



# SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF ONE NO. OF OXYGEN GENERATION PLANT OF 1000 LPM WITH BOOSTER FACILITY FOR REFILLING OF CYLINDERS AT B.K. HOSPITAL, FARIDABAD

Location: Faridabad, Haryana

## PROJECT SUMMARY

CSR PROJECT NAME	Supply, Installation, Testing & Commissioning of one no. of Oxygen Generation Plant of 1000 LPM with Booster Facility for refilling of Cylinders at B.K. Hospital Faridabad
SUPPORTED AND EXECUTED BY	NHPC Limited
MOU SIGNED FOR O&M SERVICES BY	Principal Medical Officer, District Civil (B.K.) Hospital, Faridabad
TOTAL EXPENDITURE	₹ 2.12 crores
DURATION	2021- 22
LOCATION	Faridabad, Haryana
NO. OF BENEFICIARIES	1,10,000 (approx)





## ACKNOWLEDGMENTS

IIT Jammu expresses profound gratitude to NHPC Limited for entrusting it with Impact Assessment of CSR Activity related to installation of an Oxygen Plant at B.K. Hospital Faridabad Haryana. We also thank all the individuals and organizations, whose dedicated involvement and support have been vital to the successful completion of the Impact Assessment of this activity supported by NHPC Limited.

Our deepest appreciation goes to the Health Authorities of B.K. Hospital Faridabad Haryana for their support and coordination for this assessment study. Their cooperation was instrumental in gathering essential data and insights into the project's impact.

A special note of thanks is extended to NHPC Limited for its commitment to corporate social responsibility. Their financial and technical support have been fundamental in establishing the oxygen plant, which are critical in augmenting the healthcare infrastructure of the region.

Lastly, our acknowledgment would be incomplete without mentioning the tireless efforts of the assessment team members. Their dedication and professionalism in conducting thorough research and analysis have culminated in a comprehensive report.



## PREFACE

This is an Impact Assessment Report of Corporate Social Responsibility Activity related to “Supply, Installation, Testing & Commissioning of one no. of Oxygen Plant with Booster Facility for refilling of Cylinder at B.K Hospital Faridabad” supported by NHPC Limited.

The project aims to provide quality healthcare services in the region and was undertaken taking into consideration the acute need for medicinal oxygen felt during the onset of COVID ‘19 epidemic.

This report briefly covers NHPC, its CSR policy, and its objectives. Further, the extent to which the aims and objectives of this CSR project have been met, is detailed by giving information about the beneficiaries impacted.

The conclusions are specific to this intervention and encompass learnings, that may be value building for the future endeavors of this nature.



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# List of Abbreviations

<b>CSR</b>	Corporate Social Responsibility
<b>COPD</b>	Chronic Obstructive Pulmonary Disease
<b>DBT</b>	Department of Bio Technology
<b>DSIR</b>	Department of Scientific & Industrial Research
<b>DST</b>	Department of Science & Technology
<b>IIT</b>	Indian Institute of Technology
<b>MGNF</b>	Mahatama Gandhi National Fellowship
<b>NGO</b>	Non-Governmental Organisation
<b>NIRF</b>	National Institutional Ranking Framework
<b>OECD DAC</b>	The Organisation for Economic Co-operation and Development's Development Assistance Committee
<b>SDG</b>	Sustainable Development Goals



## EXECUTIVE SUMMARY

This report provides a detailed analysis of the impact of the Corporate Social Responsibility (CSR) initiative undertaken by NHPC Limited, which focused on Supply, Installation, testing and commissioning of an Oxygen Generation Plant of capacity of 1000 Liters Per Minute (LPM) with booster facility for refilling of Cylinders at B.K Hospital, Faridabad, Haryana. The initiative was undertaken in response to the urgent need of medical oxygen in the wake of the COVID-19 pandemic. In view of upsurge in COVID cases and sudden increase in requirement of oxygen, a CSR initiative involving Installation, Testing and commissioning of an Oxygen Plant of 1000 LPM with booster having cylinder filling facility along with provisioning of a 320 KVA DG set at B K Hospital was deemed essential to address significant gaps in the healthcare services of Faridabad at that time.

Commissioned on October 7, 2021, the Oxygen Plant has significantly enhanced healthcare infrastructure in the region by increasing oxygen availability, thus making the district self-reliant in oxygen production. The initiative was implemented by NHPC Limited through a tendering process at a cost of INR 212.61 Lakh and has benefitted over 1,00,000 patients to date with an ever increasing number of patients with respiratory disorders continuing to get benefited from the initiative.

The impact assessment for this initiative was carried out in OECD DAC framework using a mixed methods approach utilizing both quantitative metrics as well as qualitative insights gained through stakeholder feedback. Instruments such as Survey, in depth interviews, and focus group discussions were used. Direct interactions with healthcare professionals and community members offered valuable insights into the improvements in healthcare provisioning as well as community satisfaction. The assessment indicates substantial improvements in healthcare services. Notably, there has been an increase in the number of patients receiving oxygen therapy and a reduction in treatment delays.

The plant, with a capacity of 1000 LPM along with cylinder filling facility and a power back up represents a crucial advancement in local healthcare infrastructure. The social return on investment indicators include higher hospitalization rates associated with respiratory ailments and reduction in the costs associated with oxygen procurement. The aggregate community satisfaction metrics include trust and confidence in access to critical healthcare facilities in emergent situations as well as routine hospitalization.

Some of the challenges noted concern the issues related to post warranty operation and maintenance of the plant and recommendations accordingly incorporate sustainability considerations of the initiative.

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These challenges can be effectively met through a focused stakeholder engagement initiative aimed at evolving a strategy for long term budgeting and effective maintenance contracts to ensure serviceability of the created infrastructure over a period of time to prevent disruptions in operation and continued delivery of better health outcomes.

