

## Communicating Climate Knowledge: A Media-Centric SWOT Analysis of the National Mission on Strategic Knowledge for Climate Change

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### Abstract

Climate change is one of the most critical challenges facing India, requiring not only scientific research but also effective communication to ensure public understanding and policy support. The National Mission on Strategic Knowledge for Climate Change (NMSKCC), a component of India's National Action Plan on Climate Change (NAPCC), aims to strengthen the country's knowledge systems to support climate-related decision-making. This study presents a media-centric SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis of the NMSKCC, focusing on how climate knowledge is communicated and disseminated through various media channels. By examining official mission documents, related academic literature, and media reports, the paper evaluates the mission's performance in raising awareness, promoting engagement, and influencing climate discourse in India. The analysis reveals key strengths such as institutional support and knowledge generation, but also highlights weaknesses including limited public outreach and inadequate media integration. Opportunities exist to enhance strategic communication, especially through digital platforms and public service media, while threats include misinformation, low media literacy, and fragmented communication efforts. The study concludes with suggestions for improving the mission's visibility and impact by aligning its objectives with more inclusive, transparent, and media-friendly communication strategies.

**Keywords:-** Climate Change, India, National Mission on Strategic Knowledge, Media, SWOT Analysis, Climate Policy

### Introduction

Climate change is one of the biggest challenges facing the world today. It affects our environment, economies, and the way people live (Abbass et al., 2022; Weiskopf et al., 2020; Shivanna, 2022; Muluneh, 2021). For India, this challenge is especially serious because the country has many different types of ecosystems, a large and growing population, and many social and economic difficulties (Hemani & Das, 2015). To handle these risks, India needs strong scientific knowledge and careful planning. In 2008, the Government of India launched the National Action Plan on Climate Change (NAPCC), which includes eight key missions.

These missions aim to promote sustainable development while fighting the effects of climate change (Ministry of Environment, Forest and Climate Change, 2021). One of these important missions is the National Mission on Strategic Knowledge for Climate Change (NMSKCC). This mission's main goal is to improve India's ability to create, evaluate, and share scientific knowledge that helps policymakers make better decisions about climate change (GOVERNMENT OF INDIA & DEPARTMENT OF SCIENCE & TECHNOLOGY, MINISTRY OF SCIENCE & TECHNOLOGY, 2010; Sambath et al., 2022; Byravan & Rajan, 2013).

The NMSKCC is designed to build a system that connects climate science with policy and practical action. It does this by supporting research institutions, encouraging data sharing, and building the skills of people and organizations involved in climate work (State Knowledge Management Centre on Climate Change (SKMCCC) et al., 2022; Committee for the Update of the Guide for the Care and Use of Laboratory Animals et al., 2011). This mission plays a critical role in ensuring that climate policies in India are based on reliable scientific information.

However, despite its importance, the NMSKCC faces several challenges. The nature of climate change is complex and constantly changing, making it harder for the mission to keep up and stay effective (Matos et al., 2022; Lawrence et al., 2020). Operational and system-level issues sometimes limit its impact. Because of this, it is important to carefully evaluate how well the mission is working and find ways to improve it (Lawrence et al., 2020; Kozlowski & Ilgen, 2006; Petropoulos et al., 2023; Kasauli et al., 2020; Handoyo et al., 2023).

This study will examine the NMSKCC by looking at its strengths, weaknesses, opportunities, and threats—a method known as SWOT analysis. To do this, the research will analyze official government documents, reports, and academic writings. The goal is to identify what the mission is doing well, where it is facing problems, what new chances it has for growth, and what external risks could harm its work. The findings from this analysis will provide useful insights into how the NMSKCC can be better designed and managed. Improving the mission will help India build a stronger and more knowledge-driven approach to climate change. This will contribute to better climate policies and help the country become more resilient in the face of growing climate risks.

## **Review of Literature**

Climate change is increasingly recognized as a multidimensional challenge requiring strategic, scientific, and policy-driven responses. Byravan and Rajan (2013) conducted a critical evaluation of India's National Action Plan on Climate Change (NAPCC), highlighting the strengths and limitations of its mission-based framework, including the National Mission on Strategic Knowledge for Climate Change (NMSKCC). Their work emphasizes the need for coherence between national goals and implementation mechanisms, noting the gap between policy ambition and local-level application. Sambath et al. (2022) added a health perspective, revealing limited awareness among India's healthcare workforce about climate

change and its health impacts, indicating a broader challenge in knowledge dissemination and integration across sectors.

