IMPACT ASSESSMENT OF THE CSR PROJECT FOR SETTING UP A CNG CREMATORIUM IN DELHI

Submitted To

POWER FINANCE CORPORATION LIMITED

Submitted By

asci
Leadership through Learning

Acknowledgement

The study team from the Administrative Staff College of India (ASCI) extends its sincere gratitude to the Management of Power Finance Corporation (PFC) for entrusting ASCI with this important study. We are particularly thankful to the Shri. M Prabhakar Das, Chief General Manager (CSR) of PFC for his invaluable support throughout the project.

We are thankful to all the stake holders of this project, for their valuable time and information enabling us to conduct the fieldwork and interactions in a timely manner.

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The Study Team

Abbreviations

ASCI	Administrative Staff College of India
CSR	Corporate Social Responsibility
CHRD	Centre for Human Resources Development
CPPGP	Centre For Public Policy, Governance and Performance
DHO	District Health Officer
IGL	Indraprastha Gas Limited
PFC	Power Finance Corporation Ltd.
PHI	Public Health Officer
PM	Particulate Matter
MCD	Municipal Corporation of Delhi
MoU	Memorandum of Understanding
SDMC	South Delhi Municipal Corporation

Contents

1 Executive Summary

Power Finance Corporation (PFC), a leading public sector enterprise in India's power sector, has consistently focused on Corporate Social Responsibility (CSR) initiatives aimed at addressing critical environmental and societal challenges. One of its significant undertakings is the establishment of Compressed Natural Gas (CNG) crematoriums in New Delhi, a city severely affected by air pollution.

The impact assessment of the four CNG crematoriums located at Subhash Nagar and Dwarka Sector-24, funded by Power Finance Corporation (PFC) under its Corporate Social Responsibility (CSR) initiative, evaluates the project's environmental, social, and operational outcomes. This comprehensive assessment examines the benefits of these interventions for various stakeholders, with a focus on their social, environmental, and operational impacts.

Geotagged photos of the crematorium facilities, included in the report and annexures, serve as visual documentation of the project's current status and implementation.

While the environmental benefits, particularly in terms of reduced emissions, are an important part of the project, the assessment study focus remains on the broader impact. This includes assessing the project's operational efficiency and community acceptance, as well as examining the long-term sustainability of the crematoriums. Key considerations include the facility operation, maintenance and financial viability all of which are crucial to ensuring continued success.

The report includes actionable recommendations for enhancing public awareness, improving operational efficiency, and ensuring the continued success and sustainability of the facility.

2 Introduction

The implementation of CNG-based cremation facilities represents a significant step forward in modernizing traditional cremation practices in India. Unlike wood-based cremations, which require substantial natural resources, CNG cremation provides a cleaner, faster, and more efficient alternative. While pollution reduction is a clear benefit, this study focuses on the broader qualitative impacts of these interventions rather than a technical or quantitative analysis of pollution levels. The emphasis is on understanding how these initiatives affect local communities, families, environmental agencies, and other key stakeholders.

3 Background

Power Finance Corporation (PFC), a leading public sector enterprise in India's power sector, has undertaken a range of Corporate Social Responsibility (CSR) initiatives across multiple sectors, including healthcare, education, skill development, and environmental sustainability. Among its notable CSR projects is the establishment of Compressed Natural Gas (CNG)-based crematoria in New Delhi.

The CNG crematorium project proposed the construction of four CNG crematoria across two sites—Subhash Nagar and Dwarka Sector-24—in collaboration with the South Delhi Municipal Corporation (SDMC). These crematoria were designed to replace traditional wood-based cremation methods with cleaner, more sustainable alternatives, significantly reducing carbon emissions and air pollution while conserving natural resources by reducing the consumption of wood.

CNG-based cremations not only contribute to lower pollution levels but also modernize funeral practices, offering a cleaner and more efficient cremation process while respecting cultural and religious traditions. SDMC has completed respective E&M & Civil works at all four sites i.e. two in Subhash Nagar (February 2021) and two in Dwarka Sector-24(December 2021).

4 Objective of the Evaluation

The objective of this study is to assess the impact of the PFC CSR-funded CNG crematorium in New Delhi from multiple dimensions, including operational, financials, environmental and social factors. The evaluation focuses on how well the project meets its goals of improving cremation efficiency, reducing carbon emissions and ensuring long-term sustainability while maintaining cultural sensitivity.

The primary objectives of this evaluation are:

To assess the benefits of the interventions to various stake holders of the activities which include:

- **To gauge the perceptions and experiences of various stakeholders**, including local residents, N.G.O running the crematorium, CNG crematorium staff, and public health authorities in terms of the project's broader benefits.

- **To evaluate the operational efficiency and sustainability** of the PFC-funded CNG crematoriums, focusing on resource utilisation, maintenance, and community acceptance.

- **To assess the qualitative benefits and environmental and public health impact of the CNG crematorium for various stakeholders** particularly how CNG crematoriums contribute to reducing pollution, as understood by nearby residents, shop owners, health workers and families using the crematorium services.

