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India Bulk Oxygen Market By Delivery Mode (Tanks/Pipeline, Cylinder, Others), By Form (Liquid Oxygen, Compressed Oxygen, Oxygen Gas Mixture), By Type (Industrial, Medical), By End User (Chemical, Aerospace, Submarine, Oil & Gas, Medical and Others), By Region, Competition, Forecast and Opportunities, 2020-2030F

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Abstracts

India Bulk Oxygen Market achieved the total volume of 16420 Metric Tonnes in 2024 and is expected t%li%reach 20349.74 Metric Tonnes by 2030 with a CAGR of 3.84% during the forecast period. The bulk oxygen market in India has experienced notable growth in recent years, primarily driven by rising industrial demand, advancements in medical applications, and an increase in respiratory diseases. As one of the largest producers and consumers of oxygen, India's market dynamics are influenced by a blend of economic, regulatory, and technological factors. This growth is particularly evident in sectors such as healthcare, metal manufacturing, chemical production, and wastewater treatment.

The demand for bulk oxygen in healthcare facilities has surged, especially in the aftermath of the COVID-19 pandemic, and this segment is expected t%li%continue as a key growth driver due t%li%increasing investments in healthcare infrastructure. Additionally, industries like steel, glass manufacturing, and chemical processing utilize bulk oxygen for various applications, including combustion, oxidation, and as a crucial reactant in chemical processes. The post-pandemic revival of manufacturing activities is further contributing t%li%this sector's expansion.

Bulk oxygen is als%li%utilized in wastewater treatment, improving aerobic processes and facilitating effective waste management solutions. It is primarily produced through methods such as cryogenic distillation and pressure swing adsorption (PSA). The

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market comprises several large companies, including Linde India, INOX Air Products, and Air Products, along with numerous regional players. These companies are focusing on expanding production capacities, enhancing distribution networks, and investing in research and development t%li%maintain a competitive edge.
Innovations in oxygen production, particularly in air separation technologies and cryogenic processes, are enhancing supply capabilities and reducing costs. The Indian government's emphasis on bolstering healthcare infrastructure and industrial growth has resulted in favorable policies that support the production and distribution of medical oxygen. However, supply chain disruptions, especially during crises, can affect the availability of bulk oxygen.
With ongoing industrialization, a strong healthcare sector, and supportive government policies, the market is well-positioned for future growth. Stakeholders will need t%li%navigate existing challenges while leveraging technological advancements t%li%seize emerging opportunities.
Key Market Drivers
Growth of Healthcare Sector
The growth of hospitals, clinics, and healthcare centers is essential for enhancing access t%li%medical services. The establishment of new facilities, especially in rural and underserved regions, has led t%li%increased demand for bulk oxygen. For example, in March 2024, Dr. Mansukh Mandaviya inaugurated 27 Greenfield Bulk Drug Park projects and 13 Greenfield Manufacturing Plants for Medical Devices under the Production-Linked Incentive (PLI) Scheme. This initiative aims t%li%support the production of 41 bulk drugs, with a total investment of USD 825.46 Million from 2020-21 t%li%2029-30. Additionally, 26 manufacturers of medical devices have been approved for 138 products under this scheme, with funding of USD 385.37 Million allocated for 2020-21 t%li%2027-28. Notably, this includes oxygen concentrators produced by Microtek New Technologies Private Limited in Baddi, Himachal Pradesh. As these healthcare facilities are developed, they will require a consistent and reliable supply of oxygen amplifying the demand within the bulk oxygen market.
The rise in respiratory diseases, such as asthma, chronic obstructive pulmonary disease (COPD), and pneumonia, driven by factors like pollution and lifestyle changes, further escalates the need for medical oxygen. India has an estimated 37.8 million COPD cases, contributing t%li%17.8% of the global burden and a disproportionate 27.3% of global COPD deaths, highlighting challenges in managing the condition effectively.
The COVID-19 pandemic has underscored the significance of emergency medical services, prompting hospitals t%li%enhance their capacity t%li%manage critical cases requiring oxygen therapy. This shift has resulted in a sustained demand for bulk oxygen in emergency rooms and intensive care units. Moreover, the demographic trend towards