Kozlowski and Ilgen (2006) stressed the importance of team effectiveness in policy implementation, pointing out that strong collaborative structures and inter-agency coordination are critical for mission success. This aligns with the NMSKCC's objective to foster collaboration among institutions. Similarly, Hemani and Das (2015) argued for a more socially inclusive approach in urban climate resilience, pointing out that without integrating community voices and social sustainability, technical solutions may fall short in practice. Their perspective strengthens the call for community-level engagement in the mission's outreach strategy.

Technological innovation also plays a central role in climate governance. Matos et al. (2022) underlined the need for embracing innovation in tackling climate issues, with special emphasis on integrating digital tools like AI and big data. This view is echoed in the operational context by Handoyo et al. (2023), who explored how strategy and innovation can work together even in uncertain environments—paralleling the unpredictability of climate change scenarios.

Shivanna (2022) addressed the ecological consequences of climate change, focusing on biodiversity and human welfare, reinforcing the urgency for evidence-based, knowledge-driven climate policies. His work supports the mission's role in generating strategic knowledge that can inform biodiversity conservation and ecosystem protection. Furthermore, Petropoulos et al. (2023) offered insights into advanced operational research techniques that can support better planning and evaluation within complex systems like climate missions, particularly in monitoring and implementation tracking.

Overall, these studies collectively emphasize the importance of institutional coordination, innovation, inclusivity, and localized engagement for effective climate knowledge generation and policy implementation. This body of literature validates the critical role of the NMSKCC within India's broader climate response framework and sets the foundation for a deeper analysis of its strengths, weaknesses, opportunities, and threats.

### **Research Objectives:**

1. To identify the key strengths and weaknesses of the NMSKCC as reflected in its official mission documents and policy framework.
2. To explore the potential opportunities and external threats influencing the effective implementation of the NMSKCC.
3. To analyze the strategic alignment of the NMSKCC with broader national and global climate change knowledge goals through a structured content analysis.

### **Research Question:**

How effectively does the National Mission on Strategic Knowledge for Climate Change (NMSKCC) address India's climate knowledge needs, based on a SWOT analysis of its content and structure?

## Methodology

This study employs a qualitative research design, with content analysis serving as the primary method to evaluate the *National Mission on Strategic Knowledge for Climate Change (NMSKCC)*. The objective is to critically examine the mission by identifying its strengths, weaknesses, opportunities, and threats (SWOT) as reflected in official policy documents and related literature.

## Data Sources

The analysis is based on primary and secondary documents relevant to the NMSKCC, including:

- Official mission documents and policy briefs published by the Government of India
- Reports from the Ministry of Environment, Forest and Climate Change (MoEFCC)
- Relevant sections of the National Action Plan on Climate Change (NAPCC)
- Academic commentaries, evaluations, and institutional reviews (where available)

## Analytical Framework

The study utilizes the **SWOT analytical framework** to systematically categorize and interpret the content into four dimensions:

- **Strengths:** Internal positive features such as institutional architecture, funding provisions, and research facilitation
- **Weaknesses:** Internal challenges including implementation gaps, inter-agency coordination issues, and resource limitations
- **Opportunities:** External enabling conditions such as scientific advancements, international collaborations, and policy convergence
- **Threats:** External risks such as political inertia, climate unpredictability, and limited public engagement

This framework enables a structured assessment of the NMSKCC's strategic scope and relevance in the evolving climate governance landscape

## Findings & Discussion

This section explains the main findings of the study, which were gathered by carefully analyzing official policy documents, mission summaries, and related research about the National Mission on Strategic Knowledge for Climate Change (NMSKCC). The goal was to understand the mission's overall situation by looking at its strengths and weaknesses, as well as outside opportunities and threats that affect how well it works over time. A SWOT analysis was used to organize and evaluate this information, giving a clear and balanced view of the mission's possibilities and challenges. The NMSKCC is one of the eight missions

under India's National Action Plan on Climate Change (NAPCC). Its purpose is to create a strong system for scientific and strategic knowledge to help deal with climate change impacts. The analysis looked at many areas such as how the mission is organized, its research ability, how it shares knowledge, involves stakeholders, and fits with climate policies. The findings show how the mission fits within India's climate policy framework and how well it supports national and international climate goals. The results are grouped under four main themes: Strengths, Weaknesses, Opportunities, and Threats. This helps highlight the mission's key strengths as well as areas that need improvement. These insights will guide further discussion and policy thinking in the next chapters, aiming to contribute to better climate governance in India.

