

THE KINGDOM OF SAUDI ARABIA:

PARTNERING TO ADVANCE HEALTH SECURITY IN THE MIDDLE EAST AND AROUND THE WORLD

Spotlight
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PANDEMIC
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THE GLOBAL RESPONSE TO COVID-19

HAS SHOWN THAT THE WORLD WAS ILL-PREPARED TO PREVENT AND RAPIDLY RESPOND TO A NOVEL PANDEMIC THREAT

As previously witnessed with the major outbreaks of West Africa Ebola virus in 2014, Middle East Respiratory Syndrome (MERS) in 2012, and Zika in 2016, emerging infectious diseases (EIDs) have too often been neglected or perceived as distant problems. Despite repeated warnings of the increasing threat of epidemics and pandemics, both public and private sector actors have repeatedly failed to prioritize the forward-looking investments, systems, and structures that are necessary to ensure that vaccines, therapeutics, diagnostics, and other medical countermeasures and lifesaving tools are ready to deploy right at the outset of an outbreak to curb the spread of disease before it becomes a global health emergency.

→ When COVID-19 emerged in early 2020, however, the Kingdom of Saudi Arabia (KSA) determined that urgent and unprecedented action would be required. Given its experience with MERS, and its role as host to the Haj and millions of visitors from around the world each year, KSA recognized the growing threat early and was one of a group of high-income country (HIC) governments that mobilized emergency surge funding to kickstart research and development (R&D) of new medical countermeasures. As President of the Group of 20 (G20) at the time, KSA in April 2020 partnered with the Coalition for Epidemic Preparedness Innovations (CEPI), investing US \$150 million to help fuel the development of COVID-19 vaccines for global use. CEPI had been created just three years prior, in the wake of the Ebola crisis, as a new global mechanism to pool resources to invest proactively in just-in-case vaccines and just-in-time platforms for serious EID outbreaks. With this timely support, CEPI was able to leverage additional funding, expertise, and know-how from around the world to accelerate COVID-19 vaccine development with the aim of enabling rapid global, equitable, and affordable access to vaccines to save lives and slow the spread of the virus.

Yet although COVID-19 vaccines have been developed in record time, nearly two years into the pandemic most low- and middle-income countries (LMICs) have been left far behind their HIC counterparts in terms of vaccine access.

As of 18 October 2021, more than 6.72 billion COVID-19 vaccine doses had been

administered globally, enough to fully vaccinate more than 40% of the world's population, yet only 2.8% of the people in low-income countries have received at least one dose.^{1,2} This egregious disparity is not only inhumane, but also dangerous: without widespread, global vaccination the COVID-19 virus will continue to spread unchecked in many parts of the world, risking the emergence of new variants that can withstand existing vaccines and therapeutics and threatening to undo the progress that has been made in other countries with high vaccination levels. This points to the need not only to urgently ramp up supply and delivery of COVID-19 vaccines now to get more jabs in arms more quickly to reach the global goal set at the Global COVID-19 Summit of 70% of the population vaccinated in every country by September 2022³, but it also makes a strong case for increased, more predictable, longer-term, and sustainable funding for development of vaccines to address variants and prepare for future epidemics and pandemics, which are growing in frequency.



CEPI is a strategic investment in epidemic and pandemic preparedness and response for KSA and the world. CEPI is the only public funder of R&D that purposefully and primarily leverages its investments in R&D to enable equitable global access to vaccines for emerging epidemic and pandemic threats. If adequately resourced, CEPI offers a powerful tool to align global ambition and advance the global good, by crowding-in additional resources and expertise and accelerating coordinated action on forward-looking vaccine R&D for both known and unknown emerging infectious diseases that threaten national, regional, and global stability and prosperity. For KSA, continued investment in CEPI can help protect the nation and its neighbors in the Middle East region from emerging threats, realize efficiencies from investing in preparedness versus much more costly emergency response efforts, and elevate KSA's global leadership.

