



Board Level podcast
Australian Institute of Company Directors, powered by CommBank

Episode 13: Lifting STEM expertise across the board

Hosted by: Catherine Fox
Interviewee: Dr Marlene Kanga

Featuring:
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This episode, Catherine interviews Dr Marlene Kanga. She is a Non Executive Director of Sydney Water Corporation, Standards Australia, Air Services Australia, and Business Events Sydney. She is President of the World Federation of Engineering Organisations.

She is an Honorary Fellow of the Institution of Engineers Australia, the Institution of Chemical Engineers (UK), Fellow of the Academy of Technology Science and Engineering (Australia), the Australian Institute of Company Directors and a Foreign Fellow of the ASEAN Academy of Engineering and Technology. She has been listed among the Top 100 Engineers in Australia and the Top 100 Women of Influence in Australia.

Rebecca [00:00:03] Hello and welcome to Board Level, the podcast that's changing the conversation around boardroom tables. Board diversity and gender balance make sense. It delivers better outcomes for shareholders, consumers, employees and the community. I'm Rebecca Warren, General Manager of CommBank's Women in Focus and we're proud to support the AICD in this valuable conversation. As a board member myself, I know the challenges and the value of contributing at this level. We all have a role to play in improving both equality and diversity. So let's level up with your host, Catherine Fox, award-winning journalist, author, presenter and leading commentator on women in the workforce.

Catherine [00:00:49] Welcome to Episode 13 and a conversation filled with illuminating stories from engineer and board director Dr. Marlene Kanga. Marlene explains why Australia is still struggling to attract more women into engineering and why every board needs STEM expertise, particularly at this critical COVID inflexion point for technology. Welcome, Marlene. I want to start by asking you, why did you decide to study engineering?

Marlene [00:01:18] **Well, actually, I always wanted to do engineering. Like many women engineers, I had a close family relative who was an engineer and so I had firsthand insights into what engineering is, what it does, and more importantly, the impact of engineering on society. My father was an engineer and he graduated just before India achieved independence. So he was very fortunate in being in a position of leadership quite early in his career. He went on to, for example, build a lot of infrastructure around India, roads, airports, bring electrification to the west coast of India and so on and he sort of took me along to the opening of many projects. Often we would have delivery's US aid coming in on big Hercules planes and he'd take me along, you know, to receive these big machines and so on. So I was always fascinated by engineering and no one said to me, girls don't do engineering. So my mother was horrified but other than that, no one else dissuaded me. I was quite interestingly enough; I was always fascinated by science and mathematics. I went to an all girls school, a convent school, and they said the nuns always empower girls and women into thinking that they can do anything and certainly that was the case but even they were horrified that I was doing advanced mathematics and I had no teacher for me in that school. So I actually taught myself calculus and trigonometry and advanced mathematics from a correspondence course accessed from the U.K. My father started me on that and then he disappeared on some project and left me to figure it out for myself. I think about it now and I don't know how I did it but I did. Then the nuns were quite worried about how I was doing and they thought it would affect my school certificate results. So they sent me off to the nearby boys school to do a test, which was a bit of a sensation you can imagine at that time. So I went to the boys school and, you know, I sat the test that the rest of the boys were doing and I did very well. So the nuns said, oh, alright, you can do that test and**

right in the last few months, they did find a teacher for me to teach me just the last few bits. I breezed through the school certificate and was the ducks of the school as well. Then I decided that I would sit the entrance test for the Indian Institutes of Technology in India. At the time there were five there, the most prestigious engineering schools in India, and there was huge competition to enter. More than a quarter of a million sat the entrance test for about 2,000 places and the five institutes were in what is now called Chennai at that time Madras, Delhi, Bombay and so on. Of course, you know, Bombay being my hometown was where I wanted to go and was one of the top schools. I didn't know at the time but there were coaching classes for the entrance test and I didn't know that because I didn't know anybody else doing the entrance test. So I went and did it. I thought I did alright. When the results came out, I went to have a look and my name wasn't on the board and I was so devastated. I remember walking back and crying all the way home and I was devastated for two or three days. My parents were beside themselves trying to console me and I said, they said, well, you could do something else. I said, no, I want to do engineering anyway. Then a letter arrived asking me to come for an interview. It turned out I stood 38 and on the foolscap page, the names had been Cyclostyle because they don't have photocopying, they didn't have photocopying in those days. My name was the last on page one and it had been wiped out.

