

It's not just men, maths and hard hats

Are women in the hydropower industry treated any differently to their male colleagues? We ask three women in high profile positions to share their views



Above: **Tammy Chu, Managing Director of Entura**



Above: **Kate Lazarus, Senior Operations Officer for Environment & Social Governance at the International Finance Corporation (IFC)**



Above: **Sandra Shuster, VP, Director of Business Development, Energy & Resources, Stantec**

IWPC&DC: Would you agree that the water power and dams industry is traditionally male dominated?

TAMMY CHU: The workforce in the water, power and dams industry is definitely still dominated by men, and that's mainly a historical legacy of gendered expectations affecting women's career choices. While education systems are now encouraging girls into careers in STEM, it will take time for that to filter through. But I do think there's room for optimism, that over coming decades we'll see a greater balance, particularly with changes in education combined with good diversity initiatives being led by employers, such as Hydro Tasmania.

Hydro Tasmania has a large workforce and we want to be part of the solution to gender inequality and to the imbalances that persist in the sector. We want to ensure aspiring female engineers have a clear and confident career path. They need to know that engineering is no longer a boys' club, that a strong career is within their reach, and businesses like Hydro Tasmania will support them.

I joined the Hydro Tasmania group in 2000 as a graduate civil engineer. Over the 19 years I've been with the business I've held a range of different positions - from civil engineer to project manager, business development manager, and manager of the water and environment group. Now, I am the Managing Director of the Hydro Tasmania group's specialist power and water consulting business, Entura, which provides renewable energy and water solutions to clients across Australia and the Indo-Pacific region. As Managing Director at Entura, I lead change, plan business development, provide solutions for clients, and help other engineers develop their careers.

At secondary school, I started to consider studying engineering because I was good at maths and science. I also had a strong interest in creating and building things and finding solutions. I felt that engineering had a strong future and would allow me to contribute to long-term positive impacts on communities. Through my university degree in civil engineering, I was able to develop the professional knowledge and skills essential for an engineer, and I then achieved a graduate placement at Hydro Tasmania.

I had a good start to my career through a variety of work experiences at Hydro Tasmania and Entura, and found a great mentor who gave me advice, encouragement and direction.

I was the first female president of the Tasmanian division of Engineers Australia, and I'm currently on the board of the International Hydropower Association (one of two women on a board of 12) and Engineers

Australia's Civil College Board. I have an MBA from Chifley Business School, am a fellow of Engineers Australia, and a graduate of the Australian Institute of Company Directors.

KATE LAZARUS: Yes but this is changing. Whilst we are not seeing that many female leaders of companies, we are seeing more women in non-traditional sectors such as engineering. More capacity and gender sensitive options need to be incorporated into operational plans for construction of hydropower projects for instance.

In the beginning, I did not think much of gender-related issues and it didn't focus in my work. I have been working in Asia for nearly 20 years, first based in Cambodia, Laos and now Myanmar. My career has focused on providing voice to local communities affected by large-scale infrastructure and has a predominant focus on the Mekong region. My interests lie in the intersection of human rights and the environment, and over time it became apparent that the role of the private sector would be key to the uptake of environmental and social standards and paving the way for sustainable growth. This is why I joined the International Finance Corporation (IFC), as the IFC's Performance Standards are global best practices to address and manage project risks. I believe I can be most effective working within the private sector to influence development decisions by incorporating environmental and social standards in early stage developments, prior to selection of projects.

It is only over the last seven years, and working more and more with the hydropower industry, that I have noticed gender-related issues and the effect on me, the role that I am trying to play in IFC and the effects on the ground - particularly the lack of inclusion of gender-related information in environmental impact assessments. This led me to take a closer look and see how I could incorporate gender into my work programme. Luckily, IFC has a strong focus on gender and a gender secretariat with well experienced professionals enabling us to bring the industry and the gender expertise together.

SANDRA SHUSTER: I agree. The water power and dams industry requires a degree and training in engineering or other STEM fields - fields that were traditionally dominated by men due to gender stereotypes and societal norms. Women were not encouraged to go into these fields and with few female role models, it was not seen as a viable career option.

This is changing though. Currently about 28% of STEM university students are women and in the technical fields that serve water power and dams the number is closer to 14%.

It is even a bit more complicated in the hydropower industry given the remoteness of many of the sites and the requirement to be onsite for months at a time. Previously, it was unheard of to find a woman engineer living and working at a hydropower construction site. I am proud to say that we have a female chief resident engineer at one of our hydropower project sites in Nepal.

IWP&DC: Do you feel you are ever treated differently, or have to perform your job differently, because you are a woman?

