Women Engineers' Survey - Part 4 (Final)

For the first time in Sri Lanka a countrywide survey was carried out in 2017 to gather information on the status quo of the woman engineer living and working in Sri Lanka. This article is the fourth part of a series published in the SLEN newsletter of the Institution of Engineers Sri Lanka (IESL) to share the results obtained in the survey which were initially announced to the audience of the AGM of the WEF (Women Engineers' Forum) of IESL in March 2018. The full survey comprised of six sections:

- Section 1 Identifying the status
- Section 2 Perception of engineering as a profession and the place of women in engineering
- Section 3 Identifying inhibitors
- Section 4 Engineering education
- Section 5 Identifying work place issues and barriers
- Section 6 Identifying a wish list

Part 1 of this series covered the findings of the Sections 1 & 2 of the survey, Part 2 the Sections 3 & 4, and Part 3 Section 5. These articles can be found respectively at 2018 No 03 Page 7; 2018 No 05 Page 9; and 2019 No 03 Page 8 on the link: <u>https://iesl.lk/index.php?option=com_content&view=article&id=162&Itemid=172&lang=en</u>. This article which is the last in the series covers the findings of Sections 6 and summarises the lessons to be learnt.

Section 6 - Identifying a wish list

This part of the survey was to find out what support structures, initiatives and encouragements would empower and enable the woman engineer to perform more effectively and efficiently. The perception of support from the spouse/partner to achieve career goals seems to be ambivalent with only less than half the participants feeling always supported when all the participants are included (Column 2 in Table 19). However, when those who are not married nor in a relationship for whom this scenario is irrelevant are excluded (Column 3 of Table 19) 85% of the women engineers indicate that their husbands either always or most of the time support them. Such support is essential for a female to thrive and progress in a career while juggling a career along with the house work, childcare, and sometimes aged care. As seen from Table 20, there is a strong belief that performance can be enhanced by postgraduate studies. This perception could be because over a quarter of the participants hold postgraduate qualifications (Table 21) and therefore experience that ability themselves or see others who possess postgraduate qualifications (male or female) performing better.

Table 19: Does your husband/partner support you to achieve your career goals?

Always	47%	57%
Most of the time	23%	28%
Sometimes	11%	13%
No	1%	2%
I am not married/in a relationship	17%	-

able 20: Do you think you can perform better if/because you have post graduate qual	lifications?
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Yes	72%
No	12%
Not sure	15%

A majority show their eagerness to gain skills through postgraduate studies (Table 21). As shown in Table 22, of those who would like to pursue higher studies nearly 60% want to complete that in Sri Lanka on a part time basis, showing no desire to leave completely either their job or family. Nearly a quarter are however, prepared to embrace the full experience away from family in a foreign country. Those neither married nor in a relationship may form a sizeable subset of this group although it is not evident from this alone.

Table 21: Would you like to pursue postgraduate studies (MSc./ PhD etc.)?

Yes	59%
Not at this stage of my career (It is too early)	4%
Not at this stage of my career (It is too late)	6%
No	4%
I already have postgraduate qualifications	28%

Table 22: If 'Yes' to above question (Table 21), which study option would you prefer?

Full time overseas (away from family)	23%
Full time in Sri Lanka	10%
Part time in Sri Lanka	59%
Other	8%

The next few questions intended to gauge awareness and opinion on the ways engineering industry can support women engineers. A vast majority of 80% believe that the industry must offer alternatives for female practitioners of engineering (Table 23). The most favoured support options 2 and 3 shown in Table 24 show that they do not seek reduced workload but merely alternatives to carry out the normal responsibilities under flexible times and environment. These may be applicable to male counterparts too. The other selected options are related to child rearing and caring which are specific to female engineers.

Table 23: Do you think engineering organisations should offer alternatives to increase participation of women in engineering?