The initiative aligns well with several United Nations Sustainable Development Goals (SDGs). Primarily, it supports SDG 3 (Good Health and Well-being) by enhancing healthcare infrastructure and improving patient care in Faridabad. It also contributes to SDG 9 (Industry, Innovation, and Infrastructure) by integrating advanced technology into healthcare systems to improve efficiency and sustainability. Additionally, the project contributes to SDG 17 (Partnerships for the Goals), highlighting the role of collaboration between NHPC Limited and local healthcare institutions in achieving these objectives.



# 1. INTRODUCTION

## 1.1 ABOUT IIT JAMMU



IIT Jammu, was established in 2016 and is located in Jammu and Kashmir, India. It is recognized as an Institute of National Importance and offers a variety of programmes at the undergraduate, postgraduate, and doctoral levels. IIT Jammu provides Bachelor of Technology (B.Tech) degrees in several engineering disciplines such as Chemical Engineering, Civil Engineering, Computer Science and Engineering, Electrical Engineering, and Mechanical Engineering. It also offers Master of Technology (M.Tech) and Doctor of Philosophy (Ph.D) programmes across various specializations.

IIT Jammu was ranked 67th in the engineering category by the NIRF in 2023. This places it among the top performers of the third generation IITs. IIT Jammu has undertaken various collaborative projects with other agencies to enhance research and development in key technological areas. IIT Jammu is actively involved in collaborations with national agencies like the DST, the DBT, the DSIR, and with the Government of the UT of Jammu and Kashmir. These partnerships focus on advancing research and development across multiple disciplines and leveraging opportunities for funding and expertise from different sectors.

IIT Jammu is engaged in significant collaborative efforts with industrial partners. These collaborations aim to align academic research with industry needs, facilitating practical applications and innovations that can be commercialized for greater good. Through these partnerships, IIT Jammu aims to enhance its research capabilities and provides its students and faculty with direct exposure to industry-specific challenges and solutions.

## 1.2 ABOUT NHPC LIMITED



NHPC Limited is the largest hydropower development organization in India, with capabilities to undertake all the activities from conceptualization to commissioning of hydro projects. NHPC has also diversified in the field of Solar & Wind energy development etc.

NHPC Ltd. (Formerly known as National Hydroelectric Power Corporation Ltd.) was incorporated in 1975 under the Companies Act, 1956. The company is mandated to plan, promote and organize an integrated and efficient development of power in all its aspects through Conventional and Non-Conventional Sources in India and abroad. NHPC is a listed company on NSE and BSE after successfully concluding its IPO in 2009.

NHPC's total installed capacity as on 31 March, 2024 is 7144.20 MW including 1593 MW in Joint Venture, comprising 6971.20 MW from 22 Hydro Power Stations, 123 MW from three Solar Power Project and 50 MW from a Wind Power Project. NHPC's hydro power share of 6971.20 MW comes to about 14.85% of the country's total installed Hydro Power capacity of 46928.17 MW.



NHPC including its JVs/ Subsidiaries is presently engaged in the construction of 15 projects aggregating to a total installed capacity of 10442.70 MW.

In addition, twelve projects aggregating to a total installed capacity of 4707 MW are Under Clearance Stage.

#### Other initiative by NHPC in Renewable Energy :-

> Under MNRE scheme, NHPC has been nominated as Renewable Energy Implementing Agency (REIA)/Intermediary Procurer. Under this 700 MW Solar Project (320MW in Bikaner and 380 MW in Jaisalmer) has been developed and 5360 MW are under development by different agencies.

>NHPC has installed 4.08 MW Roof top Solar (RTS) capacity across 25 locations. Further, addition on Roof top capacity at NHPC locations as available and identified from time to time is also being carried out through respective Projects/Units.

>NHPC has also taken initiatives for development of Green Hydrogen Technology, wherein one 25 KW capacity Pilot Green Hydrogen Project at Leh and 2 Pilot green hydrogen-based e-mobility projects (one at Kargil) and one at Chamba, Himachal Pradesh) are under implementation. These projects are anticipated to be commissioned by F.Y 2024-25.

#### **NHPC's Vision**

- To be a global leading organization for sustainable development of clean power through competent, responsible and innovative values.

#### **NHPC's Mission**

- To achieve excellence in development of clean power at international standards.
- To execute & operate projects through efficient and competent contract management and innovative R&D in environment friendly and socio-economically responsive manner.
- To develop, nurture and empower the human capital to leverage its full potential.
- To practice the best corporate governance and competent value based management for a strong corporate identity and showing concern for employees, customer, environment and society.
- To adopt & innovate state-of-the-art technologies and optimize use of natural resources through effective management.

## 1.3 ABOUT CORPORATE SOCIAL RESPONSIBILITY



As per the Companies (CSR Policy) Rules, CSR means the activities undertaken by a Company in pursuance of its statutory obligation laid down in Section 135 of the Companies Act, 2013 in accordance with the provisions contained in these rules. As per sub-section (1) of Section 135 of the Companies Act, 2013, every company having net worth of rupees five hundred crore or more, or turnover of rupees one thousand Crore or more or a net profit of rupees five crore or more during the immediately preceding financial year shall constitute a CSR Committee of the Board consisting of three or more Directors, out of which at least one Director shall be an Independent Director, provided that where a company is not required to appoint an independent director under sub-section (4) of section 149, it shall have in its CSR Committee two or more directors.

The CSR Committee shall:

1. formulate and recommend to the Board, a CSR Policy which shall indicate the activities to be undertaken by the company in areas or subjects, specified in Schedule VII;
2. recommend the amount of expenditure to be incurred on the activities referred to in clause (a); and
3. monitor the CSR Policy of the company from time to time.

The Board of every company referred to in sub-section (1) of Section 135 of the Companies Act, 2013 shall:

- After taking into account the recommendations made by the CSR Committee, approve the Corporate Social Responsibility Policy for the company and disclose contents of such Policy in its report and also place it on the company's website, if any, in such manner as may be prescribed; and
- Ensure that the activities as are included in CSR Policy of the company are undertaken by the company.

