UNDERSTANDING THE LEVEL OF

CLIMATE LITERACY AND ENVIRONMENTAL ATTITUDES

AMONG SELECTED MEMBERS

OF TAMIL NADU LEGISLATIVE ASSEMBLY

CAG
Citizen consumer and civic Action Group

Understanding the Level of
Climate Literacy and Environmental Attitudes
Among Selected Members
of Tamil Nadu Legislative Assembly

Disclaimers:

The information in this document has been obtained in good faith from sources that are believed to be reliable, but any potential interpretation of this report as making an allegation against a specific company or companies named would be misleading and incorrect. The author accepts no liability whatsoever for any direct or consequential loss arising from the use of this document or its contents.

Suggested citation:

Shankar Prakash, A. 2024. "Understanding the level of climate literacy and environmental attitudes among selected members of Tamil Nadu legislative assembly | CAG". cag.org.in.

About CAG:

CAG is a 39-year-old non-profit and non-political organisation that works towards protecting citizens' rights in consumer, civic and environmental issues and promoting good governance processes, including transparency, accountability and participatory decision-making.

Contents

Executive Summary

This report examines the climate literacy and environmental attitudes among Members of the Legislative Assembly (MLAs) in Tamil Nadu, aiming to assess their understanding and stance on climate change issues critical for effective policy-making.

Key Findings:

- **Climate Literacy:**
  - A significant 35% of MLAs scored very low (3-5 out of 20) on a climate literacy quiz, indicating a substantial knowledge gap. Only 15% scored high (11-15), suggesting that most MLAs possess only a basic or inadequate understanding of climate science. Areas of weakness include understanding coral bleaching, historical CO_2 levels, and practical mitigation strategies.

- **Environmental Attitudes:**
  - MLAs demonstrated strong preservation-oriented attitudes, with high scores in areas like "Enjoyment of Nature," "Environmental Threat," and "Ecocentric Concern." However, there was noticeable scepticism towards waste management, as they preferred recycling over reducing and reusing.

- **Information Sources:**
  - The primary sources of environmental information for MLAs are environmental NGOs and mainstream newspapers, with minimal use of social media. This preference indicates a reliance on traditional, vetted sources over digital platforms.

Recommendations:

- **Single Window System:**
  - Recommend the Tamil Nadu Legislative Assembly Speaker establish a system to streamline research access to MLAs, enhancing study participation and policy impact.

- **Educational and Training Initiatives:**
  - Organise annual workshops and specialised training, and incorporate climate education into MLA orientations to address knowledge deficits, particularly on issues such as coral bleaching, the historical context of CO2 levels, the scientific consensus on climate change, and the major contributors to greenhouse gas emissions.
  - Foster direct engagement with nature to deepen appreciation and commitment to environmental issues.
  - Collaborate with academic institutions for ongoing education and mentorship. Also, find ways to promote continuous learning through self-paced online courses.

- **Policy and Advocacy:**
  - Promote environmental advocacy through platforms for MLAs to engage with climate issues, and use policy simulations to understand complex environmental decisions.
  - Encourage public interaction to improve transparency and policy engagement.

- **Information Diversification:**
  - Introduce credible digital platforms and provide training for discerning online information, broadening knowledge sources beyond traditional media.

These recommendations aim to elevate both the climate literacy and proactive environmental policy-making among Tamil Nadu's MLAs, ensuring policies are informed by science and resonate with public needs. Despite the small sample size, this study provides critical initial insights into the legislative body's readiness to tackle climate change, highlighting the urgent need for educational intervention and policy alignment.
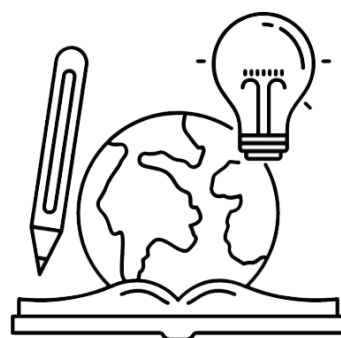
1

Introduction

Climate change has emerged as one of the most pressing global issues of our time, requiring informed and proactive legislative action to mitigate its impacts. In the context of Tamil Nadu, where climate variability and extreme weather events are increasingly evident, the role of the Legislative Assembly in shaping effective environmental policy becomes paramount. This study delves into the climate literacy and environmental attitudes among Members of the Tamil Nadu Legislative Assembly (MLAs), aiming to understand their knowledge base and attitudes towards climate change, which are crucial for crafting informed policies.

The significance of this study lies in its potential to influence how climate policies are developed and implemented at the state level. Tamil Nadu, known for its pioneering steps in environmental conservation, faces unique challenges due to its geographical and socio-economic diversity. The state's legislative body, therefore, needs a robust understanding of climate science to navigate these challenges effectively.

Climate literacy, as defined by various scholars including Arndt and LaDue (2008), involves not just an understanding of the scientific principles but also the ability to apply this knowledge in decision-making processes. Therefore, this research is timely, given Tamil Nadu's commitment to climate action through various state missions related to climate change mitigation and adaptation. The outcomes could serve as a baseline for further educational interventions, policy adjustments, and public engagement strategies. By understanding the legislative body's capacity in these areas, we can better tailor educational programmes to empower MLAs to lead in climate action, ultimately contributing to a more climate-resilient Tamil Nadu.

2

Climate literacy fundamentals and educational approaches

Climate literacy is pivotal for informed decision-making in policy, especially among legislative bodies like the Tamil Nadu Legislative Assembly. A work by Arndt and LaDue (2008) underscores the application of adult education principles, specifically andragogy, to enhance climate literacy among adults. Their study of the OK-First programme emphasises the importance of self-directed learning and contextually relevant educational content. The programme achieves this by building upon learners' existing knowledge and experience to improve their climate-related decision-making.

Further, Azevedo and Marques (2017) broaden this perspective by advocating for an integrative model that combines science education with communication strategies to bridge the gap in public understanding. Their systematic review emphasises that climate literacy extends beyond scientific knowledge to include effective communication and decision-making skills, which are vital for legislators who shape public policy.

2.1 Challenges and misconceptions in climate education

The educational landscape is often marred by misconceptions, as noted by Harrington (2008), who discusses common climatic misconceptions and suggests inquiry-based learning to rectify these. This approach could be particularly relevant for policymakers to ensure they are not swayed by oversimplified or incorrect climate models in their legislative actions. Similarly, McCaffrey and Buhr (2008) address the systemic gaps in climate education, proposing the Essential Principles of Climate Literacy as a framework to counteract these misconceptions, which could guide the development of educational programs.

2.2 Educational strategies and interventions

Several studies provide practical examples of educational strategies that could be adapted for enhancing climate literacy among policymakers. Clifford and Monroe (2018) examine the Southeast Region Extension Climate Academy, demonstrating how tailored educational programs can address diverse perspectives on climate change, an approach potentially beneficial in the culturally and politically diverse environment such as ours. Also, Shafer (2008) argues for a National Climate Service that integrates climate literacy, emphasizing user-centric educational processes, which could be mirrored in state-level services to make climate data actionable for policymakers.

2.3 Incorporating interdisciplinary approaches

The integration of various disciplines in climate education is highlighted by Shwom et al. (2017), who suggest incorporating social sciences into climate literacy to offer a fuller picture of climate dynamics, crucial for policymakers dealing with multifaceted climate issues. Current climate change initiatives in Tamil Nadu predominantly rely on consultations with technical institutions like Anna University and IIT Madras and largely overlook input from social science institutions. Meira-Cartea et al. (2018) further reveal that academic education alone might not suffice to elevate climate literacy without addressing common cultural influences, suggesting a need for comprehensive educational strategies that include both formal and informal learning contexts.

2.4 Practical applications and tools

The use of innovative educational tools like the Climate Literacy and Energy Awareness Network (CLEAN) search widget, as described by Showstack (2011), could be instrumental in providing Tamil Nadu policymakers with access to high-quality, peer-reviewed educational resources. Similarly, Riach and Glaser (2024) introduce municipal climate profiles as tools for localized climate education, which could be adapted to provide legislators with region-specific climate data, enhancing their understanding and legislative foresight.

This review of a few existing literature suggests that enhancing climate literacy among policymakers should involve a multifaceted approach: leveraging adult learning principles, addressing educational misconceptions, employing interdisciplinary educational strategies, and integrating practical tools for climate data interpretation. By adopting these insights, educational initiatives can be tailored to meet the unique needs of policymakers, potentially leading to more robust, climate-informed legislative outcomes.

3

Objectives and significance of this study

In an effort to align with the Government of Tamil Nadu's climate change mission to enhance climate literacy in the state, the primary aims of this study are:

1. To assess and evaluate the current level of climate literacy and environmental attitudes among selected Members of the Legislative Assembly (MLAs)

2. To develop targeted, evidence-based recommendations for the government on strategies to improve climate literacy and environmental awareness among legislators

This study of climate literacy and environmental attitudes among Tamil Nadu's legislative assembly members aimed at offering valuable insights for policy and governance reform, as it marks the first systematic assessment of state policymakers' perspectives on these issues. By providing insights into the current understanding of climate issues among policymakers, the study can help identify knowledge gaps and enable more scientifically grounded climate policy development. It offers a baseline assessment of MLAs' comprehension of climate change implications, revealing potential barriers to effective legislative action and guiding capacity-building initiatives. Moreover, since MLAs serve as key representatives who can influence public perception, their climate literacy levels directly impact how environmental messages are communicated to constituents.

As a benchmark for comparative and longitudinal research, the study can track environmental awareness trends, offering a valuable framework for enhancing climate action not just in Tamil Nadu, but potentially in other states and at the national level, ultimately contributing to a more informed and environmentally conscious legislative ecosystem.

4

Existing measures of environmental attitudes

Climate literacy and environmental attitudes are measured in fundamentally different ways. Climate literacy is assessed through objective knowledge of climate change facts, while environmental attitudes are evaluated based on individual perceptions, opinions, and beliefs about environmental issues. This distinction means that measuring climate literacy requires different methodological tools than the psychological inventories typically used to assess environmental attitudes. Since the 1970s, the landscape of measuring environmental attitudes has evolved significantly, with at least 15 distinct measures developed to capture the nuanced dimensions of environmental perspectives. While this diversity poses challenges for direct cross-study comparisons, it also provides researchers with the flexibility to develop context-specific and behaviour-oriented assessment tools.

Notable examples include the Maloney-Ward Ecology Inventory (Maloney and Ward 1973), the Weigel Environmental Concern Scale (Weigel & Weigel, 1978), and the New Environmental Paradigm (Dunlap et al. 2000). These initial instruments explored a range of dimensions, from environmental knowledge and emotional responses to fundamental beliefs about humanity's relationship with nature.

The 1990s saw a more specialised approach to environmental attitude measurement. Researchers developed scales targeting specific aspects such as environmental concern, environmental pessimism, and anxiety about environmental hazards like organic solvent exposure (Schahn and Holzer 1990; Bowler and Schwarzer 1991). The Environmentalism Scale, introduced by Banerjee and McKeage (1994), represented a significant advancement by examining attitudes toward environmental problem severity, broader environmental issues, and individual connections to the natural world.

Towards the late 1990s, the focus shifted towards more action-oriented measurements. Scales like the Motivation Toward the Environment Scale (Pelletier et al. 1999) and the Survey of Environmental Issue Attitudes (Schindler 1999) emerged, offering deeper insights into pro-environmental behaviour and attitudes. These tools proved particularly valuable in diverse contexts, including studies involving children (Larson, Green, and Castleberry 2011), thereby expanding the understanding of environmental perspectives across different demographic groups. This progressive development of measurement tools ultimately paved the way for more comprehensive frameworks like the Environmental Attitudes Inventory (EAI), reflecting the field's growing sophistication in understanding human environmental perceptions and behaviours.