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Yes	80%
No	11%
Not sure	10%

Table 24: If "Yes" which of these will be helpful? (more than one valid answer allowed)

1. Longer breaks (paid/unpaid leave) for those who have young children	15%
2. Flexible working hours	34%
3. Opportunities to work from home	26%
4. Provision of childcare at work place	24%
5. Not sure	2%
Other (please specify)	2%

Only a very few women engineers – only 13% - work for engineering organisations that provide some form of alternatives to support their participation (Table 25) while a majority do not. Nearly a quarter of the participants are not sure if there are any alternatives in their organisations which signal two things: if such are available they are not being promoted adequately, or the participants are reluctant to claim nothing is available when they are not certain. Of the few organisations that do offer alternatives the most common is some form of longer leave (paid/unpaid) for women with young children (Table 26) while allowing flexible working hours and place also are prominent. There are twelve working in organisations that provide childcare at workplace which is encouraging as it proves the potential for other organisations to follow if there is a will on the part of the employer.

Table 25: Does your organisation offer alternatives in order to increase

participation of women in engineering?

Table 26: If "Yes" can you name some of them?

1	1. Longer breaks (paid/unpaid leave) for those who have young children	57	84%

No	63%
Not sure	24%

Yes

2. Flexible working hours	31	46%
3. Opportunities to work from home	19	28%
4. Provision of childcare at work place	12	18%

In response to "please suggest some alternatives for academic institutes (universities), employers, and professional bodies (IESL/WEF) in order to increase participation of women engineers, help them in their career progression, and keep them longer in engineering industry" the suggestions fell into several categories. The responses were summarised from a vast array and therefore do not reflect the frequency in which each suggestion was made; they are shown in Tables 27 to 29.

The specific responses related to employers (Table 27) suggest that there is considerable dissatisfaction regarding the bias seemingly practiced when promotions, nominations to higher positions, or training opportunities are granted. Recognitions being made based on the length of work hours rather than on the value of the deliverables was a notable grievance. The feeling of seclusion may be the reason for suggesting to the employers to recruit more female engineers; this however is not a matter that can be fully addressed until more female engineering graduates are produced. There is a strong demand for extra considerations during- and post-pregnancy. Repeatedly mentioned requirement for the women to perform better was to have active help from employers to change attitudes of all employees - male and female, technical and non-technical - as well as elimination of unconscious biases from the workplace environment.

Various suggestions of support the women engineers seek from IESL/WEF are summarised in Table 28. Representation of female engineers in the decision making positions in the industry and the IESL being minimal to none is suggested to be resulting from an unfair competition. To circumvent this some suggest a mandatory women representation in the

managerial positions. There is a considerable acknowledgement of the need in leadership training, communication, and confidence building which are areas the participants feel that IESL and universities can coordinate to provide (Table 29). Overall, women engineers strongly feel that changes in attitude in the engineering industry, concerted efforts towards action against discriminations, and awareness of and removal of unconscious biases are essential for a more inclusive industry.

Table 27: Support sought from employers

- 1. Offer equal reasonable pay for equal qualification and performance.
- 2. Recognise efficient deliverables rather than long hours of work. Result oriented evaluations.
- Praise and encourage.
- 4. Encourage the recruitment of more females.
- 5. Offer transparent and clear career paths regardless of gender.
- 6. Professional and ethical decision making in promotion related
- matters without personal favourites and drinking buddies. 7. Provide equal opportunities in selections for short term training opportunities.
- 8. Reduce expectance to work long extended hours and site work during pregnancy
- 9. Offer flexible transfer schemes for mothers.
- 10. Remove age restriction for joining the organisation for females
- 11. Appoint more women engineers to top positions.
- 12. Actively encourage behavioural and attitude changes: Prevent harassment; use of words/phrases belittling women engineers' contribution; avoid apportioning blame in front of non-technical staff; create working environment making female engineers feel no discomfort in carrying out work in the work-sites; help women feel less alone and build a more inclusive engineering community; pay attention to unconscious biases and discriminatory practices

Table 28: Support sought from IESL/WEF

- 1. Prevent unfair competition at elections by allocating a few places in the Council for female engineers
- 2. Allocate mandatory minimum % of women engineers in professional bodies and managerial positions
- 3. IESL/WEF should play a more active role in promoting women engineers
- 4. Appoint a student WEF representative in each university
- 5. Organise WEF get-togethers where leading Women Engineers can be identified as role models.
- 6. Make the path less challenging and provide support to become a Chartered for those in the private sector.
- 7. Introduce and pair up with mentors who are superiors to support junior engineers.
- 8. Provide a better system of appreciation for the work done by female engineers. 9. Conduct programs aimed to remove cultural
- and social barriers for females and increase the awareness of unconscious biases prevailing in the male dominated industry.

