# The CEAB 30 by 30 Working Group Report

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# Contents

# Executive Summary

Engineers Canada is working to increase the representation of women within engineering through its 30 by 30 initiative. This initiative has a goal of raising the percentage of newly licensed engineers who are women to 30 per cent by the year 2030. Thirty per cent is universally held as the tipping point for sustainable change—reaching 30 by 30 will help drive the shift in the overall membership of the engineering profession as more and more women continue to enter the profession.

As such, Engineers Canada's Strategic Priority 3: *Recruitment, retention, and professional development of women in the engineering profession* highlights the need to drive cultural change in the engineering profession in order to attain the goal of "30 by 30".  At their Fall 2019 meeting, the Engineers Canada Board approved the Strategic Priority's sub-strategy, which included direction to the CEAB to develop appropriate ways within the accreditation process to incorporate the goals of the 30 by 30 initiative.

In response, the CEAB struck the CEAB Working Group to Respond to the Engineers Canada "30 by 30" Initiative.  This report presents the recommendations from the members of the Working Group on possible interventions that can be made in the accreditation system in support of the goal of increasing the number of women involved in the engineering profession.  The recommendations fall into the following categories:

- The CEAB Criteria and Procedures
- Supporting documentation for the CEAB Criteria and Procedures
- The interpretive statements
- Encouraging recruitment and retention to the engineering profession
- Volunteer management
- General recommendations

As the Working Group moved through the task assigned to it by the CEAB, it became apparent that the goal of the 30 by 30 initiative is one component of a larger, global movement towards the adoption of the principles of equity, diversity and inclusion (EDI).  As such, many of the recommendations this Group makes speak explicitly to EDI with the implicit understanding that the increased representation of women in the engineering profession is related to the larger principles of EDI.  These recommendations are intended to be one part of a larger, on-going initiative to change the culture of the engineering profession to make it more inclusive for women and other marginalized groups.

The Working Group met eight times in the period September 1 to December 8, 2020. In these meetings, various aspects of achieving the 30 by 30 objectives were discussed. Subcommittees were struck to explore these facets and the Working Group (as a whole) considered the various proposed initiatives. This report will document the suggested approaches to advancing a culture more conducive to the 30 by 30 goals.

We note that the achievement of 30 by 30 goals are not a stopping point. Rather, they represent a launching pad for a more inclusive, diverse and equitable profession of engineering as we move into the coming decades. Engineering will benefit from a broader perspective and deeper talent pool.  In this way, our overriding goal relates to a sustained or improved version of "30 beyond 30" looking forward.

# 1. Background

Engineers Canada's Strategic Priority 3: *Recruitment, retention, and professional development of women in the engineering profession* highlights the need to drive cultural change in the engineering profession in order to attain a rate of 30 *per cent* of new licenses awarded to women by 2030 ("30 by 30").  At their Fall 2019 meeting, the Engineers Canada Board approved the Strategic Priority's sub-strategy, which included direction to the CEAB to develop appropriate ways within the accreditation process to incorporate the goals of the 30 by 30 initiative.

In response, the CEAB struck the CEAB Working Group to Respond to the Engineers Canada "30 by 30" Initiative.  In its mandate, possible areas of intervention were identified as position statements, accreditation criteria, interpretive statements, volunteer training, and CEAB practices or processes.  Upon further review, the members of the Group identified their ability to make recommendations in the following areas:

- The CEAB Criteria and Procedures
- Supporting documentation for the CEAB Criteria and Procedures
- The interpretive statements
- Encouraging recruitment and retention to the engineering profession
- Volunteer management

A sixth category of recommendations, general recommendations, is also included. Recommendations are divided into two categories: those that pertain to the CEAB criteria and interpretive statements which will require external consultation as per Engineers Canada's policy, and those that the CEAB can adopt unilaterally as they pertain to the Accreditation Board's operations and so do not require consultation.

