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The Impact of Greenhouse Gases on Global Climate Systems: Causes, Consequences, and Mitigation Strategies

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ABSTRACT

This paper explores the impact of greenhouse gases on global climate systems. It x-ray the causes, consequences, and the environmental impacts of greenhouse gases such as ocean acidification, biodiversity loss, and increased frequency of extreme weather events. It also examined the socioeconomic consequences such as food insecurity, public health crises, economic instability, and displacement of vulnerable populations. Moreover, this study critically assesses global and regional policy responses, including international frameworks like the Kyoto Protocol and the Paris Agreement, alongside emerging mitigation strategies such as renewable energy adoption, carbon pricing, reforestation, and climate-smart agriculture. Special attention is paid to the disparities between developed and developing countries in terms of emissions, vulnerability, and adaptive capacity, highlighting the pressing need for equity and climate justice. In conclusion, while the challenges posed by GHG-induced climate change are profound and multifaceted, they are not insurmountable. Through informed policy action, technological innovation, public awareness, and international collaboration, it is possible to transition towards a low-carbon, climate-resilient future. This paper offers a comprehensive overview that integrates environmental science, policy analysis, and socioeconomic perspectives to enrich the ongoing discourse on climate change mitigation and adaptation.

Keywords: Greenhouse Gases (GHGs), Climate Change, Global Warming, Carbon Dioxide (CO_2), Methane (CH_4), Nitrous Oxide (N_2O), Paris Agreement, Environmental Policy, Sustainable Development

INTRODUCTION

The growing concentration of greenhouse gases (GHGs) in the Earth's atmosphere is one of the most tenacious issues of our time, with far-reaching consequences for global climate systems, ecosystems, and human societies. The scientific agreement is clear: human activities, particularly the burning of fossil fuels and land-use changes, are releasing massive amounts of GHGs, such as carbon dioxide (CO2), methane (CH4), and nitrous oxide (N2O), into the atmosphere, resulting to a global average temperature rise of over 1°C since the late 19th century (IPCC, 2021). According to the Intergovernmental Panel on Climate Change (IPCC, 2021), atmospheric CO_2 concentrations have surpassed 410 parts per million, levels unseen for over 800,000 years, primarily due to fossil fuel combustion and land-use changes. These changes have profound implications for ecosystems, human health, agriculture, and global socio-economic stability (Solomon et al., 2007; Pachauri et al., 2014). This warming is having devastating impacts on the planet, from more frequent and intense heatwaves, droughts, and storms to sea-level rise and ecosystem disruption.

The Intergovernmental Panel on Climate Change (2018) has unambiguously stated that human-induced climate change is a severe threat to global sustainable development, with the potential to unsettle economies, societies, and ecosystems on a global scale. The consequences of inaction will be catastrophic, with rising sea levels threatening coastal cities and communities, more frequent natural disasters disrupting economic and social systems, and ecosystem disruption leading to loss of biodiversity and ecosystem services.

The impact of climate change is being felt across the globe, from the Arctic to the Antarctic, and from the poorest to the wealthiest nations. Rising temperatures are altering weather patterns, leading to more frequent and intense heatwaves, droughts, and storms, and having significant impacts on human health, economic development, and ecosystem services (WHO, 2018). Climate change is also having significant impacts on food security, water resources, and human migration, with the potential to exacerbate social and economic inequalities (FAO, 2017).

In response to the growing threat of climate change, the international community has come together to develop global policy responses, including the Paris Agreement, which aims to limit global warming to well below 2°C and pursue efforts to limit it to 1.5°C above pre-industrial levels (UNFCCC, 2015). However, despite these efforts, global GHG emissions continue to rise, and the window for taking action to prevent the worst impacts of climate change is rapidly closing.

Statement of the Problem

Despite widespread recognition of climate change, global GHG emissions continue to rise, posing severe challenges to mitigation and adaptation efforts. The lack of cohesive international compliance and varying national interests impede effective emission reductions (Victor, 2011). Additionally, the uneven distribution of emission sources and vulnerability exacerbates inequities between developed and developing nations, complicating global negotiations (Roberts & Parks, 2007). The intensification of climate-related disasters, such as floods, droughts, and heatwaves, underscores the urgency of addressing the root causes—primarily GHG emissions. There remains a gap in understanding the socio-economic impacts of GHG-induced climate change on vulnerable populations, as well as the efficacy of current policies and technological interventions (Stern, 2007).

