	…
Other party supporter	…	…	…	…	…	…	…	…
Supports no party	…	…	…	0.9319**	-0.7134*	…	…	…
Undisclosed	…	-1.0783**	…	0.9488**	…	…	…	…
Undeclared	-0.8285**	…	…	1.1958***	…	…	…	…
Political trust index (low to high)	…	…	…	…	…	-0.0112*	…	…
Traditional values index (low to high)	…	…	0.0289***	…	…	-0.0219**	…	…
Political activism index (low to high)	…	…	…	-0.0127**	…	…	0.0086*	…
Use media to access political news or info (low to high)	…	…	…	…	…	…	…	…
Social media usage (low to high)	…	…	…	…	…	-0.2224*	…	0.2625*
Province (Ref=WC)	…	…	…	…	…	…	…	…
Eastern Cape	…	…	…	1.2626***		…	…	-0.6173*
Northern Cape	…	…	…	1.7383***		…	…	…
Free State	0.8020***	…	…	…	…	…	…	…
KwaZulu-Natal	-0.4900*	…	…	0.9892**	0.4749*	…	0.8015***	…
North West	-0.8211**	0.8704**	…	1.3879***	…	1.0918**	…	-1.1341**
Gauteng	…	…	-1.1101**	0.9702**	…	…	0.7022*	…
Mpumalanga	…	…	…	2.0156***	…	…	…	…
Limpopo	-0.9328***	…	…	…	…	0.6654*	1.5087***	…

Stepwise logistic regressions (Continued) OUTCOME VARIABLE	Model I National govt	Model II Local govt	Model III Trade unions	Model IV Business / private sector	Model V NGOs / NPOs	Model VI Community leaders	Model VII PCC	Model VIII (Don't know)
Geographic type (Ref: Urban formal metropolitan)	…	…	…	…	…	…	…	…
Urban formal non-metro	-0.3937*	…	…	…	…	…	…	…
Urban informal	…	…	…	…	…	…	…	…
Rural traditional authority areas	…	…	…	-0.5458*	…	…	…	…
Rural farms	…	-1.6249***	…	…	…	…	…	…
Impact of extreme weather events (low to high)	0.0055*	…	-0.0104*	…	…	…	…	…
Climate change awareness (low to high)	…	…	…	0.0071*	…	…	-0.0091**	…
Climate change scepticism (low to high)	…	…	…	…	…	…	-0.0082*	…
Climate concern (low to high)	…	…	…	…	-0.0094**	…	…	…
Sense of personal responsibility for climate action (low to high)	…	…	…	-0.0087*	…	…	…	…
Awareness of JT (low to high)	-0.0068*	…	…	…	…	…	…	…
Approval of the JT (low to high)	…	…	…	0.0117**	…	…	…	…
Concern about personal JT impacts (low to high)	…	…	…	…	…	…	…	…
Policy support index (low to high)	…	-0.0162**		…	-0.0154**	…	0.0373***	-0.0252***
Constant	-0.6492	-0.7648	-4.1372	-3.7770	-0.4368	-0.7115	-4.8161	0.7690
Pseudo R-Squared	0.0485	0.0611	0.0624	0.1215	0.0316	0.0714	0.1115	0.0775
N	2785	2785	2785	2785	2785	2785	2785	2785

Note: [1] Significance is denoted as follows: '…' not significant; * p<0.05 (95% level); ** p<0.01 (99% level); *** p<0.001 (99.9% level). Green-shaded cells represent a positive association on the dependent variable, and orange-shaded cells a negative association.
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

In terms of confidence in **local government (Model II)** to manage the just transition, there was an observable positive association among those living in North West province and being an ANC supporter (relative to those not disclosing their political affiliation). In contrast, trust in local government was observably lower among those with lower socio-economic status, those that had never worked, and residents of rural farms, with weaker effects for those with lower subjective health and lower JET-related social policy support. These findings again point to stronger socio-spatial patterns of trust, with little evidence of environmental attributes playing a decisive predictive influence.

The preference for **trade unions (Model III)** to take a lead in just transition management was less common among Gauteng residents (relative to those in the Western Cape). It was also associated with a lower reported impact of extreme weather events. The latter is interesting, as the only other model in which personal impacts of extreme weather events was significant was in the case of national government, but with a positive association in this instance. This implies that great impact of extreme weather events reduces demand for just transition-related leadership by certain types of non-state actors, and a greater tendency to favour a stronger government role. A positive, statistically significant relationship was found between those with a higher traditional values index score and a preference for trade union leadership in the just transition.

Those who placed their trust primarily in **businesses and the private sector** to oversee the just transition **(Model IV)** displayed a positive association with being a resident in Mpumalanga, Northern Cape, North West, Eastern Cape, KwaZulu-Natal, and Gauteng (relative to the Western Cape), and formal metropolitan areas. This provides evidence of spatial variation in demand for business to play a leading JET role. A positive association is also observed among those who approve of the JET in

principle and have a greater level of climate change awareness, as well as individuals who have never been in paid employment. This option was less frequently selected by ANC supporters, individuals with a lower reported level of political activism, and those with a lower sense of personal responsibility for climate action.

Model V indicates that **NGOs and NPOs** were more likely to be trusted to lead the just transition by individuals in managerial and professional occupations, as well as by those residing in KwaZulu-Natal.

Confidence in NGOs and NPOs to fulfil this role was lower among those with less climate concern and lower support for JET-related social policies.