5

Methods and data analysis

This study involves data collection from members of the Tamil Nadu Legislative Assembly. To obtain permission to interview them, a letter was initially sent to the Hon'ble Speaker of the Assembly. However, we were informed that since we intended to interview individual MLAs, we should approach them directly. Following this advice, we emailed all the MLAs, explaining the objectives of the study and requesting permission to interview them.

We planned to meet the MLAs in person, focusing on those from Chennai, Chengalpattu, Kanchipuram, and Tiruvallur. Unfortunately, only a few MLAs responded positively to the emails. We also attempted to contact their personal assistants to schedule appointments, but due to the MLAs' schedules, we were unable to secure interviews.

As a result, we decided to meet the MLAs at the MLA hostel during the assembly session, which proved to be an effective strategy. This approach allowed us to interview several MLAs. Thus, this study employed a non-probability sampling method known as purposive sampling to collect data. Given the various contingencies and logistical challenges associated with the routines of MLAs, successfully interviewing 20 of them was a noteworthy achievement. While this sample size is not representative of the entire study population and the results cannot be generalised, it has provided valuable insights that were previously unknown.

5.1 Description of climate literacy quiz

Under the National Science Digital Library (NSDL) Pathways project, a portal called the Climate Literacy and Energy Awareness Network (CLEAN) was launched in 2010. It is led by the science education expertise of the Cooperative Institute for Research in Environmental Science (CIRES) at the University of Colorado Boulder and the Science Education Resource Center (SERC) at Carleton College in the United States. As of 2012, CLEAN has been syndicated to the National Oceanic and Atmospheric Administration's climate.gov portal. CLEAN's primary focus is to curate a collection of climate and energy science educational resources and to support a community of professionals dedicated to improving climate and energy literacy. For this study, we adopted the climate literacy quiz developed by CLEAN (CLEAN, 2018). The quiz consists of 20 questions, which can be classified as easy, moderate, and difficult. Each correct answer to the question carries one mark, with a maximum of 20 marks. The quiz was created using Google Forms, and during the interviews with the MLAs, their scores were shared with them. This provided an opportunity for

the MLAs to revisit their responses and update their understanding. Along with the quiz, we also asked the MLAs about terminologies closely related to climate change.
For example, for the term "carbon footprint," the possible responses were:

• "I have not heard of it"

• "I have heard of it, but I don't know what it means"

• "I have heard of it and I know what it means"

When participants indicated familiarity with a concept, they were asked to elaborate on their understanding of it. In a way, this process also served as a climate literacy session.

5.2 Description of the EAI

The Environmental Attitudes Inventory (EAI), developed by Milfont and Duckitt (2010), is a comprehensive tool that includes questions across various aspects of environmental attitudes. This inventory underwent extensive testing and refinement using samples from multiple countries, which reduced the original 200-item scale to a more manageable 120 items. These 120 items are categorized into 12 scales: Enjoyment of Nature, Interventionist Policies, Environmental Activism, Anthropocentric Conservation, Confidence in Science, Environmental Fragility, Altering Nature, Personal Conservation Behaviour, Dominance over Nature, Utilisation of Nature, Ecocentric Concern, and Support for Population Growth Policies. Milfont and Duckitt also proposed a condensed version of the scale with 24 items, which was used in this study. Despite its length, the Environmental Attitudes Inventory is thorough and supported by strong theoretical and empirical evidence.

Figure 1: Different scales under the environmental attitudes inventory

Enjoyment of nature	Environmental threat	Support for interventionist conservation policies
Environmental movement activism	Altering nature	Conservation motivated by anthropocentric concern
Personal conservation behaviour	Human utilisation of nature	Ecocentric concern
Human dominance over nature	Confidence in science and technology	Attitude towards waste

These scales measure various dimensions of environmental attitudes. The "Enjoyment of Nature" scale evaluates an individual's appreciation and enjoyment of nature. The "Interventionist Policies" scale gauges support for policies that regulate business and industry to protect the environment. The "Environmental Activism" scale measures the willingness to engage in activities or movements aimed at environmental protection. The "Anthropocentric Conservation" scale assesses the belief in conserving the environment for human benefit. The "Confidence in Science" scale evaluates trust in science and technology to address environmental problems. The "Environmental Fragility" scale measures the belief in the vulnerability and fragility of the environment. The "Altering Nature" scale assesses attitudes towards human intervention in nature. The "Personal Conservation Behaviour" scale evaluates personal commitment to conservation and pro-environmental actions. The "Dominance over Nature" scale measures the belief in human control over nature. The "Utilisation of Nature" scale assesses attitudes towards using nature for human benefit. The "Ecocentric Concern" scale gauges concern for the environment for its own sake, independent of human benefit. The scale measuring population growth policies was excluded from this study due to its potential Western bias in conceptualisation and construction. In addition to these scales, a new scale was added to measure the MLAs' attitudes towards waste management, providing a more comprehensive understanding of their environmental attitudes.

5.3 Coding of responses and mean score interpretation

The EAI consists of 12 scales (11 core scales plus one waste-related scale), each measuring a distinct aspect of environmental attitudes. Responses are collected using a 7-point Likert scale ranging from 'strongly disagree' (1) to 'strongly agree' (7). To ensure consistency in interpretation, the scoring system is standardised through reverse coding of negative statements. For example, if a participant responds with 'strongly disagree' (1) to a negative statement, it is converted to a score of 7 during analysis. Similarly, a response of 2 becomes 6, 3 becomes 5, and so forth. This standardisation ensures that higher scores uniformly indicate stronger pro-environmental attitudes across all scales. Thus, a higher mean score on any scale suggests greater agreement with pro-environmental positions regarding that particular environmental aspect.

5.4 Variables examined

Independent variables
• Age
• Gender
• Highest educational qualification
• Term as a Member of the Legislative Assembly
• Native place
• Place of residence

Dependent variables
• Climate literacy
• 11 scales under the environmental attitudes inventory and an additional scale to measure attitudes towards waste

6

Results

The study results are organised and presented according to independent and dependent variables.

Table 1: Descriptive statistics of age (in years)

Min.	Mean	Median	Mode	Max.
44	55.35	57	47*	65
*N= 20; *Multiple modes exist. The smallest value is shown*				

The descriptive statistics of the ages of the MLAs reveal a range from 44 to 65 years, with a mean age of 55.35 years. The median age is 57, indicating that half of them are younger than 57 and half are older. The data shows multiple modes, with 47 years being the lowest of these most frequently occurring ages. Age can significantly influence climate literacy and environmental attitudes among MLAs for several reasons: older MLAs may have more experience and exposure to environmental policies and issues, potentially leading to a deeper understanding and stronger attitudes towards climate action; different age groups may have varying perspectives on environmental issues, with younger MLAs possibly more attuned to contemporary climate science and advocacy movements, while older MLAs might prioritise traditional approaches and long-term policy impacts; the era in which MLAs received their education can affect their climate literacy, as environmental education has evolved over the years, with more recent curricula often emphasising climate change and sustainability; and age can also impact the influence and decision-making power within the assembly, with senior MLAs potentially holding key positions that enable them to drive environmental policies more effectively. Whereas, due to the very small sample size, making inferential insights by comparing age with dependent variables is not statistically feasible. For this study, 17 male and 3 female MLAs were interviewed.

Figure 2: Highest educational qualification
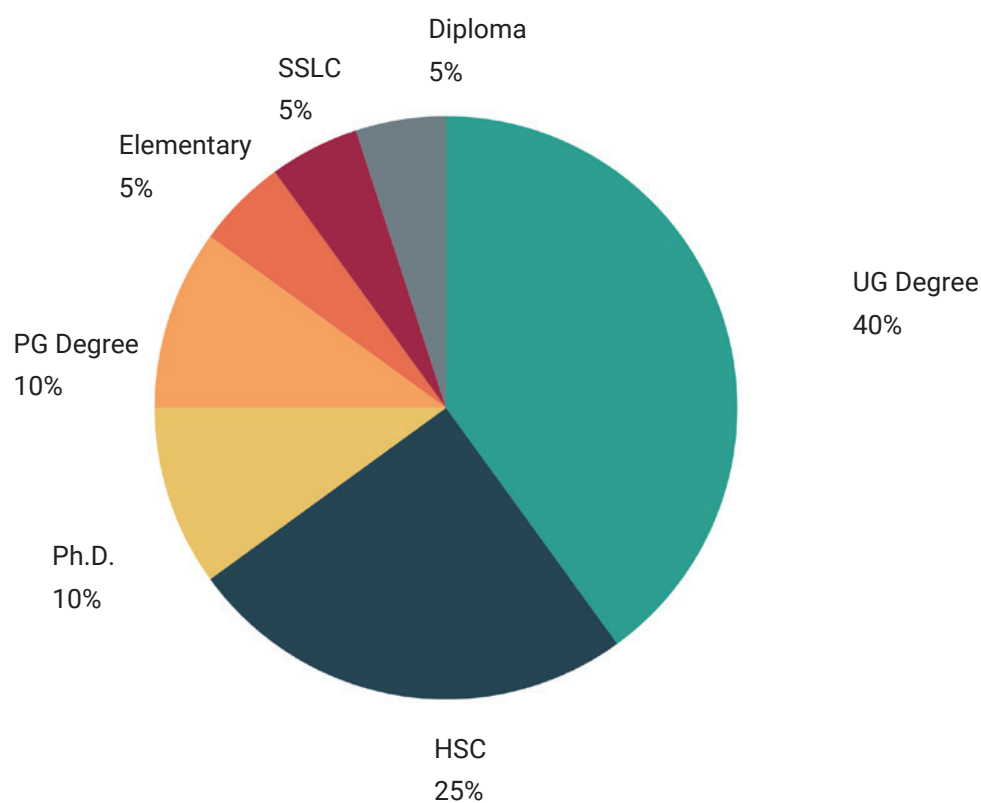
The educational qualifications of the 20 interviewed members show a diverse range of academic backgrounds. Among them, one has an elementary education, one has completed SSLC (Secondary School Leaving Certificate), and five have completed HSC (Higher Secondary Certificate). Additionally, one holds a diploma, eight have undergraduate degrees, two have postgraduate degrees, and two have Ph.D. degrees. This distribution highlights a varied level of educational attainment, with a significant proportion holding higher education degrees. The percentage of members with an undergraduate degree or higher is 60%.