5 Methodology

5.1 Data Collection Method

To conduct a comprehensive assessment, the study team used the following data collection methods:

5.2 Secondary Data Review

The study team gathered initial information from PFC regarding the project. This provided the study team with a foundational understanding of the project background, allowing them to

proceed with the impact evaluation study. Additionally, PFC shared the details of the nodal contact at MCD, including the District Medical Officers in charge of the Najafgarh Zone (which includes the Dwarka facility) and the DHO for the West Zone (which covers the Subhash Nagar facility). This facilitated smooth coordination for the field visits and ensured timely visits to all four CNG crematoriums under evaluation. A review of available secondary literature related to location factors and regional population in each of the location was conducted to assess the broader impacts of the CNG crematoriums.

5.3 Field Visits

Field visits were conducted at four CNG crematoriums—two located in Subhash Nagar and two in Dwarka Sector-24—each funded by Power Finance Corporation (PFC) under its Corporate Social Responsibility (CSR) initiative. These visits included site inspections, operational observations, and collection of stakeholder feedback to evaluate facility utilization, benefits, and overall satisfaction. Geotagged photos were taken to document the condition of each facility and are included in the report.

5.4 Stakeholder Interviews and Questionnaires

This impact assessment employed a qualitative research methodology, focusing on gathering data through semi-structured interviews, surveys, and focus group discussions with key stakeholders. A survey was conducted with a sample of 50 stakeholders representing various groups, including the representatives from Power Finance Corporation, the funding agency; the Municipal Corporation of Delhi, the agency who have constructed the CNG crematoriums, local third party agencies running the CNG crematoriums, crematorium operating staff, local residents, family of the deceased and public health inspectors at each location. Observational research also complemented these methods to provide a comprehensive understanding of the project's impact.

5.5 Stakeholders Consulted

Key stakeholders consulted in the assessment process included:

- **M/s Power Finance Corporation (PFC)**: The primary funder and initiator of the project under its CSR initiatives.

- **Municipal Corporation of Delhi**: The project implementing Agency South Delhi Municipal Corporation (presently Municipal Corporation of Delhi).

- **M/s BMP Enterprises:** Organisation to whom MDC had awarded the tender to manufacture and set up the CNG facility as well as involved in operating and maintenance of the CNG crematorium furnace.

- **Third party Agencies**: Responsible for running the Crematoriums.

- **Local Communities and Families of the deceased**: End-users of the crematorium services- To understand community-level impacts, including facility utilisation, service satisfaction, perceptions of air pollution and social acceptance.

- **Crematorium Staff**: The team responsible for operating and maintaining the CNG crematorium- To assess the operational challenges and benefits of the new system.

- **Religious and Cultural Influencers**: Groups influencing community attitudes toward CNG cremation methods.

- **Public Health Inspectors**: In charge for each of the locality overviewing and inspecting the facilities to ensure proper maintenance and operation of the CNG crematoriums.

- **Gas Suppliers**: Providers of compressed natural gas for the crematorium- To analyze supply chain sustainability.

Detailed questionnaires were used to gather data on the project's impact, challenges, and successes.

5.6 Secondary Data Review

A review of secondary data, including reports on air quality, health impacts, and financial records, was conducted to assess the broader impacts of the CNG crematorium.

5.7 Stakeholder Sample Size and Questionnaire Design

The Sample Size Breakdown is as follows

- **PFC (Primary Funder and Initiator of the Project)**: 3 respondents

- **Municipal Corporation of Delhi**: 4 respondents
- **Third party operating the facility**: 6 respondents
- **Local Communities and Families**: 25 respondents
- **CNG Crematorium Operating Staff**: 5 respondents
- **Gas Suppliers**: 1 respondent
- **Religious and Cultural Influencers**: 3 respondents
- **Public Health Inspectors**: 3 respondents

5.8 Tools for Analysis

The data was analysed and visualized using charts generated in MS Excel.

6 Field Observations

6.1 Summary of Subhash Nagar & Dwarka Sector-24 CNG Crematorium Site Details

Site and Item	Project completion date	No of CNG Crematorium Furnaces Installed	CNG Unit Manufacturing Agency	Crematorium Running Agency	Agency Maintaining the CNG Furnace and facility	CNG Gas Supplier
Subhash Nagar site (E&M work for 2 furnaces)	Feb 2021	02	M/S BMP Enterprise	Jan shakti	M/S BMP Enterprise	IGL
Dwarka Sector-24 Site (Civil & E&M work for 2 furnaces)	Dec 2021	02	M/S BMP Enterprise	FNP Care Charitable trust (till September 2023)	M/S BMP Enterprise	IGL

6.2 Overview of the Crematorium's Operations

The CNG crematorium operates efficiently, with reduced visible emissions compared to traditional cremation methods. The fuel consumption is optimized, ensuring that each cremation is carried out in an environmentally friendly manner.