## 1. Strengths of the NMSKCC

- **Institutional Legitimacy and Policy Integration:** The NMSKCC is supported by the Ministry of Environment, Forest and Climate Change, which gives it strong backing from the government. As part of India's larger climate action plan, it works closely with other missions like those focused on solar energy or agriculture. This makes its work more useful for national climate policies and helps in planning for future climate challenges. Because it's linked to important national and global goals, like the Paris Agreement and the Sustainable Development Goals, it is more likely to receive continued support and be seen as an important part of India's climate efforts.
- **Focus on Scientific Research, Capacity Building, and Knowledge Generation:** The NMSKCC focuses on supporting climate research and training people to work on climate-related problems. It partners with top Indian institutes like the IITs and IISc to study things like climate change impacts and risks. It also helps train students, scientists, and government workers by offering fellowships, workshops, and research support. This helps build a strong team of climate experts across the country. By encouraging different types of research—scientific, social, and economic—it can better understand and solve real-life problems. The mission plays an important role in creating useful knowledge for both India and the international community.
- **Promotion of International Collaboration and Knowledge Exchange:** The NMSKCC encourages working with international climate organizations and research groups. These partnerships help share knowledge, new ideas, and technology, making India's climate research stronger. By joining global projects, Indian scientists can learn new techniques and contribute their findings to the world. These collaborations also help ensure that India's work matches global standards. Importantly, they allow the mission to take useful global ideas and apply them to Indian problems. This international cooperation improves India's climate planning and shows the world that India is serious about tackling climate change through science and teamwork.

## 2. Weaknesses of the NMSKCC

- **Lack of Clear Implementation Mechanisms and Monitoring Frameworks:** The NMSKCC struggles because it doesn't have a clear plan for putting its goals into

action or a strong system to track progress. It sets good research targets but lacks detailed timelines, responsible institutions, and clear measures to see how well it's doing. This leads to scattered efforts and confusion among different agencies, causing delays and repeated work. Without proper feedback and review, the mission can't learn or improve over time. These gaps make it hard for the mission to influence climate policies effectively or show real results on the ground.

- **Limited Engagement with Local Communities and State-Level Institutions:** Though the NMSKCC works nationally, it doesn't involve local communities and state institutions enough. Its focus is mainly on research and partnerships at the national level, ignoring the people and local bodies that experience climate change firsthand. Local governments and rural groups are rarely consulted, which means the mission's work may not address the specific needs of different regions. State institutions, important for carrying out climate actions, are often left out of planning and training. To make its research useful and impactful, the mission must better connect national knowledge with local realities and needs.
- **Data Accessibility Issues and Weak Public Communication Strategy:** The NMSKCC faces problems making its climate data and research easy to access and understand. Most information is kept within academic circles and not shared openly with the public, journalists, or local officials. There are few user-friendly online platforms where people can find important climate information. Also, the mission lacks a clear communication plan to explain complex climate science in simple terms, especially for India's many languages and cultures. Without better public outreach, the mission risks staying limited to experts and missing chances to raise awareness or encourage community action on climate change.

### 3. Opportunities for Strategic Advancement

- **Integration of Emerging Technologies in Climate Research:** The NMSKCC can improve its work by using new technologies like GIS, artificial intelligence (AI), remote sensing, and big data analysis. These tools help gather real-time data and make climate models more accurate. AI can find complex patterns and improve weather forecasts, while remote sensing helps monitor changes in land, water, and air. Using these technologies will help the mission provide practical, location-specific information. Digital platforms can also improve teamwork between researchers and policymakers, making the process faster and avoiding repeated efforts. This tech focus will bring the mission up to global climate science standards.
- **Strengthening Linkages with International Climate Networks:** By working more closely with international organizations like the IPCC, UNEP, and UNFCCC, the NMSKCC can access global climate data, funding, and research partnerships. Joining these global networks boosts India's climate research visibility and trustworthiness. These collaborations allow sharing of technology, training, and joint projects, increasing the mission's impact. Being involved internationally also helps India adopt



the best global practices in climate policy. These partnerships make the NMSKCC a valuable player in both sharing and benefiting from worldwide climate knowledge.