Objectives of the Study

This study aims to:

1. Investigate the environmental and climatic impacts of increased GHG concentrations.
2. Assess the significantly impacts of climate change on the socioeconomic development of nations.
3. Examine the consequences of greenhouse gas emission on the environment.
4. Examine global policy responses and mitigation strategies.
5. Identify lessons learnt from successful case study.
6. Assess the challenges confronting the process of implementing the policy frameworks and future directions.

Research Questions

1. How do rising GHG concentrations affect the Earth's climate and environment?
2. How does climate change significantly impacted on the socioeconomic development of nations?
3. What are the consequences of greenhouse gas emission on the environment?
4. How effective are international and national policies in mitigating GHG emissions?
5. What lesson learnt can be learnt from successful case study?
6. What are the challenges confronting the process of implementing the policy frameworks and what are the future directions?

Significance of the Study

This research is significant as it synthesizes interdisciplinary knowledge crucial for policymakers, scientists, and stakeholders aiming to curb climate change. Understanding the dynamics of greenhouse gases and their impacts informs climate policy, environmental management, and public awareness. The study further highlights the importance of equitable climate action and the integration of sustainable development goals (SDGs) into mitigation and adaptation frameworks (UNEP, 2019).

Scope and Limitations

The study focuses on major greenhouse gases and their environmental impacts globally, with references to regional variations where appropriate. It examines both natural and anthropogenic sources and assesses mitigation efforts mainly through international agreements and technological solutions. Limitations include reliance on existing literature and data, which may have inherent uncertainties, and the evolving nature of climate science that could modify projections.

LITERATURE REVIEW

Theoretical Framework

This study employs the Anthropogenic Climate Change Theory, which attributes current climate trends primarily to human-induced GHG emissions (Weart, 2008). The theory integrates atmospheric chemistry, physics, and socio-economic factors, supporting the hypothesis that mitigating GHGs is critical to stabilizing the climate system.

Concept of Greenhouse Gases (GHGs)

Greenhouse gases are atmospheric gases that absorb and emit infrared radiation, thus warming the Earth's surface. The primary GHGs include CO_2, CH_4, N_2O, and fluorinated gases such as hydrofluorocarbons (HFCs). While some GHGs occur naturally, human activities have amplified their concentrations,

intensifying the greenhouse effect (Ramaswamy et al., 2001). CO_2 is the most abundant anthropogenic GHG, mainly from fossil fuel combustion and deforestation, followed by methane from agriculture and waste management (IPCC, 2014).

Major Types and Sources of GHGs

1. Carbon Dioxide (CO_2): Emitted from fossil fuel combustion, cement production, and land-use changes.
2. Methane (CH_4): Released by livestock, rice paddies, landfills, and fossil fuel extraction.
3. Nitrous Oxide (N_2O): Mainly from agricultural soil management and industrial activities.
4. Fluorinated Gases: Synthetic gases used in refrigeration and industrial applications, with high global warming potentials (Forster et al., 2007).

Greenhouse Effect and Global Warming

The greenhouse effect is a natural phenomenon that maintains the Earth's temperature within habitable ranges. However, increased GHGs enhance this effect, trapping additional heat and leading to global warming (IPCC, 2014). Radiative forcing—the difference between incoming and outgoing energy—has increased, leading to temperature rises observed globally (Hansen et al., 2010). This warming disrupts climate systems, altering weather patterns and causing various environmental changes (Meehl et al., 2007).

Global warming refers to the long-term rise in the average surface temperature of the Earth due to the increased concentration of greenhouse gases in the atmosphere. The global average temperature has risen by about 1.1°C since the late 19th century, and the past decade has seen some of the highest temperatures on record. This warming is projected to continue unless significant reductions in greenhouse gas emissions are made. In fact, the IPCC predicts that the world may hit the 1.5°C threshold between 2021 and 2040 across studied scenarios (Ripple et al. 2024).

Scientific Evidence of Climate Change

Multiple lines of evidence confirm ongoing climate change, including rising global temperatures, shrinking glaciers, earlier flowering of plants, and shifting species distributions (Hansen et al., 2010; Parmesan & Yohe, 2003). Satellite data and ground observations reveal increased heat content in oceans and more frequent extreme weather events (Trenberth et al., 2015). Paleoclimate data further link current changes to anthropogenic GHG emissions (Marcott et al., 2013).