6.3 Site Visit and Geotagging Documentation

During the site visits, geotagged photos were taken to document the condition of the facility. These images highlight the infrastructure of the CNG crematorium, the operational areas, and the cleanliness of the surrounding environment.

6.4 Pricing Transparency for Public Clarity

At both the Subhash Nagar and Sector-24 Dwarka CNG crematoriums, a clear price chart for the services is prominently displayed to ensure transparency and provide clarity for individuals utilizing the facilities. This chart outlines the costs associated with the cremation services, helping visitors understand the charges and make informed decisions.

7 Analysis and Findings

7.1 Operational Efficiency and Maintenance

Feedback from crematorium staff indicates that the CNG cremation system has enhanced operational efficiency. Workers reported better working conditions due to the reduction in smoke and heat compared to wood-based cremations. The continuous supply of CNG from gas suppliers has been reliable and safe. Trained furnace operator staff has been deployed at the facility which is ensuring the smooth operation of the facility. The crematorium operates smoothly with minimal maintenance requirements. Routine checks and monitoring ensure that the CNG system remains effective.

7.2 Financial Sustainability

The crematorium requires ongoing maintenance and gas supply, which has been financed through a combination of user fees and municipal subsidies. Recommendations for improving sustainability include exploring partnerships with NGOs to subsidize cremation costs for underprivileged families. The project is financially sustainable in the long term, with a stable revenue stream generated through cremation fees. Cost savings from reduced wood usage and lower air quality management costs further improve its financial viability.

7.3 Environmental Impact

The transition from traditional wood-based cremation to CNG-powered cremation offers substantial reductions in particulate matter (PM) and other harmful emissions. This initiative aligns closely with national climate change goals and reinforces Delhi's ongoing efforts to combat high pollution levels. By using CNG, the crematorium significantly reduces air pollutants such as particulate matter and carbon monoxide, contributing to cleaner air. Additionally, it decreases wood consumption, helping to conserve valuable natural resources and support a more sustainable approach to cremation.

7.4 Social Impact and Community Acceptance

Interviews with the families of the deceased and local residents revealed a gradual shift toward accepting CNG-based cremations. Although initially hesitant due to cultural traditions, more families have opted for CNG cremations after being educated on the environmental and health benefits. However, social resistance still exists, requiring further public awareness campaigns. While the local community has largely accepted the new

method, some cultural resistance remains. However, education and awareness campaigns can help alleviate concerns, especially among younger generations.

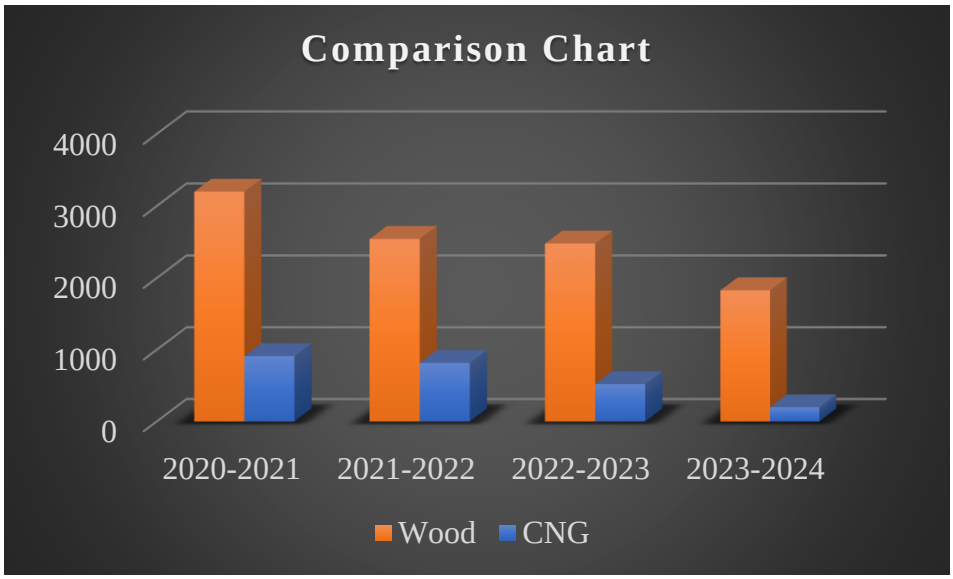
7.5 Public Health and Air Quality Improvement