As part of its mandate (as per its Terms of Reference, attached to this report as Appendix 2), the Working Group was asked to assess how other professional education accreditation bodies (both engineering and not, and both domestic and international) are addressing similar calls to action.  The purpose of this exercise was to identify good practices in this area by accreditors in order to make recommendations that are in-line with industry standards.  An environmental scan/literature review was undertaken and the results of which are presented in Appendix 2 of this report.

This report addresses the desired outcomes of the work of this Group by providing:
   a) A summary of the issue at hand from the perspective of HEIs, visiting teams, CEAB members, regulators and other stakeholders in the accreditation system,
   b) A summary of accreditation practices around diversity and inclusion,
   c) Recommendations on how Engineers Canada's accreditation system can support the 30 by 30 initiative,
   d) Suggestions of metrics that will allow for assessment of the success of proposed recommendations, and
   e) An implementation plan to support any recommended changes.

The Working Group is composed of the following members:

- Jeff Pieper, CEAB Member, Chair
- Emily Cheung, CEAB Member representing industry
- Ramesh Subramanian, CEAB Member representing academia
- Tim Joseph, Engineers Canada Director appointee
- Jeanette Southwood, Engineers Canada Senior Leadership Team representative (assisted by Cassandra Polyzou, Engineers Canada Manager, Diversity, Equity and Inclusion)
- Amy Hsiao, nominated by Engineering Deans Canada
- Mina Hoorfar, nominated by Engineering Deans Canada
- Anne-Marie Laroche, CEAB Member, member-at-large to the Working Group

The Working Group met once every two weeks between September 2nd and December 8th, 2020 to undertake their work.  In addition, members of the Working Group self-identified specific areas of interest and split into sub-groups to develop suggestions that were then presented to the entire Group for consideration, adoption or adaptation; these suggestions form the basis of the recommendations the Working Group is making to the CEAB.

## 2. Assumptions on Stakeholder Perspectives

### Engineers Canada

Engineers Canada is working to increase the representation of women within engineering through its 30 by 30 initiative. This initiative has a goal of raising the percentage of newly licensed engineers who are women to 30 per cent by the year 2030.  Engineers Canada has long fostered collaboration with engineering regulators and other engineering stakeholders to work collectively and share authority, decision-making, and accountability to reach 30 by 30. Engineers Canada facilitates the work of the 30 by 30 Champions network, facilitates data collection and distribution on the composition of the profession, and advocates to the federal government on issues relevant to women in engineering.

### 30 by 30 Champion Network

When an organization endorses the 30 by 30 goal, they nominate a Champion who actively engages in the 30 by 30 network. They also commit to investing in the creation and maintenance of programs and partnerships that lead to an improved experience for women in engineering; to sharing and applying best practices; to collecting metrics on the number of women in engineering in their jurisdiction; and to implementing policies that support the increased participation and retention of engineers who are women.  By their vary nature, the 30 by 30 Champions support the work of the 30 by 30 initiative.

### Higher Education Institutions (HEIs)

There is a clear commitment from Higher Education Institutions (HEIs) with regards to the recruitment, retention, and professional development of women in the engineering profession. HEIs have long supported the 30 by 30 champions network, have created spaces for conversations on diversity through committees and panels, and have taken action to create a more inclusive profession through education. In their feedback on the role of the accreditation system in incorporating the goals of the 30 by 30 initiative, Engineering Deans Canada has expressed concern that this work will inappropriately increase the scope of accreditation and will be a use of accreditation as a policy tool to fulfill Engineers Canada's broader mandate.  While the Deans have explicitly supported gender parity in the profession, the sense is that this movement within the accreditation system is a response to recent trends in higher education

and will set a precedence for future trends which will create instability in the criteria and will jeopardize their programs' ability to meet the criteria.

### Visiting Teams

CEAB Visiting Team members are uniquely positioned to develop an in-depth understanding of how HEIs are encouraging gender parity in the programs.  Visiting Team members will require support from the CEAB and the CEAB Secretariat to develop tools and skills to collect the necessary information; this can be achieved through the volunteer training program.