Climate Models and Projections

Climate models simulate interactions between the atmosphere, oceans, land, and ice to project future climate scenarios based on emission trajectories. The IPCC's Representative Concentration Pathways (RCPs) range from aggressive mitigation (RCP 2.6) to high emissions (RCP 8.5), predicting temperature increases between 1.5°C and over 4°C by 2100 (IPCC, 2021). These models are essential tools for policy planning but contain uncertainties related to climate sensitivity and socio-economic developments (Knutti & Sedláček, 2013).

ENVIRONMENTAL AND CLIMATIC IMPACTS OF GHGS

- **Rising Global Temperatures**: Global mean surface temperatures have risen approximately 1.1°C since the late 19th century, largely due to increased GHGs (IPCC, 2021). This warming intensifies heatwaves, alters precipitation patterns, and affects the timing and severity of seasons (Hansen et al., 2010).
- **Melting Ice Caps and Sea Level Rise**: Warming temperatures contribute to the accelerated melting of polar ice caps and glaciers, causing sea levels to rise at an average rate of 3.6 mm per year (NASA, 2022). This rise threatens coastal communities, exacerbates flooding, and leads to loss of habitats for marine and terrestrial species (Church et al., 2013).
- **Ocean Acidification**: Oceans absorb approximately 30% of anthropogenic CO_2, leading to decreased pH levels, a process known as ocean acidification (Doney et al., 2009). Acidification disrupts marine ecosystems, affecting coral reefs, shellfish, and plankton vital to marine food webs (Hoegh-Guldberg et al., 2007).

- **Extreme Weather Events**: Increased GHG concentrations amplify the frequency and intensity of extreme weather events, including hurricanes, droughts, floods, and wildfires (IPCC, 2021). These events cause human suffering, economic losses, and ecological damage (Smith et al., 2013).
- **Biodiversity Loss and Habitat Disruption**: Climate change disrupts habitats and migratory patterns, contributing to species extinction risks. Changing temperature and precipitation patterns alter ecosystems, causing loss of biodiversity and ecosystem services (Bellard et al., 2012; Parmesan, 2006).

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SOCIOECONOMIC IMPACTS OF CLIMATE CHANGE

Climate change has significantly impacted on the socioeconomic development of nations. Its impacts are visible visually in the following areas:

1. Impacts on Agriculture and Food Security: Climate change poses significant risks to global agriculture and food security, as changing temperature and precipitation patterns disrupt crop yields and livestock productivity (Porter et al., 2014). Increased frequency of droughts, floods, and heat stress reduces soil fertility and water availability, leading to decreased agricultural output, particularly in vulnerable regions such as Sub-Saharan Africa and South Asia (Lobell et al., 2011). Crop models project yield declines in staples such as wheat, maize, and rice under high emission scenarios (Schlenker & Roberts, 2009). These disruptions exacerbate food insecurity, particularly for smallholder farmers dependent on rain-fed agriculture, and can lead to higher food prices, malnutrition, and social instability (FAO, 2018).

2. Human Health and Climate-sensitive Diseases: Climate change affects human health both directly and indirectly. Rising temperatures increase heat-related illnesses and mortality, while altered rainfall and temperature patterns influence the distribution of vector-borne diseases such as malaria, dengue, and Lyme disease (Watts et al., 2019). Air quality deterioration due to increased ground-level ozone and particulate matter exacerbates respiratory conditions (Smith et al., 2014). Additionally, extreme weather events—floods, storms, and droughts—contribute to injury, displacement, and mental health stressors, disproportionately impacting vulnerable populations (WHO, 2018).

3. Water Resources and Scarcity: Climate change intensifies water scarcity through altered precipitation regimes, reduced snowpack, and increased evaporation rates (Haddeland et al., 2014). Regions dependent on glacial meltwater or seasonal rains face heightened variability and risk of drought, affecting domestic, agricultural, and industrial water supply (Kundzewicz et al., 2007). Water stress exacerbates conflicts over resources and undermines public health through reduced sanitation and hygiene (Gleick, 2014). According to the IPCC (2021), nearly half the global population could face water stress by 2050 without adequate adaptation.