Catherine [00:05:44] A bit of a design flaw there Marlene.

Marlene [00:05:45] So I stood 38, which is quite extraordinary, and went off for my interview and I lived in a bit of a cocoon in India, you know, my father worked for the military in a cantonment, you know, very sheltered life and very Westernised as well. I come from an area come from Goa, which is very Westernised. So here I was with my miniskirt, my long straight hair and so on. I went off for my interview and it caused absolute sensation. I had no idea. I was so naive. I got chemical engineering and there was a buzz all around the university because we were only 20 women and more than two thousand male students. Then I, you know, jumped on a bike. Horror, these girls didn't do that. I just thought the campus also likes to walk, ride a bike.

Catherine [00:06:45] Marlene, one of the things that's often women are often told is that you can't be what you can't see. We need role models but I would say in your case, and I've actually come to interrogate this a little bit myself, you didn't have many role models. There weren't many women clearly at university studying engineering but also as you went forward in your career. So what drove you and why did you not feel that those were barriers?

Marlene [00:07:11] Well, I had a clear sense of purpose and I think I'm one of those very fortunate people that knew what engineering was about and what the impact was. I wanted to make a difference. If you ask women engineers why they do engineering, most often that's what they say, to make a difference. Many women choose environmental engineering and biomedical engineering because those are the fields where they can see that difference but actually, all fields of engineering make a difference. If you look around anything that's natural, as you know from nature, but everything else is engineered, everything in this room, everything that you know, from the moment you woke up, you open the tap, the water flowed, that's engineering. You cooked your breakfast, electricity, that's engineering, the food that's processed, the transport of the cars you drive, that's all engineering. Some of us even have engineered bits and pieces in our bodies and limbs and artificial hearts and so on so engineering is all-pervasive. Yet as engineers, we don't talk about it. We don't sell it enough and we don't talk about how this can actually advance our economies as well, create jobs, create prosperity and create a better world. In fact, I say to young engineers, if you want to change the world, become an engineer, because that's one of the few careers that give you the skills to make that difference.

Catherine [00:08:40] Why then did you decide or how did you, in fact, decide to make a transition to boards because you've had a very distinguished career in a number of boats, including some international bodies.

Marlene [00:08:51] Again, I think it was that sense of purpose. I could see the difference that leadership brings. I think I've always been a leader even, you know, in my student days. I was always speaking up and making change. This was the natural progression because if you are in the leadership position, you can drive change strategically, not tactically. I'm a bang for buck girl. I think if you have the right strategy then you can make that change more effectively and more efficiently with less energy and in less time, hopefully.

Catherine [00:09:32] Now, one of the things that we know about boards in Australia and I'm talking very generically here that people with the kind of background you have and from STEM, which we call it more broadly,

are not well represented on many boards. Yet, as you say, particularly at the moment, those skills are really needed. Why is that?

Marlene [00:09:52] Well, I think that it's the whole process of board selection and the way boards work. It's a systemic issue that we really need to address. On boards, there's a high level of trust. The board members don't meet very often. So they build relationships perhaps outside the board because they've known each other at school or university and they have other social relationships or they have relationships through other boards. So when you come along and you are quite different in various ways, it's very hard and it takes a long while to build that trust and that reliance because on a board, you're working collectively and if something goes wrong, you're all responsible. So by default, everyone is risk averse and everyone rather work with somebody they know and trust rather than take on somebody new because what's in it for them, they don't see the benefit or the value.

Catherine [00:10:54] Is it also a case you've spoken so compellingly about engineering in India and how important it was and the impact of it and the competition to actually get into engineering courses, is engineering held in the same regard in this country, do you think?

