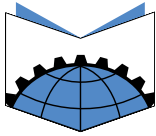


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ENGINEERING**





**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.

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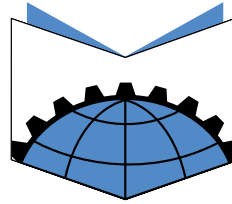
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Türkiye earthquake, by European Commission (Barbaros Kayan)

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GUEST EDITORIAL

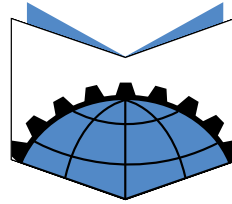
I am honoured to introduce this volume in a guest editorial for the Journal of Humanitarian Engineering, offering some reflections on where the field of humanitarian engineering might focus its attention given recent events.

Scenes from the recent (2023) Türkiye and Syria earthquakes seem all too familiar, hardly distinguishable from Kashmir (2005), Sichuan (2008), Haiti (2010), and others. The level of destruction is no less shocking. In Türkiye, its government estimates that more than 850,000 buildings were damaged or destroyed. Engineers are yet again being called into action to respond – the scale of which requires a massive level of coordination to deliver the solutions and services to meet basic needs. We should continue to rigorously support these efforts, including documenting evidence of how to build back safer. Simultaneously, we need to be asking how can such scale of devastation happen and what were the missteps to arrive here (yet again)?

While field investigations will document shortcomings and provide new recommendations to reduce earthquake risk, the engineering knowledge required to avoid the immense loss of life largely existed beforehand. Like other disasters, the dilemma wasn't about missing requisite knowledge to save lives, but rather mobilising it. Rather this disaster, like so many others, was the result of accumulating social and political factors. Assuming that engineering does not have a role to play in addressing these problems – offering only technical fixes – would be a mistake.

The engineering field often markets itself as being apolitical and neutral – the uncomfortable reality is engineering practice is intertwined with enacted governance with unequal power dynamics at play. Humanitarian engineering offers a pathway to engage with these ethical dilemmas that can address or reinforce marginalisation. So, what needs to change?

First, we as engineers need to lean into advocacy. Engineers need to recognise that our role offers the opportunity to represent marginalised voices to create positive social change. Unless we become active in the political processes that create disasters, we're likely to repeat our failures. Interviews our team have conducted with humanitarians that have



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worked in Syria on sheltering solutions have highlighted that one of the largest challenges is negotiating the space to do the needed work amidst complex and competing government interests. We need to consider not just the constraints of users in our designs, but also the political environments in which solutions are implemented. The good news is we're getting better at this – both in shifting the educational paradigm to prepare engineers for this type of work and through engineering professional societies' activism.

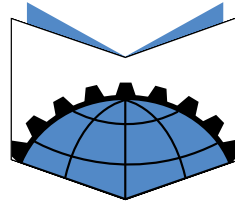
Second, as a research community, we need to mobilise the decades of knowledge we are collecting. It isn't enough to just document lessons, we need to be active in making knowledge more accessible. This means communicating consequences and allowing communities to make risk-informed decisions. To do this, we need to view the engineering profession as more than just the products we make. We should be placing renewed value on co-creating knowledge with communities – working at the interface between scientific and local knowledge. The process we take as engineers to reach solutions has the potential to either reinforce inequities or provide a platform for larger change.

Engineers have a critical role to play in reducing disaster risk, but only if we examine our positionality in the processes that create disasters.

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