Figure 3: Term as a Member of the Legislative Assembly
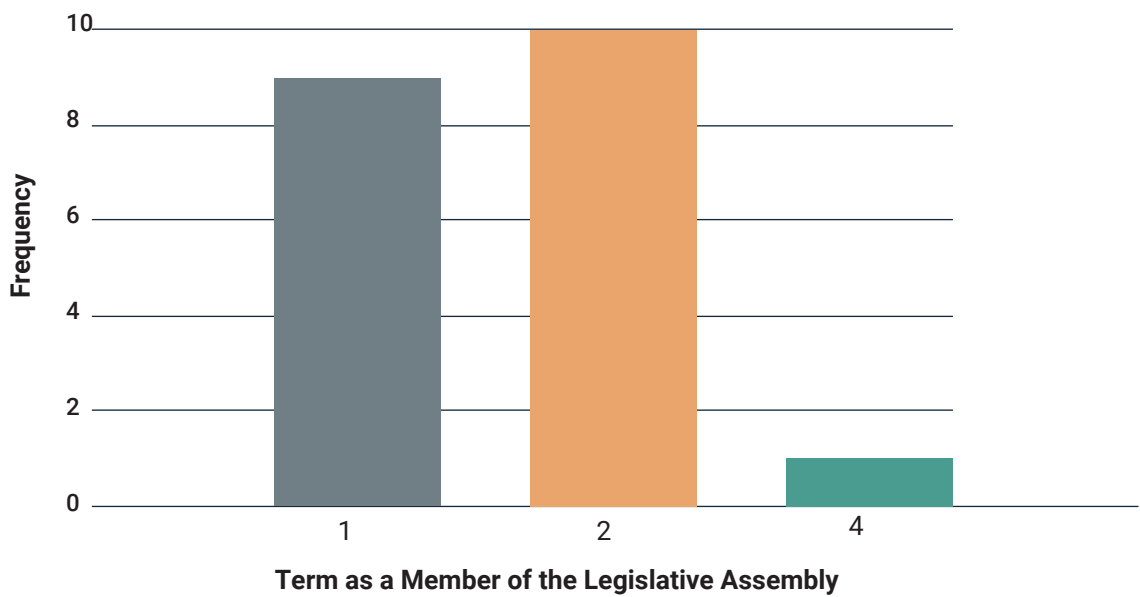
The data on the number of terms served by the MLAs indicates that nine members have served for one term, 10 members have served for two terms, and one member has served for four terms. This distribution shows that a majority of the MLAs have experience spanning multiple terms, with half of them having served at least two terms, suggesting a considerable level of legislative experience within the group.

Figure 4: Nativity and residence of the MLAs
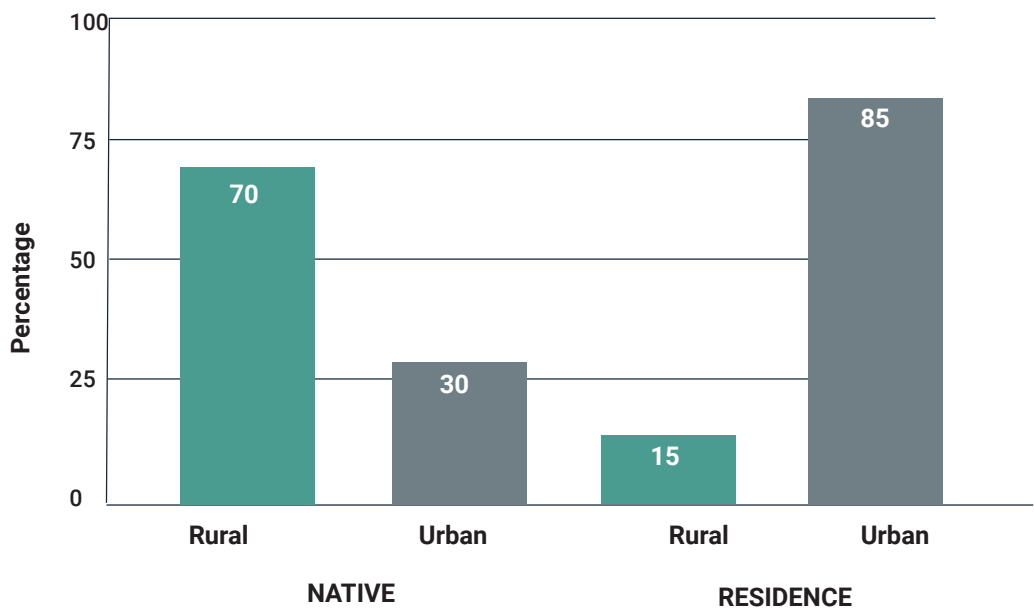
To understand the nativity and current residence of the MLAs, it was observed that a significant majority, approximately 70%, originate from rural areas, while the remaining 30% are from urban areas. Regarding their current residence, about 15% live in rural areas, and 85% reside in urban areas. For this study, MLAs from rural local bodies, such as village and town panchayats, are categorised as rural, whereas those from urban local bodies, including municipalities and corporations, are classified as urban.

Table 2: Climate literacy score secured by the MLAs

Climate literacy score	Frequency	Percent
3	2	10
4	3	15
5	2	10
6	4	20
7	1	5
8	2	10
9	2	10
10	1	5
11	1	5
12	1	5
15	1	5

The assessment of selected MLAs' climate knowledge reveals a troubling pattern. A substantial 35% of MLAs scored between 3-5 points, indicating a profound lack of understanding in climate science. Another 50% achieved scores between 6-10, showing they have a basic but not comprehensive grasp of the subject. Only a small 15% managed scores from 11 to 15, with one MLA reaching the peak score of 15. This distribution leans heavily towards the lower end, suggesting that the average MLA lacks the depth of knowledge needed for informed decision-making on climate issues.

In addition to examining the individual scores of the MLAs, an analysis was conducted to understand which climate change-related questions were answered correctly most often and least often by them. Based on this analysis, the responses were grouped into categories of high climate literacy, moderate climate literacy, and low climate literacy.

6.1 An analysis by climate literacy level based on the frequency of correct responses

At the high literacy level, where correct responses for the questions ranged between 11 and 14, MLAs demonstrated a solid understanding of fundamental climate concepts, such as the acceleration of global warming due to human activity, the greenhouse effect, and the longevity of CO_2 in the atmosphere. They also show an awareness of the urgency of climate action, recognising the need to drastically reduce fossil fuel use by 2040 to keep global temperature rise below 2°C.

In the moderate literacy band, where correct responses fall between 7 and 10, MLAs have a partial understanding of climate history through various scientific methods like studying ice cores, marine sediments, and tree rings. However, their knowledge fades when it comes to recognising the extent of temperature change since the Industrial Revolution or understanding who bears the most responsibility for greenhouse gas emissions.

At the lowest end of the literacy spectrum, the correct responses from 0 to 6 highlight a severe lack of knowledge. Here, MLAs are notably uninformed about critical issues like coral bleaching, the historical context of CO2 levels, scientific consensus on climate change, and the major contributors to greenhouse gases. Most concerning is the complete absence of correct answers on practical actions to mitigate climate change, indicating a significant gap between theoretical knowledge and practical application. This knowledge deficit among MLAs could have serious repercussions on the formulation and implementation of climate policies. It might lead to policies that are not only ineffective but could also fail to engage the public adequately in climate action. The disconnect between understanding climate science and knowing how to act on this knowledge could result in legislation that does not fully address the pressing needs of climate mitigation and adaptation.

The complete responses of the MLAs to all 20 questions are included in Appendix 1.

Figure 5: Familiarity with climate change-related terms

Term	I have not heard of it	I have heard of it, but I don't know what it means	I have heard of it and know what it means
Greenhouse gas emissions	1	3	16
Paris Agreement	2	2	16
Renewable energy	2	2	16
Climate crisis	2	5	13
Climate smart village	1	7	12
COP	2	6	12
Net zero	1	7	12
Resilient cities and villages	4	5	11
Decarbonisation	3	7	10
IPCC	6	6	8
Mitigation	3	9	8
Adaptation	7	7	6
Carbon footprint	8	6	6
Global warming vs Climate Change	2	12	6
Weather vs Climate	3	11	6
Indigenous knowledge	9	6	5
Refortation vs Afforestation	2	13	5
Climate justice	7	9	4
Nature-based solutions	10	6	4
Climate finance	8	9	3

Legend:
- I have not heard of it
- I have heard of it, but I don't know what it means
- I have heard of it and know what it means

Term	I have not heard of it	I have heard of it, but I don't know what it means	I have heard of it and know what it means
Eco-restoration	9	8	3
Rewilding	7	10	3
Bioshield	15	3	2
Carbon removal vs Carbon capture	5	13	2
Circular economy	9	9	2
Tipping point	14	4	2
Urban heat island	7	10	2
Carbon markets	13	6	1
Greenhouse gas (GHG) inventory	15	4	1
Greenwashing	13	6	1
National Adaptation Plans	19	1	
Wet bulb temparature	6	13	1
Carbon sink	9	11	
Climate overshoot	20		
Climate security	18	2	
Feedback loop	18	2	
Green jobs	5	15	
Just transition	13	7	
Loss and damage fund	15	5	
Nationally Determined Contributions	18	2	

Legend:
- I have not heard of it
- I have heard of it, but I don't know what it means
- I have heard of it and know what it means

In addition to assessing the climate literacy of MLAs based on facts, we attempted to categorise their familiarity with 40 climate change-related terms into five distinct levels: high, moderate, low, very low familiarity, and unfamiliar terms. This categorisation helps identify areas where MLAs are well-informed and where significant knowledge gaps exist. By analysing these categories, we can better understand how their familiarity with these terms influence their ability to develop effective climate policies, make informed decisions, advocate for climate action, and communicate effectively with the public. A detailed response related to the 40 climate change-related terms is added as Appendix 2. This analysis is essential for identifying the need for targeted education and training programmes to enhance the overall climate literacy of policymakers.

I. High Familiarity:
• Greenhouse gas emissions, Paris agreement, renewable energy: These terms are well-known among the MLAs, with 16 out of 20 indicating they know what these terms mean.
• Climate crisis, climate smart village, COP, net zero: These terms also show high familiarity, with 12-13 of them knowing their meanings.

II. Moderate Familiarity:
• Resilient cities and villages, decarbonisation, IPCC, mitigation: These terms have a moderate level of familiarity, with 8-11 knowing their meanings.
• Adaptation, carbon footprint, global warming vs. climate change, weather vs. climate: These terms are somewhat known, with 6-8 familiar with their meanings.

III. Low Familiarity:
• Indigenous knowledge, reforestation vs. afforestation, climate justice, nature-based solutions: These terms have lower familiarity, with 4-5 knowing their meanings.
• Climate finance, eco-restoration, rewilding, bioshield: These terms are less familiar, with only 2-3 knowing their meanings.

IV. Very Low Familiarity:
• Carbon removal vs. carbon capture, circular economy, tipping point, urban heat island: These terms are known by very few, with only 1-2 indicating familiarity.
• Carbon markets, greenhouse gas (GHG) inventory, greenwashing, national adaptation plans: These terms are barely known, with only 1 MLA familiar with their meanings.

V. Unfamiliar Terms:
• Climate overshoot, climate security, feedback loop, green jobs, just transition, loss and damage fund, nationally determined contributions: These terms are largely unfamiliar, with no MLAs indicating they know what these terms mean.

Overall, the findings suggest that while there is a good level of awareness among MLAs about some key climate change terms, there are several terms that are not well understood or known. This indicates a need for further education and awareness programs to enhance the understanding of climate change concepts among policymakers.

Table 3: Scale-wise descriptives statistics of student's environmental attitude

Scale	Mean	Std. Deviation
Enjoyment of nature	6.5500	.45595
Environmental threat	6.2750	.61719
Personal conservation behaviour	6.2250	.37958
Ecocentric concern	6.1500	.84449
Support for interventionist conservation policies	5.7500	.73449
Environmental movement activism	5.5750	.86260
Attitude towards waste	4.9250	1.01664
Confidence in science and technology	3.4500	1.45909
Human dominance over nature	3.2500	1.29269
Conservation motivated by anthropocentric concern	2.6750	1.00361
Human utilisation of nature	2.3500	.85993
Altering nature	2.3500	.67082

The study assessed MLAs' environmental attitudes using mean scores across multiple scales. A 7-point rating system was employed, where higher scores indicated stronger pro-environmental attitudes. For interpretation purposes, mean scores around 5-7 suggest positive environmental attitudes, scores around 4 indicate neutral positions, and scores around 3-1 reflect negative attitudes. To ensure data quality and minimise response bias, the survey statements (detailed in Annexure 1) were randomly ordered during data collection, despite being presented in paired positive-negative groupings in the appendix.