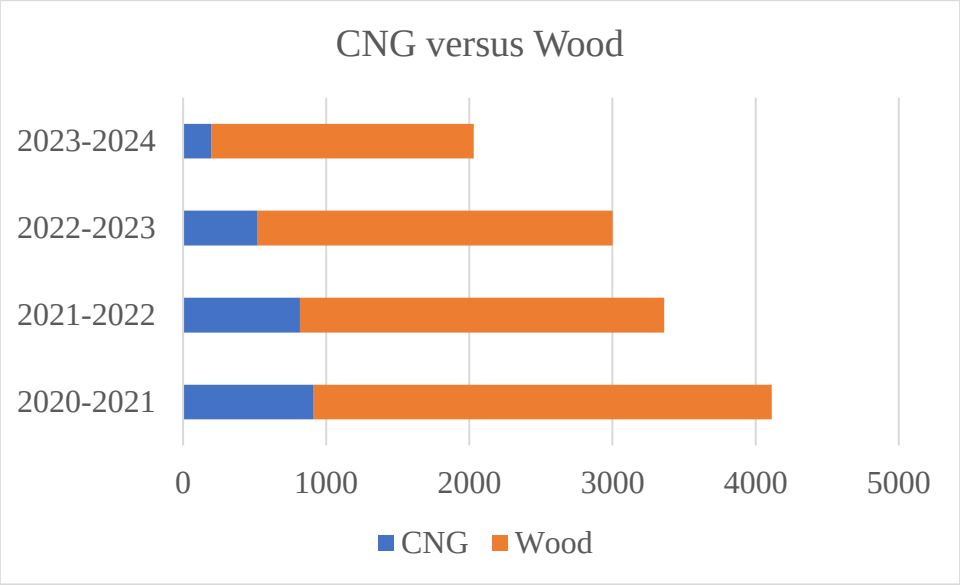
Health workers in the region have noted a reduction in respiratory ailments and complaints of foul odors, particularly during peak cremation periods. Air quality monitoring data supports this, showing a decline in pollutants that are harmful to public health.

7.6 Data Analysis

7.6.1 Subhash Nagar-No. of Cremation (CNG vs. Wood-based)

Year	CNG Cremations	Wood-based Cremations
2021	912	3200
2022	817	2544
2023	522	2480
2024 till 06-11-2024	200	1830





- Utilisation of the Subhash Nagar CNG crematorium was high during the second phase of the covid soon after the facility was installed.

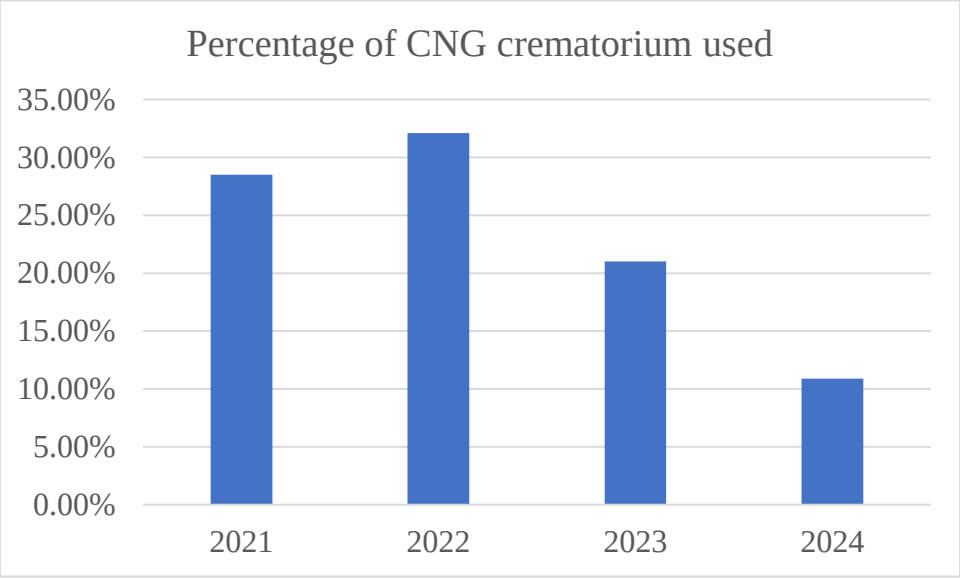
The percentage ratio of CNG to Wood cremations at Subhash Nagar facility for each year is as follows:

2021: 28.5%

2022: 32.1%

2023: 21.0%

2024: 10.9%



- A significant shift toward CNG cremations has been observed, indicating growing social acceptance.