The Board of every company referred to in sub-section (1), shall ensure that the company spends, in every financial year, at least two percent of the average net profits of the company made during the three immediately preceding financial years or where the company has not completed the period of three financial years since its incorporation, during such immediately preceding financial years in pursuance of its CSR Policy:

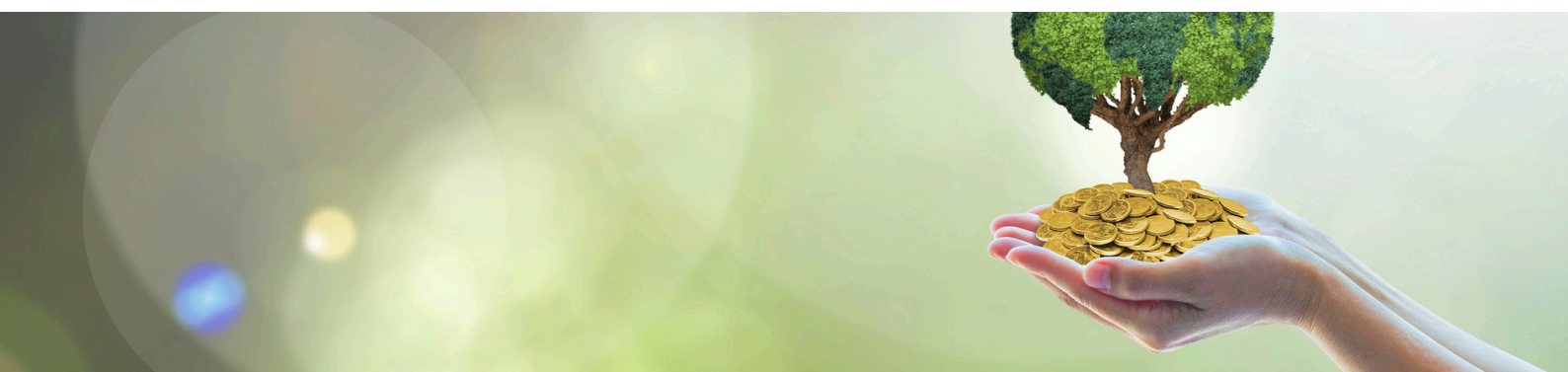
Provided that the company shall give preference to the local area and areas around it where it operates, for spending the amount earmarked for Corporate Social Responsibility activities;

Provided further that if the company fails to spend such amount, the Board shall, in its report made under clause (o) of sub-section (3) of section 134, specify the reasons for not spending the amount and, unless the unspent amount relates to any ongoing project referred to in sub-section (6), transfer such unspent amount to a Fund specified in Schedule VII, within a period of six months of the expiry of the financial year.

Provided also that if the company spends an amount in excess of the requirements provided under this sub-section, such company may set off such excess amount against the requirement to spend under this sub-section for such number of succeeding financial years and in such manner, as may be prescribed.

Thus, CSR provisions outlined in Section 135 of the Companies Act, 2013 and the Companies (CSR Policy) Rules emphasize the significance of not just adhering to regulations, but also promoting transparency and accountability in the ways that the companies contribute to the improvement of society and the environment.

## 1.4 ABOUT NHPC's CSR POLICY



CSR has been an integral part of NHPC's business philosophy. NHPC Limited is conducting its business in a socially responsible way by maintaining high level of organizational integrity and ethical behaviour, in conformity with expected standards of transparency in reporting and disclosing the performance in all spheres of its activities, demonstration of concern for social welfare, adoption of best management practices and effective operational methods to win the trust and confidence of all stakeholders. NHPC is committed to making significant contributions to the community, environment, and society through well-planned CSR interventions.



NHPC has strengthened its commitment to CSR in line with Statutory Provisions. CSR Policy of NHPC has been revised in accordance with Section 135 of the Companies Act, 2013 and the Companies (CSR Policy) Rules. NHPC also adheres to the Department of Public Enterprises (DPE) guidelines on CSR. The CSR activities undertaken by NHPC Limited align with the areas or subjects specified in Schedule VII of the Companies Act, 2013.

NHPC Limited has undertaken a number of CSR initiatives for the communities living in and around its Projects/ Power Stations / Units in the areas of Education, Health, Sanitation, Rural Development, Skill Development, Environment, Women Empowerment, Promotion of sports, etc.

NHPC has been assigned three Aspirational Districts, namely Baramulla in the UT of J&K, Chamba in Himachal Pradesh, and West Sikkim (now renamed as Gyalshing) in Sikkim, for focused development through CSR.

### **NHPC's CSR VISION**

- To contribute to sustainable development and inclusive growth while taking care of People, Planet and organizational goals / growth.