TAMMY CHU: Personally, I haven't experienced any impediment to my career due to gender. I've been fortunate that I've had male champions along the way who've encouraged me. I wasn't even intending to apply for the role of Managing Director of Entura until a senior executive suggested that I should put myself forward. Those mentors pointed out opportunities and encouraged me to take them – and that's a huge help for all people to realise their potential.

KATE LAZARUS: Yes, over the last seven years of working in the private sector, I am faced with working primarily with hydropower company staff. These are mainly men. In many cases I am the only female in the room and am often leading/chairing business meetings. For activities that I created, for example, the Hydropower Developers' Working Groups in Laos, Myanmar and Pakistan, which has garnered numerous members, it is easier. In other cases, as a participant or a voice in advancing the sustainability of the sector, it can be harder. It has taken time to begin to feel treated as equal.

SANDRA SHUSTER: I am an international development professional by education and training. I spent most of my career working in developing and/or post-conflict countries for development firms I have an undergraduate degree in intentional development and African studies, and a master's in international public policy. I have worked in more than 60 countries and many of the programs I managed had infrastructure components to them.

By far the most challenging project was managing a \$50 million program in Afghanistan. As a woman managing a team of 30 mostly male engineering and other technical staff from Afghanistan, I had two challenges to overcome in their eyes: gender and lack of an engineering degree. In order to conquer both I relied heavily on experience and relationships. I had experience operating in these kinds of environments and possessed strong program management skills. I also knew the client well, and I was able to build a strong team that delivered results in an incredibly dynamic environment.

I started working for an engineering consulting firm after I had a child and could not live and work where I used to. I had a supervisor who advocated for me at every turn and nominated me for the company's year-long senior leadership program, which had a huge impact on my career. It gave me tools and strategies to be a more effective leader, and it connected me to other senior leaders across the globe that helped me succeed in business development.

I do not believe that I am currently treated differently because I am a woman. I would be lying though, if I said I have never felt this way. Though few, I have

had supervisors in the past who bought into the more traditional gender stereotypes.

IWP&DC: How can more women be encouraged to take up positions within the industry?

TAMMY CHU: The engineering profession is still experiencing challenges in attracting students of both genders from schools and universities – so I'd encourage all students interested in STEM subjects to consider a career in this rewarding field. We certainly need to keep encouraging girls to choose STEM subjects and to keep their options open as their schooling progresses. Hydro Tasmania is reaching into schools to inspire students about STEM with a new education program, Generation Hydro. It's a great way to demonstrate to students how their STEM subjects relate to the 'real world'. If students have the chance to meet an engineer, a scientist, a digital expert, a power station operator or an apprentice, it could make all the difference to their future career choices.

I think industry and academia need to be part of a push, starting in school, to encourage more young women into STEM and to build their confidence that they are just as capable of working in STEM fields as their male peers. We also need to reach parents and teachers, to help build understanding of what engineering is about, and that it is a really rewarding career regardless of gender. It's not just 'men, maths and hard hats'.

I think one problem is the confidence gap that females sometimes have in recognising our talents and capabilities. To address that confidence gap, I recommend that female engineering students and young female engineers get involved in an association, such as Engineers Australia, or seek out good mentors who can provide advice and direction and an inside view of the engineering industry.

It's also vital that leading companies, such as Hydro Tasmania, empower women to back themselves and chase their dreams. We need organisational and industry-level commitments to addressing the gender imbalance, such as ensuring that female sponsors and male champions encourage women and address barriers. That means we need organisational inclusion and diversity programs, and the flexible working arrangements that can help to create change. Hydro Tasmania is leading the way in this area, with strong support for women in the workplace that goes beyond the rhetoric into tangible, practical actions.

KATE LAZARUS: IFC believes that there is a business case for gender diversity in the hydropower industry. This is why we started the Powered by Women Initiative in Myanmar which we are starting to replicate in Nepal. This begins with research and capacity building followed by companies signing up to take on challenges to boost gender diversity in their companies. Powered by Women helps renewable energy companies build that business case for gender diversity promoting business growth, efficiency and enhanced sustainability and closing the gender gaps within companies and with communities they work in. We have identified areas in which companies can boost women as leaders – women are under-represented at all levels of the sector, particularly in leadership 🔗

and technical jobs. For women in non-traditional jobs providing safe work environments at construction sites; ensuring respectful workplaces and ensuring women do have adequate access to child care facilities are key. Education is also key – supporting STEM programmes at early stages of development and enabling girls to engage in the same activities as boys.