- **Expanding Education, Fellowships, and Youth Engagement Programs:** The NMSKCC can grow its influence by supporting climate education and programs for young people. Adding climate topics to college courses helps students learn about the issue from different angles. Scholarships and fellowships attract talented youth to climate research. Innovation contests and internships encourage young people to solve climate problems, promoting leadership and new ideas. Working with schools, NGOs, and businesses can strengthen these efforts. These activities not only build a skilled workforce but also raise public awareness and keep communities involved in climate action over the long term.
- **Synergies with Other National Missions and State Action Plans:** The NMSKCC should work more closely with other climate missions under the National Action Plan and State Action Plans. Teaming up with missions like the National Solar Mission or Water Mission can create more complete climate solutions. Sharing research results with state governments helps design strategies that fit local needs. This cooperation improves policy coordination, reduces repeated work, and supports decisions based on solid evidence. By helping build skills and sharing knowledge, the mission can strengthen India's overall climate efforts and make sure science guides local and national actions effectively.
- **Rising Public Awareness and Demand for Climate Information:** As more people become concerned about climate change, the NMSKCC has a chance to connect with the public. Increased awareness, especially among young people, drives demand for clear, accessible climate information. The mission can respond by creating multilingual websites, interactive tools, and outreach programs that explain climate science in easy-to-understand ways. Giving communities practical, local information helps them become more resilient and encourages positive behavior changes. Clear and honest communication builds trust and fights misinformation. Using this growing interest, the NMSKCC can become a key force in spreading climate awareness and encouraging action across society

#### 4. Threats to the NMSKCC

- **Political and Administrative Inertia**

One of the most pressing threats to the NMSKCC is political and bureaucratic inertia. Climate action often clashes with short-term political interests and shifting administrative priorities. Changes in leadership or ministry focus can disrupt funding, delay initiatives, or even reverse progress. Moreover, complex government procedures and lack of coordination between agencies create bottlenecks that hinder implementation. Without strong political commitment and streamlined processes, the mission's knowledge outputs risk being sidelined

or delayed. This inertia weakens the mission's ability to quickly respond to evolving climate realities, reducing its overall impact on both policy and practice at critical moments.

- **Uncertainty and Complexity of Climate Science**

Climate science is marked by uncertainty and complexity, posing challenges for its practical use in policymaking. Diverse models and variable projections can confuse stakeholders and delay action. Policymakers may hesitate to act decisively without clear-cut evidence, and the public may become skeptical of conflicting messages. The NMSKCC must continually refine its research methods and communicate uncertainties transparently. Without this, its outputs risk being misunderstood or ignored. Effective communication of complex findings is essential to maintain credibility and support. Failure to manage this complexity may limit the mission's relevance and reduce trust among stakeholders, undermining its long-term objectives.

- **Limited Public Engagement and Awareness**

Limited public awareness remains a significant barrier to the NMSKCC's effectiveness. Many communities—particularly in rural and marginalized regions—remain unaware of climate risks and adaptation strategies. Without targeted outreach, scientific knowledge remains confined to institutions and fails to influence grassroots action. Moreover, public apathy or misinformation can lead to resistance against climate initiatives. For the mission to succeed, it must bridge the gap between expert knowledge and community understanding through inclusive and accessible communication. Engaging the public is not optional—it is essential for ensuring societal support, behavioral change, and the implementation of climate-resilient policies on the ground.

- **Funding Constraints and Resource Limitations**

Sustained and adequate funding is essential for the NMSKCC to function effectively. Climate research requires significant investment in technology, skilled personnel, and long-term fieldwork. However, budget limitations or shifting government priorities often result in underfunding. This financial instability affects not only the scope and quality of research but also the mission's ability to conduct outreach, form partnerships, and scale successful models. Dependence on short-term grants or donor support can disrupt continuity and compromise independence. Without sufficient resources, the mission risks becoming underpowered, unable to achieve its goals, and unprepared to respond to emerging climate challenges.