Table 29: Support sought from Universities

- 1.Liaise with IESL to offer CPD courses or other programs to enhance skills in leadership, latest technology, communication, and confidence.
- 2. Offer sponsorships to gain postgraduate qualifications.
- 3. Conduct awareness programs about engineering disciplines to increase engagement for school girls.

Considering the responses to this part of the survey we can come to several conclusions and make a few recommendations:

- Apart from flexible work arrangements, any positive action taken to nurture, mentor and support women engineers where there are perceptions of unequal treatment will definitely promote the confidence and hence the contribution of women engineers to industry.
- Implementation of practices to improve the culture need only a change of attitude; however they are quite valuable as the loss of valuable workforce to engineering industry as a young female engineer chooses family over engineering work - either by changing career path that allows more flexible working conditions or by stopping work all together - can be equally wasteful to the individual and the engineering industry.
- There is an expectation on the part of women engineers that both IESL and WEF should play a more active role in promoting the visibility and representation of females in decision making positions. A close and careful scrutiny of the current diversity in the leadership positions as well as in the decision making roles at all levels of the organisation will be a useful step in the right direction. Diversity at all levels leads to enhanced performance of any organisation.
- IESL/WEF can organise events highlighting those women engineers who have 'made it' to the senior positions and get them to share their experiences and provide mentorship to juniors to effect influence. They can also get inspirational speakers to talk and share their issues and success stories with juniors (irrespective of gender).
- The engineering institution can take the lead to convince and guide the engineering employers to engage in more inclusive and fair practices. Monitoring the companies' performance over the long term in a systematic manner using measurable criteria will ensure consistent progress. Appropriate guidelines and measuring criteria of progress should be drawn for this purpose preferably with consultation of the industry ensuring their buy-in. Good employers' can be showcased in IESL publications to encourage participating organisations to continue to promote good practice and also to encourage other organisations to join in.
- The universities can take steps to establish a culture in the tertiary institutions to help graduates understand the need to be inclusive and appreciative of the role and contribution of their female counterparts.
- Apart from addressing to patch the 'leaky pipe' by preventing loss of women from engineering industry after they have entered the industry, increasing inflow into the pipe is essential; for the past several years, only about 30% of the students entering state-run engineering faculties are female. A comprehensive program to increase the intakes of females into the engineering faculties in the country can be conducted by tertiary institutions which are best positioned to implement such a program with assistance from IESL and industry. Programs such as visits to schools, open days, organising events that encourage participation of very young female students in technical activities etc. will help dismiss the stereotypical thinking that engineering has to be male-dominated, and reduce the biases of teachers, caregivers, and other advisors who discourage girls from aspiring to become engineers, and help girls discard any misconceptions they may have about their abilities.

Overall, this survey confirmed that there is gender imbalance in the numbers of women engineers in Sri Lanka and those who are in the industry encounter various barriers to progression of their careers. This series of articles presented the perceived obstacles to advancing their careers and how some of them can be removed by a number of actions the employers, professional bodies, and tertiary institutes can take to encourage them to succeed more as well as to keep them in industry longer. While there are several essential actions needed to increase the number of females choosing a career in engineering, it is equally or more important to take action to retain them once they are in the industry. A focus on providing leadership, improving the prevailing culture in the engineering industry, and recognising female engineers and supporting them in their role in the industry and the society are some of the ways to increase the retention and enhance participation of women in engineering. The IESL, WEF, and tertiary institutes can and must individually and collectively take steps to address the concerns in the voices of the women engineers of Sri Lanka.

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