Our findings show that hydropower businesses that do not have balanced gender rosters miss the boat on the benefits of diversity in the workplace – including access to talent, cost savings, team cohesion, innovation, improved community relations and risk management. Women and their households also miss out on good jobs and the incomes they bring.

Many Asian hydropower firms do want to play a catalytic role in advancing women in leadership positions and reap the benefits of gender diversity, but they lack locally grounded tools and experience. IFC currently has six companies that have taken up the Powered by Women challenge so they can learn about the appropriate gender-smart tools and approaches that are available to them.

SANDRA SHUSTER: Key enablers to getting more women in the industry are early exposure to STEM, role models and family support. It must start when girls are young. In order to see themselves as engineers, girls need to know what engineering is about. Raising awareness about engineering careers and providing role models when girls are in middle and high school is how we will bring about transformation. You need experienced women engineers mentoring high school and university students, engineering career fairs targeted to women and meaningful internship opportunities.

In order to recruit and retain women, companies need to be committed to diversity and inclusion. Companies must have internal policies and practices that enforce that commitment especially when it comes to recruiting, benefits, and training. Examples include, posting positions in diverse locations for a designated set of time in order to attract a more diverse candidate pool; having a diverse hiring committee; back-to-work programs for both women returning from maternity leave and for women coming back into the workforce after they have taken time off to raise children; coaching and leadership training for women to be more assertive and help break down barriers to promotion.

At Stantec our programs include: benefits for part-time employees; flexible working hours for those with family needs; and the ability to work from home and this year we are launching a women's leadership development program.

IWP&DC: Do you think more women are now taking up senior positions within the industry?

TAMMY CHU: More women are starting to move into senior positions, but the change is slow. Seeing more female role models in senior positions will encourage young female engineers to put themselves forward, but there also needs to be active encouragement and support from employers through all career stages. This is another area where flexible working arrangements are important, so that young female engineers don't fall behind or drop out of their professional careers when demands outside the workplace increase – such as

caring for young children or ageing parents, activities which are still often carried more commonly by women than men in our communities.

SANDRA SHUSTER: It is slowly changing, but there is still a lot to be done for senior leadership to adequately represent the demographic composition of the workforce and population. Companies are seeing the difference in their bottom line when there is more gender diversity in senior leadership. A recent McKinsey & Company report found that “in the United Kingdom, greater gender diversity on the senior-executive team corresponded to the highest performance uplift in our data set: for every 10% increase in gender diversity, EBIT rose by 3.5%.”

IWP&DC: Do you believe the demand is really out there? Do more women really want to become involved in the industry?

TAMMY CHU: Regardless of gender, engineering offers the opportunity to leave a lasting legacy and improve livelihoods and economic development. My work has brought me huge opportunities to travel and to meet and work with people from different cultures and ethnic backgrounds — India, Nepal, Malaysia, Bhutan, right through to the Pacific. And now there's another great opportunity to contribute at home, with Entura providing a range of services for Tasmania's Battery of the Nation initiative. Women can play just as great a role in these sorts of transformative projects as men.

SANDRA SHUSTER: I do believe the demand is out there. The demand for skilled STEM workers is high and expected to grow. The US Bureau of Labor Statistics projects an increase of approximately 1.7 million new jobs in the US between 2012 and 2022.

Given that women earn 57% of all bachelor's degrees in the US, the female STEM drop-off has a disproportionate effect on the job-readiness of the national workforce and the broader ability of the United States to drive innovation and compete in the world marketplace.

Women do want to become involved in the industry but often their motivations are different. A study by the Harvard Business Review found that women, more often than men, want to become more socially responsible engineers, working to solve major problems and making a difference in people's lives.

Here at Stantec we know the demand is real. We are growing and are constantly seeking to fill positions with a diverse and talented workforce.

IWP&DC: An ageing workforce and skills shortages are growing concerns. Can women help to fill this gap?

TAMMY CHU: One of the biggest issues facing the engineering sector is the ability to attract and retain engineers. The current level of need to upgrade infrastructure is keeping engineers in extremely high demand across the globe. That means there are a lot of opportunities for graduates. We need more engineers coming through the education system to fill this demand – whether they are male or female. Certainly having more women opting for engineering as a career

will help to grow the workforce – it’s a simple reality that if half the population aren’t seeing engineering as a viable or interesting career option for them, the pool of talent and human capital is massively restricted. That’s a waste we simply can’t afford.

SANDRA SHUSTER: Women are 50% of the population, they must be part of the solution. We cannot afford to miss out on the talent and ingenuity of half the world’s population.

