GOAL: Maximizing the use and installation of low-arsenic wells in rural Bangladesh to eliminate over 100,000 annual deaths and raise annual income by US$800 million.

In Bangladesh, 40 million people, nearly one quarter of the country’s population, are drinking arsenic contaminated water every day. This has been a public health crisis for decades and has inflicted an immense toll. Arsenic impairs fetal growth, increases infant mortality, diminishes children’s intellectual and motor functions, and has been shown to substantially reduce adult earnings. By combining best practices from multiple disciplines with new technology and building on strengthened political will, we now have a solution.

In 2000, as shown in the map below, over half of the 75,000 people residing in our study area were drinking from arsenic contaminated water sources. Our work over two decades proved that if people know a well is contaminated, they will switch to a safer well and target safe aquifers with new wells.
The map below shows that by 2018, three-quarters of the same population had switched. We can do it better, we can do it faster, and we’re ready to scale up the approach to the entire country.

This plan will provide millions of Bangladeshis with access to safe water within a few years. Short of a US$100M grant from the MacArthur Foundation, this is what could be achieved with:

- Deploy existing app prototype to disseminate test results
- Village-level campaign to promote use of the app
- Document adoption of app
- Refined version of app based on extensive market testing.
- Randomized-control trial to measure impact of app and incentives on private and public well installations.
- Final version of app based on wide-ranging user feedback
- Government agreement to use performance-based incentives
- Nationwide assessment of vulnerability towards low-arsenic wells
- Strategy to export approach to India, Pakistan, and Nepal
- Professional documentary about project

Our team at Columbia University’s Earth Institute and key partners in Bangladesh have developed a way to test wells for arsenic in the field and disseminate that information to promote behavior change in a way that drastically reduces exposure to arsenic. Smartphone technology is key for efficiently recording and disseminating well test data and for incentivizing the optimal allocation of public wells.

We propose a new large-scale partnership of affected rural communities and local NGOs to rapidly test 10 millions wells, and disseminate this information to encourage switching to existing safe wells, targeting of safe aquifers for the installation of new private wells, and allocating new and deeper public wells where they are most needed.

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