### CEAB Members

CEAB members are in favour of finding ways to support the goals of the 30 by 30 initiative.  There is a recognition that this support could take the form of interventions in the criteria, but that the CEAB and the CEAB Secretariat's operations are also likely areas in which changes can be made to encourage gender parity via the accreditation system.

### Regulators

The regulators are committed to fostering a more inclusive profession, representative of the Canadian population.  There is a recognition that equality is an important aspect for a society, and that the engineering profession does not currently reflect the composition of our communities.  Each authority has contextual programs to address the issue, but there is also a recognition that the 30 by 30 initiative is an opportunity to critically reflect on the conditions that have created gender disparity and to identify possible strategies to work towards solutions.  The regulators look to Engineers Canada to support them in their efforts, as evidence by their approval of Strategic Priority 3, which is designed to address this issue.

## 3. Accreditation Practices Related to Diversity and Inclusion

In fall 2020, an environmental scan and literature review was undertaken in order to identify how other accreditors are addressing calls to action similar to Engineers Canada's 30 by 30 initiative.  With regards to engineering, a review of the public websites of the Washington Accord signatories (both full and provisional categories) found that signatories in South Africa, New Zealand, Australia, Costa Rica, Sri Lanka and Canada are engaged in organized efforts to address gender disparity in the profession.  The United States and the United Kingdom appear to be doing 'spotlight work' on diversity issues in general, but an over-arching policy/program seems to be absent; a search of their websites provide individual news articles/blog posts feature women and/or gender issues. In March 2020, ABET launched the Inclusion, Diversity and Equity Advisory (IDEA) Council which may lead to more work in this area in the future. The remaining countries do not have publicly available materials on their website about any gender-related programs.

While exploring the Washington Accord signatory webpages, a trend emerged: when an organization has the sole mandate to accredit engineering programs (i.e., Russia, Turkey, India) they are unlikely to pursue projects such as the 30 by 30 initiative.  For organizations that have a dual accreditation/representation role (i.e., Canada, Australia, New Zealand), it is more common to find work around the development of the profession, including gender parity.  Ireland, the United Kingdom and the United States were notable exceptions to this trend.

This trend, however, is observable in other accrediting organizations in Canada.  Following a review of the public websites of the members of the Association of Accrediting Agencies of Canada (AAAC), it was noted that only the accrediting organizations for engineering, psychology, statistics and technological engineering have projects/programs designed to address gender disparity in their professions.  As with engineering, the accrediting organizations for these disciplines have a joint accreditation/representation mandate.

With regards to the global engineering community, the International Engineering Alliance (IEA) solicited input from the engineering community throughout 2020 around proposed updates of its Graduate Attributes and Professional Competencies Framework.  Part of that work included a partnership between the IEA, the UN Educational, Scientific and Cultural Organization (UNESCO) and the World Federation of Engineering Organizations (WFEO) to address the UN's sustainable development goals around gender equality and education.  The proposed updates to the graduate attributes stress diversity and inclusion and, in terms of mechanics, are being re-written to be gender neutral.

Finally, a literature review of the issue found only a handful of publications speak to the role that accreditation could/does play in addressing gender disparity in a profession via education.  The most fulsome (Ferreira, Vidal and José Vieira, 2014) is a study of 51 accreditors representing 20 countries (primarily in Europe and the USA), which found that most accreditors speak to diversity and inclusion to some degree through criteria and standards.  One of the more interesting findings of the literature review was a study of a German medical school (Ludwig, Roa Romero and Balz, 2018) in which the authors observed internal quality assurance personnel 'augmenting' external accreditation standards to more explicitly speak to diversity and inclusion.  What emerges from the (limited) literature is the need for collaboration between accreditors and HEIs, but for true systemic change to occur and remain in place, leadership is key.

Appendix 2 to this report provides details on the sources consulted for the environmental scan/literature review.