Trust in **community leaders** to manage the JET **(Model VI)** was positively associated with residing in North West or Limpopo provinces. Age, political trust, and traditional values index all influence trust in community leaders. Specifically, older individuals and those with lower traditional values and political trust tended to trust community leaders more, while social media usage negatively affected trust.

Demand for a **presidential multi-stakeholder committee** (like the PCC) to lead the JET **(Model VII)** was favoured by those residing in Limpopo, KwaZulu-Natal, and, to a lesser extent, Gauteng. A positive relationship was also found on the basis of socio-economic status, years of education, and political activism. However, Indian adults and those with better self-reported health were less likely to place their trust in a multi-stakeholder committee to manage the just transition. With regard to environmental predictors, individuals with greater support for JET-related social policies tended to favour the multi-stakeholder committee option, as did those with lower climate awareness and lower climate change scepticism.

Lastly, those reporting **uncertainty** about who should primarily manage the just transition **(Model VIII)** were more likely to have never worked before compared to managers and professionals and even those in elementary occupations. It was also more common in the Western Cape than in the North West and Eastern Cape among individuals with lower education levels, and those with higher social media usage. Uncertainty about the preferred management arrangement for the just transition was higher for those expressing less support for JET-related social policy support.

The results of each of the models above highlights unique socio-demographic and attitudinal predictors associated with trust in different entities to manage the transition from coal to other energy sources. Looking at the significant predictors across the different models, it is evident that provincial differences represent a key source of variation. The next section provides an overview of some of these spatially differentiated patterns.

4.5 COMPARATIVE ANALYSIS OF CLIMATE CHANGE AND JUST TRANSITION ATTITUDES ACROSS SOUTH AFRICAN PROVINCES

In South Africa, examining climate change attitudes by province is crucial given the country's geographic, economic, and social diversity. Each province has different levels of exposure to climate risks. For example, KwaZulu-Natal experiences frequent extreme weather events, while Limpopo sees far fewer. Economic differences also play a role, with provinces like Mpumalanga and Gauteng heavily reliant on carbon-intensive industries, which can lead to resistance to climate policies due to job concerns. Cultural and educational disparities are also evident in provinces. In rural provinces like Limpopo and the Eastern Cape, there is lower access to information while urbanized areas like Gauteng and the Western Cape have much greater access. These regional differences make it clear that national climate policies must be tailored to local needs. Provinces with low awareness require educational campaigns, while regions with high concern but low action need community-driven strategies to encourage greater involvement.

Understanding provincial attitudes also helps to build localized support for the just transition, ensuring that policy interventions resonate with residents. Provinces with low approval can benefit from showcasing the economic and social advantages of green initiatives, like job creation in renewable energy. By analysing climate and just transition perceptions at the provincial level, policymakers can ensure resources are effectively allocated and that climate action is embraced more widely and meaningfully across the country. This section of the report focuses more specifically on provincial variation, given the different elements of climate change and the just transition. **Table 39** provides a snapshot of how different provinces in South Africa compare in their perceptions of climate change and the just transition. By analysing exposure to extreme weather events, climate change awareness, scepticism, concern, and attitudes toward the just transition, clear regional differences emerge which are discussed in more detail per province below the table. An outline of how the measures presented in table can be found in Appendix 2.

Table 39: Comparative provincial analysis of the different measured dimensions of climate change and the just transition (Mean scores based on 0-100 scales)

	Exposure to extreme weather events	Climate change awareness	Climate scepticism	Climate concern	Personal respon-sibility	Awareness of energy transition	Approval of Just Transition	Concern for JT	Benefits of JT	Policy support
WC	34	43	62	58	60	42	49	35	38	64
EC	41	43	57	59	69	34	50	43	40	69
NC	36	42	58	60	66	30	55	38	43	69
FS	42	57	55	63	69	41	71	47	51	70
KZN	56	56	36	63	62	36	56	42	58	80
NW	40	45	54	54	65	31	62	33	55	76
GP	43	56	55	55	62	43	79	43	64	75
MP	45	48	42	64	68	35	67	38	54	77
LP	32	40	60	47	48	25	43	36	44	71
RSA	43	50	52	58	62	37	62	40	53	73

Note: Blue shaded cells denote mean score values on the measure that are above the national average. Orange shaded cells denote mean score values that are lower than the national average.
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

4.5.1 Western Cape

Relative to other provinces, the Western Cape reported low perceived exposure to extreme weather events and relatively low climate change awareness (43%). This is contributing to an above-average share of climate sceptics in this province, mainly due to high levels of trend scepticism and uncertain responses. Their level of concern is low relative to many other provinces, but approximating the national average. Western Cape residents do not exhibit high levels of personal responsibility to act to address climate change. While awareness of the just transition is relatively high, approval of the transition, concern, and perceived benefits related to the just transition rate low. Of all provinces, the Western Cape rates lowest on policy support measures for the just transition. The latter does not reflect opposition to policies to offset any potential negative JET consequences, but rather a greater degree of ambivalence and uncertainty compared to other provinces.

4.5.2 Eastern Cape

The Eastern Cape reports moderate exposure to extreme weather events (41%) and ranks relatively low among provinces on climate change awareness. This province exhibits relatively high levels of climate scepticism (57%). Despite showing an average level of concern about climate change, Eastern Cape residents portray a great sense of personal responsibility to address climate change. Compared to other provinces, awareness and approval of the just transition is low. Concern about negative personal impacts of the just transition is higher than many other provinces, and the perceived benefits are low. Policy support for the just transition is second lowest (similar to the Northern Cape).

