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CLIMATE CHANGE AND ITS IMPACT ON SUSTAINABILITY

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ABSTRACT

Climate change is a long-term alteration of the Earth's climate system and worldwide weather patterns that is frequently related to human activities like the combustion of fossil fuels and deforestation. Increased sea levels, melting ice caps, and more frequent and severe weather events like hurricanes, floods, and droughts are all results of this transition. The effects of climate change are widespread and have a big impact on natural ecosystems, the global economy, and human health. Our energy, transportation, and land-use policies will need to alter significantly in order to mitigate climate change. Policies and investments that support sustainable and low-carbon technology will also be necessary. Climate change has the ability to cause significant environmental, social, and economic impacts. This paper gives an overview of the causes and effects of climate change and examines potential mitigation strategies. Climate change is a pressing issue with far-reaching implications for individuals, businesses, and policymakers. Climate change has caused a statistically defined change in the climate system, which includes global temperatures, sea level rise, and extreme weather events. It is critical to prioritize sustainability in the coming business situation in order to meet the challenges of climate change. Human activity is one of the most significant contributors to climate change. Climate change is influenced by factors such as deforestation, the use of fossil fuels, and industrial processes. Several solutions have been developed to prevent or slow climate change. Among them is the transition to renewable energy sources, carbon pricing, and investments in sustainable agriculture and forestry practices. To summarise, climate change is a global threat that jeopardizes the sustainability of many industries worldwide. Prioritizing sustainability is crucial, as are actions to cut greenhouse gas emissions and lessen the consequences of climate change by switching to renewable energy sources.

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INTRODUCTION

There are numerous and severe effects of climate change on sustainability. Agriculture, water resources, and biodiversity are negatively impacted by increasing global temperatures and extreme weather conditions like heatwaves, droughts, and floods. In addition to displacing people and destroying infrastructure and ecosystems in coastal areas, sea level rise is a major problem. Also, vulnerable groups including women, indigenous peoples, and low-income communities are disproportionately affected by climate change. Using sustainable methods that lower greenhouse gas emissions and foster resilience are crucial to addressing how climate change affects sustainability. This entails switching to renewable energy, enhancing energy efficiency, cutting waste, encouraging sustainable forestry and agricultural practices, and creating infrastructure that is climate resilient. The essential importance of climate change as well as its dangers are briefly discussed in this paper.

Climate change is one of the most substantial disasters of our time, and it is happening far quicker than we thought. But, despite this global threat, we are far from being helpless. Climate change, a key issue of our time, has a significant negative impact on both the environment and our civilizations. Using sustainable methods that lower greenhouse gas emissions and foster resilience is crucial to addressing how climate change affects sustainability. This entails switching to renewable energy, enhancing energy efficiency, cutting waste, encouraging sustainable forestry and agricultural practices, and creating infrastructure that is climate resilient. However, putting in place laws that reward sustainable behaviour and spending money on research and development of low-carbon technologies can aid in hastening the transition to a more robust and sustainable future. Water resources, agriculture, health, energy, and ecosystems are just a few of the areas where climate change is having an impact on sustainability.

For instance, when temperatures rise, droughts and water scarcity are anticipated to occur more frequently and be more severe, which would harm agriculture and food production. Moreover, catastrophic weather conditions and rising Agriculture, health, energy, and ecosystems are just a few of the areas where climate change is having an impact on sustainability. The consequences of climate change are unparalleled in their severity; they range from changing weather patterns that threaten food production to rising sea levels that increase the likelihood of a cataclysm. For instance, it is predicted that as temperatures rise, droughts and water shortages will become more frequent and severe, harming agriculture and food production.

Need for the study: Long-term climate change is primarily caused by rising levels of greenhouse gases in the atmosphere. Carbon dioxide is the most significant greenhouse gas. Climate change has a significant impact on the sustainability of the planet, affecting the environment, economy, and society. The environment is one of the most significant effects of climate change on sustainability. Rising temperatures, melting glaciers and sea ice, and more frequent and severe weather events such as hurricanes, floods, and droughts have all resulted from climate change. These changes have aided in the loss of biodiversity, the extinction of species, and the degradation of ecosystems. Climate change is a real thing. rising sea levels, which pose a threat to low-lying regions and small island states. Climate change is also affecting the economy. Climate change is causing increased costs, decreased productivity, and significant economic losses in a variety of industries, including agriculture, fisheries, and tourism. Extreme weather can damage infrastructure, disrupt supply chains, and cause power outages, all of which can have serious economic consequences. To address the effects of climate change on sustainability, significant efforts to reduce greenhouse gas emissions and transition to a low-carbon economy are required. This includes switching to renewable energy, increasing energy efficiency, and enacting policies and regulations that promote environmentally friendly practices. Addressing climate change is critical to ensuring the planet's, its inhabitants, and its ecosystems' long-term viability.