4. **Displacement and Climate Refugees**: Environmental degradation and extreme weather events increasingly force populations to migrate internally or across borders (McLeman, 2018). Climate-induced displacement threatens livelihoods, exacerbates urban overcrowding, and strains social services (IDMC, 2020). Low-lying island nations and coastal areas are particularly vulnerable to sea-level rise and storm surges, making climate migration an urgent humanitarian concern (Nicholls & Cazenave, 2010).

5. Economic Losses and Development Challenges: The economic toll of climate change is substantial, with damages from extreme weather events costing billions annually and expected to rise (Stern, 2007). Developing countries bear disproportionate impacts due to limited adaptive capacity and reliance on climate-sensitive sectors (Hallegatte et al., 2016). Climate change threatens to reverse gains in poverty reduction and sustainable development by increasing inequality and hampering infrastructure, education, and healthcare systems (IPCC, 2014).

CONSEQUENCES OF GREENHOUSE GAS EMISSION ON THE ENVIRONMENT

The consequences of greenhouse gases (GHGs) released into the environment are widespread and devastating. GHGs, such as carbon dioxide, methane, nitrous oxide, and fluorinated gases, trap heat in the atmosphere, leading to global warming and associated climate change impacts (IPCC 2022).

Consequences of GHG Emissions

1. Global Temperature Rise: Increased temperatures lead to more frequent and intense heatwaves, droughts, and storms. According to the Intergovernmental Panel on Climate Change (IPCC), the global average temperature is expected to reach or exceed 1.5°C above pre-industrial levels within the next few decades (IPCC 2021).
2. Sea-Level Rise: Melting glaciers and ice sheets contribute to sea-level rise, threatening coastal ecosystems and communities. As reported by the National Oceanic and Atmospheric Administration (NOAA), global sea level has risen about 8 inches since reliable record-keeping began in 1880, and is projected to rise at least another foot by 2100 (NOAA 2023).
3. Extreme Weather Events: Increased frequency and severity of natural disasters, such as hurricanes and wildfires, are linked to climate change. For example, the 2023 summer was Earth's hottest on record, with temperatures 0.41°F warmer than any other summer, according to NASA (NASA 2023).
4. Ocean Acidification: CO2 absorption by oceans leads to acidification, impacting marine life and ecosystems (IPCC 2022). The ocean absorbs about 25-30% of the CO2 released into the atmosphere, leading to an increase in hydrogen ions and a decrease in pH levels, making the ocean more acidic (IPCC 2022)). Conversely, since the Industrial Revolution, the ocean's pH has decreased by about 0.1 units, representing a 30% increase in acidity (National Oceanic and Atmospheric Administration. 2022).
5. Human Health Impacts: Climate change increases the spread of diseases, heat stress, and other health issues (WHO 2018). Air pollutants like sulfur and nitrogen oxides contribute to premature death and respiratory illnesses, including asthma. Ground-level ozone and microscopic airborne pollutants (PM2.5) can decline by reducing emissions. According to NASA (2021), reducing emissions to limit global warming to 1.5°C would prevent about 4.5 million premature deaths, 1.4 million hospitalizations and emergency room visits, and 300 million lost workdays in the United States.

POLICY RESPONSES AND GLOBAL MITIGATION EFFORTS

Global policies evolve as responses to mitigating the effects of climate change. These policies include:

1. International Agreements (Kyoto Protocol, Paris Agreement): International climate governance has evolved through landmark agreements such as the Kyoto Protocol (1997), which introduced binding emission reduction targets for developed countries, and the Paris Agreement (2015), which established a universal framework aiming to limit global warming to well below 2°C (UNFCCC, 2015). The Paris Agreement emphasizes nationally determined contributions (NDCs), transparency, and climate finance to support mitigation and adaptation, representing a shift towards inclusive and flexible climate action (Falkner, 2016).

2. National Policies and Commitments (NDCs): Countries submit NDCs outlining their climate goals, policies, and measures to reduce emissions and adapt to climate impacts (UNFCCC, 2020). The diversity of NDCs reflects different national circumstances, capacities, and development priorities, though current pledges are insufficient to meet the Paris targets (Climate Action Tracker, 2023). National policies often integrate renewable energy expansion, energy efficiency, deforestation reduction, and carbon pricing as key tools (IEA, 2021).