### **NHPC's CSR MISSION**

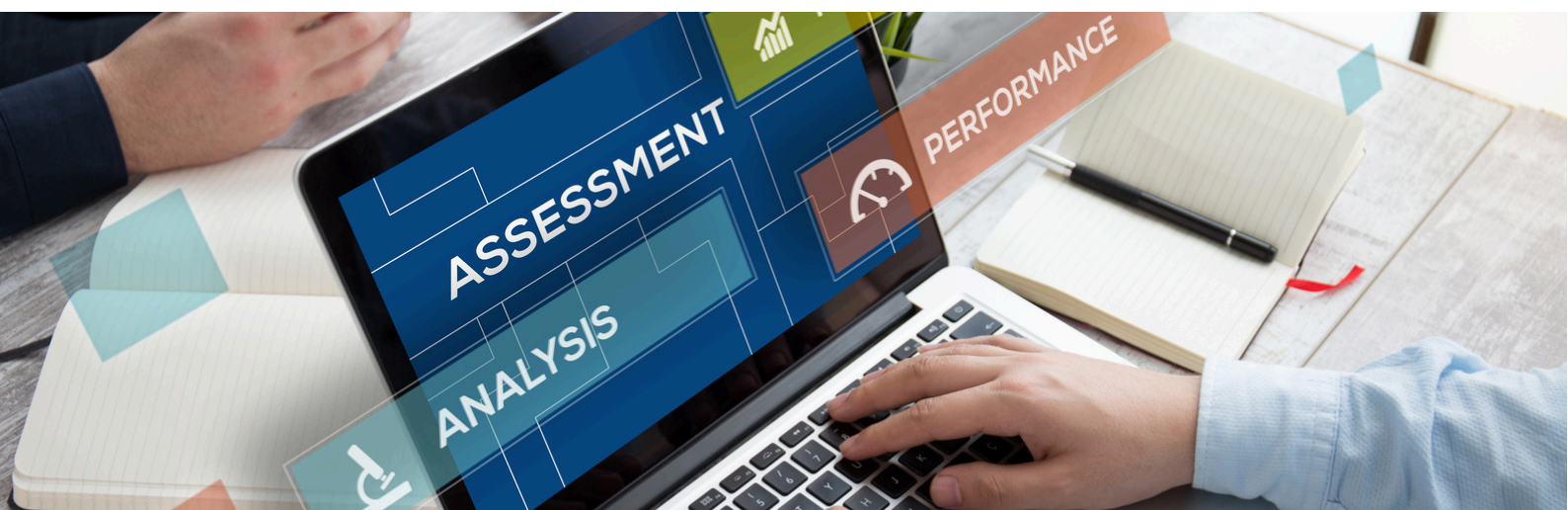
- To become socially responsible corporate entity committed to improving the quality of life of the society at large.
- To create and develop facilities for the communities it engages with.
- To balance social, economic and environmental development objectives through collective and unified efforts of all stakeholders.

The CSR Policy of NHPC is committed to the guideline of localizing its efforts, with the concentration being given to the communities located in and around its power stations and projects. It is this close proximity that enables the company to respond directly to the specific needs of those communities by intervening in ways that are relevant, timely, and directly beneficial to the residents. Accordingly, this approach of holistic community involvement gives priority to education, health care, environmental conservation, and rural development-related projects. NHPC collaborates with the government, local administrations, and NGOs, including community leaders, in such a way that their proposed projects be in line with national priorities and recommendations of the local populations.

The company has strong monitoring and reporting mechanisms of each CSR initiative built into place that would enable checking on the progress of these at regular intervals. These include the preparation of comprehensive reports outlining what is spent, achieved, and the efficiency of initiatives undertaken, put in the public domain. This not only enhances transparency of the exercise but also makes room for adjustments and improvements in strategy based on empirical evidence and stakeholder feedback.

CSR Policy of NHPC Limited exemplifies the company's commitment to being a responsible corporate citizen by its strategic and localized community engagements. It is completing all statutory requirements, where the perceptible result is being seen that it contributes to the welfare of the people at large. The policy exemplifies the commitment of NHPC Limited towards sustainable development and a realization at the company's end that it is one of the leaders among energy companies in India in corporate responsibility .

## 1.5 ABOUT IMPACT ASSESSMENT



The Ministry of Corporate Affairs in India mandates impact assessments for CSR activities through amended rules. Every company having average CSR obligation of ₹10 crores or more in pursuance of sub-section (5) of Section 135 of the Companies Act, 2013, in the three immediately preceding financial years, shall undertake impact assessment, through an independent agency, of their CSR projects having outlays of Rs. One Crore or more, and which have been completed not less than one year before undertaking the impact study. A company undertaking impact assessment may book the expenditure towards CSR for that financial year, which shall not exceed two percent of the total CSR expenditure for that financial year or fifty lakh rupees, whichever is higher.

An Impact Assessment in CSR is the critical evaluation tool that seeks to measure effectiveness and sustainability of initiatives taken by companies under their CSR obligations. This benchmark reflects not only the work being done but also the strategic alignment as to which CSR projects are aligned along with the long-term vision of the company and, more importantly, the genuine community needs.

Therefore, the crux of the impact assessment of the CSR projects lies in its ability to give clear and measurable understanding of how the CSR projects are, in fact, creating value for society and the implementing organization.

Impact assessment is the method applied in systematic evaluation towards finding outcomes and benefits of social responsibility initiatives of a firm in relation to the invested resources. Data collection on the key indicators is done before and after the implementation of a project to capture the direct and indirect effects that the project has on the target community and other stakeholders.

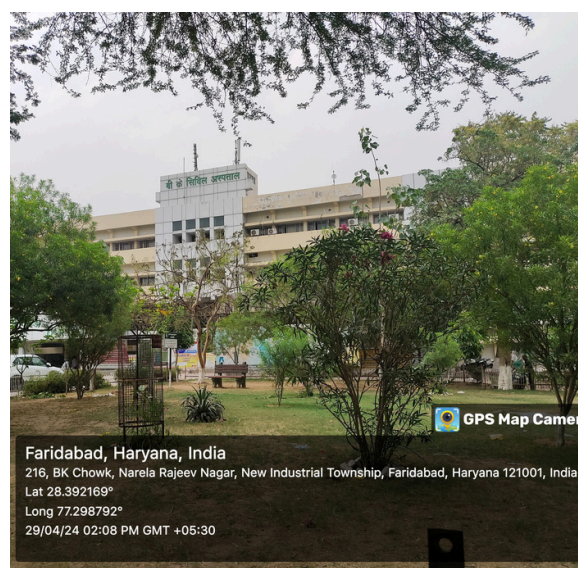
Among the added values that come with a full impact assessment made by an independent third-party agency, there is also that of ensuring objectivity to the evaluation and bringing credibility to the findings. Something that may be crucial for better corporate transparency and trust among the stakeholders. Furthermore, these recommendations for improvement in future always help companies refine their strategies and practice of CSR for increased impacts on the society.

From an operational point of view, impact assessment includes a number of steps viz. the definition of aims and scope of the assessment, methods to be chosen, data collection, and analysis etc. Further, an effective impact assessment should include, in the context of each CSR project, the level of intervention, geographical, and cultural setting of beneficiary community needs.

## 1.6 PROJECT BACKGROUND

Faridabad is one of the lively cities in the North Indian state of Haryana. It shares its border with the national capital on the southeast side, and therefore, it forms part of the Delhi NCR. Being one of the largest cities in Haryana, Faridabad acts as a center point for economic and industrial activities within the region.