- **Rapid Environmental and Socioeconomic Changes**

India's fast-changing environmental and socioeconomic conditions pose a constant threat to the relevance of the NMSKCC. Factors such as urban expansion, migration, industrialization, and shifting land use patterns evolve rapidly, sometimes outpacing the research and policy cycles. Unanticipated events—like extreme weather, pandemics, or political disruptions—can further derail the mission's progress. If the NMSKCC cannot adapt to this dynamic landscape, its outputs may become outdated or misaligned with current needs. Maintaining



flexibility, updating methodologies, and building early warning systems are essential for resilience. Otherwise, the mission risks losing effectiveness in addressing real-time climate vulnerabilities across India..

### **Summary of SWOT Insights and Strategic Implications**

The SWOT analysis of the National Mission on Strategic Knowledge for Climate Change (NMSKCC) reveals a nuanced picture of both promise and challenges inherent in the mission's efforts to strengthen India's climate knowledge framework. On the one hand, the mission benefits from well-established institutional structures, focused research agendas, and growing recognition of the critical role that strategic knowledge plays in climate resilience and policy formulation. These strengths provide a solid foundation for generating high-quality, actionable climate data and insights that are crucial for informed decision-making at national and sub-national levels. At the same time, the analysis identifies important internal weaknesses such as coordination gaps between various agencies, limited resource availability, and occasional lack of clarity in implementation strategies. These internal challenges can hamper the mission's ability to operate efficiently and to sustain momentum in its knowledge-generation activities. Furthermore, the NMSKCC faces external threats including political and administrative inertia, the inherent uncertainties of climate science, limited public engagement in certain regions, and the fast-paced changes in environmental and socioeconomic conditions that can quickly render static knowledge obsolete. However, the mission also stands at the threshold of several significant opportunities that could considerably enhance its impact. The rapid advancement of emerging technologies like AI and GIS, the potential for stronger international collaborations, growing public awareness about climate change, and the chance to synergize with other national and state-level climate missions all represent avenues for growth and greater effectiveness. Capitalizing on these opportunities through adaptive policy reforms, enhanced stakeholder engagement, and improved institutional coordination will be essential. In conclusion, while the NMSKCC faces operational and contextual challenges, strategic alignment with emerging trends and a proactive approach to reform can enable it to fulfill its mandate more effectively, thereby playing a pivotal role in India's climate change adaptation and mitigation efforts in the years ahead.

### **Conclusion**

The National Mission on Strategic Knowledge for Climate Change (NMSKCC) plays a vital role in India's broader climate action framework by generating and disseminating critical knowledge needed to address complex climate challenges. This SWOT analysis underscores the mission's solid institutional foundation, research capabilities, and growing potential to influence policy and practice. However, it also reveals important operational and contextual challenges, including coordination inefficiencies, resource limitations, and the difficulty of translating complex scientific data into actionable strategies. External factors such as political inertia, scientific uncertainty, and limited public awareness further complicate the mission's ability to achieve its full potential. Despite these obstacles, the analysis highlights several promising opportunities. Leveraging emerging technologies, enhancing collaborations at

national and international levels, and increasing public and youth engagement are key pathways through which the mission can expand its reach and impact. Synergies with other national and state climate missions also offer a strategic avenue for maximizing resource use and ensuring cohesive climate governance. Moving forward, the success of the NMSKCC will depend on its ability to adopt adaptive management practices, improve institutional coordination, and prioritize capacity building. Ensuring consistent political and financial support will be crucial to sustaining long-term research and knowledge dissemination efforts. Furthermore, engaging diverse stakeholders (including policymakers, scientists, and local communities) will be essential for translating strategic knowledge into effective climate action. In summary, the NMSKCC holds significant promise but requires focused reforms and proactive strategies to overcome its challenges and become a cornerstone of India's climate resilience and sustainability goals.

### Suggestions & Recommendation

To make the National Mission on Strategic Knowledge for Climate Change (NMSKCC) more effective in communicating climate knowledge, a few key steps should be taken. First, there should be better coordination between government departments, research groups, media organizations, and state agencies to ensure that information is clear and not repeated. A special communication team could help manage this. Second, the mission should support training in modern technologies like AI, remote sensing, and data analysis, and also help journalists and communicators present climate information in simple and engaging ways. Third, public awareness (especially in rural areas) should be improved by working closely with schools, community radio, local newspapers, NGOs, and digital platforms. Fourth, regular funding and strong government support are necessary to keep communication efforts consistent and long-lasting. Lastly, working with international climate organizations and media networks can bring in fresh ideas and improve how climate knowledge is shared with people. These steps will help make the mission more visible, better understood by the public, and more useful in supporting India's climate goals.

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