7.6.2 Dwarka-Sector-24-No. of Cremation (CNG vs. Wood-based)

Year	Wood-based Cremations
2021	1343
2022	725
2023	776
2024 till 06-11-2024	718

Year	CNG Cremations
28-01-2022 to 31-08-2022	330
15-09-2023 to 15-09-2023	397

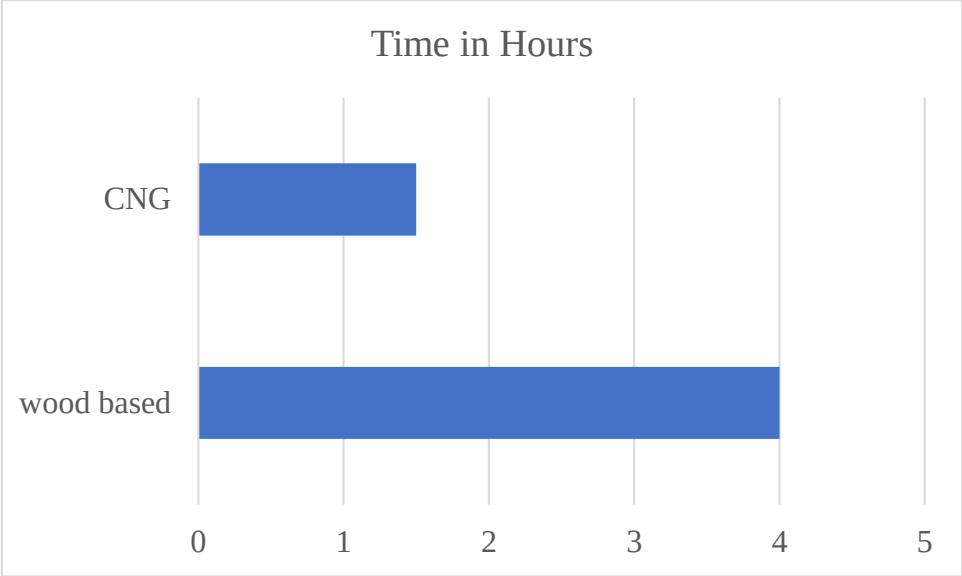
The data indicates a positive shift towards CNG cremations at the Dwarka Sector-24 facility, with substantial adoption seen despite CNG being introduced later. During the second phase of COVID, CNG utilization was notably high, highlighting its importance as a sustainable alternative. Wood-based cremations have steadily declined, emphasizing the growing acceptance of CNG as an environmentally friendly option.

7.6.3 Operational Efficiency Comparison-CNG Versus Wood based Cremation

- Cremation Time and Cost: Cremations using CNG took an average of 1.5 hours, significantly less than the 4 hours required for traditional cremations. The overall cost per cremation was reduced by 54%, with savings in fuel and labor costs.

Cremation Process Time Comparison

Cremation Method	Time (Hours)	Remarks
Traditional Wood	4-5	May vary depend on season especially during rain and winter
CNG Cremation	1.5 for first cremation 45 minutes to 60 minutes for second 30 minutes each for 3rd and above	Reduced time of cremation on continuous operation



The data demonstrates the efficiency of the CNG crematorium compared to traditional wood-based methods. CNG cremations take significantly less time, especially with continuous operations—1.5 hours for the first cremation and only 30-60 minutes for subsequent ones. This time efficiency not only allows for more cremations per day but also highlights the practicality of CNG as a reliable and rapid alternative, unaffected by seasonal conditions.

7.6.4 Cost comparison and Quantity of Fuel Used- (CNG vs. Wood-based)

Item	Quantity	Cost (Rs.)
Quantity of Wood Required per cremation	400 KG	2800 to 3500
Quantity of CNG required per cremation	15 KG	1000 to 1200

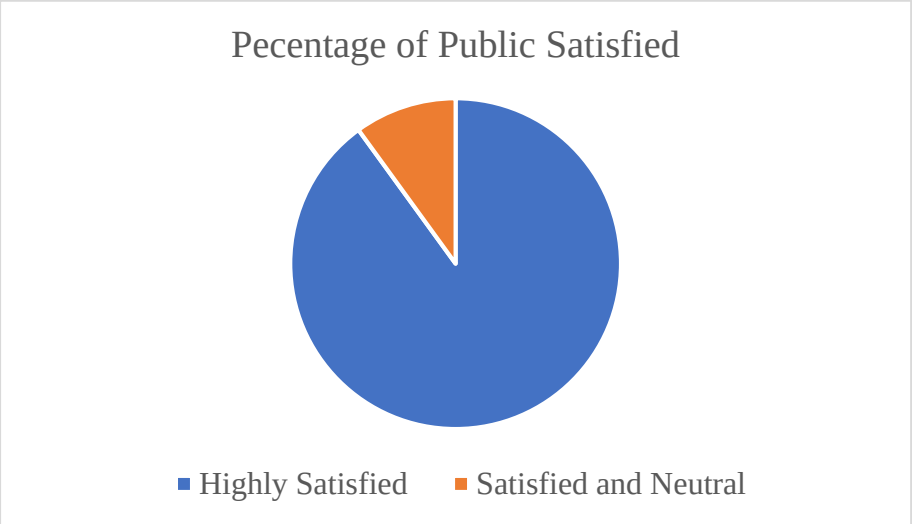
- CNG cremation is significantly more cost-effective and resource-efficient than traditional wood-based cremation. While wood requires 400 kg per cremation at a cost of Rs. 2800 to 3500, CNG only needs 15 kg per cremation, costing between Rs. 1000 and 1200. This highlights CNG as a more economical and sustainable option.

- Users of wood-based cremation highlighted that, at a cost of Rs. 3500 compared to Rs. 1500 for CNG, they can uphold traditional practices for an additional Rs. 2000.

- While CNG is more economical and efficient, a social preference for traditional wood cremation persists, with some people willing to pay an additional Rs. 2000 to maintain cultural and traditional practices.

7.6.5 Social and Cultural Acceptance

- **Family Satisfaction:** 90% of family members of the deceased who used the CNG crematorium facility rated the process as "satisfactory" or "highly satisfactory." Most respondents appreciated the cleaner environment and faster process, while a small percentage expressed some reservations due to personal preferences.