One of the key areas of healthcare provision that the COVID-19 pandemic brought to the fore was access to adequate medical oxygen. With the demand for oxygen rising not only in the



**B. K. Hospital Faridabad**



bigger hospitals but even in big and small clinics all over Faridabad, this critical weakness of health system was obvious. On this count, NHPC Limited responded by installing an Oxygen Plant at District Civil Hospital, Faridabad (B.K. Hospital) to contribute significantly to increasing the availability of medical oxygen in Faridabad and around as it is a high capacity plant with cylinder filling facility. B.K. Hospital is a major healthcare institution located at B. K. Chowk in Faridabad and operates under the jurisdiction of the Government of Haryana.

The purpose of this Impact assessment is to measure the effectiveness and contribution of NHPC towards bringing improvement in bridging health care gaps in Faridabad, Haryana, by way of setting up an Oxygen Plant at District Civil Hospital (B. K. Hospital). It is a major part of the NHPC's commitment towards assisting with healthcare facilities for improved ability to respond to local community needs. This initiative was prompted by the critical medical oxygen needs that surfaced during COVID-19 pandemic, accentuating the importance of such infrastructure for enabling adequate emergency response. Against this background, this report seeks to understand how this initiative enables reducing the pressure on healthcare services and increasing its ability to effectively meet the healthcare needs of the community.



**Oxygen Plant at B. K. Hospital Faridabad**

## 2. APPROACH AND METHODOLOGY

A systematic and comprehensive approach is followed to assess the impact of NHPC's CSR project related to establishment of an Oxygen Plant in Faridabad, Haryana. Impact Assessment Team employed a variety of methods including surveys, focus group discussions, and in-depth interactions with healthcare professionals to gather insights.

- ✓ On the quantitative aspect, the metrics tracked included the volume of oxygen produced, usage frequency, capacity of the hospital to utilize oxygen related healthcare facilities, and the effectiveness of the same in meeting patient needs. This data was of importance in understanding and assessing the improvements that were brought about by the oxygen plant to the infrastructure on oxygen delivery and its efficiency in the support of health care service. Broadly, other aspects also referred to the improvements in patient recovery, oxygen access and overall satisfaction among healthcare providers and recipients.
- ✓ Qualitative assessments also held significant importance, offering insights into the community's reaction, increased health infrastructure awareness, and collaboration among various stakeholders in the health sector. Through discussions and observations, a deeper understanding of the project's influence on public health attitudes, policy formation, and community cohesion was gained.
- ✓ The integration of the findings both quantitative and qualitative enabled the formulation of a comprehensive picture of the impact of the oxygen plant in Faridabad. The analysis was done through different data points, and trends identified. The collected data was put into context to enable meaningful recommendations for future endeavors of this nature. The very objective of this detailed assessment is to yield feedback valuable for fine-tuning CSR strategies at NHPC Limited. Further, it is aimed at fostering a wider discourse on corporate initiatives in the improvement of healthcare infrastructure and its contribution to sustainable development.





## 2.1 MEASURE OF SUSTAINABILITY

To measure the sustainability of the CSR Activity, IIT Jammu has used the OECD DAC framework. Each criteria used in the Impact Assessment Project acts as a lens giving a different perspectives on the intervention - both implementation and the results. The union of all these criteria provides a complete picture of the intervention. All criteria carries equal weightage with grading A (90-100), B (75-90), C (50-74), D (40-50) and F (<40). All Score are on a scale of 100.

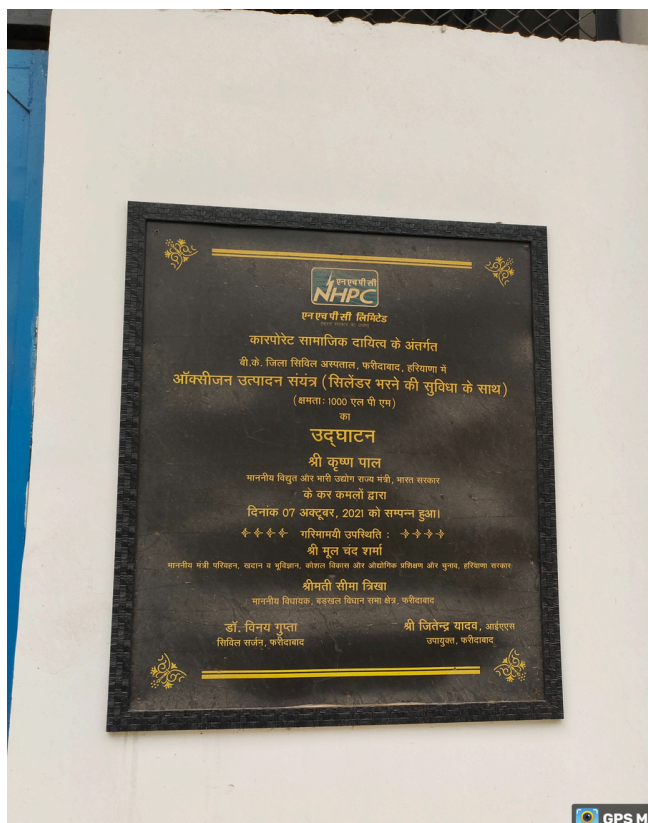


Fig. 1: OECD DAC Framework

## 3. CSR ACTIVITY DETAILS

During the COVID-19 crisis, Faridabad experienced a severe oxygen shortage. Despite efforts to make short term arrangements, there was no immediate resolution to the Oxygen crisis in sight. Hospitals struggled to replenish their oxygen stocks for COVID-19 patients, indicating a systemic problem. This crisis highlighted the dire need of a high capacity medicinal Oxygen generation plant with cylinder filling facility in the area. In response to this healthcare need during the COVID-19 pandemic in Faridabad, Haryana, NHPC Limited stepped forward to enhance the oxygen supply capabilities at the local healthcare facilities. A PSA Oxygen Plant with a capacity of 1000 LPM was successfully installed and inaugurated on 07-10-2021 at the District Civil Hospital (B.K. Hospital), Faridabad. The operation of this plant commenced immediately, with the facility being formally handed over to B.K. Hospital. The establishment of this oxygen plant involved a financial outlay of ₹212.61 lakhs. The inauguration ceremony was graced by

Shri Jitender Yadav, IAS, Deputy Commissioner of Faridabad, and was attended by senior officials and staff from NHPC Limited and B.K. Hospital.