## 4. Recommendations and Suggested Metrics

The members of the CEAB Working Group to Respond to the Engineers Canada "30 by 30" Initiative are recommending to the CEAB that the following interventions to the accreditation system be made in support of the goal of increasing the involvement of women (and other demographic groups) in the engineering profession.  As per Engineers Canada policy, recommendations related to possible changes to the criteria and interpretive statements are required to undergo public consultation, while operational recommendations do not.  Given the importance of this topic, however, the Working Group is seeking stakeholder input on all of the following recommendations: [1]

### The CEAB Accreditation Criteria and Procedures

**Recommendation 1**: Updates to criterion 3.5.3 Leadership
It is recommended that the following addition be made to criterion 3.5.3 on leadership:

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[1] Where proposed changes to language are made, the change is identified using ~~Deleted~~ / **Added** text font colours and formatting.

The dean of engineering (or equivalent officer) and the head of an engineering program (or equivalent officer with overall responsibility for each engineering program) are expected to provide effective leadership in engineering education, **including the promotion of equity, diversity and inclusion,** and to have high standing in the engineering community. They are expected to be engineers licensed to practice in Canada.

**Metric**: Improved satisfaction with EDI issues in Engineers in training (EIT) candidates on their experiences while in programs from a survey done by regulators of which one portion could address 30 by 30, EDI and other culture of engineering programs issues.

**Recommendation 2**: Updates to criterion 3.5.4 Experience and competence of faculty members
It is recommended that the following addition be made to criterion 3.5.4 on the experience and competence of faculty members:

Faculty delivering the engineering curriculum are expected to have a high level of expertise and competence, **demonstrate an understanding of, and continual commitment to, EDI**, and to be dedicated to the aims of engineering education and of the self-regulating engineering profession, which will be judged by the following factors:

a. The level of academic education of its members.
b. The diversity of their backgrounds, including the nature and scope of their non-academic experience.
c. Their ability to communicate effectively.
d. Their experience and accomplishments in teaching, research and/or engineering practice.
e. Their degree of participation in professional, scientific, engineering, and learned societies.
f. Their appreciation of the role and importance of the self-regulating engineering profession, and of positive attitudes towards professional licensure and involvement in professional affairs.
**g. EDI as an aspect of recruitment of new faculty and instructors**

**Metric**: Improved satisfaction with EDI issues in EIT candidates on their experiences while in programs from a survey done by regulators of which one portion could address 30 by 30, EDI and other culture of engineering programs issues.

**Recommendation 3**: Change Graduate Attribute 8 from "Professionalism" to "Professionalism and Ethics"
It is recommended that Graduate Attribute 8 be changed from "Professionalism" to "Professionalism and Ethics."  The following is the proposed new wording:

8. Professionalism **and Ethics.** An understanding of the roles and responsibilities of the professional engineer in society, especially the primary role of protection of the public **demonstrating an ability to recognize and act ethically and apply professional ethics.**

It is further recommended that Appendix 8, the *Interpretive statement on graduate attributes* be updated to include the following definitions of the concepts of professionalism and ethics:
*Professionalism*
**An understanding of the roles and responsibilities of the professional engineer in society, especially the primary role of protection of the public resulting in readiness for the professional environment.**

*Ethics*

**An ability to understand, recognize, and apply professional concepts that include but may not be limited to duty, fairness, respect, risk of harm, honesty, diligence, trustworthiness, confidentiality, and transparency.**

**Metric**:  Information gathered from a survey of stakeholders that this revised Graduate Attribute and associated definitions and interpretations are helpful and useful in creating strong programs.  This survey can be done in conjunction or as an addition to normal feedback gathered from HEIs after their visit.