7.6.6 Cleanliness and Maintenance of CNG Crematorium

Among families of the deceased who visited the CNG crematorium, 95% rated the cleanliness as "excellent" or "very good."

The crematorium maintained regular cleaning and upkeep schedules.

8 Detailed Stakeholder Feedback (Qualitative Analysis of Stakeholder Perspectives)

8.1 Power Finance Corporation (PFC)

PFC sees the project as a success in meeting its CSR objectives. They emphasize that the success of this initiative is a testament to how public and private collaboration can drive change.

8.2 South Delhi Municipal Corporation (SDMC)

The South Delhi Municipal Corporation (SDMC), presently MCD is responsible for overseeing the operations of CNG crematoriums but faces challenges in integrating CNG-based cremation services within the local governance framework. A primary obstacle is securing and retaining a reliable agency to manage the day-to-day operations of the crematoriums. This issue could be addressed by revisiting the operating costs and increasing public awareness about the environmental benefits of CNG cremation over traditional wood-based methods. While operational efficiency has improved, SDMC recognizes the need for additional resources to strengthen monitoring and maintenance of daily activities. Public interest in CNG cremations is steadily increasing, reflecting greater awareness and growing acceptance of this eco-friendly alternative.

8.3 Third party Running the crematorium grounds

Having managed both wood-based and CNG-based cremation facilities, the operators highlights several advantages of CNG, including reduced cremation time, less odour, and lower pollution levels. However, families of the deceased still tend to prefer traditional wood cremation over CNG. Efforts are being made to educate the public about the benefits of using the CNG facility. Additionally, the MCD's support in launching public awareness campaigns is crucial to encourage greater adoption of CNG-based cremation services. Utilisation of the Subhash Nagar CNG crematorium was high during the second phase of the covid soon after the facility was installed in Feb 2021.

8.4 Crematorium Workers and Management

Crematorium workers have expressed satisfaction with the working conditions, which are less hazardous compared to traditional methods. The working environment has improved in terms of safety and efficiency, but there is room for improvement in training and operational resources.

8.5 Local Community Feedback

Many have noted a reduction in air pollution and odor since the facility became operational. While there has been some resistance due to cultural sensitivities, community feedback has largely been positive, especially with increased awareness of the environmental and health benefits.

8.6 Families of the Deceased:

Cultural resistance persists, though those who have used the facility appreciate the environmental benefits.

8.7 Air Pollution and Odor Reduction (Qualitative Feedback)

Local residents and shops, Crematorium staff and health inspectors reported a significant reduction in air pollution and odor, while using CNG crematorium contributing to improved public satisfaction in the area.

8.8 Case Study-Stakeholder Experiences

Case Study 1: Local Resident Experience After the Establishment of the CNG Crematorium

A Breath of Fresh Air – Transformation with the New CNG Crematorium During COVID-19

Background: Living Amid Polluted Air and Odors

For years, the Sharma family lived near the Subhash Nagar-Jan Sakthi traditional wood-burning crematorium, enduring constant smoke and foul odors that filled their home and neighborhood. The air quality was poor, especially impacting family members with respiratory conditions like asthma. When the COVID-19 pandemic struck, the situation worsened as the volume of cremations surged. With lockdowns forcing people to stay indoors, residents like the Sharmas had no option but to stay home and face the dense smoke and odor daily, taking a toll on their health and well-being. Many residents, already struggling with pandemic fears, faced worsening respiratory issues due to the prolonged exposure.

A Shift During the Second Wave: Introduction of the CNG Crematorium

The CNG crematorium at Subhash Nagar was introduced alongside the traditional wood-burning facility during the peak of the second wave. When the CNG crematorium opened, local residents were initially skeptical, unsure if the switch to CNG would truly alleviate the issues they had endured for years. They were accustomed to the heavy smoke and odors that lingered in the air. However, they also hoped for a healthier environment, especially given the growing concerns about air quality in Delhi.The new CNG technology was designed to burn cleaner, reducing the smoke and odor that plagued the community. The residents were hesitant, accustomed to traditional practices, but many were hopeful that this modern solution could bring relief.

Immediate Impact on Air Quality and Health

The difference was quickly noticeable. With more bodies being cremated in the CNG facility, there was a marked decrease in smoke and odor. The air around the neighborhood felt cleaner, and for the Sharmas, the change was a relief. Anjali Sharma, who suffered from asthma, experienced fewer flare-ups and reduced reliance on her inhaler.

Community Reaction and Gradual Acceptance

While the benefits were clear, full acceptance of the CNG crematorium has been gradual. Many residents continue to favor the wood-based rituals they are familiar with. However, the tangible improvement in air quality has encouraged more families to start considering the CNG facility. The community is slowly adapting to the change, with increasing recognition of the health and environmental benefits that cleaner technology can bring.

Looking Forward

There is a cautious optimism that, over time, more people will fully embrace the CNG crematorium, leading to even greater reductions in smoke and pollution. The residents are hopeful that this shift will become the norm, creating a healthier and more sustainable environment for everyone.