The oxygen generation plant at a hospital is a crucial infrastructural component towards raising the level of health service provisioning in the area. It allows and ensures that the flow of medical-grade oxygen is continuous. This system is indispensable for the treatment of a large number of respiratory diseases, from chronic diseases like COPD and ILD to acute infections such as pneumonia and COVID-19, where oxygen therapy may be life-saving. This extends well beyond the critical medical applications—an on-site plant reduces the transport costs associated with procurement. It also allows the hospital to be more self-reliant and develop higher standards of both operational efficiency and preparedness for future emergent situations such as onset of pandemics or mass casualty incidents. The in-house generation of oxygen ensures that during that period local healthcare institutions are going to be in a position to meet sudden surges of demand for Oxygen without reliance on suppliers, who may well be experiencing crisis of their own at that time. Besides, it supports the administration of anesthesia in surgical situations or supporting neonatal care. Again, this setup adds to environmental sustainability through reduction of carbon footprints associated with transportation of oxygen cylinders. An oxygen generation plant therefore, builds not only the healthcare capacity of a hospital but increases safety, reliability, and hospital's readiness to deal with both normal and extraordinary requirements of patient care.





## 4. IMPACT ASSESSMENT

In a significant step towards improving healthcare services in Faridabad, the NHPC Oxygen Plant initiative has brought significant positive changes and improvement. This report explores how healthcare services have become better, the advantages patients have experienced, the hurdles faced during the project's operation, and how sustainable the project is. The report is based on actual results and feedback from the initiative.

The contribution/ of an oxygen plant by NHPC Limited has greatly improved healthcare services in Faridabad. The plant's increased capacity to produce 1200 liters per minute, up from 200 liters per minute, has allowed for a significant increase in the number of patients receiving oxygen.

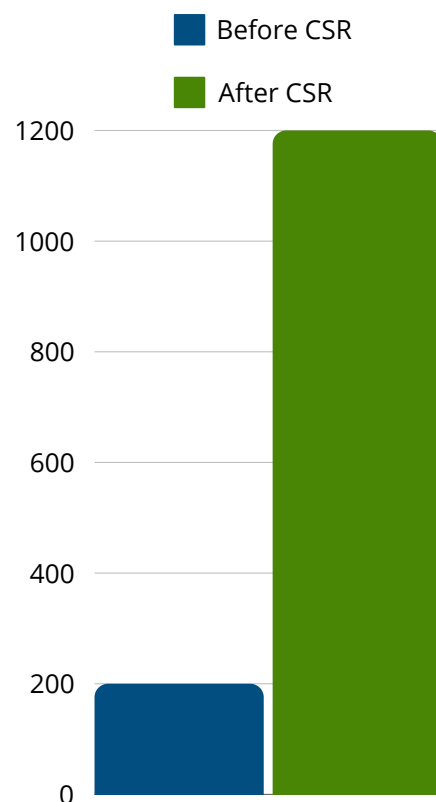


Fig. 2: Oxygen Generation Capacity (LPM)

This has led to a notable increase in the number of patients being treated - from 40 general patients or 10 ICU patients per day to 240 general patients or 60 ICU patients which suggests a 600% increase in no. of patients, who are dependent on Oxygen being treated .

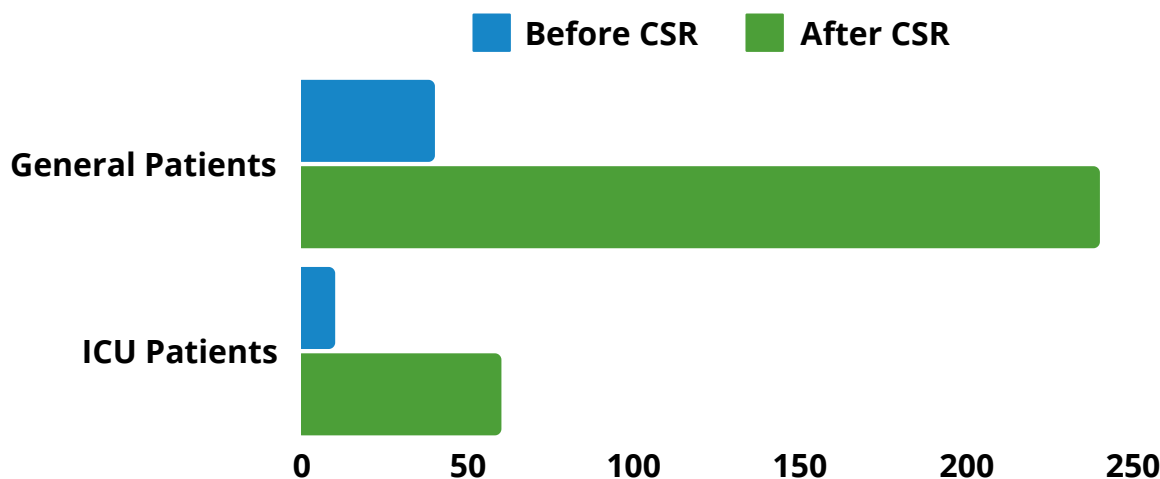


Fig. 3: Avg. no. of Patients treated/day

Additionally, healthcare professionals have seen an increase in efficiency and confidence of healthcare providers leading to a 30% improvement in patient recovery rates. The reduction in treatment delays by 3 hours has also had a significant impact on patient care and its outcomes.