4.5.3   Northern Cape

The Northern Cape has low perceived exposure to extreme weather events (36%) and low levels of climate change awareness (42%). Relative to other provinces, the Northen Cape exhibits above-average levels of climate scepticism, with moderate to high concern for climate change (60%) as well as a sense of personal responsibility. However, awareness of the just transition is low as well as approval for it. Benefits associated with the just transition are generally not recognised and policy support for such a transition remains low.

4.5.4   Free State

Compared to other provinces, the Free State experiences middling levels of perceived exposure to extreme weather events but exhibits the highest climate change awareness. Climate scepticism is slightly above average. The Free State has the second highest concern (second to Mpumalanga) and personal responsibility is the highest in the country (69%). Awareness of the just transition is also high, and approval of the transition is second highest of all provinces (71%). Despite this, the Free State exhibits the highest concern about potential personal impacts arising from the just transition, which may partly explain why it does not rate high in terms of perceived benefits or support for specific just transition policies.

4.5.5   KwaZulu-Natal

KwaZulu-Natal stands out with the highest exposure to extreme weather events (56%) and one of the highest levels of climate change awareness (second only to Free State, and similar to Gauteng). Given the exposure to extreme weather events, it is not surprising that climate change scepticism is low, indicating a well-informed population. KwaZulu-Natal is ranked second highest in concern about climate change (after Mpumalanga), but personal responsibility is relatively low. Awareness of the just transition is moderate, and approval is at 56%, which is middle of the range compared to other provinces. Concern for the just transition is moderate (42%), but perceived benefits are among the highest (58%). Policy support for the just transition is the highest in this province.

4.5.6   North West

The North West has perceptions of low exposure to extreme weather events (40%) and low climate change awareness. This province shows high scepticism and low concern, and personal responsibility (65%) is moderate. Despite low awareness of the just transition, there is moderate approval of it. Concern for the just transition is low (33%), while perceived benefits and policy support are both higher than in many other provinces.

4.5.7   Gauteng

Gauteng shows moderate exposure to extreme weather events (43%) but has the second highest climate change awareness value (tied with KwaZulu-Natal). Climate scepticism is above average, which may be contributing in part to a lower level of concern about climate change and a lower sense of personal responsibility to doing something about it. Gauteng has the highest awareness of the just transition and the highest level of approval in principle. Concern associated with the just transition is moderate and the perceived benefits are higher than in KwaZulu-Natal and Mpumalanga. Support for specific just transition policies is moderate.

4.5.8   Mpumalanga

Mpumalanga experiences moderate exposure to extreme weather events (45%) and has lower climate change awareness (48%) compared to other provinces. However, scepticism is low (42%), indicating

relatively low doubt about climate change. Concern about climate change is high (64%), and personal responsibility is also high (68%). Awareness of the just transition is moderate (35%), and approval is high (67%). Concern for the just transition is moderate (38%), while perceived benefits are fairly high (54%). Support for the different policies is strong at 77%.

4.5.9 Limpopo

Limpopo has the lowest perceived exposure to extreme weather events and the lowest climate change awareness (40%). Climate scepticism is second highest, and concern about climate change and personal responsibility are the lowest among all provinces. In addition, awareness and approval of the just transition are also lowest in Limpopo. Concern for the just transition is low as is the perceived benefits associated with it. Policy support is slightly higher than expected despite lower just transition awareness and approval.

4.6 SPATIAL ANALYSIS: THE EFFECT OF PROXIMITY TO COAL MINES AND COAL-FIRED POWER STATIONS ON CLIMATE CHANGE AND JUST TRANSITION ATTITUDES

To provide a more nuanced understanding of the spatial dimensions of awareness, attitudes, and preferences related to climate change and the just transition, the association between a set of core survey measures and proximity to coal mines and coal-fired power stations was examined. The hypothesis underlying this analysis was that those living close to such mines and power stations would be more aware of the just transition. In **Figure 33**, the location of coal mines and coal-fired power stations in South Africa is mapped. As is evident from the map, the distribution of coal mines and coal-fired power stations is concentrated in Mpumalanga and Gauteng, also bordering on Free State. A few coal mines and coal-fired power stations are situated in Limpopo. One coal mine was found in KwaZulu-Natal. It is therefore clear that most coal mines and coal-fired power stations are found in Mpumalanga.