Formulation of the problem: Climate change is one of the most pressing issues of our time, and its implications for sustainability research are significant. Sustainability research seeks to comprehend the interactions of social, economic, and environmental systems in order to identify strategies for promoting long-term development. The effects of climate change, on the other hand, are changing the way we think about sustainability and leading to new approaches to research formulation the most severe effects of climate change and adapt to the changes that are already taking place. This sense of urgency is fuelling a new wave of sustainability research aimed at identifying practical solutions that can be put into action quickly. This realisation is prompting new approaches to sustainability research that emphasise the importance of understanding and addressing these interconnected systems. Climate change is also changing the types of research questions that sustainability researchers are asking. Previously, sustainability research focused on identifying the drivers of unsustainable practises and ways to promote more sustainable behaviors. However, climate change is highlighting the importance of addressing the root causes of unsustainable behavior, such as overconsumption, inequality, and unsustainable economic systems. This raises new research questions about how to transform these systems to promote sustainability and mitigate the effects of climate change. This realisation is prompting new approaches to sustainability research that emphasize the importance of comprehending and addressing these interconnected systems. They are also employing interdisciplinary approaches to address complex sustainability challenges, bringing together experts from a variety of disciplines such as ecology, economics, and sociology. The formulation of sustainability research questions, methods, and strategies aimed at promoting sustainable development. Sustainability research is interdisciplinary, drawing on a variety of disciplines such as ecology, economics, social sciences, and engineering. The first step in developing sustainability research is to identify research questions.

Climate change, biodiversity loss, and resource depletion are examples of key sustainability challenges that should be addressed in these questions. They should also be concerned with identifying practical solutions that can be put in place to promote long-term development. Researchers must choose appropriate research methods after identifying research questions. The use of quantitative and qualitative research methods, such as surveys, interviews, case studies, and modelling, is common in sustainability research. Researchers must choose methods that are appropriate for the research questions they are addressing. Sustainability research also includes the creation of strategies to promote long-term development. Policy recommendations, technological innovations, and behavioural changes are all examples of these strategies. Researchers must evaluate the feasibility and effectiveness of various strategies in order to identify those that are most likely to promote long-term development. In addition to these fundamental steps, the formulation of sustainability research requires collaboration with stakeholders. Government agencies, non-governmental organisations, industry representatives, and local communities. Engaging with stakeholders can assist researchers in identifying key sustainability challenges and developing strategies tailored to the specific context, the formulation of sustainability research should include an assessment of the research's ethical implications. Researchers must consider the potential social and environmental impacts of sustainability research. Finally, climate change is having a significant impact on the formulation of sustainability research. It is altering our perspectives on sustainability, the questions we ask, and the methods we employ. Climate change is driving a new wave of sustainability research that is focused on identifying practical solutions that can be implemented by highlighting the urgency of the problem, demonstrating the interconnectedness of social, economic, and environmental systems, and emphasising the need to address the root causes of unsustainability.