The patients and healthcare community have greatly benefited from this initiative. Approximately 1000 patients each month are now receiving improved oxygen supply, which has greatly improved healthcare accessibility and quality. The establishment of the plant has also led to the introduction of new respiratory treatment services, showing an increase in healthcare options in the area.

Feedback from the healthcare community has been very positive, with a confidence rating of 7 out of 10, highlighting the plant's positive impact on healthcare delivery in Faridabad.

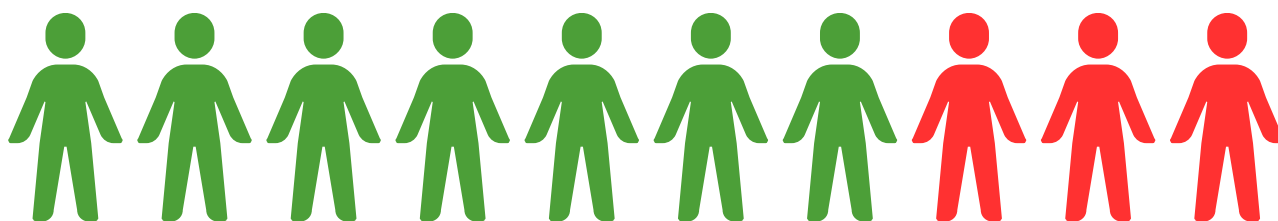


Fig. 4: Healthcare feedback rating

Although there have been significant positive outcomes, the project has encountered some difficulties. At first, there were no additional jobs generated, leading to a lack of operational capacity. This issue was tackled by establishing 10 new positions dedicated to plant operation and upkeep. The process of incorporating the oxygen plant into the current healthcare procedures demanded its reliable operation. This is planned to be done through strategic preparation and training to guarantee smooth functioning and maintenance protocols for optimal plant performance.

The initiative has saved the hospital approximately ₹50,000 per month in oxygen procurement and has attracted over ₹1 crore in new healthcare infrastructure investments. The 20% rise in hospital admissions for respiratory treatments shows that the local community is increasingly depending on and trusting the healthcare system for respiratory diseases. Additionally, with 10 new jobs in plant operations and maintenance, the project is also actively contributing to local employment and the development of valuable skills.

The NHPC's Oxygen Plant initiative in Faridabad showcases the importance of corporate social responsibility in tackling health care issues. The positive changes in healthcare services, benefits for patients and healthcare recipients, and successful resolution of operational obstacles demonstrate the effectiveness of the initiative. Moving ahead, the continued success of this project will bring lasting advantages to Faridabad's healthcare sector setting a precedent for similar projects in other areas.





## 5. Testimonials

Medical professionals and B.K. hospital administrators shared their experiences related to the new oxygen plant. They emphasized its beneficial role, allowing them to produce oxygen on-site, reducing reliance on external suppliers and also meet the requirements of other healthcare facilities by filling cylinders. However, they expressed concerns about the financial and procedural challenges of maintaining and operating the equipment, especially after the warranty period. This suggests that proactive engagement and dialogue with stakeholders is essential in evolving long term service and maintenance contracts to ensure long-term functionality and benefit to patients.

Members of the local community and patients have also noticed improvements in the availability and quality of healthcare services since the oxygen plant was introduced.

“I would like to thank NHPC limited for contributing this expensive equipment. It was the need of the day during COVID 19. It is a big plant with booster capacity. We got self reliant and we also saved a lot of money. We don't have any operational problem such as the operation is outsourced but adding to that if the hospital staff had been imparted operational training, it would have helped us a lot. After the CMC of 2 years ended, the whole burden of maintaining the whole plant shifted to District Hospital which gets difficult being a government body as the costs are quite high. We need to get many approvals for the maintenance head. I suggest that during the point of investment of this type, a minimum CMC of 5 to 7 years can be included during the CSR Activity. As it is a new thing for us, we faced many difficulties in maintaining this plant. However, we are constantly developing a dialogue with the higher authorities to run the plant smoothly.”

**Dr. Hemant, Medical Superintendent, District Hospital, Faridabad**

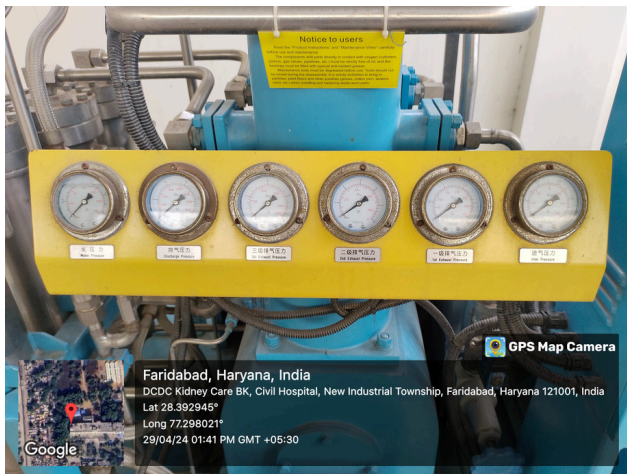
“The plant is operational, but certain components, such as filters and zeolites, are currently not functioning properly, which affects the purity of the oxygen produced. Initially, the plant operated perfectly for two years; however, due to non-functional sensors and other parts, it is now not working at full capacity. Despite providing quotes for the necessary repairs, the hospital administration has not yet responded. When fully operational, this plant has the capacity to operate 24 hours a day.”

**Sandeep Dondiyal,  
Spirare Energy Pvt Ltd. (Plant Vendor)**

## 6. PRESENT STATUS

For the initial two years comprehensive maintenance support was given by the vendors. But now the plant is without AMC cover. Medical operations require a high standard for oxygen purity, ranging between 90 - 99%. But due to worn out filters and non-replacement of other consumables that need replacement, the purity of oxygen getting produced is between 80-85%, limiting its usability.

The hospital has since then has got another oxygen plant with a capacity of 200 lpm under the PM Care Fund and is serving them well.