Figure 33: Location of coal mines and coal power stations
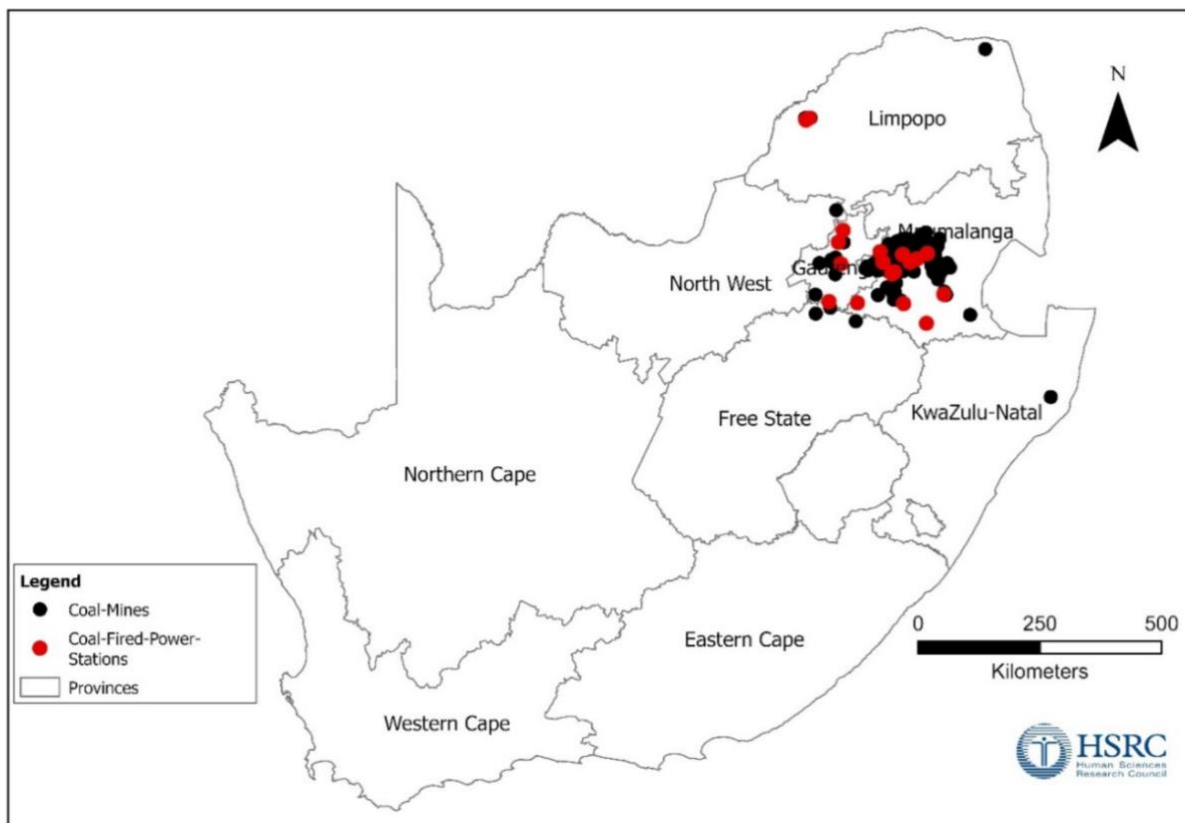
The PCC data were collected across South Africa (**Figure 34**) using 500 SALs as primary sampling units. These data collection points are represented by blue dots on the map below. The location of coal-fired power stations and coal mines are also indicated on this map to get a sense of the spatial distribution of data collection points, coal mines, and coal-fired power stations. For each data point (where the interviews were held), a geographic location point was calculated which was used to measure distance the from coal mines and coal-fired power stations. This mapping to specific geographic areas helps provide an understanding of regional variations in climate perceptions and responses, which can guide targeted climate communication and policy efforts.

Figure 34: Small Area Layer (SAL) locations of the PCC survey data collection points relative to coal mines and coal-fired power stations
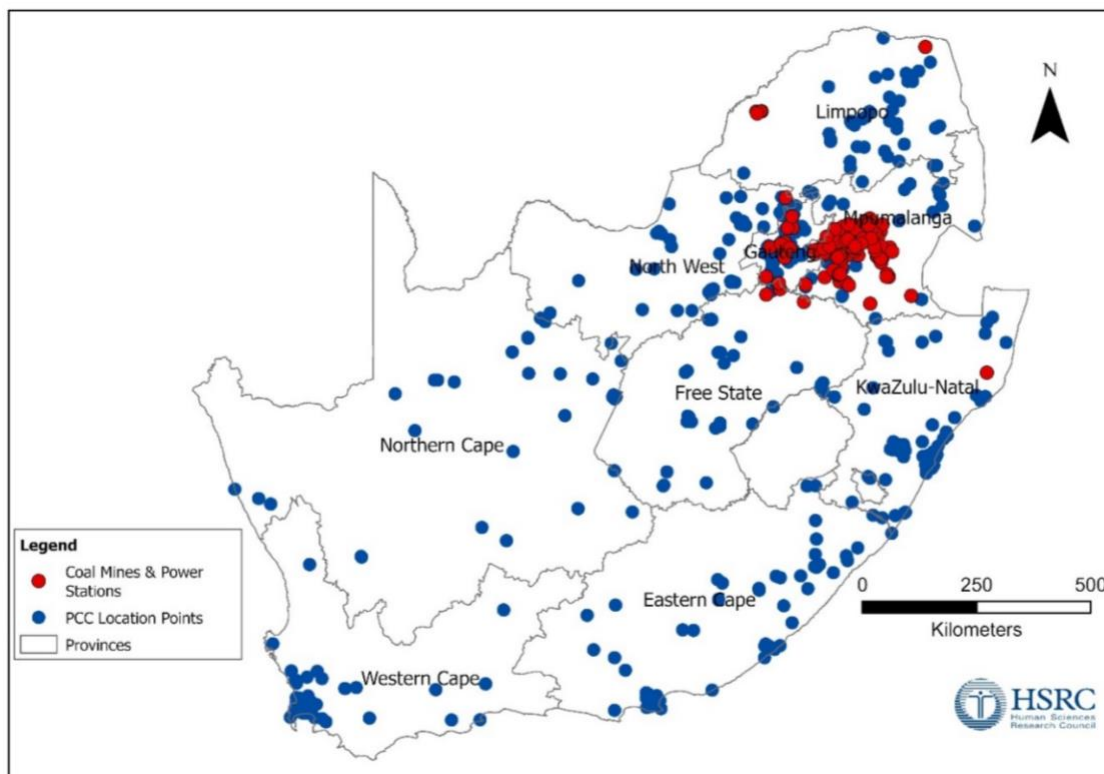
To assess the impact of proximity to coal mines and coal-fired power stations on survey data collected across South Africa (**Error! Not a valid bookmark self-reference.**), distance measurements are crucial. Using GIS software, the spatial distance from each geographic centre-point (centroid) of each SAL where survey data were gathered to the nearest coal mine or coal-fired power station was calculated and integrated as a variable in the survey dataset. Multivariate regression analysis was then performed using the SASAS PCC data, running a series of ordered logistic and linear regression models to examine whether closeness to these facilities influenced respondents' attitudes and perceptions related to climate change and the just transition. For the dependent variables in these models, a choice of eight measures were selected: (i) climate change awareness; (ii) climate scepticism; (iii) climate concern; (iv) personal pro-environmental norms; (v) just transition awareness; (vi) support for JET-related actions in principle; (vii) concern about personal adverse JET impacts; and (viii) the JET policy support index. All measures were scaled on a 0-100 score. The modelling approach adopted involved first testing the effect of the proximity to the nearest coal mine or coal-fired power station on each of the dependent variable measures, with no other variables included in the model. Then, the set of socio-demographic and other attributes outlined and used earlier in modelling in the report were added to the models and the effect of spatial proximity measure was again examined, to