Objectives of the study: Climate change can have an impact on a region's economic sustainability by causing infrastructure damage and disrupting supply chains. Floods, droughts, and hurricanes, for example, can raise the cost of doing business and running a government. Furthermore, the long lasting effects of climate change on agriculture, forestry, and fisheries can lower economic productivity and growth. Climate change can have serious social consequences, particularly for vulnerable populations. Economic refugees as a result of rise in sea levels, droughts, and other climate-related events can spark conflict and exacerbate social inequality. Climate change can also affect access to basic necessities such as food and water, threatening social sustainability. Climate change has a significant impact on the sustainability of the environment. by affecting ecosystems, biodiversity, and environmental sustainability. Temperature, precipitation, and other climatic variables can all contribute to the extinction of species and the degradation of habitats. Furthermore, climate change can have an impact on the availability and quality of water resources, which are critical for maintaining ecological balance. As a result, any study aiming to achieve sustainability goals must consider the impact of climate change and include strategies to mitigate its negative effects. This could include using renewable energy, practising sustainable land use, and building climate-resilient infrastructure. Climate change has serious implications for sustainability. The study's sustainability goals are to identify strategies and practises that promote long-term development, which includes economic growth, social progress, and environmental protection. Climate change, on the other hand, poses a significant challenge to achieving these goals, necessitating a rethinking of sustainability research and practise. One of the most significant effects of climate change on sustainability is that it has highlighted the problem's urgency. Climate change is already having major environmental and social consequences, such as rising sea levels, extreme weather events, and biodiversity loss. As a result, there is a growing awareness that we must act quickly to mitigate the worst effects of climate change and adapt to the changes that are already taking place. This sense of urgency is fueling a new wave of sustainability research aimed at identifying practical solutions that can be put into action quickly.

Climate change is also changing the way we think about study objectives for sustainability. Traditionally, the goals of sustainability research have been to promote economic growth, social progress, and environmental protection. However, the effects of climate change show that these goals are inextricably linked. Climate change, for example, can have significant social and economic consequences, such as food insecurity, displacement, and economic instability. This realisation is resulting in new approaches to studying sustainability objectives that emphasise the importance of understanding and addressing these interconnected systems. Another effect of climate change on sustainability objectives is that it alters the types of research questions that sustainability researchers ask. Previously, sustainability research concentrated on comprehending Climate change is also altering our understanding of sustainability objectives, the drivers of unsustainable practises, and how to promote more sustainable behaviours. Climate change, on the other hand, emphasises the importance of addressing the root causes of unsustainable behaviour, such as overconsumption, inequality, and unsustainable economic systems. This raises new research questions about how to transform these systems in order to promote sustainability and mitigate the effects of climate change. Finally, climate change is driving new sustainability goals for research methods and approaches. For example, to understand the complex interactions between economic, social, and environmental systems and to identify the most effective strategies for promoting sustainability, researchers are increasingly using modelling and simulation tools. They are also employing interdisciplinary approaches to address complex sustainability challenges, bringing together experts from a variety of disciplines such as ecology, economics, and sociology.

Finally, climate change is having a significant impact on the study's sustainability objectives. It is altering our perspectives on sustainability, the questions we ask, and the methods we employ. By emphasising the problem's urgency, demonstrating the interdependence of economic, social, and environmental systems, and Climate change is driving a new wave of sustainability research that is focused on identifying practical solutions that can be implemented quickly to promote sustainability and mitigate the effects of climate change, emphasising the need to address the root causes of unsustainability.

REVIEW OF LITERATURE

Literature Review: Over the last several decades, climate change has been the subject of extensive research, and the impact of climate change on sustainability has been extensively studied. Here is a brief review of the literature on some of the key findings on this topic:

Climate change is causing significant environmental changes, such as rising temperatures, sea level rise, melting glaciers and sea ice, and more frequent and severe weather events. These changes are resulting in biodiversity loss, ecosystem degradation, and species extinction. Climate change is having a significant impact on the global economy, and costs are expected to rise in the coming years. Floods and hurricanes, for example, are causing infrastructure damage, supply chain disruptions, and power outages, all of which can have serious economic consequences. Failure to address climate change could cost the global economy a significant amount of money. Climate change has a wide-ranging impact on human societies, particularly vulnerable populations. Extreme weather events and sea-level rise are causing people to be displaced and migrate, which can exacerbate social inequalities. According to a World Bank study, climate change could push an additional. Mitigation of climate change necessitates considerable efforts to cut greenhouse gas emissions and transition to a low-carbon economy. Enacting rules and regulations that encourage ecologically friendly practises, boosting energy efficiency, and moving to renewable energy sources are all part of this. Finally, research shows that climate change has a huge impact on sustainability, affecting the environment, economy, and society as a whole. Significant efforts must be undertaken to reduce greenhouse gas emissions and transition to a low-carbon economy in order to address climate change.

The issue's urgency emphasises the necessity for immediate action to maintain the long-term viability of the planet and its population.