Two key statistical measures were used in the analysis:
1. **Mean scores:**
   Calculated as the arithmetic average of responses, providing a central measure of MLAs' attitudes on each scale
2. **Standard deviation:**
   Used to assess response variability, where smaller values indicate greater consensus among MLAs (responses clustered closer to the mean), while larger values suggest more diverse viewpoints.

This analytical framework allows for a systematic evaluation of MLAs' environmental perspectives across different attitudinal dimensions.

The study reveals a notable dichotomy between MLAs' expressed environmental attitudes and actual policy implementations. MLAs demonstrated strong preservation-oriented environmental attitudes across multiple dimensions, particularly evident in their high scores for "Enjoyment of nature," which suggests a deep emotional connection with the natural environment. This

preservation mindset is further reinforced by elevated scores in "Environmental threat," "Personal conservation behaviour," and "Ecocentric concern," indicating a substantial commitment to environmental protection. Notably, utilisation-oriented attitudes received significantly lower scores, with minimal support for "Human utilisation of nature" and "Altering nature." The low scores for "Conservation motivated by anthropocentric concern" suggest that MLAs value environmental protection intrinsically rather than for human benefit. While MLAs expressed moderate support for environmental activism and strong backing for interventionist conservation policies, their environmental practices showed some inconsistencies, particularly in waste management, where they favoured recycling over reduction and reuse strategies. Their scepticism toward scientific and technological solutions to environmental challenges, evidenced by low confidence scores, aligns with Milfont and Duckitt's (2010) preservation-oriented perspective. However, a significant disconnect emerges between these expressed attitudes and recent policy decisions over developmental projects. The varying standard deviations across categories, particularly regarding confidence in science and technology, indicate diverse viewpoints within the sample. Given the limited number of participating MLAs, these findings warrant careful interpretation, especially considering the apparent gap between stated environmental attitudes and actual policy implementation.

Figure 6: Main source of information on environmental protection
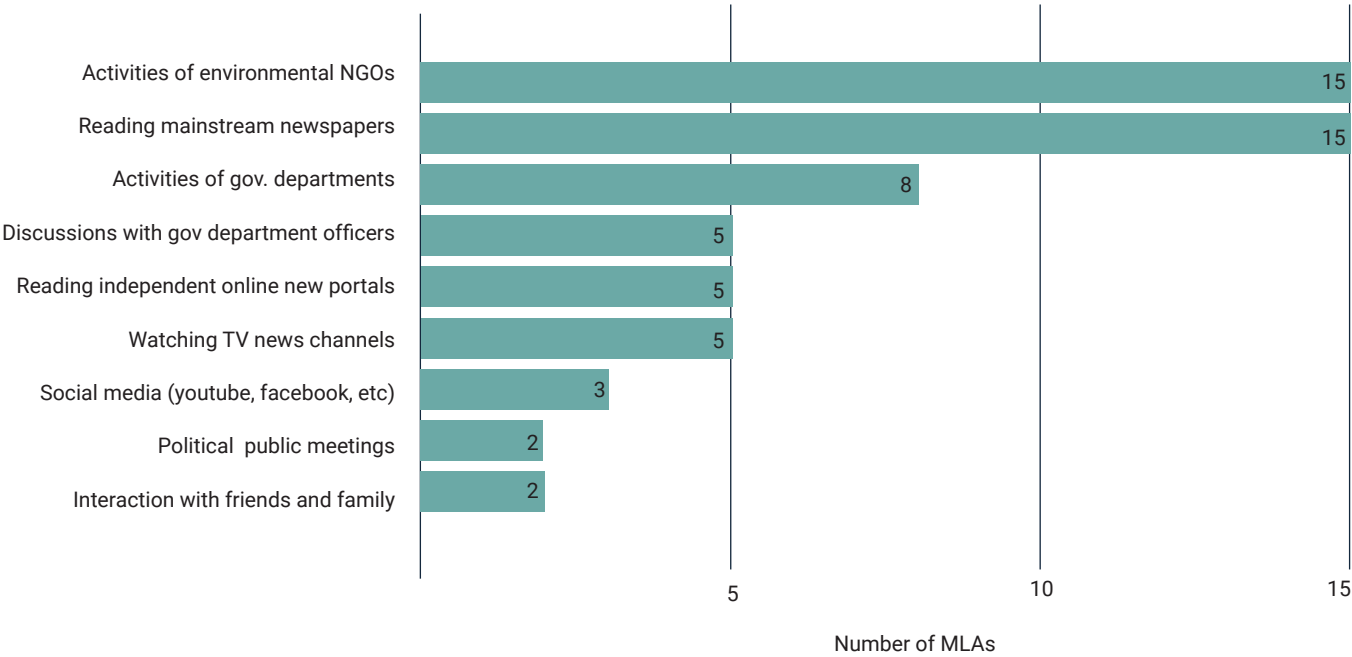
An analysis of MLAs' primary information sources for environmental protection reveals distinct patterns in their information-gathering approaches. Environmental NGOs and mainstream newspapers (including their digital platforms) emerge as the predominant sources, with 15 MLAs each identifying these as their principal channels for environmental information. Government departments rank third, cited by 8 MLAs as a key source. Discussions with government department

officers, independent online news portals, and television news channels share equal prominence, with 5 MLAs each favouring these sources. Social media platforms received markedly less attention, with only 3 MLAs citing them as information sources. Political public meetings and interactions with friends and family proved to be the least consulted channels, with merely 2 MLAs each reporting these as information sources. This distribution suggests a notable absence of environmental protection discussions within political discourse, highlighting a significant gap in translating awareness into ground-level action.

The MLAs' preferred mediums for accessing environmental protection information demonstrate a pronounced inclination towards traditional and institutional sources rather than digital and informal channels. The substantial reliance on environmental NGOs indicates a strong trust in specialist organisations and their expertise, whilst the equivalent preference for mainstream newspapers reflects continued confidence in established media outlets. The notably low utilisation of social media platforms, despite their ubiquitous presence and capacity for real-time information dissemination, proves particularly telling. This pattern suggests a deliberate choice to depend on vetted, professionally curated information rather than potentially unverified social media content. The limited engagement with government departments and officers, despite their official capacity, merits attention, as does the minimal role of public meetings and personal networks in environmental information dissemination. These information-seeking behaviours carry significant implications for how environmental protection initiatives and policies are communicated to and through these legislative representatives, potentially affecting the effectiveness of environmental policy implementation and public engagement.

7

Limitations

The current study, which explores climate literacy and environmental attitudes among MLAs in Tamil Nadu, acknowledges several important methodological limitations. With a sample size of only 20 MLAs, the findings cannot be conclusively generalised to represent the entire legislative assembly. This constraint underscores the preliminary nature of the research.

The study reveals that MLAs' climate literacy is influenced by multiple factors, including educational background, exposure to information through meetings, newspapers, and news media. Critically, the research highlights a significant difference between positive environmental attitudes and actual pro-environmental behaviours. Having a favourable attitude does not automatically translate into meaningful environmental action, which suggests the need for more comprehensive research.

To address the current study's limitations, a more robust approach would involve a longitudinal study that can more effectively track the relationship between environmental attitudes and concrete behavioural changes. This would provide deeper insights into the potential gap between perception and practice among legislators. Moreover, the research acknowledges the potential impact of social-desirability bias, a common challenge in self-reported social science research. Respondents may consciously or unconsciously provide responses they believe will be perceived positively, potentially distorting the actual environmental perspectives and commitments of the MLAs.

These considerations are crucial for a nuanced interpretation of the study's findings. While the research offers valuable initial insights, it also clearly demonstrates the need for more extensive, methodologically refined investigations to develop effective strategies for promoting genuine environmental engagement among people representatives.

8

Recommendations

Based on the study's findings, the following recommendations were made to enhance climate literacy and environmental attitudes among MLAs.

Establishing a single window system for research access to Tamil Nadu MLAs:

Based on the research experience, there is a pressing need to establish a streamlined process for social science research involving Members of the Legislative Assembly (MLAs) in Tamil Nadu. The current system, which requires researchers to individually approach each MLA for study participation, creates significant procedural barriers that limit both the scope and effectiveness of policy-related research. This was evidenced in our study, where despite concentrated efforts, we were only able to secure participation from 20 MLAs, substantially constraining our sample size and potentially affecting the representativeness of our findings.

To address this challenge, we recommend that the Office of the Speaker of the Tamil Nadu Legislative Assembly implement a single-window system for research permissions. This centralised approach would serve multiple purposes: it would standardise the approval process, ensure proper vetting of research proposals, and facilitate more efficient communication between researchers and MLAs. Such a system would not only enhance the quantity and quality of policy-related research but would also create valuable opportunities for evidence-based policymaking. By enabling more comprehensive access to policymakers, this reformed process would generate deeper insights into legislative processes and ultimately contribute to more informed and effective public service delivery.

Educational workshops and seminars:

Based on the study findings, we recommend implementing structured annual workshops to enhance MLAs' understanding of climate science and policy. While current environmental initiatives often focus heavily on tree planting, there is a critical need to broaden awareness of more impactful climate mitigation strategies, including tropical forest restoration, renewable energy adoption, and food waste reduction. The proposed workshops should be designed to address specific knowledge gaps identified in the research. Particular emphasis should be placed on foundational climate science concepts where literacy was found to be low, such as coral bleaching mechanisms and historical CO_2 level patterns. Additionally, the curriculum should introduce and explain key technical terminology that many MLAs are currently unfamiliar with,

including concepts like 'climate overshoot', 'climate security', and 'feedback loops'.

To ensure comprehensive learning outcomes, these workshops should feature interactive sessions led by a diverse panel of experts, including both natural and social scientists as well as policy specialists. This multidisciplinary approach would enable MLAs to better understand not only the scientific aspects of climate change but also its socio-economic implications and potential policy responses. Such enhanced understanding would contribute to more informed legislative decision-making and more effective climate action at the state level.

Specialised training programmes:

We recommend the development of comprehensive training modules designed to bridge the gap between climate science knowledge and practical policy implementation. These modules should be structured to accommodate the diverse educational backgrounds of MLAs whilst maintaining consistent quality and depth of content. Notably, our study revealed that many MLAs primarily encounter climate-related terminology in English, highlighting the crucial need to deliver these programmes in Tamil to ensure optimal understanding and engagement.

The proposed curriculum should incorporate three key elements. Firstly, detailed case studies of successful climate policies from various jurisdictions worldwide, providing concrete examples of effective implementation strategies. Secondly, practical scenario planning exercises to help MLAs understand the implications of different policy choices. Thirdly, evidence-based analyses of the potential consequences of delayed action on climate initiatives, particularly within the Tamil Nadu context.

To maximise accessibility and impact, the training materials should be developed with careful consideration of varying knowledge levels amongst participants. This adaptable approach would ensure that all MLAs, regardless of their prior exposure to climate science, can effectively engage with the material and translate their learning into meaningful policy action. The programme's ultimate aim should be to equip MLAs with the practical tools and knowledge necessary to develop and champion effective climate policies within their constituencies and the broader legislative framework.

Integration into legislative orientation:

We propose incorporating climate change education as an essential component of the initial legislative orientation programme for newly elected MLAs. This proactive approach would establish a strong foundation of climate awareness from the outset of their legislative service. The orientation module should systematically introduce MLAs to climate science fundamentals, regional environmental challenges specific to Tamil Nadu, and the legislative mechanisms available for environmental action. This early exposure would enable MLAs to more effectively participate in climate-related policy discussions and decision-making processes from the beginning of their tenure.