**Recommendation 4:** Change Graduate Attribute 10 from "Ethics and Equity" to "Equity, Diversity and Inclusion"
It is recommended that Graduate Attribute 10 be changed from ""Ethics and Equity" to "Equity, Diversity and Inclusion."  The following is the proposed new wording:

10. **Equity, Diversity, and Inclusion. Demonstrate an understanding of equity as well as diversity at individual, interpersonal, organizational and societal levels, with an ability to create and work in inclusive environments.**

It is further recommended that Appendix 8, the *Interpretive statement on graduate attributes* be updated to include a definition of equity, diversity and inclusion (see recommendation 6).

**Metric**:  Information gathered from a survey of stakeholders that this revised GA and associated definitions and interpretations are helpful and useful in creating strong programs.  This survey can be done in conjunction or as an addition to normal feedback gathered from HEIs after their visit.

## The interpretive statements

**Recommendation 5**: Update to the Interpretive Statement on Graduate Attributes
It is recommended that Appendix 8 the *Interpretive statement on graduate attributes*, specifically the section related to criterion 3.1.4 (assessment tools) be updated to provide clarity around the definitions and expectations for the categories introductory, developed and advanced application (I/D/A).

**Metric**: The adoption of an updated interpretive statement by the CEAB.

**Recommendation 6**: Engineers Canada definition of Equity, Diversity and Inclusion
It is recommended that the Engineers Canada Board develop definitions for "equity," "diversity" and "inclusion" that are applicable to all aspects of the work that Engineers Canada undertakes, including accreditation.

It is further recommended that Appendix 8, the *Interpretive statement on graduate attributes* be updated to include the definitions of equity, diversity and inclusion in relation to the proposed Graduate Attribute 10 Equity, Diversity and Inclusion.

**Metric**:  Information gathered from a survey of stakeholders that this definition and associated interpretive statement are helpful and useful in creating strong programs.  This survey can be done in conjunction or as an addition to normal feedback gathered from HEIs after their visit.

**Recommendation 7**: Update to the Interpretive Statement on Accreditation Unit (AU) Categories
To provide HEIs with examples of how EDI can be incorporated into operations, it is recommended that Appendix 7 *Interpretive statement on accreditation unit (AU) categories* be updated to include the following language:
> The 305 AUs may be assigned to any combination of mathematics, natural sciences, engineering science, engineering design and complementary studies, as well as a distinct category "other" if considered desirable. The latter is intended to cover learning activities that may not otherwise be categorized but complement the technical content of the curriculum, is consistent with the program objectives and is assigned academic credit by the institution.  **HEIs are encouraged to consider EDI or 30 by 30 training or seminar series (for example) within this allocation of AUs.**

**Metric**:  That 50% of HEIs adopt EDI or 30 by 30 training or seminars as optional learning activities contributing to the AU total in programs as indicated on documentation provided by the HEIs as part of their questionnaire as prepared for the visiting team.

**Recommendation 8**: Update to the Interpretive Statement on Continuous Improvement
To provide HEIs with examples of how EDI can be incorporated into operations, it is recommended that Appendix 9 *Interpretive statement on continuous improvement* be updated to include the following language in relation to criteria 3.2.1 (improvement process), 3.2.2 (stakeholder engagement) and 3.2.3 (improvement actions):
> **Examples: The implementation and expansion of EDI and 30 by 30 initiatives.**

**Metric**:  Information gathered from a survey of stakeholders that this revision of the interpretive statement is helpful and useful in creating strong programs.  This survey can be done in conjunction or as an addition to normal feedback gathered from HEIs after their visit.

## Supporting Documentation for the CEAB Criteria and Procedures

**Recommendation 9**: Addition to Suggested interview questions for (onsite) visits regarding criterion 3.3.3 Academic Advising
It is recommended that questions be added to the interview guide to facilitate the visiting team member's data collection on the processes that are in place to address EDI issues in relation to faculty-, staff- and peer-advising.  The suggested questions are included as an appendix to this report, and are also presented broken down by topic area in subsequent recommendations.