ascertain whether the nature of the association remained unchanged. The summary results are presented in **Table 40** and each row represents the results of the specific regression.

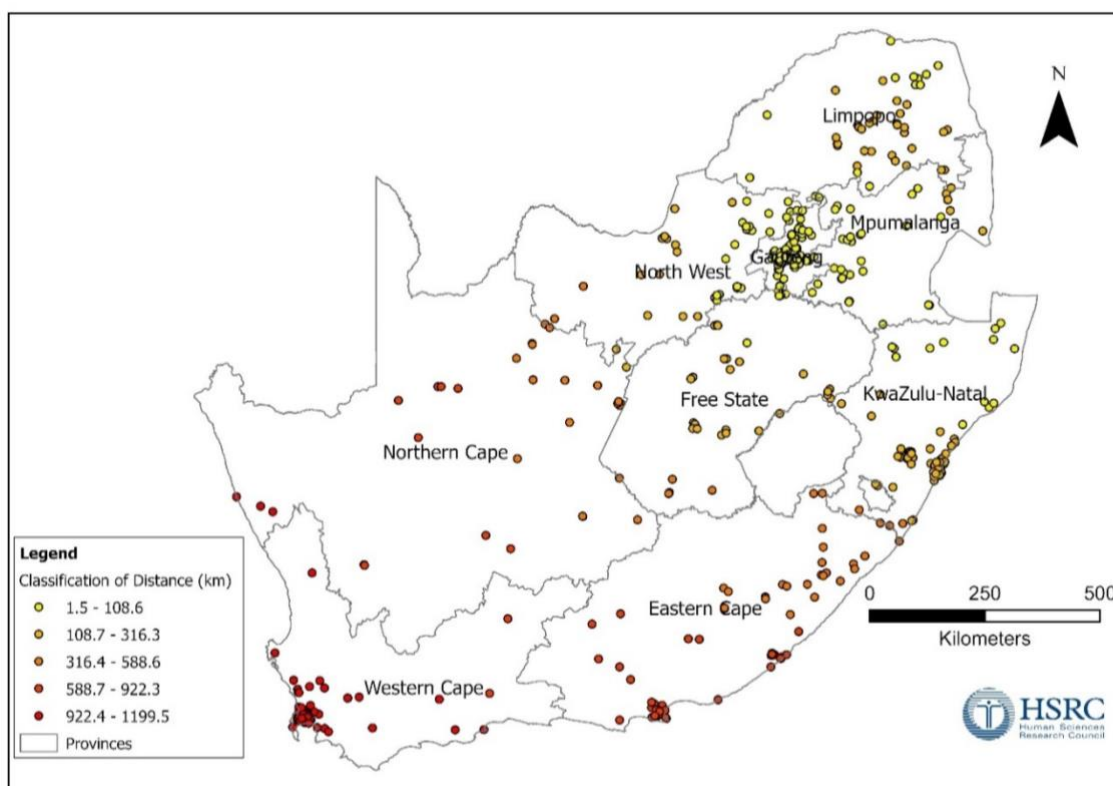**Figure 35: Distance measurement to the closest coal mine or coal-fired power station (in km)**

Table 40: Results from regression analysis testing for the effect of proximity to coal mines and coal-fired power stations on climate and just transition measures