IWP&DC: Speaking to your male colleagues, why would you say that we should still be encouraging women to work within the industry?

TAMMY CHU: I think that many male engineers are very welcoming of female engineers and recognise that all workplaces are enriched, strengthened and better balanced through greater diversity. Diversity of thought and backgrounds leads to better outcomes overall.

Established engineers recognise that over the next decade the industry will need many skilled people, and that means that the profession must reach out. We must encourage women to be a part of our industry and the possibilities for them to contribute are endless — they can really make a difference in projects that are going to decarbonise energy generation in Australia and the world as we increase the proportion of renewable energy. Already we’ve seen rapid expansion of wind and solar, and the next big growth area is energy storage, such as pumped hydro, to make those renewables ‘dispatchable’.

My strongest interest and greatest satisfaction in my career has come from providing sustainable engineering solutions to build a better future. Improving power and water infrastructure makes a real difference to communities, helping to create better quality of life and supporting economic development. Also, renewable energy infrastructure has an enormous role to play as we transition away from emissions-intensive power to more clean energy as part of the fight against climate change. I’ve always wanted to be part of that, and I’m looking forward to seeing how it all plays out. It’s exciting to play a role in such a major transformation in the way we live.

SANDRA SHUSTER: In addition to the positive affects gender diversity has on the bottom line, the lack of gender diversity in STEM fields limits workplace performance. “Studies have shown that more diverse and inclusive teams consistently produce more accurate and successful solutions to complex situations and are less likely to make significant mistakes than homogenous teams”. The Difference: How the Power of Diversity Creates Better Groups, Firms, Schools, and Societies, Scott E. Page (Princeton: Princeton University Press, 2007).

IWP&DC: What advice would you give your younger self about being a woman in a traditionally male dominated workplace?

SANDRA SHUSTER: Tenacity is an important quality. Talk to other women working in various roles to understand the challenges and opportunities. Find someone who can be a true advocate for you. ●

Working together

Laura C. Bull, Head of Studies and Head of Latin America at the International Centre for Hydropower, shares her experiences in the industry

The water power and dams industry has traditionally been, and still is, male dominated. But interesting changes have begun to occur over the past few decades. Access to education has been improving, opening up possibilities and motivating younger generations of women to become more involved in not only civil and electrical engineering, but also environmental engineering, economics and social sciences. Over the past 15 years we have seen how hydropower has become a catalyst for development and social processes where women have become in every way more relevant.



I have been working at the International Centre for Hydropower (ICH) and within the industry for 12 years now. With headquarters in Norway, we focus on capacity building at a global level and run specialised and tailor-made training programmes.

Years of interaction with generators, financial institutions, multilateral banks, government agencies, communities, and local entities among other actors, has allowed me to understand the importance of continuously learning from each other in working spaces. It is important to learn how to articulate and recognise abilities that allow us to optimise each other’s work, and to enhance more equal opportunities for all.

One of the most rewarding experiences for me has been this interaction with other actors from the industry. When you join forces and find synergies with other institutions, you learn together and can find creative solutions.

That is how I met Kate Lazarus from the International Finance Corporation (IFC). At ICH’s first training regional course in Asia in 2013, Kate and I started connecting through capacity building activities. We were trying to find the best ways, through our organisations’ activities, that our professional practitioners could understand why policies and compliance are key factors to achieving sustainable hydropower development.

After six years of cooperation we are seeing more women participating every time in more leading roles in the industry, as well as within technical and operational activities. More women in leading industry roles are also taking part in our training activities – but we need more.

Our organisation’s main donor, the Norwegian Agency for Development Cooperation (Norad) has demonstrated how women’s economic participation has made a significant contribution to Norway’s economic growth since the 1970s, while economic independence has helped to enhance the position of women in the home and in society. Women’s rights and gender equality are a priority area for Norwegian foreign and development policy. There is a call for Norwegian experiences with gender equality work as Norway has had relatively good results to show in this area.

Gender equality for development began in 2017. The programme is a central element in the implementation of the Norwegian government’s action plan for women’s rights and gender equality. It is in the ICH mandate to work toward gender equality in the hydropower sector, and enhance opportunities for women practitioners.

In 2018 ICH and IFC delivered the first Gender and Hydropower training course in Myanmar. It was a great success. The course will be replicated in 2019 at a regional level in Latin America and in Africa.

Social impact assessment and gender training will also be carried out in Nepal in May, together with IFC.

It is also noteworthy to mention that the actual secretariat of ICH is powered by women with Line Amlund Hagen as Managing Director; Carole Rosenlund as Head of Africa; and I am Head of Studies and Latin America.