Summary of review

Climate change is a long-term alteration in the Earth's climate, primarily caused by the increasing concentrations of greenhouse gases in the atmosphere. Climate change has had a significant impact on sustainability, affecting the environment, economy, and society. Climate change is having a substantial influence on the global economy, with expenses rising in the coming years. Severe weather events can damage infrastructure, disrupt supply chains, and cause power outages, all of which can have serious economic effects. Climate change is having a wide-ranging impact on human societies, particularly vulnerable populations. Severe weather events and sea-level rise are causing people to be displaced and migrate, which can worsen social inequality. Tackling climate change necessitates considerable efforts to cut greenhouse gas emissions and transition to a low-carbon economy. In conclusion, climate change has a significant impact on sustainability, and addressing it requires immediate action to ensure a sustainable future for the planet and its inhabitants.

Research gap: As a major global issue, climate change has a big impact on reaching sustainability goals. There is still a huge study vacuum in understanding the connection between climate change and sustainability, despite increased awareness of the significance of sustainability and the effects of climate change. In this section, we'll look at the research gaps surrounding sustainability and climate change and talk about potential directions for further investigation. Lack of a thorough grasp of how climate change affects sustainability is one of the major research gaps in this area. Although the damaging effects of climate change on the environment, society, and economy are well documented, much remains to be discovered about the intricate relationships between sustainability and climate change. Research is required, for instance, on how climate change affects many facets of sustainability, such as economic, social, and environmental sustainability, and how these consequences fluctuate across various contexts and geographical locations..

Another research gap is the limited understanding of the effectiveness of different policy measures to address climate change and achieve sustainability goals. There is a need for research that evaluates the effectiveness of policy measures such as carbon pricing, renewable energy incentives, and green infrastructure investments. This research should consider the economic, social, and environmental impacts of these policies, as well as the factors that influence their adoption and implementation. While there is growing recognition of the importance of social sustainability, there is still a limited understanding of how climate change affects social sustainability and how social sustainability can be incorporated into climate change policies and practices. For example, there is a need for research that explores the impact of climate change on vulnerable populations and marginalized communities, and how social sustainability can be promoted through community-based approaches to climate change adaptation and reduction. In addition, there is a research gap related to the role of businesses and corporations in promoting sustainability and addressing climate change. While many companies have made commitments to reduce their carbon footprint and adopt sustainable practices, there is still a limited understanding of the effectiveness of these efforts and the factors that influence corporate sustainability practices. There is a need for research that examines the impact of corporate sustainability practices on climate change and sustainability outcomes, as well as the barriers to and drivers of corporate sustainability. Finally, there is a need for interdisciplinary research that bridges the gap between the natural sciences, social sciences, and humanities to address climate change and sustainability. Climate change is a complex and multifaceted issue that requires a holistic approach to research and policy development. There is a need for interdisciplinary research that integrates natural and social science perspectives to address the complex interactions between climate change and sustainability, and to develop policies and practices that promote sustainability in the face of climate change.

In conclusion, climate change has a significant impact on sustainability objectives, and there is a significant research gap in understanding the relationship between climate change and sustainability.

To address this research gap, there is a need for research that examines the impact of climate change on different aspects of sustainability, evaluates the effectiveness of policy measures to address climate change and achieve sustainability goals, explores the social dimensions of climate change and sustainability, examines the role of businesses and corporations in promoting sustainability, and promotes interdisciplinary research that integrates natural and social science perspectives to address climate change and sustainability. By addressing these research gaps, we can develop a more comprehensive understanding of the relationship between climate change and sustainability, and develop policies and practices that promote sustainability in the face of climate change.

Methodology of the study

Research objective: The research objective of climate change and its impact on sustainability is to understand how human activities, such as the burning of fossil fuels, deforestation, and industrialization, are affecting the Earth's climate system and the implications of these changes for social, economic, and environmental sustainability.

Research Questions

- 1-How important do you consider sustainability to be in your personal life?
- 2-How often do you consider sustainability when making purchasing decisions?
- 3-How optimistic are you about the ability to achieve a sustainable future?
- 4-How willing are you to pay extra for sustainable products or services?
- 5-How knowledgeable do you feel about the causes and consequences of climate change?
- 6-Do you believe that climate change is primarily caused by human activity?
- 7-How important do you think it is for education systems to prioritize educating students about the impact of climate change on sustainability?
- 8-How much do you trust the information and messaging around climate change from government and media sources?

Research approach: Data for this study is a result of an online survey, we asked participants regarding climate change and sustainability and how important they think it is.