3. Carbon Pricing and Emission Trading Systems: Carbon pricing mechanisms, including carbon taxes and emissions trading systems (ETS), are economic tools designed to internalize the social costs of carbon emissions (World Bank, 2022). ETS cap emissions and allow trading of permits, providing incentives for emission reductions in sectors such as power generation and industry (Ellerman et al., 2010). Successful systems include the EU Emissions Trading Scheme and regional initiatives in North America and Asia, though challenges remain regarding coverage, price volatility, and equity (Zhang et al., 2017).

4. Renewable Energy and Technological Innovations: The transition to renewable energy sources such as solar, wind, and hydropower is central to reducing GHG emissions (IRENA, 2020). Advances in energy storage, smart grids, and carbon capture and storage (CCS) technologies complement decarbonization efforts (Fuss et al., 2018). Innovations in electric vehicles, energy-efficient buildings, and sustainable agriculture further contribute to mitigation (Creutzig et al., 2015).

5. Role of Non-State Actors and Civil Society: Non-state actors, including cities, businesses, NGOs, and indigenous groups, play critical roles in climate action by implementing local initiatives, fostering innovation, and advocating for policy change (Hoffmann, 2011). Public awareness campaigns and grassroots movements, such as Fridays for Future, amplify demands for ambitious climate policies and promote sustainable lifestyles (Newell & Paterson, 2010).

CASE STUDIES AND EMPIRICAL DATA

Developed vs Developing Countries' Emissions Trends

Developed countries historically contributed the majority of GHG emissions; with per capita emissions remaining high despite recent declines (Peters et al., 2012). Developing countries have seen rapid emission growth due to industrialization and urbanization, though on a per capita basis remain lower (IEA, 2021). Empirical data highlight the need for differentiated responsibilities and support for developing nations in mitigation and adaptation (UNEP, 2020).

Sectoral Analysis (Energy, Transport, Industry)

The energy sector remains the largest emitter globally, accounting for over 70% of CO_2 emissions, followed by transport and industry (IEA, 2022). Fossil fuel combustion dominates energy-related emissions, while industry contributes through process emissions and energy use (IPCC, 2014). Sector-specific mitigation strategies include renewable energy adoption, electrification of transport, and industrial efficiency improvements (Creutzig et al., 2015).

Local Mitigation Strategies and Community Resilience

Local initiatives, such as urban green infrastructure, community-based renewable energy, and climate-smart agriculture, enhance resilience and reduce emissions (Bulkeley & Betsill, 2013). Case studies from cities like Copenhagen and Curitiba demonstrate effective integration of climate goals into urban planning (Puppim de Oliveira et al., 2020).

Lessons Learned from Successful GHG Reduction Programs

Successful programs emphasize stakeholder engagement, policy coherence, and long-term financing (UNEP, 2019). The German Energiewende exemplifies a comprehensive national transition towards renewables with supportive policies and public buy-in (Morris & Pehnt, 2016). Lessons include the importance of transparent monitoring, capacity building, and equitable benefits distribution.

CHALLENGES AND FUTURE DIRECTIONS

Despite the global efforts in mitigating the emission of greenhouse gases there are still challenges confronting the process of implementing the policy frameworks. Some of these challenges include:

- ✓ **Political and Economic Barriers:** Political will is often hampered by short-term interests, economic dependence on fossil fuels, and geopolitical tensions (Victor, 2011). Economic concerns about competitiveness and job losses impede ambitious climate policies, requiring just transition frameworks to balance interests (Newell & Mulvaney, 2013).
- ✓ **Technological Limitations:** While technological advances offer promise, challenges include high costs, infrastructure needs, and scalability issues (Fuss et al., 2018). Uncertainty around negative emission technologies such as bioenergy with carbon capture raises risks (Smith et al., 2016).
- ✓ **Climate Justice and Equity:** Addressing historical emissions and ensuring equitable burdens and benefits remains a central challenge (Roberts & Parks, 2007). Vulnerable communities require targeted support for adaptation, while inclusive governance mechanisms can empower marginalized groups (Schlosberg & Collins, 2014).
- ✓ **The Role of Education and Public Awareness:** Education fosters understanding and empowerment for climate action (Monroe et al., 2019). Integrating climate change into curricula, media, and community programs enhances behavioral change and political engagement (Moser & Dilling, 2011).