Independent variable used in regression analysis: Distance in kilometres from area of residence (SAL centroid) to the nearest coal mine or coal-fired power station	Model with spatial independent variable only		With additional socio-demographic and other predictor variables	
Dependent variables:	B	Sig.	B	Sig.
Climate change awareness (0=low knowledge; 100=high knowledge)	-0.0006	**	-0.0004	*
Climate change scepticism (0=no scepticism; 100=high scepticism)	0.0006	*	0.0003	n.s.
Climate concern (0=no concern; 100=extreme concern)	0.0002	n.s.	0.0006	n.s.
Personal pro-environmental norms (0=no sense of responsibility; 100=strong sense of responsibility)	0.0000	n.s.	0.0002	n.s.
JET awareness: How much have you read or heard about JET (0=nothing; 100=a lot)	0.0000	n.s.	0.0002	n.s.
Support for JET-related actions (0=strong opposition; 100=strong support)	-0.0006	**	-0.0005	*
JET concern: Worry that self and family will be negatively affected by JET (0=no concern; 100=very high concern)	0.0003	n.s.	0.0002	n.s.
JET policy support index (0=low support; 100=high support)	-0.0012	***	-0.0098	***

Note: Significance is denoted as follows: 'n.s.' not significant; * p<0.05 (95% level); ** p<0.01 (99% level); *** p<0.001 (99.9% level). The numbers in the cells are Beta coefficient values from the regression analysis.
Source: HSRC SASAS 2023 PCC module on Attitudes towards Climate Change and the Just Transition.

Does living closer to a coal mine or coal-fired power station matter for knowledge, attitudes, and preferences relating to climate change and the just transition in South Africa? The findings from the modelling showed that climate change awareness was higher the closer one resided to a coal mine or coal-fired power station. This effect weakened somewhat once socio-demographic and other predictor variables were added to the model. Climate scepticism was found to be lower the closer one was to a coal mine or coal-fired power station, but this significant effect fell away once other attributes were controlled for. Both climate concern and personal pro-environmental norms had no significant association with the proximity measure. Turning to the four just transition measures, awareness and concern were not significantly influenced by proximity to a coal mine or coal-fired power station, but support for JET-related actions in principle as well as support for specific policies intended to offset any negative consequences of the transition both had significant bearing. In both instances, living closer to a coal mine or coal-fired power station was associated with higher levels of support. The spatial influence on support for JET-related actions diminished once other personal attributes were controlled for but the effect on support for specific JET policies to mitigate any adverse consequences remained unchanged. Further testing of the spatial influence of living closer to a coal mine or coal-fired power station using multivariate analysis in ArcGIS, a spatial statistical software, found that the explanatory power of this spatial measure on the climate change and just transition measures was fairly small (less than 5% based on the Adjusted R-Squared statistic). This suggests that despite some patterns of association, living in proximity to the country's coal belt or a coal-fired power station has a significant but relatively nominal effect in aggregate on certain climate change and just transition attitudes and preferences.

5   CONCLUSION

The report underscores the critical importance of addressing climate change in South Africa, despite it being overshadowed by other pressing concerns in the public eye. While the country faces significant challenges such as unemployment, crime, corruption, and service delivery issues, the impact of climate change exacerbates these problems and poses additional threats to the economy, environment, and public health. The findings reveal a growing awareness of climate change among South Africans, although scepticism persists regarding its causes and severity. Nonetheless, there is an appreciable level of climate concern among respondents, coupled with a sense of personal responsibility to protect the environment.

Efforts towards a just transition to renewable and other lower emissions energy sources are currently underway in South Africa, and it seems that these efforts are favoured by a majority of respondents. However, there is a need for a clearer understanding and communication of the term 'just transition' to ensure widespread support and engagement.

Policy preferences emphasise the importance of education, support for local businesses, and financial assistance for affected workers in mitigating the negative impacts of the transition. Transparency in managing financial aid is crucial for building trust and ensuring equitable outcomes. Responsibility for addressing the climate crisis is seen as shared among environmental groups, large companies, and government entities. Trust in various stakeholders to manage the transition underscores the need for inclusive decision-making and collaboration at all levels.

The report also provided a more detailed analysis of the survey data, using a mix of bivariate and multivariate techniques to delve deeper into climate change and just transition awareness, attitudes, and preferences in South Africa. This analysis specifically examined differences by demographic, socio-economic, political, informational, and spatial factors. It further tested the association between climate change and just transition measures to establish whether a conceptual model building on Stern's Value-Belief-Norm (VBN) model (2000) applies to the South African case and the specific set of topics and constructs examined.

The survey provided confirmatory evidence of the conceptual model in general. Climate change awareness was found to be inversely related with climate scepticism and positively associated with climate concern. In turn, higher levels of climate concern were a significant influence on the sense of personal responsibility for climate actions. Climate change awareness was, as envisaged, positively correlated with just transition awareness. A greater sense of personal responsibility for climate action (personal pro-environmental norm) was found to predict higher approval of the JET in principle. Those who knew more about the JET were less inclined to express concern that it would have a personal adverse impact on them and their families. However, those worried about climate change tended to be similarly worried about the personal impacts of the just transition. Support for JET-related policies was higher among those with a stronger sense of responsibility for climate action, those believing in the Just Energy Transition (JET) in principle, but lower among those who are more worried about personal adverse JET impacts. Policy support was also marginally lower among those expressing greater climate scepticism.

The survey revealed significant differences in climate awareness, attitudes, and personal pro-environmental norms across various segments of South African society, influenced by factors like socio-economic status, geographic location, and direct experience with extreme weather events. While awareness of climate change has increased over the years, a considerable share of the population remains unaware or sceptical, particularly among females, black African adults, and those in rural areas. Education, exposure to extreme weather, and social media use positively influence climate awareness and concern, highlighting the need for targeted educational campaigns and credible communication strategies to address scepticism.