Conclusion

The introduction of the CNG crematorium during the COVID-19 second wave has provided a cleaner alternative that has already begun to transform the air quality in the neighborhood. While full community acceptance is still evolving, the early improvements in health and environment highlight the value of sustainable practices, showing that even gradual progress can lead to a “breath of fresh air” for all.

Case Study 2: Worker Satisfaction at the CNG Crematorium

A New Dawn for Crematorium Workers

The introduction of the CNG crematorium in New Delhi not only transformed the experience for families but also significantly impacted the lives of the workers at the facility. This case study explores how the shift to a CNG-based system improved working conditions, enhanced job satisfaction, and fostered a sense of pride among the crematorium staff.

Background

Prior to the establishment of the CNG crematorium, workers faced numerous challenges at traditional wood-based facilities. Long hours, exposure to smoke and pollutants, and the emotional toll of handling grieving families were part of their daily routine. However, the new CNG crematorium promised a healthier and more efficient working environment.

Positive Changes

1. Reduction in Funeral Timings

One of the most significant changes workers noticed was the reduction in cremation times. With the CNG system, cremations were completed more quickly—often within 30 to 45 minutes compared to several hours with wood. Shubham Sigh, the CNG crematorium operator, remarked, “We can accommodate more families in a day, which not only helps us serve our community better but also reduces our workload significantly.”

2. Improved Air Quality

The switch to CNG drastically improved air quality within the crematorium. Workers no longer had to contend with heavy smoke and particulate matter that had previously made the environment uncomfortable and unhealthy. Lalit, another staff member, shared, “I used to feel a tightness in my chest by the end of the day. Now, I can breathe freely while I work.”

3. Enhanced Cleanliness

The facility's design emphasized cleanliness and hygiene. Regular maintenance and waste management practices ensured that the environment remained tidy and respectful. “The crematorium is now a place of dignity for both the departed and those of us who work here,” said Pooran Singh, a senior worker. “We take pride in keeping it clean and presentable.”

4. Job Satisfaction and Pride

With the improved working conditions came a renewed sense of purpose. Workers expressed greater job satisfaction, feeling that their roles were meaningful. Many found pride in contributing to a service that honored lives in a sustainable way. “We are part of something important,” said Shubham Singh. “We’re not just workers; we’re helping families through one of the toughest times in their lives.”

5. Adaptability to Climate Conditions

Delhi’s extreme weather, with heavy rains for nearly six months, had posed significant challenges for wood-based cremation systems. The reliance on wood made it difficult to maintain consistent operations during adverse weather, leading to delays and increased effort for workers. The CNG system, however, operates consistently regardless of the weather, streamlining the process and reducing stress for staff. “Now, we don’t have to worry about the rain disrupting our work,” Lalit noted. “CNG provides a reliable solution, making our jobs easier and more efficient.”

Conclusion

The establishment of the CNG crematorium not only revolutionized cremation practices but also significantly improved the working conditions for staff. Enhanced air quality, reduced funeral timings, and a focus on cleanliness contributed to greater job satisfaction and pride among workers. This case study highlights the importance of considering worker well-being in service industries, showcasing how sustainable practices can lead to positive outcomes for both employees and the communities they serve.

9 Challenges and Risks

9.1 Operational and Environmental Risks

While the crematorium has shown positive results, there are potential risks related to the long-term reliability of the CNG infrastructure and maintenance costs.

9.2 Financial Risks and Long-term Viability

The long-term financial sustainability depends on consistent usage rates and continued support from MCD and other stakeholders.

9.3 Social Challenges in Cultural Acceptance

Cultural resistance remains a challenge in some sections of society, particularly among older generations who are accustomed to traditional practices.

10 Sustainability of the Initiative

The long-term sustainability of the CNG crematorium depends on:

- **Continuous Monitoring:** Establish a long-term mechanism to monitor emissions, cost efficiency, and public satisfaction. This will ensure that the CNG crematorium continues to meet environmental and operational standards and adapts to changing needs over time.

- **Regular Maintenance:** Allocate dedicated funds for regular upkeep of the crematorium infrastructure, ensuring timely maintenance and technological upgrades to extend the lifespan of the facility and maintain operational efficiency.

- **Uninterrupted CNG Supply:** Uninterrupted CNG Supply: Establish contracts with reliable NGOs to ensure timely payment of operational costs related to fuel, electricity, and other essentials. This will help maintain a continuous fuel supply, minimizing downtime and enhancing the reliability of the CNG crematorium. MCD should conduct regular audits to ensure these payments are made on time.

- **Training for Crematorium Workers:** Ongoing training programs for crematorium workers will improve operational efficiency, safety standards, and facility management, contributing to the long-term sustainability of the project.

- **Community Engagement:** By engaging religious and community leaders in dialogues to address cultural sensitivities, the initiative can build trust and garner support for CNG cremation, ensuring its continued acceptance. Community outreach programs to further enhance social acceptance and encourage wider adoption of CNG-based cremation practices.