CEPI: A COMMITMENT TO GLOBAL EQUITY

→ CEPI plays a unique role in the global health security landscape by addressing key systemic gaps and market failures for R&D. ⁴ It was founded in 2017 to proactively invest in the development of vaccines for a targeted group of known, priority EIDs from the World Health Organization (WHO) R&D Blueprint with epidemic potential as well as to advance platform technologies for development of vaccines against unknown, “Disease X” viruses. Created as a result of lessons learned during the 2014 Ebola outbreak in West Africa — when unpredictable, boom- and-bust public sector funding left the world without an Ebola vaccine ready to deploy — CEPI was designed to serve as a forward-looking new pillar of the international system to increase investments in EID vaccine R&D to get ahead of emerging threats. It also was designed to focus where most industry and government R&D stakeholders do not: shepherding vaccines for EIDs with epidemic potential through the “valley of death” from the lab to the market, funding R&D phases from enabling science, preclinical studies through Phase 1-3 of development, and supporting vaccine technologies that are acceptable, appropriate, and affordable for all geographies and resource settings. ⁵

To do this, CEPI leverages a range of flexible incentives to de-risk EID R&D and bring together diverse partners from governments, industry, multilateral institutions, and philanthropy to advance vaccine development. Since its inception, CEPI has funded the development of vaccines against seven diseases — including a portfolio of five MERS vaccine candidates — and has overseen scientific breakthroughs in developing accessible vaccines against several infectious diseases, including the first phase 3 trial of a Chikungunya vaccine and the advancement of the first-ever Nipah virus and Lassa virus vaccines into Phase 1 clinical trials.

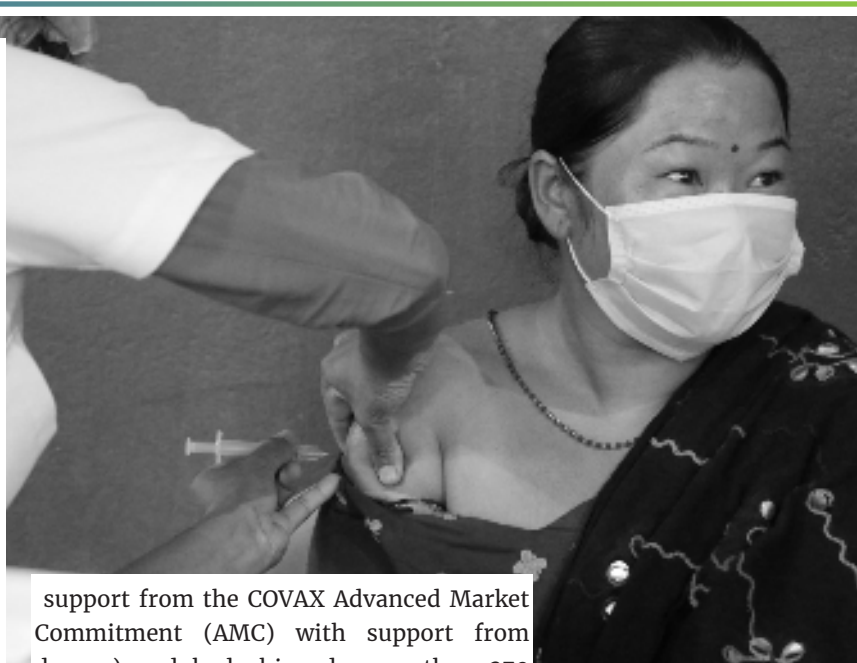
In particular, CEPI responds to the longstanding failure of the market-based R&D system to prioritize global, equitable access to vaccines with epidemic and pandemic potential. It requires vaccines produced with its support to be accessible first and foremost in low-resource settings and equitable access provisions in its contracts with industry partners. CEPI also drives vaccine equity by sourcing innovations from around the world, engaging with global R&D partners, crowding in public and private investors, and deliberately building diversified product portfolios suitable for widespread use. Because infectious disease threats can emerge from anywhere and threaten everyone, everywhere — not just in HICs that are able to self-finance R&D — greater investment in global access and equity for new vaccines should be a top priority to bolster global health security and to prevent and prepare for future pandemics.



CEPI'S ROLE IN THE COVID-19 RESPONSE

→ With its proactive, global, and equitable mindset, CEPI was a first mover to jumpstart development of COVID-19 vaccines early in the evolution of the pandemic. CEPI quickly identified critical gaps in the ecosystem and established partnerships and incentives designed to accelerate R&D of vaccines for global use. Within 3 weeks of the publication of the genome sequence for COVID-19 — when there were just 581 confirmed cases of COVID-19 globally and before bilateral government funders stepped up — CEPI announced its first three partnerships to catalyze the development of COVID-19 vaccines. With the financial support it received from KSA and other government, philanthropy, and private partners, to date CEPI has invested a total of USD \$1.6 billion to accelerate the development of a diverse portfolio of 14 COVID-19 vaccine candidates, the world's largest. CEPI also identified and helped address another critical gap in the international pandemic response system by providing more than US\$500 million for “at-risk” manufacturing of vaccine candidates to accelerate production and access in low-resource settings.