**Metric**:  Feedback from visiting teams that the question list was helpful.

**Recommendation 10**: Addition to Suggested interview questions for (onsite) visits regarding criterion 3.5.1.1 Quality of the educational experience
It is recommended that questions be added to the interview guide to facilitate the visiting team member's data collection on a) the program's demonstrated commitment to EDI, b) the program's provision of EDI training to faculty and staff, and c) the program's policies and procedures to support students through counselling services.  The suggested questions are as follows:

- Who is providing counselling?
- What the nature of the counselling (i.e., psychological, morale, program advising)?
- What is the level of availability (i.e., first come first served, or are special considerations made to allow certain demographic groups [like women, LGBTQ2+] to access the services first?)

**Metric**:  Feedback from visiting teams that the question list was helpful.

**Recommendation 11**: Addition to Suggested interview questions for (onsite) visits regarding criterion 3.5.3 Leadership
It is recommended that questions be added to the interview guide to facilitate the visiting team member's data collection on leadership's commitment to EDI:
- What is the Dean doing within the faculty to be a leader on EDI issues?
- Does the Dean support (and have a program in place to support) EDI?  If so, how is it being rolled out and how is it being sustained?

**Metric**: Feedback from the visiting teams that the question list was helpful.

**Recommendation 12**: Addition to Suggested interview questions for (onsite) visits regarding criterion 3.5.4 Experience and competence of faculty members
It is recommended that questions be added to the interview guide to facilitate the visiting team member's data collection on the experiences of female faculty members:
- Are female and minority group faculty members being encouraged and supported for sustained growth?
- What ongoing/sustainable training opportunities exist for women and minority groups?
- How are female and minority group faculty encouraged/supported in their early career to gain industry partnership/mentorship/etc.?
- What EDI principles are endorsed by the Dean and faculty as it relates to the faculty and staff hiring processes?

**Metric**: Feedback from the visiting teams that the question list was helpful.

**Recommendation 13**: Addition to Suggested interview questions for (onsite) visits regarding criterion 3.5.7 Authority and responsibility for the engineering program
It is recommended that a question be added to the interview guide to facilitate the visiting team member's data collection to understand if the Engineering Faculty Council (or equivalent) is aware of EDI issues.  The suggested question is as follows:
- How are EDI issues addressed by this body?

**Metric**: Feedback from the visiting teams that the question list was helpful.

**Recommendation 14**: Addition to Suggested interview questions for (onsite) visits regarding general EDI issues

It is recommended that the following questions be added to the interview guide to facilitate the visiting team member's data collection on general EDI issues:

*Strength of Infrastructure*
- Does the HEI have an EDI statement?
- What is the general state of awareness and training on EDI for faculty, staff, graduate and undergraduate students?
- Are the specific faculty or staff dedicated or focused on 30by30 or EDI issues?
- What champion groups, or other entities, support EDI within the HEI?
- What is the general level of effectiveness of EDI-related interventions?

*Qualitative:  Student Experience of EDI*
- Interviews:  undergraduate, graduate, staff, technologists
    - Have you experienced harassment or been discouraged while participating in the program?
    - Would you choose this major again?
    - What happened when issues were brought forth?  Were they addressed?  By whom?

*Quantitative:  Knowledge and attitude of leadership*
- How many women students?  Major?
- How many women faculty?
- How are women students being supported?
- How are women faculty being supported?
- What actions are occurring with regards to EDI for recruitment and retention?
- What are the outreach activities success rates?
- Would you characterize the EDI efforts of the HEI as ad-hoc, top-down, collective effort?

**Metric**:  Feedback from the visiting teams that the question list was helpful.

## Encouraging recruitment and retention to the engineering profession

**Recommendation 15**: Position statement on issues related to recruitment and retention
It is recommended that the CEAB issue a position statement related to EDI and issues of recruitment and retention which touches on the following points:

- Programs are encouraged to seek out non-engineering disciplines to be involved with program development and delivery in order to be dynamic and inclusive especially with respect to EDI issues.  An effective way to engage non-engineering disciplines is through engineering design capstone projects.
- Disciplines with historically low diversity enrollment rates are encouraged to seek out ways to increase diversity and representation in their programs.  It should be noted that gender balance in enrollment would be an effective way to measure the impact of a program's commitment to the 30 by 30 initiative.
- Programs are encouraged to engage their industry partners to help identify EDI issues within a program that may be impacting the local practice environment as a means to improve the program culture.