The spatial analysis suggests that proximity to coal mines and coal-fired power stations modestly impacts climate change awareness and support for JET policies, though this effect is limited when broader socio-demographic factors are considered. The findings underscore the need for tailored policy interventions that consider regional disparities and focus on enhancing climate education, especially in less aware and more sceptical communities. Promoting pro-environmental norms through social media and educational initiatives, particularly in vulnerable and underserved areas, is essential for fostering a more climate-aware and environmentally active citizenry. The support for JET policies also indicates a general willingness to embrace the energy transition, provided that concerns about job losses, electricity costs, and environmental impacts are adequately addressed.

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SOUTH AFRICAN SOCIAL ATTITUDES SURVEY Questionnaire 2: August-September 2023	HSRC Human Sciences Research Council

CLIMATE CHANGE

Now some questions on a different topic.

1. **How much, if anything, would you say you know about climate change?**

I know a lot	1
I know a fair amount	2
I know a little	3
I know nothing at all	4
(Don't know)	8

2. **There has been a lot of discussion about the world's climate and the idea that it has been changing in recent years. Which of the following statements comes closest to your opinion?**

The world's climate has not been changing	1
The world's climate has been changing mostly due to natural processes	2
The world's climate has been changing about equally due to natural processes and human activity	3
The world's climate has been changing mostly due to human activity	4
(Can't choose)	8

3. **How worried are you about climate change?**

Not at all worried	1
Not very worried	2
Somewhat worried	3
Very worried	4
Extremely worried	5
(Refusal)	7
(Do not know)	8

4. **To what extent have extreme weather events (such as floods, big storms, droughts, heatwaves) affected you and your family over the past 10 years?**

Not at all	1
To a minor extent	2
To some extent	3
To a great extent	4
(Don't know)	8

5. **To what extent do you feel you have a personal responsibility to try and protect the environment? [*SHOWCARD 12*]**

Not at all										A great deal	(Refusal)	(Do not know)
0	1	2	3	4	5	6	7	8	9	10	77	88

6. Who do you think bears the most responsibility for preventing climate change from getting worse? [*SHOWCARD 33*]

INTERVIEWER: MULTIPLE RESPONSES ALLOWED. PLEASE SELECT UP TO 3 ANSWERS

a.	Large companies	1
b.	The South African National Government	2
c.	Environmental groups	3
d.	Individuals and their households	4
e.	The governments of well-off countries	5
f.	The governments of poorer countries	6
g.	Provincial Government	7
h.	Eskom	8
i.	Local Government	9
j.	The Government (unspecified levels)	10
k.	Nobody – the problem is not serious enough to require urgent attention	11
l.	Other (specify)	12
m.	(Don't know)	88

Most of South Africa's electricity currently comes from coal. There are now actions being taken to change from coal power to other sources of energy (like solar and wind).

7. How much have you read or heard about these actions?

Nothing	1
A little	2
Quite a bit	3
A lot	4
(Do not know)	8

8. To what extent do you approve or disapprove of the actions being taken to change from coal to other sources of energy (like solar and wind)?

Strongly approve	1
Approve	2
Neither approve nor disapprove	3
Disapprove	4
Strongly disapprove	5
(Refused)	7
(Don't know)	8

9. Some people think that the change from coal power to other energy sources (like solar and wind) will have positive benefits for South Africa, while others disagree.

Which of the following positive impacts do you believe will happen in South Africa because of the shift from coal power to other energy sources (like solar and wind)? [*SHOWCARD 34*]

INTERVIEWER: MULTIPLE RESPONSES ALLOWED. SELECT ALL THAT APPLY.

a.	There will be more jobs than before	1
b.	The economy will grow	2
c.	Women and youth will have more opportunities	3
d.	Load shedding will reduce or end	4
e.	Electricity prices will decrease	5
f.	People's health will improve	6
g.	Air pollution will decrease	7
h.	The health of the environment will improve	8
i.	None of the above	9

10. **How worried are you that you and your family will be negatively affected by the change from coal to other energy sources (like solar and wind)?**

Not at all worried	1
Not very worried	2
Somewhat worried	3
Very worried	4
Extremely worried	5
It won't impact me or my family	6
(Refuse to answer)	7
(Don't know)	8

11. **Are you worried about any of the following happening to you or your family because of the change from coal power to other forms of energy (like solar and wind)?**
[*SHOWCARD 35*]

INTERVIEWER: MULTIPLE RESPONSES ALLOWED. SELECT ALL THAT APPLY.		

a	Loss of a job or a source of income	1
b	Worse load shedding for my household	2
c	Having to pay more for electricity	3
d	Negative impacts on my health or that of my family	4
e	Damage to the local environment	5
f	I am worried about some other consequence (please specify)	6
g	I am not worried because I think there will be no consequences	7
h	(Don't know)	8

As South Africa moves from coal power to other energy sources like solar and wind, workers in the coal industry will lose their jobs, but news jobs will be created in other sectors.