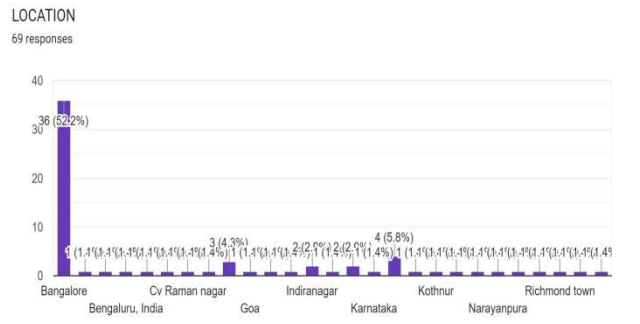
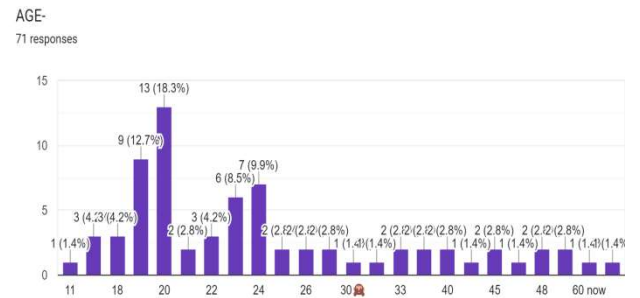
Sampling technique: Convenience sampling is a non-probability sampling technique where units are chosen for the sample based on their accessibility to the researcher. A non-probability sampling technique called convenience sampling includes taking a sample from the nearest area of the population.

Sample size: In this study, we were able to obtain 70 valid answers from people all over India

Data analysis and Interpretation

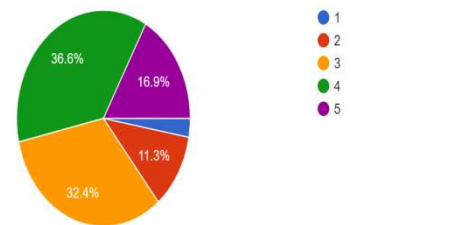
Data Collection Method: The basic method used in collecting the data for the research is questionnaires and surveys. The questions are closed-ended and multiple-choice. We have restricted the survey to just 10 questionnaires as people are not likely to fill up time-consuming forms.

Data Analysis technique: The types of survey analysis methods depend on the type of data collected. When we use closed-ended questions to gather numerical or quantitative data, we use quantitative analysis.



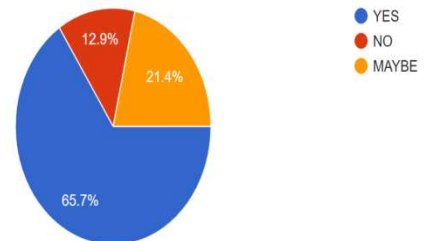
How knowledgeable do you feel about the causes and consequences of climate change?

71 responses



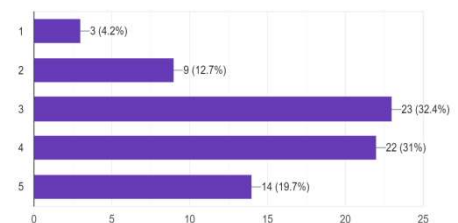
Do you believe that climate change is primarily caused by human activity?

70 responses



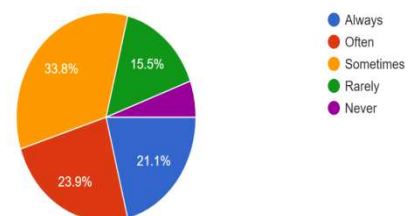
How important do you consider sustainability to be in your personal life?

71 responses



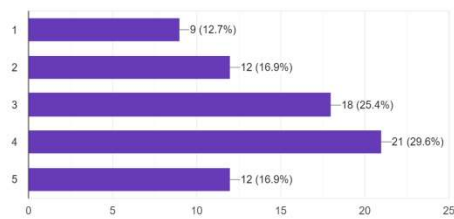
How often do you consider sustainability when making purchasing decisions?

71 responses



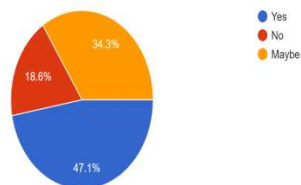
How optimistic are you about the ability to achieve a sustainable future?