**Metric**:  The position statement is published and made available on the Engineers Canada website, and is accessed by external stakeholders (which is possible to determine via web analytics).

## Volunteer management

**Recommendation 16**: Composition of visiting teams
It is recommended that the CEAB update CEAB policy 4.2 (selection of visiting team) to reflect the following language:

> The CEAB strives to create visiting teams that are composed of at least 30 per cent women. A long-term goal would be a female/male split representative of the Canadian population.

It is further recommended that the Engineers Canada Board review the Diversity and Inclusion policy to determine if it appropriate to limit both the target and time goals associated with the 30 by 30 initiative.

**Metric**: That CEAB Policy 4.2, Selection of visiting team, is updated and approved by the Engineers Canada Board to indicate CEAB "strives to create visiting teams that are composed of at least 30 *per cent* women; a long-term goal would be a female/male split representative of the Canadian population."

**Recommendation 17**: Volunteer pool
It is recommended that efforts be made to increase outreach and recruitment activities in order to grow the pool of visit volunteers to be more reflective of the Canadian population.

**Metric**: That advertising for volunteers via the Engineers Canada website and social media platforms include the following language: "Engineers Canada believes that having a pool of volunteers that is reflective of the Canadian population is a source of our strength. As such, we encourage all qualified individuals to apply, including women and members of minority groups." Further that female-centric engineering organizations, regulators and the EDC partner with the CEAB in the dissemination of the call for volunteers.

## General Recommendations

**Recommendation 18**: Code of conduct
It is recommended that Engineers Canada critically review the current code of conduct enshrined in the Board Policy Manual, 4.3 – Code of Conduct to ensure the organization is inclusive and respectful of all groups, and that the Code is applicable to all of the organization's operations.

**Metric**: The Engineers Canada Board undertakes a review of the current Code of Conduct policy.

It is further recommended that all visiting team members be provided with a written copy of the current Code of Conduct and any future iterations as they become available.

**Metric**: That the CEAB Secretariat provides all visiting team members with a copy of the Code of Conduct for each visit in which they participate.

It is further recommended that the visiting team chair's orientation presentation be updated to include information on the Code of Conduct (current and future iterations) and the principles of equity, diversity and inclusion.

**Metric**: That the visiting team chair's orientation presentation template is updated to include information on the Code of Conduct and the principles of equity, diversity and inclusion.

**Recommendation 19**: Library of resources on EDI

It is recommended that the CEAB, in connection with staff assigned to support the Engineers Canada 30 by 30 initiative, maintain a library of resources that HEIs could consult on best-practice and industry standards when planning and implementing EDI work for their faculty/department and program(s).

**Metric**:  Information gathered from a survey of stakeholders that this library provides a helpful and useful resource.  This survey can be done in conjunction or as an addition to normal feedback gathered from HEIs after their visit.

# 5. Implementation Plan

Changes to the Criteria and Interpretive Statements

Recommendations for changes to criteria and interpretive statements are governed by the policy laid out in Section 9 of the Engineers Canada Board Policy Manual.  These recommendations include:
- Recommendation 1: Updates to criterion 3.5.3 Leadership
- Recommendation 2: Updates to criterion 3.5.4 Experience and competence of faculty members
- Recommendation 3: Change Graduate Attribute 8 from "Professionalism" to "Professionalism and Ethics"
- Recommendation 4: Change Graduate Attribute 10 from "Ethics and Equity" to "Equity, Diversity and Inclusion"
- Recommendation 5: Update to the Interpretive Statement on Graduate Attributes
- Recommendation 6: Engineers Canada definition of Equity, Diversity and Inclusion
- Recommendation 7: Update to the Interpretive Statement on Accreditation Unit (AU) Categories
- Recommendation 8: Update to the Interpretive Statement on Continuous Improvement

Changes to CEAB criteria and interpretive statements must be recommended by the CEAB, undergo internal review and external consultation, and then be referred to the Engineers Canada Board for final approval and adoption.