Furthermore, this integration would signal the government's commitment to environmental stewardship while ensuring that all incoming legislators, regardless of their background, begin

their service with a shared baseline understanding of climate challenges and opportunities. This standardised approach would contribute to more informed environmental legislation and policy implementation across constituencies.

Regular updates and briefings:

We recommend establishing a systematic climate information dissemination framework within the legislative assembly through a dedicated climate change committee or task force. This specialised body would be responsible for providing MLAs with consistent, high-quality briefings on critical climate-related developments. The proposed briefing system should deliver regular updates across three key areas: advancements in climate science research, significant shifts in global climate policy and agreements, and documented environmental impacts within Tamil Nadu. These updates would be curated to emphasise developments most relevant to state-level policymaking and legislative action.

To ensure maximum effectiveness, we propose that these briefings be delivered through structured quarterly sessions, supplemented by special briefings when urgent climate-related issues arise. This approach would help MLAs maintain current knowledge of climate developments while avoiding information overload. The briefings would serve as a bridge between scientific understanding and legislative action, enabling more informed environmental decision-making within the assembly. This systematic approach to climate information sharing would strengthen the legislature's capacity to respond effectively to environmental challenges and opportunities, ultimately leading to more robust climate-related legislation and policy implementation.

Diversifying information sources:

While MLAs predominantly rely on NGOs and traditional media, introducing them to credible digital platforms and encouraging the use of social media for verified environmental news could broaden their perspectives and enhance source credibility. Training on identifying reliable information online would also be beneficial. Self-paced online courses offered by the One UN Climate Change Learning Partnership (UN CC:Learn) program could serve as a valuable resource. These courses should be translated into Tamil with the assistance of state universities to ensure accessibility and better understanding.

Public-policy interface:

Create opportunities for MLAs to interact with the public on environmental issues through town halls or digital forums, promoting transparency and accountability in environmental policymaking, which could also improve their engagement with constituencies on these matters.

Overall, these recommendations aim to bridge the gap between theoretical knowledge and practical application, fostering a more informed and proactive legislative body to address climate and environmental challenges.

9

Conclusion

The study on climate literacy and environmental attitudes among Tamil Nadu's MLAs reveals a significant gap in understanding and application of climate science within legislative practices. Despite widespread positive environmental attitudes, particularly regarding preservation, there is a notable disconnect between these attitudes and policy implementation, as evidenced by numerous developmental projects. The research underscores the need for targeted educational interventions, a streamlined approach to research involvement, and regular, relevant information updates to empower MLAs to make informed decisions. Enhancing MLAs' engagement with diverse, credible information sources and fostering public interaction could lead to more effective climate policy and action, ultimately contributing to a more sustainable and climate-resilient Tamil Nadu.
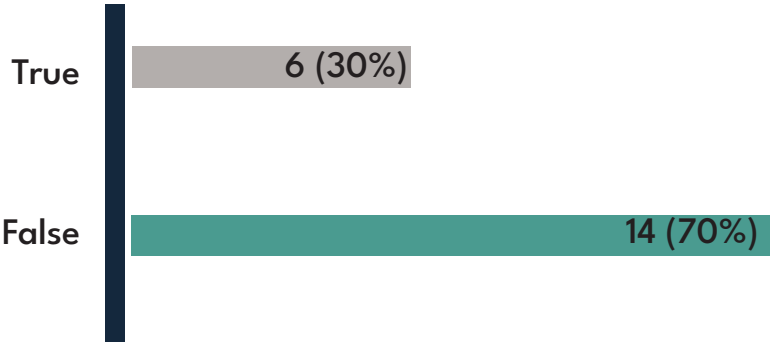
References

Arndt, Derek S., and Daphne S. LaDue. 2008. "Applying Concepts of Adult Education to Improve Weather and Climate Literacy." Physical Geography 29 (6): 487–99. doi:10.2747/0272-3646.29.6.487.

Azevedo, José, and Margarida Marques. 2017. "Climate Literacy: A Systematic Review and Model Integration." International Journal of Global Warming 12 (3/4): 414. doi:10.1504/IJGW.2017.084789.

Banerjee, Bobby, and K McKeage. 1994. "How Green Is My Value: Exploring the Relationship between Environmentalism and Materialism." Advances in Consumer Research, no. 21: 147–52.

Bowler, Rosemarie M., and Ralf Schwarzer. 1991. "Environmental Anxiety: Assessing Emotional Distress and Concerns after Toxin Exposure." Anxiety Research 4 (2): 167–80. doi:10.1080/08917779108248771.

CLEAN. 2018. "Climate Literacy Quiz." Teaching Climate. https://cleanet.org/clean/literacy/climate/quiz.html. Clifford, Maggie, and Martha Monroe. 2018. "Improving Climate Literacy within Extension by Understanding Diverse Climate-Related Informational Needs." Journal of Extension 56 (7). doi:10.34068/joe.56.07.23.

Dunlap, Riley E., Kent D. Van Liere, Angela G. Mertig, and Robert Emmet Jones. 2000. "New Trends in Measuring Environmental Attitudes: Measuring Endorsement of the New Ecological Paradigm: A Revised NEP Scale." Journal of Social Issues 56 (3): 425–42. doi:10.1111/0022-4537.00176.

Harrington, John. 2008. "Misconceptions: Barriers to Improved Climate Literacy." Physical Geography 29 (6): 575–84. doi:10.2747/0272-3646.29.6.575.

Larson, Lincoln R., Gary T. Green, and Steven B. Castleberry. 2011. "Construction and Validation of an Instrument to Measure Environmental Orientations in a Diverse Group of Children." Environment and Behavior 43 (1): 72–89. doi:10.1177/0013916509345212.

Maloney, Michael P., and Michael P. Ward. 1973. "Ecology: Let's Hear from the People: An Objective Scale for the Measurement of Ecological Attitudes and Knowledge." American Psychologist 28 (7): 583–86. doi:10.1037/h0034936.

McCaffrey, Mark S., and Susan M. Buhr. 2008. "Clarifying Climate Confusion: Addressing Systemic Holes, Cognitive Gaps, and Misconceptions Through Climate Literacy." Physical Geography 29 (6): 512–28. doi:10.2747/0272-3646.29.6.512.

Meira-Cartea, Pablo A., José Gutiérrez-Pérez, Mónica Arto-Blanco, and Amor Escoz-Roldán. 2018. "Influence of Academic Education vs. Common Culture on the Climate Literacy of University Students / Formación Académica Frente a Cultura Común En La Alfabetización Climática de Estudiantes Universitarios." Psyecology 9 (3): 301–40. doi:10.1080/21711976.2018.1483569.

Milfont, Taciano L., and John Duckitt. 2010. "The Environmental Attitudes Inventory: A Valid and Reliable Measure to Assess the Structure of Environmental Attitudes." Journal of Environmental Psychology 30 (1): 80–94. doi:10.1016/j.jenvp.2009.09.001.

Pelletier, Luc G., Stéphanie Dion, Kim Tuson, and Isabelle Green-Demers. 1999. "Why Do People Fail to Adopt Environmental Protective Behaviors? Toward a Taxonomy of Environmental Amotivation1." Journal of Applied Social Psychology 29 (12): 2481–2504. doi:10.1111/j.1559-1816.1999.tb00122.x.

Riach, Nils, and Rüdiger Glaser. 2024. "Local Climate Services. Can Municipal Climate Profiles Help Improve Climate Literacy?" Climate Services 34 (April): 100449. doi:10.1016/j.cliser.2024.100449.

Schahn, Joachim, and Erwin Holzer. 1990. "Studies of Individual Environmental Concern: The Role of Knowledge, Gender, and Background Variables." Environment and Behavior 22 (6): 767–86. doi:10.1177/0013916590226003.

Schindler, Fred H. 1999. "Development of the Survey of Environmental Issue Attitudes." The Journal of Environmental Education 30 (3): 12–16. doi:10.1080/00958969909601872.

Shafer, Mark A. 2008. "Climate Literacy and a National Climate Service." Physical Geography 29 (6): 561–74. doi:10.2747/0272-3646.29.6.561.

Showstack, Randy. 2011. "Climate Literacy and Energy Awareness Network Releases Search Widget." Eos, Transactions American Geophysical Union 92 (48): 443–443. doi:10.1029/2011EO480004.

Shwom, Rachael, Cindy Isenhour, Rebecca C Jordan, Aaron M McCright, and Jennifer Meta Robinson. 2017. "Integrating the Social Sciences to Enhance Climate Literacy." Frontiers in Ecology and the Environment 15 (7): 377–84. doi:10.1002/fee.1519.

Weigel, Russell, and Joan Weigel. 1978. "Environmental Concern: The Development of a Measure." Environment and Behavior 10 (1): 3–15. doi:10.1177/0013916578101001.

Appendix 1

Green highlighting indicates the correct answer, while the numbers show how many of the 20 MLAs selected each response option.

Earth's climate has changed naturally in the past, therefore humans are not the cause of global warming

14/20
correct responses

True   6 (30%)

False   14 (70%)

What is the greenhouse effect?

13/20
correct responses

Certain gases in the atmosphere trap heat and warm the Earth   13 (65%)

Life on Earth exhales gas that warms up the atmosphere   0 (0%)

The tilt of the Earth changes the amount of solar energy the Earth receives   0 (0%)

The Sun is putting out more radient energy over time   7 (35%)
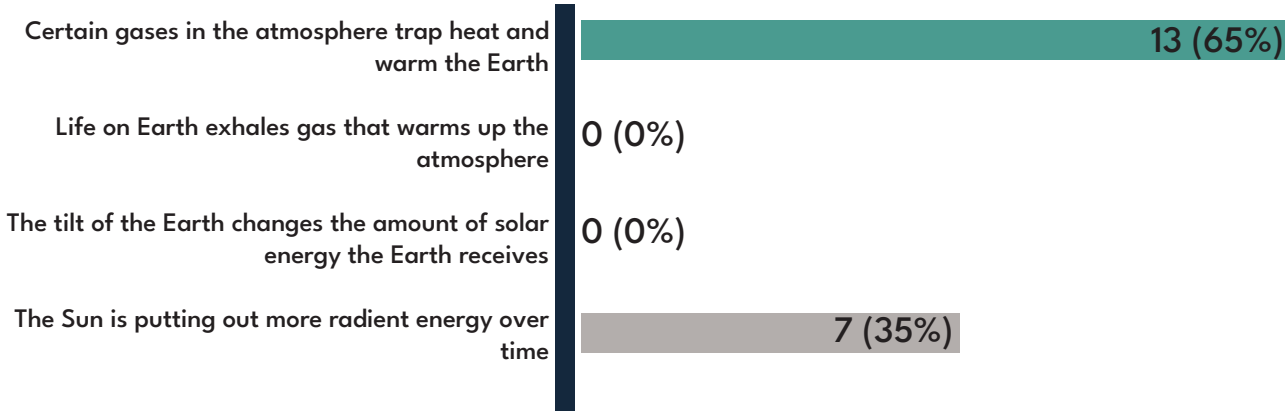
How long does CO2 remain in the atmosphere?