CEPI has also helped promote global solidarity and catalyze new models of international cooperation around the COVID-19 response. CEPI is a founding partner of the Access for COVID-19 Tools Accelerator (ACT-A), an alliance of governments, scientists, businesses, civil society, philanthropists, and multilateral organizations launched in April 2020 to bring together the wide range of institutions stakeholders needed to rapidly develop and deliver lifesaving innovations for the global COVID-19 response.⁶ Together with Gavi and WHO, CEPI co-leads the vaccines pillar of ACT-A, known as COVAX, a global risk-sharing mechanism for pooled procurement and equitable distribution of safe and effective COVID-19 vaccines. Participating countries have equal access to COVID-19 vaccines through the COVAX facility either free of charge or at fair prices, depending on country income level.⁷ As of 18 October 2021, COVAX had 144 participating countries or territories (of which 92 are eligible for



support from the COVAX Advanced Market Commitment (AMC) with support from donors) and had shipped more than 370 million vaccines to 144 participating countries or territories around the globe.⁸ Without CEPI, global access to COVID-19 vaccines would be even further behind than it is today. By embedding equitable access requirements into its vaccine development contracts, CEPI's investments in R&D and manufacturing have enabled COVAX to access almost 3 billion doses of CEPI-supported vaccines for equitable distribution. As manufacturing and supply chain issues continue to challenge delivery and timely, equitable access to vaccines, CEPI also has established the COVAX Marketplace, a platform which is addressing immediate supply bottlenecks by connecting vaccine manufacturers with suppliers of critical inputs, and is coordinating with the WHO to facilitate cross-sector dialogues to sustainably expand manufacturing capacity and in a way that leaves no one behind.⁹ CEPI has also partnered with the African Union for targeted work to enhance vaccine R&D and manufacturing on the continent.

Despite the efforts of COVAX, COVID-19 has exposed serious shortcomings in global pandemic preparedness and response financing and infrastructure which have contributed to vaccine nationalism and left the most vulnerable populations in many parts of the world without access to COVID-19 today. CEPI and its COVAX partners are working diligently with governments and vaccine manufacturers to accelerate access to vaccines. In parallel the world must now lay the foundations for the future of global health security with equitable access at its core.

CEPI'S EVOLVING ROLE IN A BUILDING A BETTER PREPARED WORLD

→ COVID-19 has reaffirmed the need for the world to sustainably invest in an entity like CEPI, whose mission is squarely focused on the global good. Notably, CEPI was not initially designed nor resourced to drive R&D at the size, scale, and scope necessary for a pandemic. Drawing on lessons from its work on COVID-19, CEPI has launched a new 5-year, USD \$3.5 billion strategy¹⁰ to expand its capacity and “push the bounds of vaccine R&D” to substantially reduce, or even eliminate the risk of future pandemics, as stated in its investment case. The objectives of CEPI’s new Prepare, Transform, and Connect agenda are as follows:

1. Strengthen defenses against COVID-19 and reduce the risk of future coronavirus pandemics, by optimizing current vaccines, addressing variants, developing next-generation COVID-19 vaccines, and initiating the development of broadly protective or universal coronavirus vaccines.
2. Develop and advance access to vaccines for known threats, including MERS, Chikungunya, Lassa Fever, Nipah, Rift Valley Fever, and Ebola.
3. Compress vaccine development timelines to 100 days by optimizing the capabilities of platform technologies like mRNA, optimizing clinical trial networks, streamlining global regulatory requirements, and linking manufacturing facilities to enable rapid production of pandemic vaccines.
4. Produce a library of prototype vaccines for pathogens from critical viral families. The “library of prototype vaccines” will be developed through Phase 1 clinical trials and use platform technologies that will allow rapid adaptation if related viruses emerge.
5. Establish global networks for lab capacity, assays, and preclinical models that are critical for rapid vaccine development with existing national or regional clinical trial and manufacturing networks.
6. Boost global manufacturing capacity by LMICs to develop infrastructure and expertise to studies, carry out technology transfer and establish national and regional vaccine manufacturing.

