

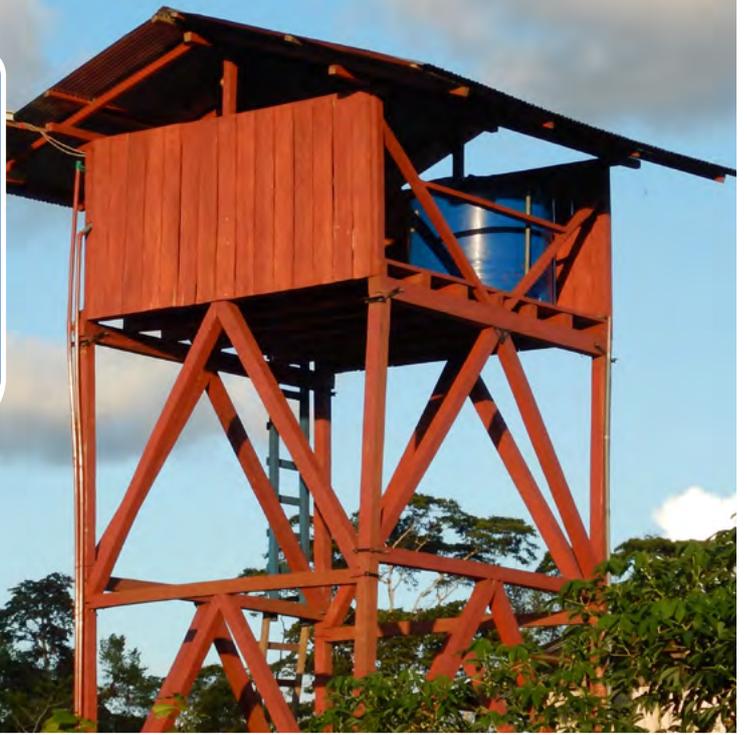
# Journal of Humanitarian Engineering

Volume 5, Issue 1

ISSN 2200 4904



JOURNAL OF  
HUMANITARIAN  
ENGINEERING





engineers  
without borders  
australia



## Journal of Humanitarian Engineering (JHE)

The Journal of Humanitarian Engineering (JHE) is an open access publication that publishes outcomes of research and field experiences at the intersection of technology and community development. The field of “humanitarian engineering” describes the application of engineering and technology for the benefit of disadvantaged communities. The field spans thematic areas from water to energy to infrastructure; and applications from disability access to poverty alleviation. The JHE aims to highlight the importance of humanitarian engineering projects and to inspire engineering solutions to solve the world’s most pertinent challenges.

For more information, visit: [www.ewb.org.au/journal](http://www.ewb.org.au/journal).

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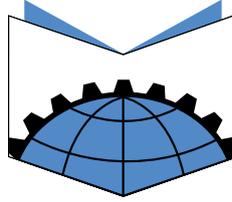
## INDIGENOUS AUSTRALIAN ACKNOWLEDGEMENT

EWB respectfully acknowledges the Traditional Owners of the Country on which we work.

To learn more about our commitment to reconciliation, read EWB’s Reconciliation Action Plan.

### Cover photos:

Top and middle left - Villagers work to erect a water tower in the Ecuadorian Amazon with guidance from the NGO Reach Beyond. Students and faculty from the U.S. Naval Academy (Annapolis, MD) partnered with Reach Beyond to investigate the local wood used to build the towers and recommend design improvements that save labor and materials while maintaining structure safety (Courtesy of Malek et al., this issue); Bottom - A meeting to discuss the future of the Cange water system with DINEPA, the Haitian water and sanitation department (courtesy of Gordon, et al., this issue); Middle right - Beautified fountain in Cange, Haiti (courtesy of Gordon, et al., this issue)



## The little things...



I have never replaced the pedals on a bicycle. I had never even contemplated it until I read this issue's paper, "Viability of Distributed Manufacturing of Bicycle Components with 3-D Printing: CEN Standardised Polylactic Acid Pedal Testing". It is quite humbling to think how much we take the small things for granted in our day-to-day lives, like the fact that I would expect to be able to get my bike fixed immediately if a pedal broke, or could just pop to the shop if a battery ran out on one of my appliances. I expect these things because I live in a developed urban economy where I don't have to worry about where these things come from, they are just there, and relatively cheap, when I need them. But that paper got me thinking about all the incredibly complicated supply chains we depend on to get by in the day-to-day, and what a huge impact 3D printing might have on those. Although I might be pretty happy for an excuse to avoid riding the stationary bike at the gym because of a broken pedal, for a

lot of people, a broken pedal can mean loss of their primary means of transport, or even income generation. So being able to fix these sorts of everyday conundrums quickly can be of immense value - as compared to my decision that a broken pedal means I'm off home to eat chips!

I do think about water a lot, but that is my bread and butter. When I see a tap left running in a public bathroom I immediately freak out about the amount of energy that went into abstracting and cleaning that water, and the subsequent energy that will go into processing it even though it has passed directly from tap to drain. But, I am often reminded that not everyone thinks about things this hard. I used to run an interactive fluid dynamics demonstration for students in years 8 to 10. One of my first questions was always "where does the water we drink come from?" It was rare for the answer to be something other than "the tap". Because, like me and bicycle pedals, the average person in a developed country doesn't need to think about where their water comes from (or goes to!). But two papers in this issue highlight the intricacies of delivering bulk water in South and Central America, where it is not necessarily as easy as turning on the tap and expecting pathogen-free water.

I tend to get a little bit defensive when people from my home town ask whether I became a (real) doctor. That is considered "the" sexy way of saving lives and making a difference in this world. But when you really think about all the small ways in which engineering makes our lives easier on a daily basis, I tend to think that being an engineer is actually a pretty cool way of improving the well-being of those around us.

**Dani Barrington**

Editor-in-Chief, *Journal of Humanitarian Engineering*



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