CO2 washes out of the atmosphere seasonally	0 (0%)
CO2 remains in the atmosphere for 5-10 years	7 (35%)
CO2 remains in the atmosphere for up to 200 years or more	13 (65%)
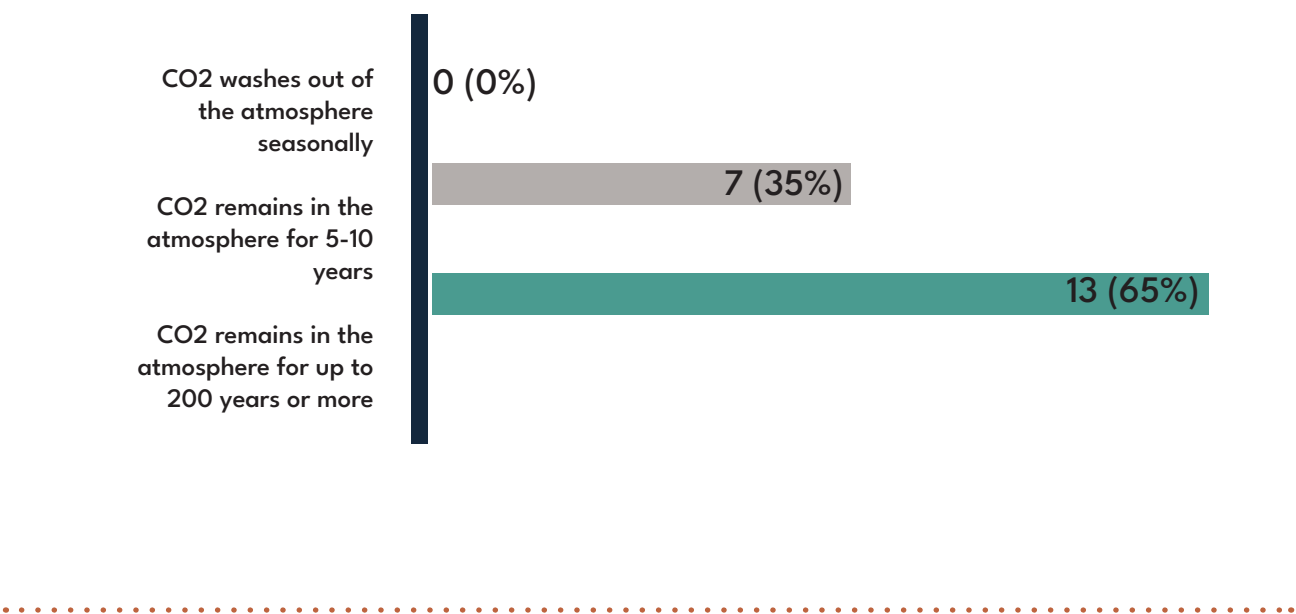
How fast do we need to stop burning fossil fuels to limit global temparature rise to 2 C?

We need to stop burning fossil fuels by 2100	4 (20%)
We need to stop burning fossil fuels by 2040	11 (55%)
Fossil fuels don't matter, the sun will cool so will Earth	0 (0%)
It's already too late to stay below the 2 C threshold	5 (25%)
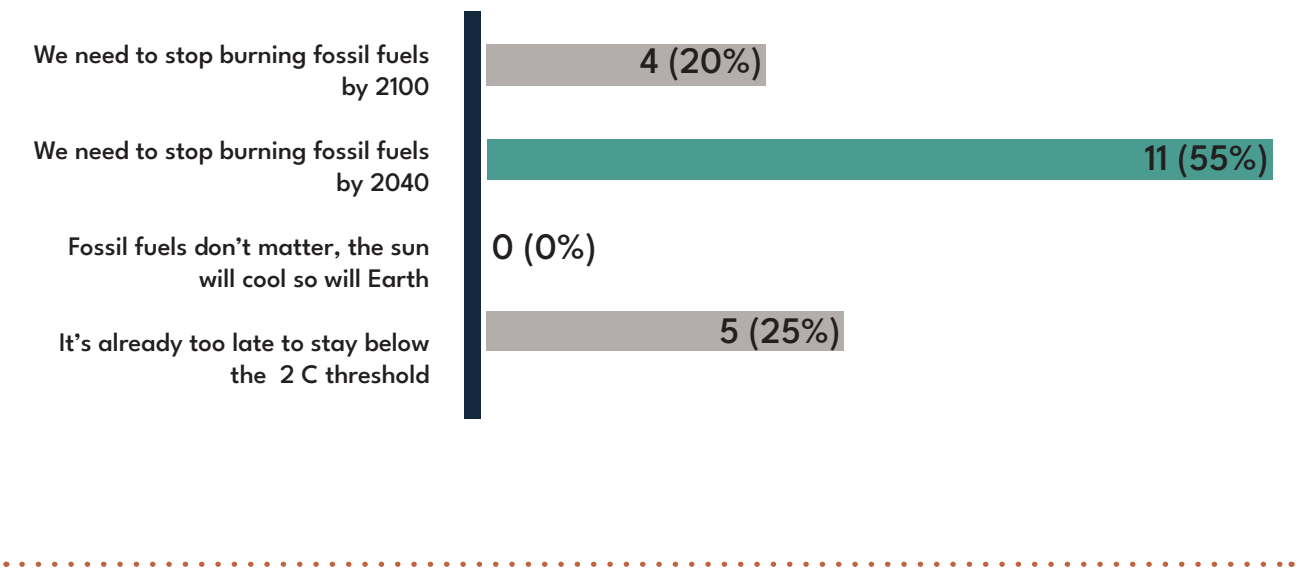
How do we know what greenhouse gas levels and temparatures were like on Earth long ago, before modern instruments existed?

10/20 correct responses

Air bubbles trapped in ice cores provide detailed records of what the atmosphere was like in the past — 0 (0%)

Examining organisms in marine sediments can tell us what the temperature was like in the past — 4 (20%)

Pollen in lake beds shows what plant species have lived there during different times. Different plant populations are associated with different types of climates — 0 (0%)

Glacial moraines show when and where previous episodes of glaciation occurred — 1 (5%)

Tree rings show the history of drought, fire, and other environmental variations — 5 (25%)

All of the above — 10 (50%)

How has the global average temparature changed since the Industrial Revolution?

9/20 correct responses

Cooler by 0.1 ° C — 0 (0%)

Temparature has gone up and done, but remains overall same — 0 (0%)

Warmer by 0.1 ° C — 0 (0%)

Warmer by more than 1 ° C — 9 (45%)

Warmer by almost 2 ° C — 11 (55%)
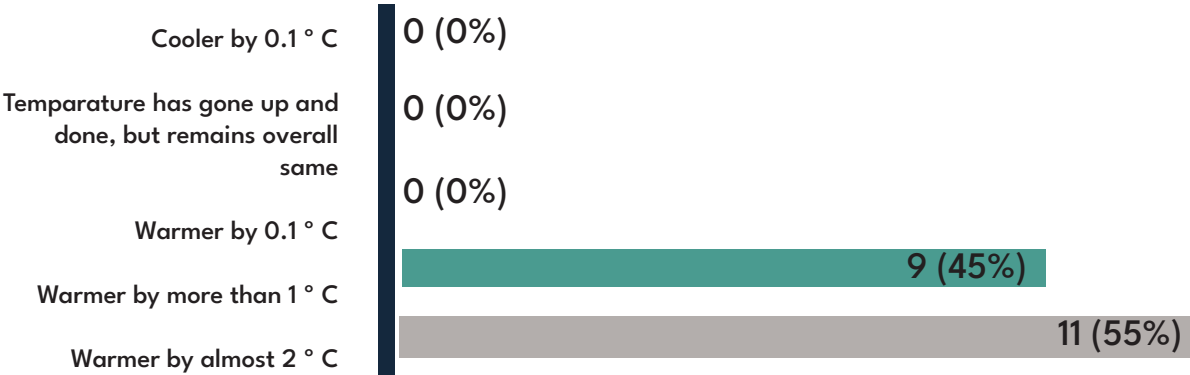
Which country has released the most CO2 overall and is most responsible for the greenhouse gases in the atmosphere today?

China	8 (40%)
USA	9(45%)
Russia	1 (5%)
European Union	1 (5%)
Saudi Arabia	1 (5%)

What is the primary cause of the overall rising trend in the CO2 in the atmosphere?

9/20
correct responses

Increase in CO2 caused by fossil fuel burning	9(45%)
CO2 is increasing because we are coming out of an ice age	5 (25%)
As human population grows, people exhale more CO2	5 (25%)
CO2 released by oceans as they warm	2 (10%)
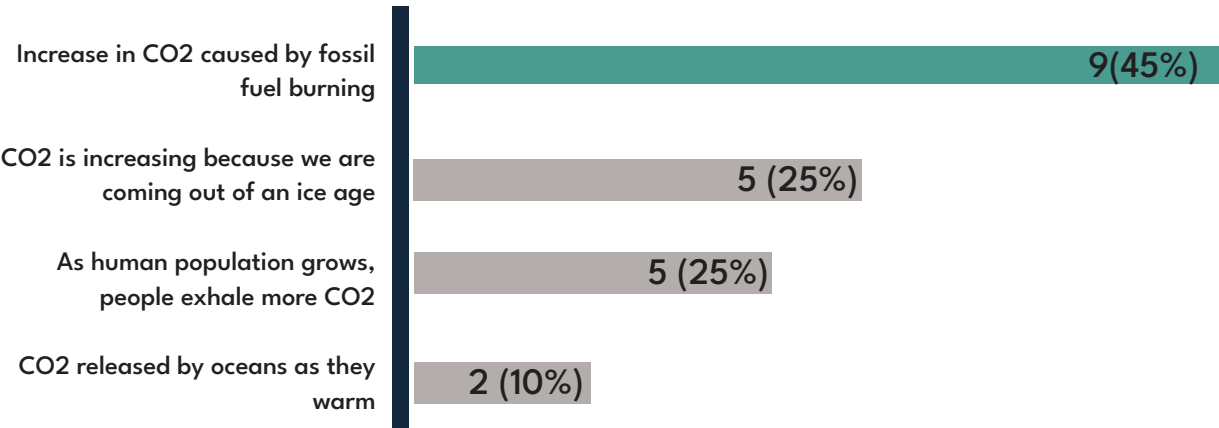
What is the increase in atmospheric CO2 levels since the Industrial Revolution in 1751?

8/20
correct responses

11 percent	4 (20%)
49 percent	8 (40%)
62 percent	8 (40%)
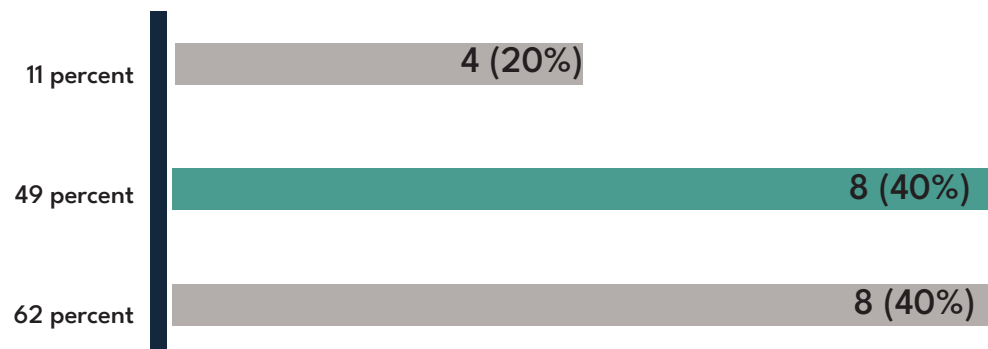
If we stopped burning fossil fuel today, what would happen to the climate?