Marlene [00:11:09] No, I don't and that is most unfortunate. I think the narrative is that it's a tech world. You know, it's for technicians to do it. Often the name of the profession also creates that confusion. For example, Qantas calls their maintenance staff, engineers or engineering so people confuse what engineers can do and actually, you know that part of that technical work is a very small part of engineering. There's a huge amount of conceptual thinking, critical thinking to be done to develop solutions where there are none. I have for example, I have a garage full of reports, which I've hung onto because I think, oh, that was an interesting task. I'll keep that report because maybe I'll use it again. Then I'll never use it again because it just shows the diversity of work that we get thrown at us and we have to think up those solutions and make things work. It's only engineers who know and understand that and those who are outside the profession don't. Again because I think as engineers, we don't communicate that well enough. We don't promote engineering as we should and we don't promote the importance of engineering and engineers on boards and the essential role that they play because all organisations are dealing with science and engineering in some way, whether you know their manufacturing and mining, of course, that's relevant but also, even if they're in logistics, for example, or in services, there is some element of science and engineering and certainly of information technology involved there. So having engineers on boards or even scientists, I think, or someone who's qualified is absolutely vital because you bring that different dimension. Importantly, you can call management to account in certain areas because of that deep understanding that innate understanding that others don't have.

Catherine [00:13:16] Well, it's classically problem solving, isn't it, engineering in many ways and science and technology. I wanted to ask you about another glaring issue that I think I know only too well that you've been deeply involved in over the years and that's women in engineering. The fact that, you know, the numbers are very low still. I think you and I share the same view here that the wrong questions are often raised around this. I'd be interested in your thoughts on where should we be interrogating the lack of women who are both studying science and engineering and so on and how can we change that.

Marlene [00:13:52] Well, my theory is that the countries where engineering first began at the start of the Industrial Revolution as a formal profession, which is in the UK and Europe, the USA, Canada, South Africa, New Zealand, Australia, these were male dominated right at the beginning. So they started out with a culture that excluded women and so that culture continues. It's very insidious but it's there and so you have less than 20% women at the engineering schools around these countries and very low levels of participation and similar cultural issues. There have been repeated studies of why women leave engineering and we have huge losses, including in Australia. The culture in these organisations is generally very poor. So these organisations, more than 90% have policies and procedures like, you know, flexible working arrangements, for example and they say, yes, you can have maternity leave and all this sort of thing but women still leave because that culture, that bias is so strong against them and they rather go and do something else. They generally go into banking or something where the pay is better and the culture is less antagonistic for them. In countries in Asia, in Africa and even in South America, it's very different. I had women complain to me in South America that their culture was very machismo and I said, so how many women, what's the percentage? It's about 30%. So I said, well, it's about seven to 10 percent in Australia and they were shocked. In countries like Malaysia, you have more than 50% engineering students are women and about 30% of registered women, registered on the Board of Engineers Malaysia are women and it's a highly regarded profession and because you've got high proportions of women, you have changes in the culture of organisations that facilitate their participation, like job sharing, flexible work and so on. In fact, engineering because it's not customer facing

necessarily, it is actually very well suited to job sharing and flexible work. It's just a matter of project management and managing the time and resources appropriately to allow people to work flexibly. In the Middle East, for example, there is a high proportion of women, 60% in the university in Kuwait. In Myanmar, it's, you know, 60 to 70%, in Mongolia at 60 to 70% and so on, both in academia and in industry. The one caveat is that the high proportion of women in the universities but when they go for jobs, they get jobs in the public sector, not in the private sector. The private sector is dominated by multinationals that are British and UK owned, et cetera. So this is the caveat. So they're doing great work in the public sector organisations sort of rolling out the equivalent of NBN, for example, almost entirely being done by women engineers but that is not recognised. You can see that culture coming through even in the multinational organisations.

Catherine [00:17:25] When you talk to men who are leading organisations that employ engineers of all different kinds, how do you talk about this and what are the kinds of arguments that you often hear that I think are often used to defend the lack of women, certainly through the ranks and up right into the boardroom?

