Blueprint for the National Medical Oxygen Grid launched

Report describes design for a national grid to prevent deaths due to lack of access to medical oxygen

By **BioVoice News Desk** - October 20, 2022

Bengaluru: To support the goals of the Oxygen-for-India campaign, and with support from USAID-RISE, the Bill & Melinda Gates Foundation, and the Swasth Alliance, the One Health Trust (OHT) embarked on an effort to develop a national oxygen grid, that can ensure timely availability of medical oxygen which can save lives, including those of children suffering from respiratory ailments, pregnant women, patients with severe malaria, cardiovascular disease, and traumatic injuries.

The “Blueprint for a National Medical Oxygen Grid in India” was launched today in Bengaluru by Shri D. Randeep IAS, Comissioner, Health and Family Welfare Services, Additional Charge, State Mission Director, ABDM and heralds the advent of self-reliance in the supply of medical oxygen throughout the country.

The report presents a comprehensive assessment of the current and future medical oxygen needs of India and the design and implementation of a National Medical Oxygen Grid (NMOG).

Background

During the second wave of the COVID-19 pandemic, the peak of medical oxygen sales, ~9,000 Metric-Tons-Per-Day (MTPD), was unable to meet the ~17,000 MTPD need.

In the pre-COVID business-as-usual scenario, India had an absolute production capacity of ~10–11,000 MTPD of oxygen, that was sufficient to meet industrial (~9,600-10,000 MTPD) and medical (~1,000–1,400 MTPD) requirements. However, a significant demand–supply gap of medical oxygen was witnessed during the pandemic when it failed to meet ~35 percent of the medical demand.

During the second wave of the pandemic, the peak medical oxygen sales of ~9,000 MTPD were unable to meet the ~17,000 MTPD need. The production capacity was also not uniformly distributed, with regional variations in supply and demand patterns
Post-Wave-2, the absolute production capacity is now estimated to be 18–19,000 MTPD of oxygen nationwide, although there is significant variation.

Since then, several oxygen production and supply initiatives have been adopted in India at both national and state levels under the Prime Minister (PM) Care scheme to prepare the country for possible future health emergencies. These have included short- and long-term

policy measures, such as installing oxygen production plants, increasing production capacity in existing plants, and developing technology-enabled supply-demand management systems.

About the National Medical Oxygen Grid Blueprint

The report finds that the lack of utilization of medical oxygen, especially outside of major metros, meant that there was both a lack of supply as well as a lack of personnel trained to use medical oxygen. It is vital to fix the problem and ensure that oxygen is widely available and used in the farthest corners of

the country during normal times so that the country's infrastructure is ready for any future crisis.

An ideal oxygen grid for the country would work much like an electricity grid, with central generation (liquid medical oxygen), transmission (tankers and cylinders), storage (liquid and gaseous), and decentralized production (pressure swing adsorption generators and oxygen concentrators). No electricity grid would rely on just decentralized solar or micro-hydro plants without centralized transmission and distribution; similarly, a reliable national oxygen grid should have multiple generation and storage components. The National Medical Oxygen Grid, if executed, will be a far-reaching endeavour that would unify the medical oxygen supply and consumption industry for the efficient management of the medical oxygen supply in the country, especially during health crises.

This report lays the groundwork for the design and implementation of the grid. It recommends a four-step approach for the design of the NMOG. The first step is to model and plan exercises to forecast the demand that must be met. The second is to divide the demand into manageable distribution areas to ease distribution. The third step is to create a detailed supply-side assessment so that the demands forecasted in step 1 may be met. The final step is to design the grid network that would include detailed steady-state and exigency operational plans.

Some other features of the proposed NMOG are the creation of a large storage reservoir capacity to meet any future demand spurt and an interconnected network allowing for a smooth flow from surplus to deficit areas. Public–private partnership models are deemed imperative for the achievement of oxygen self-sufficiency. The authors propose a robust IT platform that includes IOT devices for sensing and automatic data collection, and GPS systems to enable supply-side management. The report also recommends the drawing of new clinical protocols

and training mechanisms for doctors and other health professionals for optimal usage of medical oxygen

Pilot projects are proposed in some states like Uttar Pradesh and Karnataka, as a collaborative effort between different government departments, refillers, and hospitals in the division, experts and IT professionals, and funding agencies.

Dr. Ramanan Laxminarayan, the Founder and President of OHT, said, “The NMOG would work much like the electricity grid, with both centralized production units (Air Separation Units – ASUs) with their own storage and transmission systems, and decentralized production (Pressure Swing Adsorption – PSA and oxygen concentrators) to meet the current and future needs of medical oxygen in the country.”

“The despair of April-May 2021 is rapidly being forgotten. This comprehensive report from the One Health Trust is a valuable tool that reviews potential demand, productive capacity, and distribution mechanisms in order to ensure that data to inform strategy for a National Oxygen Grid are readily available to policymakers”, said Dr. Gagandeep Kang, Professor – The Wellcome Trust Research Laboratory, Division of Gastrointestinal Sciences, Christian Medical College, Vellore.

The NMOG would include improved oxygen production capacities to meet predicted and unforeseen demand scenarios. In order to enhance reliability, purity, and economy of the medical oxygen supply, robust and extensive logistics systems would be created to ensure efficient supply to the most remote areas. The NMOG design would also incorporate modern telecommunication technologies for effective oxygen flow from source to destination.