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an aging population is increasing health issues that often necessitate oxygen therapy. Elderly patients frequently require medical oxygen, necessitating a steady supply of facilities focused on geriatric care.
Government initiatives like Ayushman Bharat aim t%li%enhance healthcare access and quality, which indirectly boosts the demand for essential medical supplies, including bulk oxygen, by increasing the number of insured patients and encouraging better care.
Growing awareness of respiratory health and the significance of oxygen therapy has led t%li%more patients seeking treatment, further driving demand for bulk oxygen supplies.
The pandemic has catalyzed investments from both public and private sectors in healthcare infrastructure, with new hospitals, expanded emergency departments, and improved critical care units all requiring reliable bulk oxygen supplies.
The Union Budget for 2024-25 emphasizes transforming the healthcare sector through enhanced digital infrastructure and a revised health expenditure of USD 10.70 billion t%li%improve accessibility and innovation in healthcare services. Continuous investments in healthcare not only address current needs but als%li%prepare for future health emergencies. The interplay of demographic shifts, technological advancements, and government initiatives ensures that the bulk oxygen market will continue t%li%expand alongside the healthcare sector, making it a vital area for investment and development.
Rising demand from the Steel and Metal Industries
Oxygen plays a vital role in steelmaking, particularly in the Basic Oxygen Process (BOP), where it is utilized t%li%convert molten iron int%li%steel. India possesses the fifth-largest iron ore reserves globally. In the Union Budget for 2023-24, the government allocated approximately USD 8.6 million t%li%the Ministry of Steel. As India’s steel production continues t%li%expand, driven by infrastructure projects and urbanization, the demand for bulk oxygen rises in tandem.
Bulk oxygen is extensively used in welding and cutting applications across various metalworking sectors. Increased manufacturing and construction activities further elevate the need for oxygen t%li%support these operations. The growth of industries that require metal fabrication such as automotive, aerospace, and construction als%li%drives the demand for oxygen. As these sectors expand, s%li%does the requirement for oxygen in their fabrication processes.
Government initiatives aimed at enhancing infrastructure, including roads, bridges, and railways, contribute t%li%the rising demand for steel and other metals, directly impacting the bulk oxygen market. For example, Linde India Ltd. received a Letter of Acceptance from Steel Authority of India (SAIL) for the installation of a 1,000-ton-per-day cryogenic oxygen plant on a 20-year Construct, Operate, and Maintain (COM) basis at SAIL’s Rourkela facility.
Technological advancements in oxygen production and steel manufacturing processes

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improve efficiency, leading more steel plants t%li%adopt bulk oxygen. A notable development is in June2024, JSW Energy Ltd.'s establishment of India’s largest 25 MW green hydrogen project in Vijayanagar, Karnataka, intended for its subsidiary JSW Steel Ltd. This project includes a seven-year agreement t%li%supply 3,800 tons per annum of green hydrogen and oxygen. Furthermore, JSW Energy has received a capacity allocation of 6,800 TPA from the Solar Energy Corporation of India and signed an MoU with JSW Steel t%li%provide an additional 85,000 t%li%90,000 TPA of green hydrogen and 720,000 TPA of green oxygen by 2030.

As environmental regulations become more stringent, steel manufacturers are increasingly required t%li%adopt cleaner technologies. The use of oxygen in combustion processes helps reduce emissions, further driving the demand for bulk oxygen. With the ongoing growth and evolution of these sectors, the reliance on bulk oxygen for various applications will remain strong, making it a critical area for investment and development within the Indian economy.

Key Market Challenges

Infrastructure Limitations

Many areas, especially rural and underserved regions, suffer from a lack of a strong distribution network for bulk oxygen. This can lead t%li%delays in delivery and insufficient supply, particularly during emergencies when timely access is essential. Additionally, inadequate storage facilities restrict the ability of healthcare and industrial sectors t%li%maintain sufficient inventories, potentially causing supply interruptions during peak demand periods. Inefficient transportation infrastructure, such as poor road conditions and limited logistical capabilities, complicates the distribution of bulk oxygen. These issues can result in longer delivery times and increased costs, negatively affecting the overall efficiency of the supply chain. Infrastructure challenges may als%li%hinder companies' compliance with safety and quality regulatory standards in oxygen production and distribution, often requiring substantial investment t%li%upgrade facilities.

Rapid urbanization can exceed the development of necessary infrastructure t%li%meet the rising demand for bulk oxygen. As cities grow, the strain on existing facilities and transportation systems intensifies. Inadequate infrastructure may als%li%limit healthcare facilities' ability t%li%respond effectively t%li%emergencies, such as natural disasters or health crises, where bulk oxygen is vital. Addressing these infrastructure limitations is crucial for the growth of the bulk oxygen market in India. Investments in transportation, storage, and production facilities, along with improved regulatory support, will be essential t%li%ensure a reliable and efficient supply of bulk oxygen, ultimately benefiting both healthcare and industrial sectors.