Marlene [00:17:44] Yes, a lot of very well meaning, I have to say, male engineering leaders say so what do women want? We've got all the policies and procedures and they're still leaving and they have a blind spot. They don't see it because, of course, they don't have women often at the table, at the management table to bring up certain issues. For example, the gender gap is huge in Australia. There's a 16% gender gap. Last time I looked even at entry level and even in public sector organisation. So how can you justify a gender pay gap at entry level? It turned out one public sector organisation had five levels at entry and the women came in at the lowest level and the male entrants at, you know, middle or highest levels. So they started out that way and so you have a persistent gender gap in Australia across all professions but also in engineering. This becomes evident, you know, when you have women at the table at the board, they'll raise this because they have that lens. So men say, what do women want? So it's not just policies and procedures but it's really transforming the culture and it's engaging the entire organisation into saying every member of our organisation is important and we value you, not in spite of the fact that you're different but because you are different, because you are different, you will bring something to the table that that we don't have, that we don't know and that's why we want you and that's why we need you. I think valuing everyone is very important. I draw the analogy with safety. Today, if you had even the chairman of the board go on a work site without safety boots and hardhat and the usual personal protective equipment, they would not be allowed entry. This culture now is pervasive. We've made a huge transformation in our safety, culture and safety as a statistic is discussed at a board meeting as the first item and so on. So there's a high awareness of the importance of safety. So I have applied this to a strategy that I developed to change the culture of organisations to be more diverse, not just accepting just women but diverse in terms of culture. We have a multicultural country and also embracing our indigenous community, I think we have so much to learn from them as well. It's basically looking at valuing the team in all its aspects we value, we keep you safe, we value you because of your contribution that you can make. So it's just a continuum of that safety culture. This strategy has had huge traction in engineering, especially in the consulting engineering sector because when I presented it to the CEOs, I said, you don't even have to read this. You've already done this for safety. All you've got to do is a slight shift and apply to cultural change. Some of them have taken it on board. I'm so pleased to see that a lot of them have become employers of choice in a very short space of time because a clear message came down from the line, from the chair and the CEO, safety is a non-negotiable issue and so is diversity because we value every member of the team that's the message we need to get. The deflection we get is what women want or we need more women, more girls to take up science and engineering. I say that is somebody else's problem, not our problem. I say to them as engineers, if you had a pipeline and you were going to supply a township with 100,000 litres of water and there's a very leaky pipeline, what would you do? Would you pump a million litres an hour to get that volume or would you fix the pipeline? What's the sensible thing to do? So let's fix that pipeline, which is so full of holes.

Catherine [00:21:59] That is such a fantastic analogy and spoken like a true engineer. So tell us about making your voice heard in some of these environments, because as you say, you are often the only woman, you're often probably the only person who's not from a very, you know, a very traditional sort of racial background for this country, so how do you go about that?

Marlene [00:22:20] It's hard work and it takes a lot of patience and persistence. You know, I work very hard at it to make a contribution, to understand the issues and to communicate them. I work with the board collectively as well as individually to explain some of the issues. It's a slow process but, you know, it does happen and it does change. I think, again, I'm driven by the purpose. I think the purpose is so important that drives me to make that contribution. I will go beyond the call of duty to do that. I think that over time, my fellow directors see that and that acceptance comes but it's not as easy as it is for some. So I see some new directors who come in and there's that easy acceptance. I haven't had that. I have to

say that the community at large does, you know, want the kind of person that I am. So where I've been elected to a board, I've swept the elections. I've been always elected with more than 50, you know, like a two-thirds majority for Engineers Australia, for the World Federation and so on, and also to certain boards in Australia where an election is needed. So clearly, I have something that the community that I represent wants. So that also is empowering in terms of making that difference and having that voice of the board.

Catherine [00:23:51] And tell me who's inspired you, who's motivated you or who's mentored you along the way?