Summary of the findings

1. The study with respect to research question one found out the environmental and climatic impacts of greenhouse gases. The study identifies the following as environmental impacts of greenhouse gases: rising global temperatures, melting ice caps and sea level rise, ocean acidification, extreme weather events, and biodiversity loss and habitat disruption.
2. Similarly, with respect to research question two, the study found out that climate change has significantly impacted on the socioeconomic development of nations. Some of the socioeconomic impacts include: impacts on agriculture and food security, human health and climate-sensitive diseases, water resources and scarcity, displacement and climate refugees, and economic losses and development challenges.
3. In addition, with regards to research question three identify the consequences of greenhouse gas emission. The consequences include: Global temperature rise, sea level rise, extreme weather events, ocean acidification, and human health impact.
4. Furthermore, the study with respect to research question four found out that global policies arise as responses to mitigating the effects of climate change. These policies include: International Agreements (Kyoto Protocol, Paris Agreement), National Policies and Commitments (NDCS), Carbon Pricing Emission and Trading System, Renewable Energy and Technological Innovation, and Role of Non-State Actors and Civil Society.
5. Conversely, the study found out that, the lesson learnt from successful case studies include: the importance of transparent monitoring, capacity building, and equitable benefits distribution.
6. Conclusively, the study found out that despite the global efforts in mitigating the emission of greenhouse gases there are still challenges confronting the process of implementing the policy frameworks. Some of the challenges include: political and economic barriers, technological limitations, climate justice and equity, and the role of education and public awareness.

CONCLUSION

Climate change represents one of the most profound and multifaceted challenges confronting humanity in the 21st century. This study has explored the complex interplay between greenhouse gas emissions, environmental transformations, socioeconomic repercussions, and global mitigation efforts. The evidence presented underscores that the impacts of climate change are not only environmental but deeply socio-economic, affecting agriculture, human health, water resources, migration patterns, and economic development across the globe. The scope and scale of these impacts highlight the urgent need for a robust and integrated response involving local, national, and international stakeholders.

The environmental consequences of climate change—ranging from rising global temperatures and melting ice caps to ocean acidification and increased frequency of extreme weather events—pose direct threats to natural ecosystems and biodiversity. These physical changes cascade into human systems, undermining food security and water availability, thereby exacerbating vulnerability especially in developing regions where adaptive capacity is limited. The proliferation of climate-sensitive diseases and displacement of populations further demonstrate the profound human dimension of climate change impacts, underscoring the interconnection between environmental health and human well-being.

This research has also illuminated the critical role of policy frameworks and international cooperation in addressing climate change. The evolution from the Kyoto Protocol to the Paris Agreement marks significant progress in global governance, emphasizing inclusivity, flexibility, and shared responsibility. Nonetheless, the inadequacy of current national commitments and the persistent political, economic, and technological barriers remain formidable obstacles to achieving the global climate goals. The integration of carbon pricing mechanisms, the acceleration of renewable energy adoption, and innovations in technology offer promising pathways for emissions reduction. Yet, such strategies must be complemented by equitable policies that recognize climate justice and support vulnerable communities in both mitigation and adaptation efforts.

RECOMMENDATIONS

In light of the extensive analysis of the environmental, socioeconomic, and policy dimensions of greenhouse gases and climate change, this study proposes the following key recommendations aimed at strengthening global and local efforts to mitigate climate change impacts and enhance adaptation:

1. Enhance Ambition in Nationally Determined Contributions (NDCs): Countries must commit to more ambitious and binding emission reduction targets aligned with the latest climate science to limit global warming to 1.5°C above pre-industrial levels (IPCC, 2021). International mechanisms should support transparent monitoring, reporting, and verification to ensure accountability.
2. Increase Climate Finance for Developing Countries: Wealthier nations should fulfill and expand their financial commitments to assist vulnerable developing countries in both mitigation and adaptation efforts, recognizing the principle of common but differentiated responsibilities (UNFCCC, 2015).
3. Promote Renewable Energy Deployment: Governments should incentivize investments in renewable energy technologies such as solar, wind, geothermal, and hydropower through subsidies, tax breaks, and favorable regulatory frameworks (IRENA, 2020). Expansion of smart grids and energy storage solutions is crucial to manage variable renewable outputs.
4. Phase Out Fossil Fuel Subsidies: The elimination of subsidies for coal, oil, and natural gas will create a more level playing field for clean energy and reduce carbon emissions (OECD, 2021).
5. Replicate lesson learnt from other nations on successful implementation of greenhouse gas mitigation strategies.
6. Promote sustainable land use practices, such as reforestation and afforestation to sequester carbon dioxide.

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