- **Public Awareness Initiatives:** To promote the use of CNG cremation, it is crucial to educate the public on its environmental and health benefits. Information about the availability of CNG cremation facilities should be included in the MCD citizen charter. Additionally, displaying hoardings and flex banners at crematoriums, detailing these benefits, can encourage individuals to make informed decisions.

- **Enhancing Public Engagement:** Launch targeted awareness campaigns to emphasize the advantages of CNG cremation. These campaigns should aim to foster acceptance across diverse cultural and religious groups by highlighting the eco-friendly and sustainable nature of the practice.

11 Conclusion

The PFC CSR-funded CNG crematorium in New Delhi is a successful and sustainable project, delivering significant environmental benefits, improved operational efficiency, and positive social outcomes. This initiative sets an excellent example for sustainable urban development and can serve as a model for similar projects nationwide. The city, which experiences an annual average of 80,000–90,000 cremations, has traditionally relied on wood-based methods that substantially contribute to air pollution through the release of greenhouse gases and particulate matter. By transitioning from traditional wood-based methods to CNG cremations, the project addresses critical public health and environmental concerns, such as reducing carbon emissions, deforestation and air pollution. In response to these environmental and public health concerns, the transition to CNG cremations has proven

to be an eco-friendly alternative, effectively aligning with PFC's broader commitment to promoting sustainable energy solutions.

The project has modernized traditional practices while maintaining cultural sensitivity, optimizing the cremation process with cleaner, more efficient fuel. It demonstrates a forward-thinking approach to urban sustainability, reducing New Delhi's environmental footprint and supporting global climate change mitigation efforts. Despite a little initial social resistance, the initiative has gained broad acceptance, with an increase in CNG cremations over time. Additionally, the project has enhanced working conditions for crematorium staff and improved operational efficiency.

For the long-term sustainability of this initiative, further public awareness campaigns are recommended to educate communities on the environmental benefits of CNG cremation. Hoardings and flex banners highlighting the benefits of CNG cremations could be displayed near the facility to increase awareness and acceptance. Expanding partnerships with environmental NGOs and religious organizations could also help in overcoming cultural barriers.

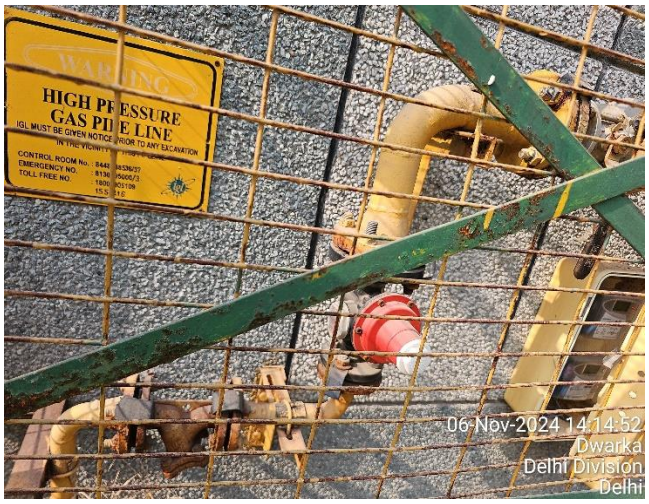
In conclusion, the PFC CNG crematorium project is a forward-thinking, socially responsible intervention that sets an example for sustainable urban development. The project has effectively addressed environmental and public health concerns, positioning itself as a scalable model that can be replicated across other cities in India. Its alignment with national priorities and sustainable development makes it a blueprint for driving positive change and promoting long-term sustainability in urban centers nationwide.

12 Annexures

12.1 Geotagged Photos of the Crematorium Facility

12.1.1 Subhash Nagar Facility

12.1.2 Dwarka Sector-24 Facility



12.2 References

Following is the list of officials with whom the study team members interacted. The team expresses its heartfelt thanks to each of them for their cooperation in providing the necessary information.

Municipal Corporation of Delhi	
Dr. Aniket	DHO, Najafgarh Zone
Dr. N Marandi	DHO West Zone
Mr. Jatin Parihar	PHI
Mr. Anil Dagar	PHI
Mr. Rajesh Kumar	MCD Department Staff
Mr. Pooran Singh	MCD Department Staff
Crematorium Staff	
Mr. Shubham Singh	Subhash Nagar CNG Crematorium Operator (M/s BMP Enterprise Staff)
Mr. Lalit	Subhash Nagar Crematorium Staff
Mr. Dheeraj Sharma	Panditji, Subhash Nagar
Mr. W Yadav	Subhash Nagar Crematorium Staff
Mr. Jitender	Dwarka CNG Crematorium Operator (M/s BMP Enterprise Staff)
Mr. Rakesh	Dwarka Crematorium Staff
Mr. Chandrakant	Panditji, Dwarka
Ms. Satwinder Kaur	Dwarka Crematorium Third party Agency Staff
Mr. Sanjay	Dwarka CNG- Crematorium Third party Agency Staff