To what extent do you agree or disagree that the following policies should be implemented to help address these potential impacts? [*SHOWCARD 1*]

		Strongly agree	Agree	Neither agree nor disagree	Dis-agree	Strongly disagree	(Refusal)	(Don't know)
12.	Create training and skills programmes for workers who lose their jobs	1	2	3	4	5	7	8
13.	Give short-term financial help to workers who lose their jobs and cannot find new ones right away	1	2	3	4	5	7	8
14.	Provide help to women, youth and vulnerable groups to find jobs	1	2	3	4	5	7	8
15.	Support local businesses and create job opportunities in areas that are affected	1	2	3	4	5	7	8
16.	Improve education to help people find jobs in new sectors	1	2	3	4	5	7	8
17.	Create a special grant that all South Africans would receive each month (Basic Income Grant)	1	2	3	4	5	7	8

18. **Wealthy countries have promised to give money to South Africa to help make the change from coal to other energy sources like solar and wind. Which of the following statements comes closest to your opinion on this?**

South Africa should accept this financial help from wealthy countries, and the government should manage the funds	1
South Africa should accept this financial help from wealthy countries, but the government should not manage the funds	2
I do not think South Africa should accept any financial help from wealthy countries	3
I do not have an opinion on this	4
(Don't know)	8

19. **Which of the following groups should be involved in decisions about the change from coal to other energy sources (like solar and wind)? [*SHOWCARD 36*]**

INTERVIEWER: MULTIPLE RESPONSES ALLOWED. SELECT ALL THAT APPLY.		

a.	Trade unions	1
b.	Businesses/the private sector/industry	2
c.	Local government	3
d.	NGOs/non-profit organizations	4
e.	National government	5
f.	Community leaders	6
g.	A committee established by the President that includes representatives of all the above groups	7
h.	Others (please specify)	8
i.	(Don't know)	88

20. **Who do you MOST trust to manage this change from coal to other energy sources (like solar and wind)? [*SHOWCARD 36*]**

Trade unions	1
Businesses/the private sector/industry	2
Local government	3
NGOs/non-profit organizations	4
National government	5
Community leaders	6
A committee established by the President that includes representatives of all the above groups	7
Others (please specify)	8
(Don't know)	88

21. **Have you heard of the term "*just transition*"?**

I have heard the term "*just transition*" and know what it means	1
I have heard the term "*just transition*", but I don't know what it means	2
I have not heard the term "*just transition*"	3
(Don't know)	8

APPENDIX 2: MEASURES USED FOR PROVINCIAL COMPARATIVE ANALYSIS

Exposure to extreme weather events: 4-point scale, transformed into 0-100 score, where 0 represents that the respondent and his/her/their family has not at all been affected by extreme weather events in the last 10 years, and 100 signifies that there had been a great personal impact due to by extreme weather events in the last 10 years.

Climate change awareness: Reversed 4-point scale, transformed into 0-100 score, where 0 represents knowing 'nothing at all' about climate change and 100 represents knowing 'a lot'. 'Don't know' responses were also assigned a value of 0 (low awareness).

Climate scepticism: A dichotomous variable, where 0 represents believing that the world's climate has been changing either due equally to human activity /natural processes or mostly due to human activity; and 1 represents a belief that the world's climate has not been changing or that it has been changing mostly due to natural processes. 'Don't know' responses were also assigned a value of 1, implying a degree of scepticism (an inability to definitively state that the climate is changing and attribute this to particular factors).

Climate concern: A 5-point scale, transformed into 0-100 score, where 0 represents being 'not at all worried' about climate change and 100 represents being 'extremely worried'. 'Don't know' and 'refusal' responses were coded as system missing.

Personal responsibility for climate action (personal pro-environmental norms): 11-point (0-10) scale, transformed into 0-100 score, where 0 represents 'not at all' feeling a sense of responsibility to try and protect the environment, and 100 represents feeling 'a great deal' of personal responsibility to act. 'Don't know' and 'refusal' responses were coded as system missing.

Awareness of just energy transition: 4-point scale, transformed into 0-100 score, where 0 represents having read or heard nothing about the just energy transition, and 100 represents having read or heard 'a lot' about the subject. 'Don't know' responses were also assigned a value of 0 (low awareness).

Approval of just transition in principle: 5-point scale, transformed into 0-100 score, where 0 represents 'strong disapproval' of the just transition, and 100 represents 'strong approval. 'Don't know' responses in this instance were assigned a scalar midpoint value of 50 (signifying more ambivalent views), while 'refusal' responses were coded as system missing.

Concern about the personal impact of the just transition: 6-point scale, transformed into 0-100 score, where 0 represents being 'not at all worried' about adverse personal impacts of the just transition or stating that 'it won't impact me or my family', and 100 represents being 'extremely worried' about personal negative impacts. 'Don't know' responses were coded as 0 (low concern), while 'refusal' responses were coded as system missing.

Benefits of the just transition: Factor analysis was initially performed on the set of coded responses (8 listed benefits and a none of the above response), which showed that the benefits formed three factors relating to perceived economic gains (more jobs, economic growth, opportunities for women and youth), energy-related benefits (reduced load shedding, decreased electricity prices) and health and environmental gains (improved human health, reduced air pollution, improved environmental health). We created three dichotomous variables corresponding to whether the respondents mentioned one or more of each type of benefit, and then additively combined these variables into a 0-3 scale, based on how many types of benefits were recognised. This was then transformed into a 0-

100 scale, where 0 represents that none of the different types of benefit were recognised, and 100 that all three types of benefit were recognised.

Support for specific just transition policies: A set of six examples just transition policies were used, each based on a 5-point agreement scale. These scales were reversed and transformed into 0-100 scales, where 0 represents strong opposition to the policy measure and 100 strong support. 'Don't know' responses in this instance were assigned a scalar midpoint value of 50 (signifying more ambivalent views), while 'refusal' responses were coded as system missing. The responses to the six items were averaged together, retaining the 0-100 scaling.