## 7. OECD DAC FRAMEWORK MEASURE

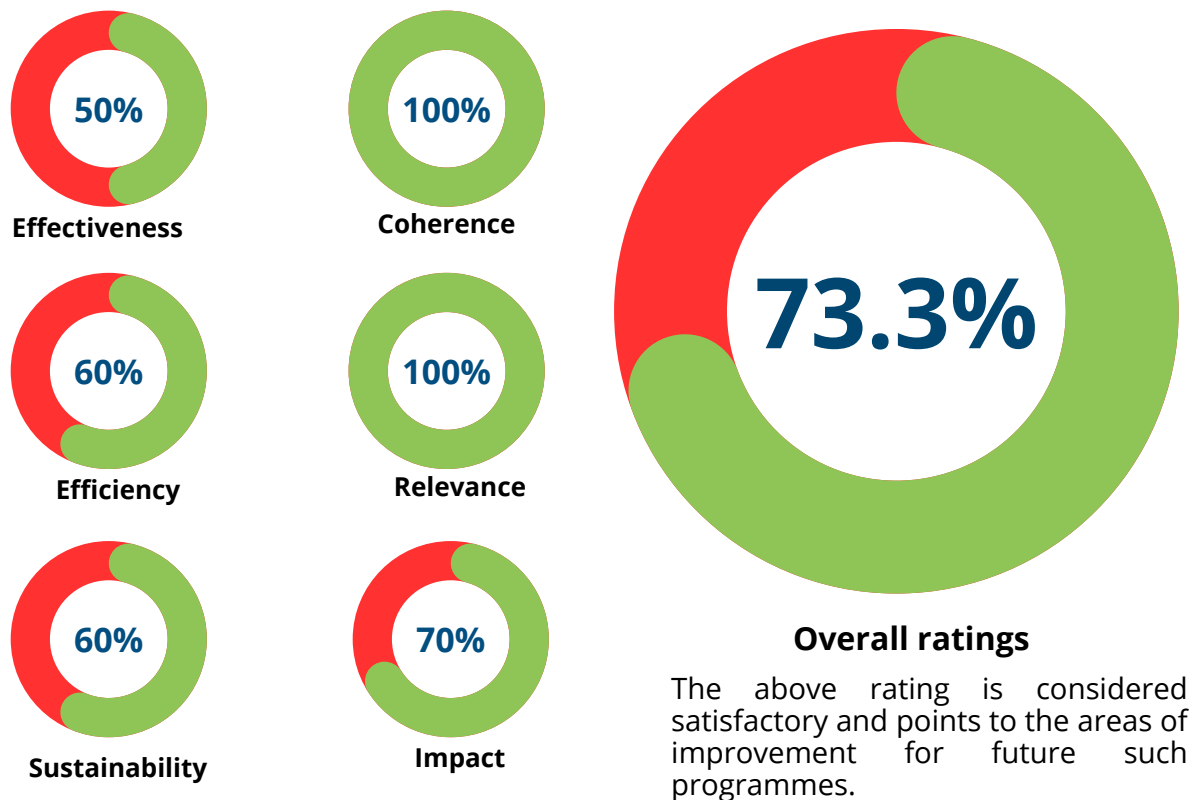


Fig. 5: OECD DAC Measure

### 1. Relevance:

- The project is highly aligned with NHPC's CSR Policy and the essential needs of the community, as identified through stakeholder consultations and assessment carried out as per the guidelines.

### 2. Coherence:

- Strong coherence is observed, with the project adhering to NHPC's CSR policy and integrating effectively with other community development initiatives.

### 3. Effectiveness:

- Effectiveness of the plant has suffered as it is currently not producing the medical oxygen as per the required standards due to lack of effective maintenance.

### 4. Efficiency:

- The plant is currently in need of maintenance and is not performing efficiently.

### 5. Sustainability:

- The project's sustainability has suffered as the required maintenance is currently not being provided. However, an MOU was signed stating that the district civil (B.K.) Hospital shall Operate and Maintain the said Oxygen generation plant at their own cost.

### 6. Impact:

- The project had good impact during the COVID' 19 epidemic and also in improving healthcare infrastructure, however long term sustainability needs to be ensured.

## 8. ALIGNMENT WITH SDGs



This initiative directly contributes to several United Nations Sustainable Development Goals (SDGs):

**SDG 3 (Good Health and Well-Being):** By improving the health care infrastructure and reducing treatment delays.

**SDG 9 (Industry Innovation and Infrastructure):** By investing in health infrastructure of District Faridabad.

**SDG 17 (Partnerships for the Goals):** Demonstrating effective collaboration between NHPC Limited and District Administration, Faridabad.





## 9. RECOMMENDATIONS

Sustainability of the project should be integrated in the project at the inception stage itself. This can be ensured through an extensive dialogue with the stakeholders. In situations involving critical equipment and ancillary services, annual maintenance contracts tend to become a critical requisite. This needs to be worked out with the stakeholders at the planning stage. This can go a long way in not only ensuring exact need assessment but also ensuring long term efficiency, effectiveness and sustainability of the equipment. For example, in the instant case, a lower capacity plant with ten-year CMC and a manifold room and a training component could have been an option.

The Project needs to start with a clear blueprint that includes every stage from setting up to day-to-day use and beyond, ensuring that the project remains functional over the years. This includes aspects such as training of the associated staff on how to use and maintain the oxygen plant, so they can handle everyday tasks and minor issues without needing outside help. Further, identification of a reliable supplier source of necessary parts early on in the project can keep the plant running without interruptions.

Like any important piece of equipment, the plant should have a schedule for regular examinations to ensure it's always in good working order. Forming partnerships with businesses nearby can lead to reliable, quick support when needed and might also be more cost-effective. Furthermore, all steps and procedures related to the plant's operations need to be documented and easily understandable, ensuring everyone knows what to do and when. This essentially will require a close coordinated working with the stakeholders such as hospital administration, state health authorities' and district administration.

# **SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF ONE NO. OF OXYGEN PLANT WITH BOOSTER FACILITY FOR REFILLING CYLINDERS AT B.K. HOSPITAL, FARIDABAD**

**Location:** Faridabad, Haryana

