

Innovations for Enhanced Access to Oxygen (INNOVATE) project



Oxygen cylinders stored at a health facility in Kenya. Photo: PATH/Janet Shauri.

Medical oxygen is a critical component of a well-functioning health system. It is essential for treating a wide range of acute and chronic conditions across all populations and required to ensure safe surgery and perioperative care.

Despite increased investment in oxygen infrastructure during the COVID-19 pandemic, only 30 percent of patients in low- and middle-income countries (LMICs) who need oxygen receive it. This limited accessibility contributes to nearly 9 million deaths annually, including 1.6 million children under age five.

Key access barriers that drive this coverage gap include (1) supply and delivery challenges, such as limited production capacity, costly installation and maintenance requirements, and inadequate procurement and supply systems; (2) affordability, such as high cost of products and lack of local manufacturers; and (3) demand and adoption barriers, such as limited sustainable funding and limited guidelines.

Innovations for Enhanced Access to Oxygen project

With support from Unitaid, PATH and a consortium of partners are leading the Innovations for Enhanced Access to Oxygen (INNOVATE) project to address critical barriers to oxygen access. The project catalyzes promising oxygen production and piping technologies, along with innovative operation and maintenance

business models, to expand equitable access. By strengthening production and delivery capacity in health facilities and improving efficiency across the oxygen value chain, INNOVATE aims to accelerate the adoption of more cost-effective and sustainable solutions.

Project snapshot

Key outcomes:

1. Increase access to safe, reliable, and high-quality oxygen therapy through a suitable mix of delivery solutions tailored to local capacity and needs.
2. Create the conditions needed for sustainable oxygen delivery models.
3. Foster inclusive and demand-driven partnerships for innovation.

Key objectives:

1. Pilot innovative technologies to increase production capacity and improve delivery.
2. Pilot business model to improve sustainable delivery of medical oxygen.
3. Explore market-shaping opportunities to facilitate affordability and ensure sustainability.
4. Increase demand generation and advocacy to foster local leadership and improved policy and financing.
5. Reinforce partnerships and coordination of collective global efforts for medical oxygen.

Partners:

- Research lead: KEMRI, Karolinska Institute.
- Implementation partners: Indian Institute of Technology Bombay (India), KEMRI (Kenya), Global Health Informatics Institute (Malawi), Oxygen for Life Initiative (Nigeria).
- Advisory partners: Build Health International, INNOVATE community advisory board, Ministries of Health - India, Kenya, Malawi, Nigeria, Senegal.
- Community partners: national civil society organization coalitions for medical oxygen access.

Focus countries: India, Kenya, Malawi, Nigeria, and Senegal

Duration: January 2026–December 2029

Key objectives and activities

Innovative technologies to increase production capacity and improve delivery

The project aims to generate real-world evidence on the viability—acceptability, feasibility, and cost-effectiveness—of using novel oxygen technologies in LMIC contexts through pilot studies in select project countries. Targeted pilot technologies include **medical ceramic oxygen generation** and alternative piping technologies like **corrugated metal tubing** and **axially swaged fittings**.

PATH and partners will design comprehensive protocols and implement pilot studies, evaluate technology performance, and share findings with national and global stakeholders to inform broader introduction and scale-up.

Business models to improve sustainable delivery of medical oxygen

The project will also generate real-world evidence on innovative business models to inform scale-up strategies for oxygen providers, manufacturers, and distributors.

In partnership with local firms, PATH and partners will co-design and test high-impact models, evaluate performance, and share results to support local implementation and domestic financing. Targeted business models include:

- Regional spare parts consolidation.
- Subscription model for respiratory care equipment consumables.
- Outsourcing of pressure swing adsorption (PSA) plant operations and maintenance.
- PSA cylinder distribution.
- Liquid oxygen mini-tank distribution.

Market shaping to facilitate affordability and ensure sustainability

The project will advance market entry for innovative oxygen technologies and business models by conducting market analyses to assess market conditions and estimate demand across LMICs. Building on pilot evidence, the project will support manufacturers in developing commercialization strategies and strengthening local firms' capacity to overcome market barriers and leverage innovative financing.

Demand generation and advocacy to foster local leadership and improved policy and financing

The project will strengthen stakeholder engagement and community-led advocacy to support strategic planning, delivery, and sustained investment in medical oxygen.

PATH will partner with local decision-makers, implementers, and advocates to establish a community advisory board that drives demand for piloted technologies and business models.

The project will also strengthen locally-led [civil society coalitions for oxygen access](#) to advance supportive policies and budgets, while facilitating knowledge sharing and dissemination of evidence to enable scale-up.

Partnerships and coordination of collective global efforts for medical oxygen

Through close collaboration with global oxygen initiatives and platforms, including the Global Oxygen Alliance (GO₂AL), the project will elevate community and civil society voices and closely integrate project findings into the global oxygen agenda.

For questions or additional information, contact oxygen@path.org.



PATH is a global nonprofit dedicated to achieving health equity. With more than 40 years of experience forging multisector partnerships, and with expertise in science, economics, technology, advocacy, and dozens of other specialties, PATH develops and scales up innovative solutions to the world's most pressing health challenges.

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