

# ADVANCING WOMEN IN STEM

# COMMUNITY FLOOD EDUCATION

*The current national drive to advance girls and women in STEM could provide a mechanism to deliver flood education to school students – here's why:*

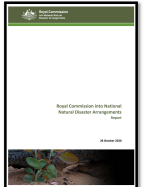
## What does the Australian Government say?

"From reduced confidence in STEM subjects by year four, through to the lower numbers of women STEM professors, the inequality crosses sectors, disciplines, and levels. Girls and women's underrepresentation across the full pipeline must be addressed if Australia is to fully engage in the opportunities that an increasingly digital, technological, and STEM-driven world will provide." (Advancing Women in Science, Technology, Engineering and Mathematics (STEM) (Australian Government, 2020),



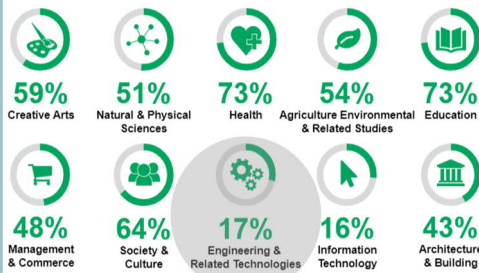
Photo: NSW State Emergency Service

"...governments have a critically important role in providing information on disaster risks via community education and engagement programs. These education and engagement programs...should be fit for purpose – accounting for changing risk profiles and community demographics" (Royal Commission into National Natural Disaster Arrangements Report, Oct 2020, Section 10.3).



## Why are women under-represented in STEM fields?

Misconceptions about what 'STEM careers' are, a lack of female role models and the perception that 'some STEM fields are a better fit for males' are cited as some of the biggest barriers to girls and women participating and persisting in STEM.



Female participation rate – Students commencing full time bachelors degrees in 2016 (Engineers Without Borders, 2020)

## The role of education and reducing flood fatalities



Water over road in Windsor, March 2021 (Photo I. Testoni)

'More should also be done to communicate the risks of entering floodwater in a vehicle from the passenger's point of view, both to support advocacy of passengers (including children) as well as to encourage drivers to view risks from the perspectives of others in the vehicle' (Vehicle-related flood fatalities in Australia, 2001-2017 BNHCRC, 2020).

## Why does it matter?

- Ensuring girls and women have equal access to STEM education and ultimately STEM careers is an imperative from the human rights, scientific, and development perspectives (UNESCO, 2017)
- Decreasing the gender disparity in STEM fields provides more opportunity for women to **generate fair incomes**, as well as encourages professional environments that are safer and more productive for women (Robogals)
- As well as being good for women, improving gender equality (and all types of **diversity**) in engineering benefits the industry itself.
- A workforce made up of varying genders and minorities creates a team dynamic more conducive to problem solving and innovation, and better reflects the communities for which we are solving problems (i.e., our customers) – all of this leads to **Improved business performance**.

## Flood Engineering = Humanitarian Engineering

**'Humanitarian engineering brings enhanced well-being, welfare, and comfort to any individual or community in disadvantaged circumstances and is inclusive of research, design, manufacturing and construction. The issues to be addressed in engineering terms might include chronic ongoing conditions for an individual or group or be associated with high-impact disasters and emergencies which imperil large numbers of people.'** Neil Greet, 2014

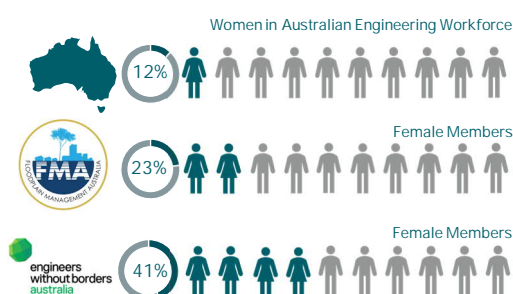
Floodplain risk management, which directly affects large numbers of people, is a form of humanitarian engineering. The direct impact of our work with communities could well make the 'science of flood risk' an attractive area of study for schools keen to boost the participation of female students in STEM subjects.



Water over Devlin Road (Castleknock) March 2021 (Photo I. Testoni)

## What motivates women to pursue careers in STEM?

A growing body of research in the engineering education space is demonstrating that curriculum which emphasises the social relevance of engineering is linked to more gender diverse student cohorts (Engineers Without Borders (EWB), 2020).



**Floodplain risk management** readily lends itself to interesting and interactive topics for **STEM** subjects, and is fertile ground for teachers wanting new, innovative, interesting and interactive topics for their students. If we, as a floodplain risk management industry can **collaborate** with agencies that seek to address the gender imbalance in STEM fields, we might find we can reach a far greater audience than we both might be able to otherwise.

## Interested in this project? Join the club!

We have established a collaborative working group of Councils and consultants, and are looking for more contributors.

Scan this QR code to get connected and choose the level of involvement that suits you:

- ☐ Great idea, please keep me informed.
- ☐ I have some ideas or contacts that might help, but limited time to get involved.
- ☐ I'm keen to be actively involved in some way!

