

In honor of yesterday's World Water Day, read how our funded research community is addressing the global challenge of water and climate change.



SPECIAL EDITION

WORLD WATER DAY 2020



"Assuring safe and sufficient water for all is among the 21st century's most urgent challenges. Water supplies will see growing strain as the effects of climate change intensify and as populations continue to grow. We must unite across disciplines and across nations to ensure reliable access to clean water for the future."

John H. Lienhard V, J-WAFS Director



#WorldWaterDay

See yesterday's World Water Day campaign on Twitter to learn more about the ways that our funded research community is responding to global water challenges. [@jwafs_mit](https://twitter.com/jwafs_mit)

READ MORE

WATER & CLIMATE CHANGE

INEXTRICABLY LINKED

A Thirsty Planet

30+ million Americans live in areas where water systems violated safety rules last year. America's clean water crisis goes far beyond Flint, MI. ([TIME](#))

70% by 2030: The percent of the Namibian population expected to migrate into overcrowded city slums due to severe prolonged drought in the countryside. ([Thomas Reuters Foundation](#))



40% of global grain production could be at risk by 2050 if we continue to place unsustainable pressures on the world's water supply. ([2018 SDG 6 Synthesis Report](#) p.10)

1.1 Billion: The number of people affected by drought between 1995 and 2015. ([UN Office for Disaster Risk Reduction](#))

2 out of 3 transboundary waterways and aquifers lack formal cooperative management frameworks, setting the stage for future water conflicts between countries that use these shared water resources. ([The New Humanitarian](#))

81 million: The number of people who could have been fed for a year by crops that were destroyed by drought. ([World Bank](#))

Water Equity Challenges Posed by Coronavirus

With Covid-19 spreading like wildfire through populations across the world, we have all heard nonstop messages about how frequent and thorough handwashing is one of the most effective ways to slow the spread of the virus. How many times have you washed your hands today? Preparing food in the kitchen? After using the bathroom? After returning home from the supermarket or drug store? Or touching a doorknob or handle that someone touched before you? Perhaps also after opening the mail? Or petting your neighbor's dog?

Imagine trying to keep your hands clean and prevent disease if you didn't have clean water, running water, or a clean sink or bathroom. That is the situation for a substantial portion of the world's population who lack access to an "improved water source," and many more who live without running water and basic indoor plumbing. Astonishingly, this includes [more than 2 million people in the US.](#)



Largely driven by international travel patterns, the coronavirus got its first major foothold outside of China in countries like Iran and South

Korea, followed by prosperous European countries, and the United States. However, it will not be long before a rapid uptick is seen in India, across Africa, and in other countries in Asia, South America, and Central America where many people live without reliable access to clean water, and where medical systems are lacking. The impact will be severe, particularly in large city slums where people live in close proximity without adequate access to water for hygiene.

Addressing public health challenges is substantially more complex where water is scarce or polluted. Without access to safe water to drink and clean water for personal hygiene, public health risks are disproportionately magnified for hundreds of millions of people. For the fast-moving coronavirus epidemic, the situation is especially alarming. Yesterday, on World Water Day, we call on leaders everywhere to recognize the connection between water and health, and to pursue innovative technologies and strategies with a sense of urgency. The MIT water research and innovation highlights below demonstrate the many advances that are becoming available to meet these needs, and the impact J-WAFS is having on addressing challenges across the world.

MIT WATER RESEARCH & INNOVATION

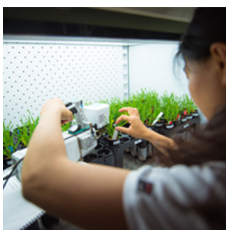
SELECT HIGHLIGHTS FROM J-WAFS NEWS



Whisking Away Heavy Metal Pollutants

[2015 Seed Grant](#)

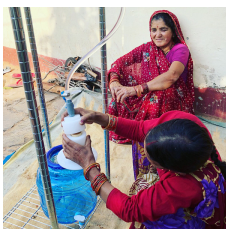
J-WAFS-funded researchers in the Mechanical Engineering Department have developed a simple method to test water for heavy metal contaminants and are making plans to commercialize the technology in India. [More Info](#)



Improving Plant Endurance Under Drought Scenarios

[2018 Seed Grant](#)

Researchers are bringing together environmental engineering, plant biology, and computer science to identify genes that regulate plant response to drought and use them to improve crop resilience. [More Info](#)



Using Wood to Filter Water

[2019 India Grant](#)

A Mechanical Engineering Department & MIT D-Lab collaboration has resulted in an open-sourced, low-cost water filter soon to be widely available via commercial efforts of local entrepreneurs in India. [More Info](#)

Understanding Clean Urban Water Challenges

[2019 Seed Grant](#)



Piped water supplies for millions of people around the world are not available 24 hours a day. CEE's Andrew Whittle asks, 'How do these intermittent supplies affect water quality?' [More Info](#)



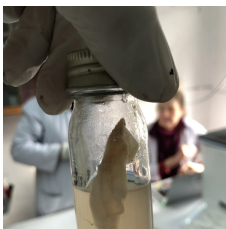
Economic Incentives for Groundwater Management in India [2018 India Grant](#)

Researchers across Sloan, MIT Economics, and J-PAL piloted a "conservation credit" program in India to promote more sustainable groundwater usage practices by smallholder farmers. Their program has yielded positive results. [More Info](#)



Finding Low-Carbon Solutions for Desalination [J-WAFS Workshop 2016](#)

Desalinating saltwater may be critical to ensure freshwater supplies in the future, but current methods are energy intensive. J-WAFS convened international experts to craft a path toward better low-carbon solutions. [More Info](#)



Putting Water Testing in Users' Hands [2018 Solutions Grant](#)

An interdisciplinary MIT research team is working with international partners to commercialize an affordable and easy to use *E. coli* test kit, aimed for use in Nepal and potentially across S.E. Asia. [More Info](#)

CLOSING THOUGHTS

A REFLECTION ON THE URGENCY OF OUR TIMES

“In the same way we have responded to COVID19 as a global emergency, we must act in response to the threat to our planet’s water. We must react—in the words of Greta Thunberg—‘as if our house is on fire’ and tell the truth about the climate and water emergency. The two are intimately connected, and without water, there is no life.”



Susan Murcott

Environmental Engineer
MIT D-Lab Lecturer
J-WAFS Solutions PI

INTERESTED IN SUPPORTING J-WAFS?

When you make a gift, you are making an investment in both the future of J-WAFS and our Institute-wide work to improve the productivity, accessibility, and sustainability of the world's water and food systems.

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RENEE J. ROBINS
Executive Director, J-WAFS
rrobins@mit.edu or (617) 324-6726



J-WAFS is an Institute-wide effort that brings MIT's unique strengths to bear on the many challenges our food and water systems face.

Our program catalyzes MIT research, innovation, and technology for ensuring safe and resilient supplies of water and food while reducing environmental impact, to meet the local and global needs of a rapidly expanding and evolving population on a changing planet.



Abdul Latif Jameel Water and Food Systems Lab
Massachusetts Institute of Technology
77 Massachusetts Avenue, E70-1278
Cambridge, MA 02139
E: jwafs@mit.edu
P: (617) 715-4222
W: jwafs.mit.edu

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