Technological Challenges

Many current oxygen production facilities utilize outdated technologies, resulting in

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inefficiencies and increased operational costs. T%li%enhance efficiency and meet rising demand, it is crucial t%li%upgrade t%li%more advanced production methods. However, implementing new technologies often requires significant capital investment, which can pose a barrier, especially for smaller companies. This limitation affects their ability t%li%compete effectively and innovate within the market.
The adoption of advanced technologies als%li%requires a skilled workforce capable of operating and maintaining new equipment. A shortage of trained personnel can impede the successful implementation of these technologies and impact overall productivity. Additionally, integrating new technologies with existing systems can present considerable challenges, as compatibility issues may arise, complicating the transition and potentially disrupting operations. In some instances, companies depend on imported technology, which can be costly and create vulnerabilities in the supply chain. This reliance may als%li%stifle local innovation and hinder the development of domestic solutions. Furthermore, as environmental regulations become stricter, the adoption of greener technologies is increasingly important. Companies face challenges in shifting t%li%more sustainable production methods, which may require substantial restructuring and investment. T%li%address these challenges, ongoing investment in technology, workforce training, and research and development will be essential for improving efficiency, reducing costs, and meeting the growing demand for bulk oxygen in both healthcare and industrial sectors.
Key Market Trends
Focus on Green Technologies
The emphasis on green technologies is a prominent trend in the Indian bulk oxygen market, driven by the need for sustainable practices and adherence t%li%environmental regulations. Companies are increasingly investigating ways t%li%produce oxygen using renewable energy sources. This includes processes like electrolysis, which generates hydrogen and oxygen from water using renewable electricity, facilitating more sustainable production methods.
The emergence of green hydrogen projects is closely tied t%li%bulk oxygen production. As industries strive t%li%transition t%li%cleaner energy sources, the oxygen generated alongside green hydrogen is being utilized in various applications, including steelmaking and chemical manufacturing. For example, in September 2024, Jindal Steel & Power (JSPL) and Jindal Renewable Power Private (JRPL) signed a memorandum of understanding (MoU) t%li%invest in green hydrogen production for steelmaking in Angul, Odisha. Under this agreement, JSPL intends t%li%incorporate green hydrogen int%li%its direct reduced iron (DRI) units, with the initial phase aiming for a green hydrogen generation capacity of up t%li%4,500 tons per annum by December 2025, along with the supply of 36,000 tons of oxygen annually for the Angul steelworks.
Stricter environmental regulations are prompting companies t%li%adopt cleaner

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production methods. Compliance with these regulations is crucial for avoiding penalties and aligns with global sustainability objectives. Many businesses are incorporating green technologies int%li%their operations as part of their corporate social responsibility (CSR) strategies, enhancing their brand image and addressing the increasing consumer demand for environmentally friendly practices.

Collaboration among industry players, research institutions, and government bodies is becoming more common t%li%advance the development and adoption of green technologies in bulk oxygen production. For instance, in October 2023, Hygenc%li%Green Energies signed a long-term offtake agreement for green hydrogen and oxygen with Sterlite Technologies Limited (STL). Under this agreement, Hygenc%li%will build, own, and operate a green hydrogen facility for STL for 20 years, utilizing renewable energy and expected t%li%be commissioned within the next 15-18 months. Hydrogen and oxygen are critical for producing optical fiber and serve as fuel in blast furnaces for glass manufacturing. Both companies aim for significant carbon abatement, targeting around 30% reductions annually through this partnership.

Investments in research and development are als%li%on the rise as companies seek t%li%innovate sustainable production techniques, enhancing efficiency in oxygen production and minimizing carbon footprints associated with traditional methods. Adopting green technologies can provide a competitive advantage, allowing businesses t%li%differentiate themselves in the market and attract environmentally conscious customers and investors.

There is growing recognition of the importance of sustainable practices among various stakeholders, including manufacturers, consumers, and regulators. This heightened awareness is driving demand for green technologies in the bulk oxygen sector. By prioritizing sustainability, companies can improve operational efficiencies, comply with regulations, and meet the evolving expectations of consumers and stakeholders. This trend not only supports environmental objectives but als%li%positions businesses for long-term growth in a competitive landscape.

Segmental Insights

Type Insights

Based on Type, the Industrial emerged as the dominating segment in the Indian market for Bulk Oxygen during the forecast period. The industrial sector, especially in steel, metal fabrication, chemicals, and manufacturing, is a major driver of bulk oxygen demand. Industries such as steelmaking rely on oxygen for essential processes like combustion and refining, resulting in high consumption levels. For example, in September 2024, Linde India Ltd signed a plant sale agreement with Tata Steel Ltd t%li%acquire industrial gas supply assets, specifically tw%li%1800 tpd air separation units (ASUs) from Tata Steel's Kalinganagar phase tw%li%expansion project. Ongoing infrastructure developments, including roads, bridges, and urban projects,

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further enhance the industrial demand for bulk oxygen. The growth of these sectors is closely tied t%li%the increasing use of oxygen across various industrial applications. Additionally, advancements in production technologies are contributing t%li%the industrial segment's expansion, as companies adopt more efficient and cost-effective methods.