These are ambitious, yet achievable, objectives. For these to be realized, CEPI will require additional and sustained funding from a broad and diverse set of investors over time.

KSA AND CEPI: A STRATEGIC INVESTMENT FOR COVID-19

→ KSA’s investment in CEPI of US\$150 million in April 2020 played a catalytic role in early COVID-19 vaccine development. KSA’s early contribution was essential for CEPI to ramp its COVID-19 response into high gear — and it also had an important signaling effect to bring other G20 and high-income investors to the table and set the bar for fair-share investments in the global COVID response. KSA is one of 14 new sovereign and philanthropic investors in CEPI since the start of the COVID-19 pandemic. With these investments, CEPI has been able not only to pool funds to fuel R&D for global benefit, but also to connect geographically diverse research teams and augment national medical R&D infrastructure.

KSA’s investment in CEPI has already yielded a direct return to the country and its neighbors in the Middle East region. Two of the three COVID-19 vaccines approved for use in and purchased by Saudi Arabia — developed by Moderna and Oxford/AstraZeneca — were supported by CEPI for at least one stage of R&D or manufacturing. As of October 19, 2021, 61.1% of the Saudi population was fully vaccinated against COVID-19.¹¹ KSA’s support for both CEPI and COVAX has facilitated the rollout of vaccines in countries throughout the region and has provided an additional purchasing platform for the country. CEPI’s ongoing R&D to support second-generation COVID-19 vaccines will also help protect the people of KSA, in the rest of the Middle East region, and the world against newly emerging COVID variants that have the potential to be even more contagious and lethal. Additionally, this progress on COVID-19 vaccines is helping CEPI lay the groundwork for development of pan-corona vaccines to protect against a range of coronaviruses — including MERS, which continues to pose a direct health security threat to Saudi Arabia and the Middle East region.

MITIGATING THE THREAT OF MIDDLE EAST RESPIRATORY SYNDROME (MERS): A PRIORITY FOR CEPI AND KSA

- Health officials first reported the existence of the novel MERS coronavirus in Saudi Arabia in September 2012. The virus has taken a serious toll on the health and livelihoods of the populations of KSA and the broader Arabian Peninsula. An extremely lethal respiratory virus, about 3 or 4 out of every 10 patients reported with MERS have died.¹² Saudi Arabia has reported 2178 confirmed MERS cases with 810 deaths to date, and new data aggregation shows the continuing threat of MERS to lives and health systems in both KSA and the Middle East region.^{13 14} The spread of MERS across the Middle East region and to Asia prompted the WHO to include the coronavirus in its R&D Blueprint—its priority list of diseases that pose the greatest public health risk due to their epidemic potential and/or need for R&D because there are no or insufficient countermeasures.
- In line with the threat and need, CEPI has prioritized vaccine R&D for MERS. Thus far, CEPI has made 5 major investments in MERS vaccine candidates, including in Themis Bioscience, Janssen Vaccines & University of Oxford, University of Queensland, and IDT Biologika, as well as Inovio Pharmaceuticals whose vaccine candidate is currently in Phase 2 development.¹⁵ CEPI has also facilitated and funded the first WHO International Standard for MERS-CoV antibodies¹⁶, which helps assess the human immune response to MERS vaccine candidates and advance research on MERS immunity.
- In 2019, CEPI established a MERS Task Force to advance MERS vaccine development. The Task Force includes three experts from Saudi Arabia (representing the Ministry of Health, King Fahad Medical City and the King Abdullah International Medical Research Centre. In the wake of COVID-19, CEPI has also committed to invest an initial US\$200 million in R&D to systematically eliminate the risk of future coronavirus pandemics by accelerating the development of vaccine candidates with the aim of protecting against a broad range of coronaviruses, including SARS, MERS, and COVID-19, in a single platform.



CEPI'S EVOLVING ROLE IN A BUILDING A BETTER PREPARED WORLD

KSA will reap long-term benefits from an ongoing partnership with CEPI. A fully funded CEPI, supported by KSA and other sovereign and private investors, can accelerate and de-risk EID vaccine R&D by pooling and leveraging global resources and adopting a portfolio approach for an expanded and diverse set of infectious disease threats — strengthening and bolstering what national medical R&D systems can accomplish independently. CEPI's ambition to propel forward-looking R&D for "Disease X," develop a library of prototype vaccines against pathogens from each viral family that infects humans and advance a 100-day goal for vaccine development against a novel pathogen is critical to get ahead of and enable rapid response for the next EID that may impact KSA and the Middle East region. CEPI's global orientation and partnership approach can also help connect Saudi scientists to global peers for collaboration, information-sharing, and leveraging of time, resources, and expertise to accelerate EID R&D. Access to global networks and expertise and transfer of knowledge to KSA will also help in the realization of the goals of Vision 2030 in supporting diversification of the economy and helping citizens lead fulfilling and healthy lives.