Marlene [00:23:57] Well, my motivation is really to be of service. I really don't look at personal gain. For me, the leadership is about outcomes and if you have been driven by purpose, have got a good outcome and leave a great legacy and also importantly, grow other leaders behind you and mentor and support them. Well, I think that's what it's all about. I'm not really looking for anything else and I'm inspired by those leaders who have had that spirit of service, who've had that purpose. I would say, you know, people like Nelson Mandela, for example, who went through enormous difficulties but still stuck to his goals and in engineering, John Monash, who was on the hundred dollar bill and a celebrated engineer, a great military genius, and again, driven by a sense of purpose. I think, you know, that's most important.

Catherine [00:25:01] And tell us you've spoken so eloquently about the need for engineers, why is it particularly important not only that we have more engineers in this country but they're represented on all of our boards, why at this particular time is that so important?

Marlene [00:25:15] We are at a very critical inflexion point in the world at this time and more importantly for Australia, in a post COVID-19 world, we are going to have an inflexion and acceleration into new technologies. Countries around the world have the fundamentals and are gearing up for that, not just in the United States, but India, China and many countries in Europe are going to forge ahead. For that, you've got to be innovation ready and I don't think we are in Australia and we are then in danger of being left behind with dire consequences for our economic growth and prosperity. I think the other imperatives for engineering and science is climate change. We actually have to address decarbonisation and how are we going to implement climate change? We can't afford to keep our heads in the sand because we've got large reserves of coal. This is our future and this is our future for jobs as well. Ironically, Australia led the world in terms of solar technology. We had leading researchers at the University of New South Wales. And for a pittance, they gave this technology away to Chinese investors and China, Chinese companies, 8 out of 10 of the largest companies are from China in solar energy. We could have had a massive industry just in solar and think of all the employment and growth and economic prosperity that we could have had just from that one technology alone. So I think, you know, this change we simply cannot afford to ignore. We're also on the cusp of the Asian century. It's here in 2020; Asian economies are producing more than 50% of the world's output. Asia is on our doorstep. What a wonderful advantage that is for us and we have more than 20% of our population have connections with Asia, either Asian born or have family or networks. We should leverage this as much as we can and build those connections with Asia because that's where our future lies and there is, again, a huge, you know, positivity towards Australia. Asia wants to engage with Australia as long as Australia steps up and reaches out as well. So companies need to do that and understand the culture and build the economic future with Asia. So there are a huge number of reasons for greater diversity on boards, but especially, I think, in terms of science and engineering, because the future is all about technology and you simply can't ignore that.

Catherine [00:27:57] Absolutely and Marlene, I wanted to ask you, what's the one thing you wish you'd known when you started out?

Marlene [00:28:04] Well, I have to say, I've thought about this and I'm glad I didn't know a lot of things. Perhaps I wouldn't have started out in so many areas but I guess the one thing is to reach out and ask people for support. I think people are extraordinarily generous. When you ask them, you know, they can give very valuable advice. I'm very fortunate to have had that from what I thought was unexpected sources. You know, some of the most unexpected sources have been the most valuable. I value all the kinds of advice and mentoring that I get from my peers, from my superiors when I was working and from my fellow board members. I seek it out now because I think having those conversations centres you, keeps you grounded and helps you move forward.

Catherine [00:29:01] When you say unexpected sources, just what do you mean by that?

Marlene [00:29:05] Well, you know, in terms of people that you think or, you know, they probably wouldn't be supportive. You'd imagine that they wouldn't be supportive or they might be overly critical. You might be afraid to ask them something because of the fear of that criticism but in fact, it's very valuable. There's always something to learn, I find and I always value that advice.

Catherine [00:29:32] Marlene, thank you so much for joining us.

Marlene [00:29:34] Thanks for having me. It's been a real pleasure.

Joanne [00:29:38] Thanks for listening to Board Level hosted by Catherine Fox for the AICD and powered by CommBank's Banks Women in Focus, where we're sharing stories from women making an impact in the boardroom. I'm Joanne Gilroy, Board Diversity Manager at the AICD. We're helping build the capability of the next generation of outstanding boardroom leaders. Visit aicd.com.au to access show notes from this episode and other valuable resources. Subscribe to Board Level wherever you get your podcasts so you don't miss an episode. Leave a rating or review and help keep the conversation going.