The government's emphasis on boosting manufacturing capabilities through initiatives like 'Make in India' has led t%li%increased investments in industrial facilities that require bulk oxygen, reinforcing the segment's leading position. Beyond steel, bulk oxygen is utilized in various sectors, including chemicals, pharmaceuticals, food processing, and energy, further broadening its applications and strengthening the industrial segment's dominance. As India experiences economic growth and urbanization, industrial activity is on the rise, driving up oxygen demand and solidifying the industrial segment's status in the market.

End User Insights

Based on End User, Medical emerged as the dominating segment in the Indian market for Bulk Oxygen in 2024. The COVID-19 pandemic significantly increased the demand for medical oxygen in hospitals and healthcare facilities, as it became essential for providing respiratory support t%li%patients with severe conditions. India is experiencing considerable investments in healthcare infrastructure, which includes the construction of new hospitals and the expansion of existing ones. This development is driving a greater need for medical oxygen t%li%accommodate a growing patient population.

The Indian government has made enhancing healthcare services a priority, ensuring a reliable supply of medical oxygen through supportive policies that promote its production and distribution. Additionally, advancements in oxygen production and delivery systems are improving the efficiency and accessibility of medical oxygen, allowing healthcare providers t%li%better meet patient needs. For example, in December 2023, the Karnataka government's Department of Electronics, IT, BT, and S&T showcased innovative products developed by startups during the Bengaluru Tech Summit (BTS) 2023, including an oxygen generator by Mystic Clean Energy Tech LLP. This generator extracts pure oxygen from water, with the only required inputs being water and electricity. Regulatory frameworks are als%li%in place t%li%guarantee that medical facilities have sufficient access t%li%oxygen, underscoring its critical role in the healthcare sector.

Regional Insights

Based on Region, West India emerged as the dominant region in the Indian market for Bulk Oxygen in 2024. Western India, especially in states like Maharashtra and Gujarat, has a dense concentration of industries, including chemical, petrochemical, and manufacturing sectors. These industries are significant consumers of bulk oxygen for various applications. The region als%li%features substantial steel and metal production

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facilities, where oxygen plays a crucial role in processes such as steelmaking and metal fabrication, leading t%li%high demand.
Additionally, Western India is equipped with advanced infrastructure, including comprehensive road, rail, and port networks, which facilitate the efficient transportation and distribution of bulk oxygen. Major ports like Mumbai and Kandla further enhance the region's capacity t%li%import technology and materials, bolstering industrial growth and oxygen production capabilities.
Ongoing investments in new industrial projects and the expansion of existing facilities in this region continue t%li%drive demand for bulk oxygen. Furthermore, government policies and initiatives designed t%li%promote manufacturing in these states contribute t%li%the growth of industries that require bulk oxygen. Together, these factors establish the western region as the leading area in India’s bulk oxygen market, backed by strong industrial activity, infrastructure, and continuous investments.
Key Market Players

INOX Air Products Private Limited

India Glycols Pvt Ltd.

Steelman Gases Pvt. Ltd.

Sol India Private Limited

Praxair India Private Limited

Linde India Limited

Air Liquide India

Bhuruka Gases limited

Southern Gas Limited

Ellenbarrie Industrial Gases Ltd.

Report Scope:
In this report, the India Bulk Oxygen Market has been segmented int%li%the following categories, in addition t%li%the industry trends which have als%li%been detailed below:

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India Bulk Oxygen Market, By Delivery Mode:

Tanks/Pipeline

Cylinder

Others

India Bulk Oxygen Market, By Form:

Liquid Oxygen

Compressed Oxygen

Oxygen Gas Mixture

· India Bulk Oxygen Market, By Type:

Industrial

Medical

· India Bulk Oxygen Market, By End User:

Chemical

Aerospace

Submarine

Oil & Gas

Medical

Others

India Bulk Oxygen Market, By Region:

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West India

North India

South India

East India

Competitive Landscape
Company Profiles: Detailed analysis of the major companies presents in the India Bulk Oxygen Market.
Available Customizations:
India Bulk Oxygen Market report with the given market data, TechSci Research offers customizations according t%li%a company's specific needs. The following customization options are available for the report:
Company Information

Detailed analysis and profiling of additional market players (up t%li%five).

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