8/20
correct responses

Increase in CO2 caused by fossil fuel burning	0 (0%)
CO2 is increasing because we are coming out of an ice age	8 (40%)
As human population grows, people exhale more CO2	4 (20%)
CO2 released by oceans as they warm	8 (40%)
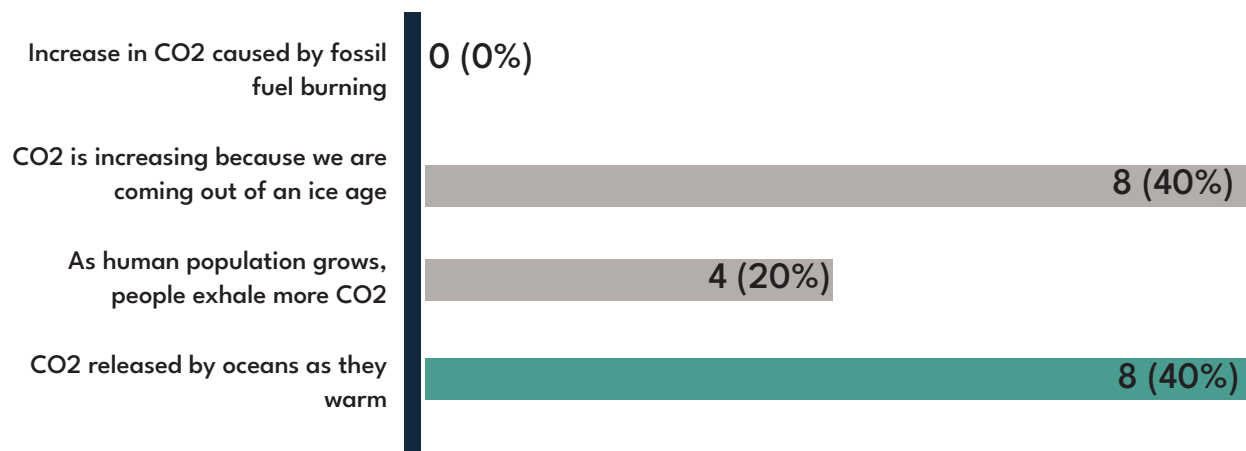
How does the rate of today's warming compare to previous episodes of rapid climate change on Earth?

Today's climate is as fast as previous temparature swings on Earth — 1 (5%)

Past changes have been faster than changes we are seeing today — 12 (60%)

Today, Earth's climate is changing much faster than in the past — 7 (35%)
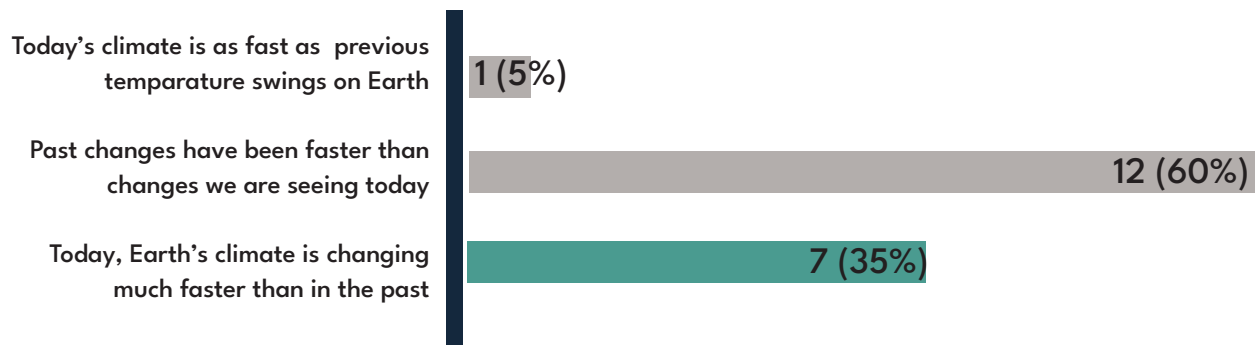
What causes ocean acidification?

7/20
correct responses

CO2 dissolved in coean water — 7 (35%)

Sunscreen in the water — 1 (5%)

Ocean pollution — 9 (45%)

Warm water — 2 (10%)

Sediment stirred up by extreme storms — 1 (5%)
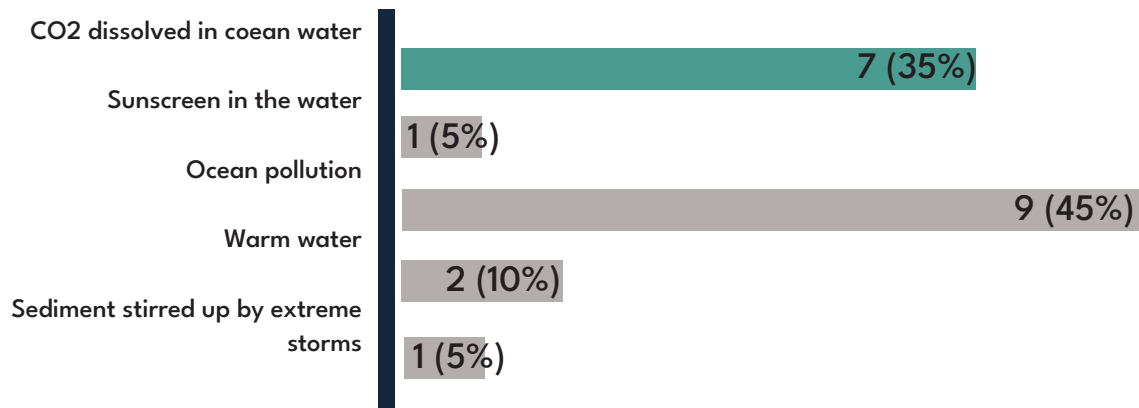
What is the leading cause of coral bleaching?

5/20
correct responses

CO2 dissolved in ocean water	13 (65%)
Sunscreen in the water	1 (5%)
Ocean pollution	1 (5%)
Warm water	5 (25%)
Sediment stirred up by extreme storms	0 (0%)
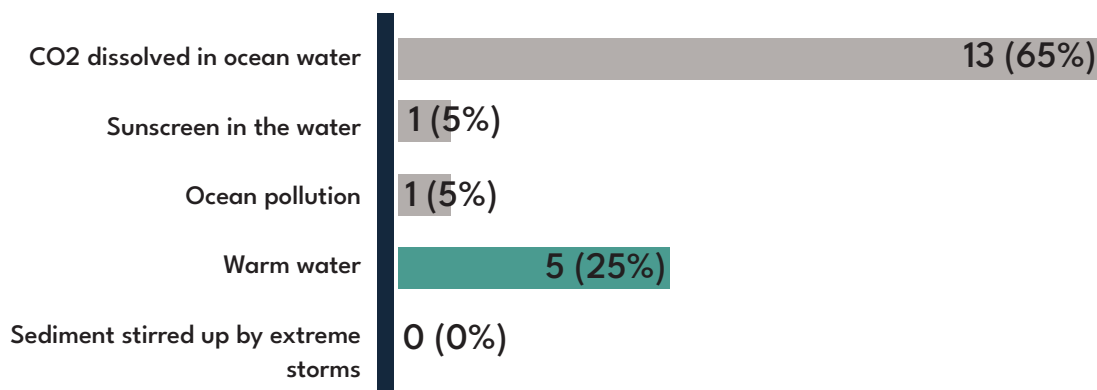
If the greenhouse effect is natural, then why is today's climate change a bad thing?

4/20
correct responses

A small increase in greenhouse gas concentration can have a large effect of increased warming	0 (0%)
Humans have altered a natural process and exaggerated change that might normally occur over millions of years	4 (20%)
Once released into the atmosphere, greenhouse gases remain potent for many years, making it difficult to reverse the process	7 (35%)
Abrupt changes to the climate system may have unintended outcomes that may pose challenges for societies, like more extreme weather, spread of diseases, a decline in marine life, or an alteration of ocean circulation patterns	5 (25%)
All of the above	4 (20%)

When was the last time in Earth's history that CO2 was as high as it is now?

This is the highest it's ever been	8 (40%)
CO2 was at least as high during the warm period between ice ages	6 (30%)
CO2 has not been this high in almost one million years	2 (10%)
The last time CO2 was this high was 3 million years ago	4 (20%)
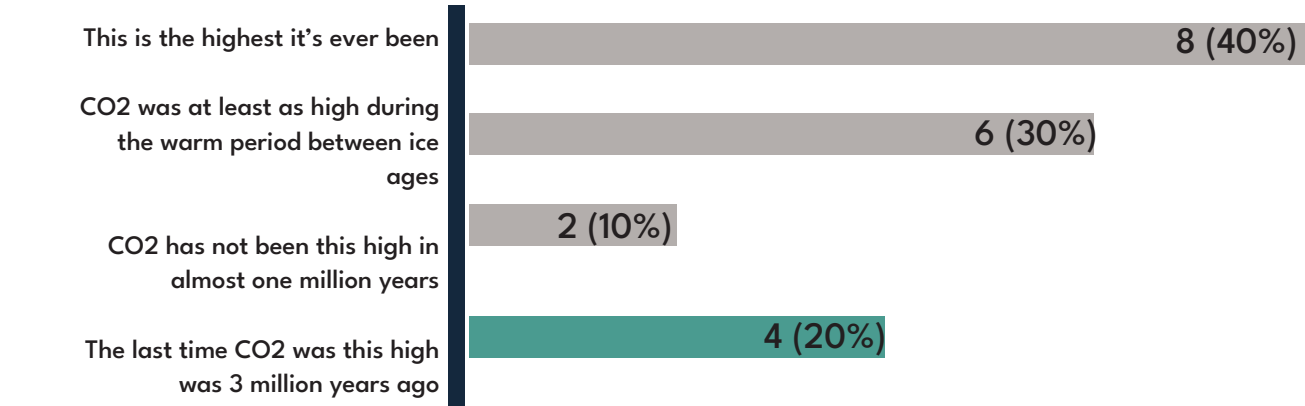
What proportion of climate scientists has concluded that humans are the primary driver of today's global warming?

4/20
correct responses

34 %	2 (10%)
59%	4 (20%)
76%	10 (50%)
97% or more	4 (20%)
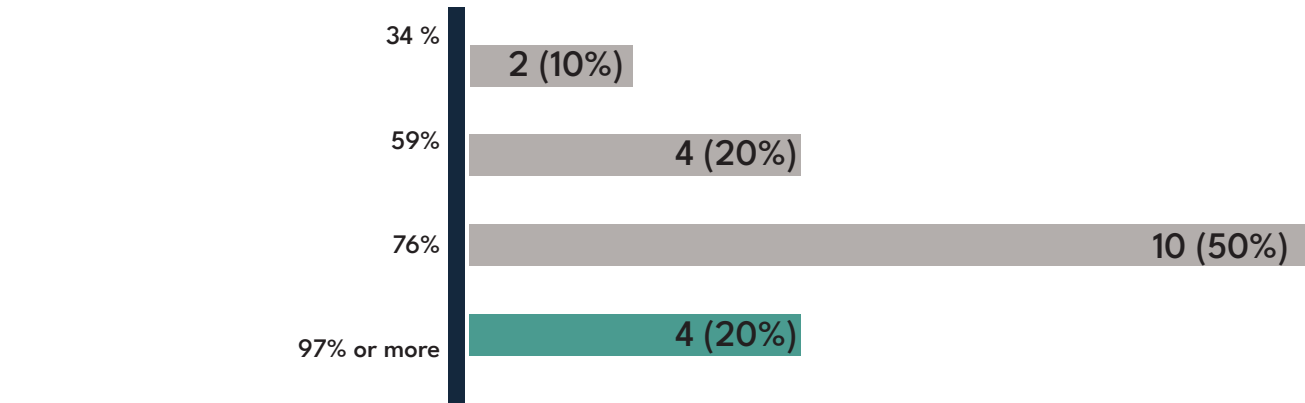
What would the climate be like today if there were no human-caused greenhouse gas emissions?