Furthermore, there is compelling evidence that investing in pandemic preparedness is dramatically more economically efficient and sustainable than emergency response. The International Monetary Fund has estimated that the COVID-19 pandemic will cost the global economy at least US\$28 trillion in lost output¹⁷ an amount that is likely to increase as the global gap in vaccine access prolongs the crisis into a third year¹⁸ while the G20 High-Level Independent Panel on Financing the Global Commons put the conservative international price tag of greater preparedness at an additional US\$75 billion over the next five years. In its September 2020 report, the Global Preparedness Monitoring Board found that it would take 500 years to spend as much on investing in preparedness as the world is losing due to COVID-19.

While the fight to end the acute phase of the COVID pandemic continues, the world cannot afford to wait to get prepared for the next pandemic threat. The absence of ready vaccines, therapeutics, and diagnostics to mitigate the global spread of COVID-19 underscores the urgency for increased and sustained international investments in forward-looking R&D for novel EID threats with epidemic and pandemic potential. As pandemic threats are likely to grow in frequency, proactive R&D for EIDs is even more essential — for the health and prosperity of Saudi Arabia, the Middle East region, and the world. Without an urgent change in strategy and ambition, the world risks being once again caught unprepared for the next global health emergency.

CONCLUSION

A well-financed CEPI is a strategic investment for KSA, the Middle East region, and the world. Not only will it propel critically needed R&D for pathogens like MERS, COVID, and the next Disease X that threaten regional and global health and stability, but it will also promote global scientific collaboration, ensure that new vaccines are appropriate and affordable for all geographies, and enhance global solidarity, cooperation, and burden-sharing. Pandemics cannot be beaten in isolation; it is imperative that the global community heeds the lessons learned from COVID-19 and dramatically and sustainably increases global financing in preparedness to ensure the entire world is better protected from emerging infectious disease threats.

KSA's early support for CEPI's work on COVID-19 R&D and for ACT-A has helped promote global equitable access to lifesaving vaccines and begun to lay the groundwork for enhancing global health security. With additional investment in CEPI's next phase, KSA can emerge as a leader in building a world that is better prepared¹⁹ and help stop another deadly and costly crisis like COVID-19 from happening again.

ABOUT FII INSTITUTE

→ FII INSTITUTE is a new global nonprofit foundation that has an investment arm and one agenda: Impact on Humanity. Global, inclusive and committed to Environmental, Social and Governance (ESG) principles, we foster great minds from around the world and turn ideas into real-world solutions in five critical areas: Artificial Intelligence (AI) and Robotics, Education, Healthcare and Sustainability. We are in the right place at the right time: when decision makers, investors and an engaged generation of youth come together in aspiration, energized and ready for change. We harness that energy into three pillars: THINK, XCHANGE, ACT. Our THINK pillar empowers the world's brightest minds to identify technological solutions to the most pressing issues facing humanity. Our XCHANGE pillar builds inclusive platforms for international dialogue, knowledge sharing and partnership. Our ACT pillar curates and invest directly in the technologies of the future to secure sustainable real-world solutions. Join us to own, co-create and actualize a brighter, more sustainable future for humanity.

ABOUT PANDEMIC ACTION NETWORK

→ Pandemic Action Network drives collective action to bring an end to COVID-19 and to ensure the world is prepared for the next pandemic. The Network consists of more than 140 global multi-sector partners, working both publicly and behind the scenes to inform policy, mobilize public support and resources, and catalyze action in areas of acute need. Partners are aligned in a belief that every effort made in the fight against COVID-19 should leave a longer-term legacy that better prepares humanity to deal with outbreaks and help prevent another deadly and costly pandemic from happening again. Learn more at www.pandemicactionnetwork.org.

Contact

Fii Institute:

Director of THINK (content)
think@fii-institute.org

Pandemic Action Network:

info@pandemicactionnetwork.org

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