71 responses



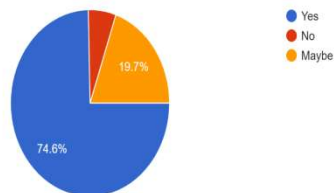
Are you willing to pay extra for sustainable products or services?

70 responses



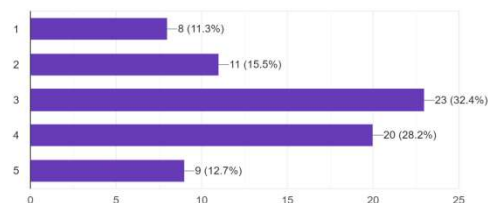
Do you think it is important for education systems to prioritize educating students about the impact of climate change on sustainability?

71 responses



How much do you trust the information and messaging around climate change from government and media sources?

71 responses



Analysis and Findings: Through this research, only 37.7% of the people are fully aware and possess good knowledge about climate change and its impacts. 71.3% of the people believe that humans are responsible for the main cause of climate change. Only 18% of the people consider sustainability to be important and only 18% consider sustainability while making purchasing decisions. 16.4% of the people are optimistic about the ability to achieve a sustainable future and 51% are willing to pay extra for sustainable products or services. 77% of the people think that it is important for education systems to prioritize educating students about the impact of climate change on sustainability.

Implication of research

Urgency for action: Climate change is a global problem that requires immediate action to mitigate its worst impacts. Research on climate change and sustainability can provide policymakers and the public with information about the magnitude and urgency of the problem, which can help mobilise support for effective action. Development of sustainable solutions: Research on climate change and sustainability can help identify and develop sustainable solutions to mitigate and adapt to the impacts of climate change. For example, research on renewable energy technologies can inform the development of policies and programmes to promote their use and deployment.

Improved public awareness: Research on climate change and sustainability can help increase public awareness and understanding of the causes and consequences of climate change.

Limitation of research: Lack of data: Despite intensive study of climate change, we still know very little about the consequences. For instance, it might be challenging to forecast future effects because we don't have enough information about how climate change affects particular locations, species, or ecosystems.

Uncertainty: Our estimates about the effects of climate change in the future are likewise fraught with a great deal of uncertainty. It is challenging to precisely estimate the long-term effects of climate change since climate models are complicated and can be altered by a variety of factors, including changes in population growth, technology improvements, and governmental actions.

Finances: Funding for research on sustainability and climate change can be scarce or constrained by political considerations.

Further scope of study: The scope of study for climate change and sustainability is vast and multidisciplinary, encompassing fields such as environmental science, ecology, economics, sociology, and policy. Researchers and practitioners can investigate a range of topics, including:

Climate modelling and forecasting to understand the future impacts of climate change on different regions and ecosystems. Mitigation strategies to reduce greenhouse gas emissions, such as transitioning to renewable energy sources, improving energy efficiency, and carbon capture and storage. Adaptation strategies to cope with the impacts of climate change, such as building resilient infrastructure, protecting biodiversity, and developing sustainable agriculture practices. Assessment of the economic costs and benefits of climate change policies and measures, including the distributional impacts on different social groups and regions. Analysis of the social and political drivers of climate change, including the role of institutions, governance structures, and public attitudes.

CONCLUSION

In summary, climate change is a significant issue that imperils sustainability. Its impacts can be seen in human society's economic, social, and environmental sides. Climate change can have adverse consequences on ecosystems, threaten food security, and harm people's health and wellbeing. It can also result in rising temperatures, sea level rise, and extreme weather. In order to address the issues brought on by climate change, governments, businesses, and people must all collaborate. To reduce greenhouse gas emissions and enhance sustainable development, it is vital to put mitigation and adaptation strategies into practise. Policies and efforts that reflect the distributional effects of climate change on various populations must be implemented to support a just transition to a low-carbon economy. Moreover, research and innovation are essential for creating novel products and business strategies that help advance sustainability and lessen the adverse effects of climate change. Finally, in order to instill a sense of urgency and a sense of shared responsibility for combating climate change and advancing sustainability, public knowledge and involvement are crucial. In general, the effects of climate change on sustainability are a complicated, multifaceted issue that calls for an all-encompassing, integrated strategy. We can lessen the effects of climate change and encourage a sustainable future for future generations by cooperating.

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