Slight warming	12 (60%)
Strong warming	4 (20%)
No change	1 (5%)
Slight cooling	3 (15%)
Strong cooling	0 (0%)
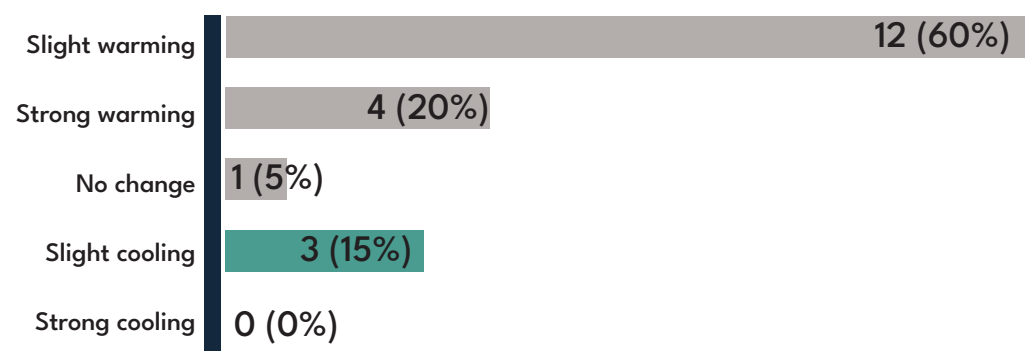
Which activities are the largest contributors of greenhouse gases? (select top two)

Deforestation	13 (65%)
Electricity generation	6 (30%)
Industry	13 (65%)
Transportation	10 (50%)
Landfills	0 (0%)
Agriculture	1 (5%)
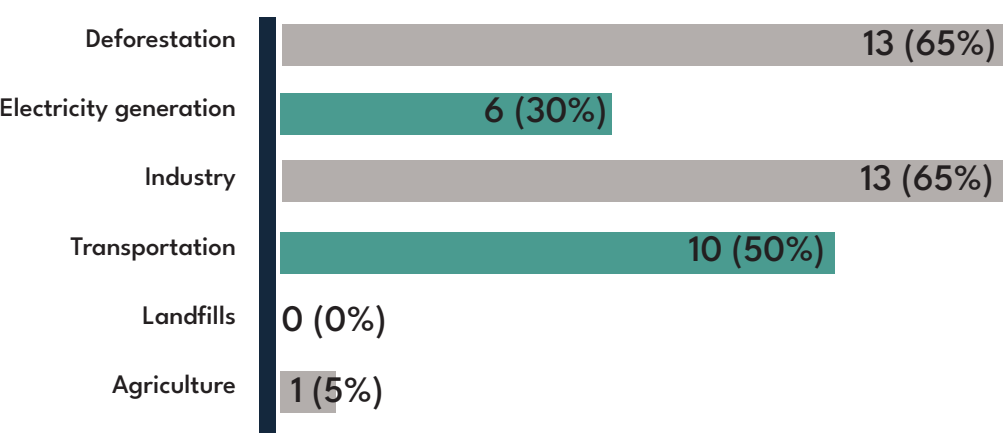
What are the major causes of sea level rise? (select top two)

Category	Value
Melting sea ice	15 (75%)
Melting glaciers and ice sheets	18 (90%)
Rivers accelerating	7(35%)
Seawater expanding as it gets warmer	2 (10%)
Rocks and soil washing into the sea	1 (5%)
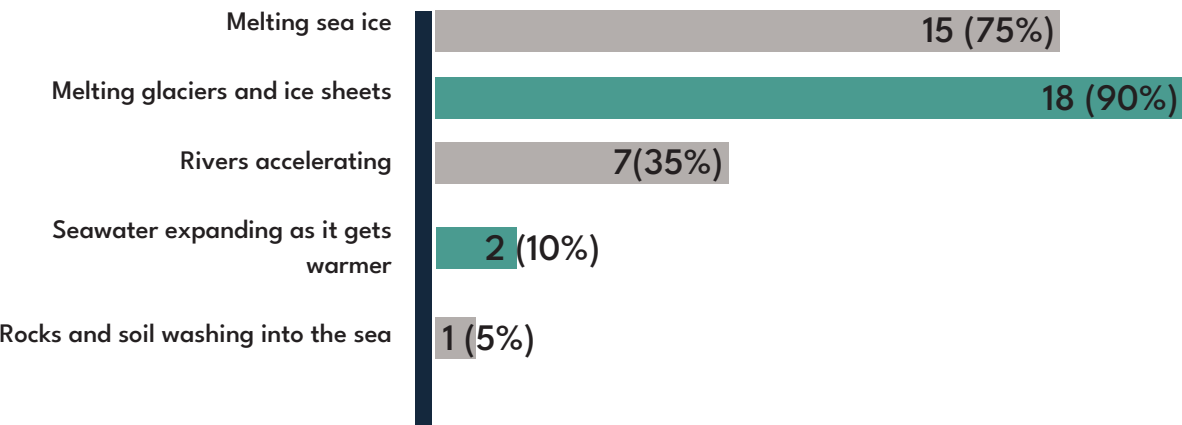
Which actions will have the biggest impact on reducing climate change? (select top four)

Category	Value
Household and industrial	14 (70%)
Cleaning up ocean pollution	13 (65%)
Planting trees	19 (95%)
Wasting less food	4 (20%)
Large-scale solar farms	11 (55%)
Carpooling	2 (10%)
Restoring tropical forests	12 (60%)
Onshore wind turbines	1 (5%)
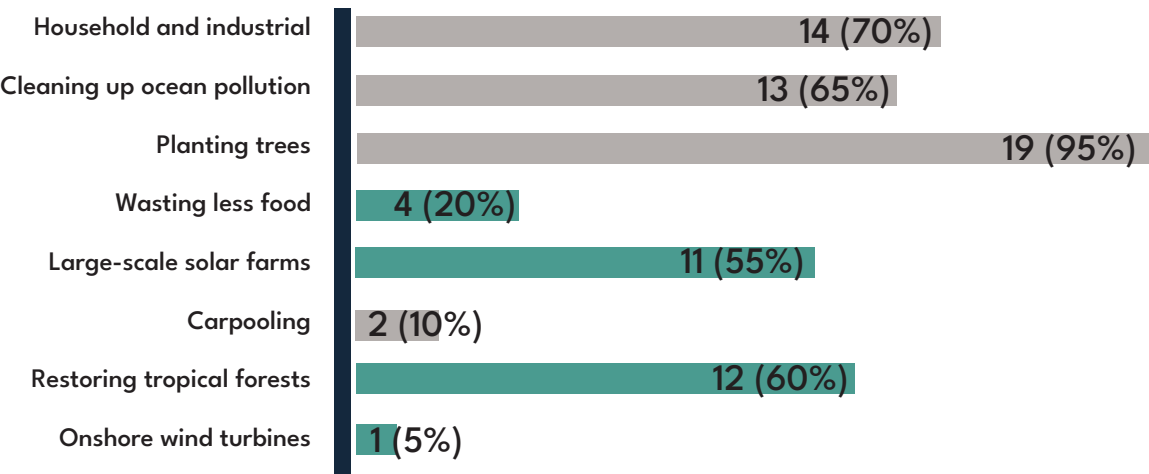
Appendix 2

Terms	I have not heard of it	I have heard of it, but I don't know what it means	I have heard of it and I know what it means
Greenhouse gas emissions	1	3	16
Paris Agreement	2	2	16
Renewable energy	2	2	16
Climate crisis	2	5	13
Climate smart village	1	7	12
COP	2	6	12
Net zero	1	7	12
Resilient cities and villages	4	5	11
Decarbonisation	3	7	10
IPCC	6	6	8
Mitigation	3	9	8
Adaptation	7	7	6
Carbon footprint	8	6	6
Global warming vs. Climate change	2	12	6
Weather vs. Climate	3	11	6
Indigenous knowledge	9	6	5
Reforestation vs. Afforestation	2	13	5
Climate justice	7	9	4
Nature-based solutions	10	6	4

Climate finance	8	9	3
Eco-restoration	9	8	3
Rewilding	7	10	3
Bioshield	15	3	2
Carbon removal vs. Carbon capture	5	13	2
Circular economy	9	9	2
Tipping point	14	4	2
Urban heat island	7	11	2
Carbon markets	13	6	1
Greenhouse gas (GHG) inventory	15	4	1
Greenwashing	13	6	1
National Adaptation Plans	19	0	1
Wet bulb temperature	6	13	1
Carbon sink	9	11	0
Climate overshoot	20	0	0
Climate security	18	2	0
Feedback loop	18	2	0
Green jobs	5	15	0
Just transition	13	7	0
Loss and damage fund	15	5	0
Nationally Determined Contributions	18	2	0

Annexure 1

CAG survey on environmental attitudes among policymakers in Tamil Nadu

Section 1

This section of the survey contains twelve specific scales designed to measure your attitude towards the environment. Your responses will be recorded on a seven-point scale, ranging from "Strongly Disagree" to "Strongly Agree". The seven-point scale is abbreviated as follows: Strongly Disagree (SD); Disagree (D); Somewhat Disagree (SMD); Neither Agree nor Disagree (N); Somewhat Agree (SMA); Agree (A); Strongly Agree (SA). Please read each statement carefully and tick one box in each row that best reflects your opinion. Thank you for your participation!

Statement	SD	D	SMD	N	SMA	A	SA
I really like going on trips into the countryside, for example to forests or fields							
I think spending time in nature is boring							
Governments should control the rate at which raw materials are used to ensure that they last as long as possible							
I am opposed to governments controlling and regulating the way raw materials are used in order to try and make them last longer							
I would like to join and actively participate in an environmentalist group							
I would NOT get involved in an environmentalist organisation							
One of the most important reasons to keep lakes and rivers clean is so that people have a place to enjoy their leisure							
We need to keep rivers and lakes clean in order to protect the environment, and NOT as places for people to enjoy their leisure							
Modern science will NOT be able to solve our environmental problems							
Modern science will solve our environmental problems							
Humans are severely abusing the environment							
I do not believe that the environment has been severely exploited by humans							
I'd prefer a garden that is wild and natural to a well-groomed and ordered one							
I'd much prefer a garden that is well groomed and ordered to a wild and natural one							
I am NOT the kind of person who makes efforts to conserve natural resources							
Whenever possible, I try to save natural resources							

Human beings were created or evolved to dominate the rest of nature							
I DO NOT believe humans were created or evolved to dominate the rest of nature							
Protecting peoples' jobs is more important than protecting the environment							
Protecting the environment is more important than protecting peoples' jobs							
It makes me sad to see forests cleared for developmental activities							
It does NOT make me sad to see natural environments destroyed							
I don't view single-use plastics as a significant environmental problem							
I prefer recycling over reducing and reusing							

Section 2

This section aims to gather information about your profile for the analysis of your environmental attitude. The information collected will not reveal your personal identity, so please feel free to share the requested information. Please tick one box in each row.

1.	Age	
2.	Gender	Female
		Male
		Others
3.	Highest Educational qualification	No formal education
		Primary
		Elementary
		SSLC
		Diploma
		HSC
		UG Degree
		PG Degree
		PhD
4.	Term as a Member of the Legislative Assembly	

5.	What is your main source of information on environmental protection?	1. Discussions in legislative assembly	8.Interaction with friends and family
		2. Activities of environmental NGOs	9.Reading mainstream newspapers (including e-newspapers and its websites)
		3. Activities of government departments	10. Reading independent online news portals
		4. Political public meetings	11. Listening to radio
		5. Discussions with government department officers	12. Using social media (YouTube, Facebook, etc.)
		6. Documentaries on OTT (Netflix, Prime Video, etc.)	13. Watching TV News channels
		7. During World Environment Day celebrations every June 5	14. Others, specify:
6.	Native Place	Rural	
		Urban	
7.	Current place of residence	Rural	
		Urban	