Recommendations to the Engineers Canada Board

Recommendations related to the Engineers Canada Board can be made at any time for inclusion at an upcoming Board meeting.  These recommendations include:
- Recommendation 6: Engineers Canada definition of Equity, Diversity and Inclusion
- Recommendation 16: Composition of visiting teams
- Recommendation 18: Code of conduct

Changes to CEAB procedures, policy and operations

The recommendations related to the CEAB *Suggested interview questions for (onsite) visits* requires consultation with the CEAB's Policies and Procedures Committee (the P&P).  These recommendations include:
- Recommendation 9: Addition to Suggested interview questions for (onsite) visits regarding criterion 3.3.3 Academic Advising
- Recommendation 10: Addition to Suggested interview questions for (onsite) visits regarding criterion 3.5.1.1 Quality of the educational experience

- Recommendation 11: Addition to Suggested interview questions for (onsite) visits regarding criterion 3.5.3 Leadership
- Recommendation 12: Addition to Suggested interview questions for (onsite) visits regarding criterion 3.5.4 Experience and competence of faculty members
- Recommendation 13: Addition to Suggested interview questions for (onsite) visits regarding criterion 3.5.7 Authority and responsibility for the engineering program
- Recommendation 14: Addition to Suggested interview questions for (onsite) visits regarding general EDI issues

The P&P is mandated with the "continuing review, updating and development of AB policies and procedures and documentation thereof," and, as such, is responsible for the upkeep of the list of suggested interview questions. Once the P&P has finalized the list of additions, the new questions will be referred to the CEAB for approval. Changes to accreditation documents occur at the September CEAB meeting for implementation in the next accreditation cycle; as such, the soonest these recommendations could be implemented would be the 2023/2024 accreditation cycle (with approval to occur at the September 2022 CEAB meeting).

The recommendation pertaining to the visiting team composition (Recommendation 16: Composition of visiting teams) needs to be assessed by the P&P (for the same reasons cited above) and confirmed by the CEAB. Changes to accreditation documents (which includes the policy in question) occur at the September CEAB meeting for implementation in the next accreditation cycle; as such, the soonest this recommendation could be implemented would be the 2023/2024 accreditation cycle (with approval to occur at the September 2022 CEAB meeting).

The recommendation relating to growing the volunteer pool (Recommendation 17: Volunteer pool) can be incorporated into Engineers Canada's volunteer management strategy.

The recommendation related to training for visiting team members (Recommendation 18: Code of conduct) can be quickly implemented. As Engineers Canada staff prepare for the 2022/2023 accreditation cycle, the existing Board Code of Conduct can be provided to visiting team members at the same time as the confidentiality forms. The visiting team chair orientation presentation can be updated for implementation in the same cycle. Should the Engineers Canada Board update their Code of Conduct in the future, current materials can be provided as they become available.

The recommendation related to establishing a library of resources for HEIs to consult when planning EDI activities (Recommendation 19: Library of resources on EDI) could be accomplished by building on Engineers Canada's existing activities in this area. Opportunities for synergy between the CEAB and Engineers Canada's Strategic Partnership department would facilitate this work.

Position statement
The recommended position statement (Recommendation 15: Position statement on issues related to recruitment and retention) can be developed by the CEAB at any time and published once approved by the CEAB. The CEAB can delegate this task to either this Working Group or the P&P.

The quickest possible timeline for any changes recommended by the Working Group is:

| Stage | Estimated date |
| --- | --- |
| Change suggested by the Working Group to the CEAB | June 2021 |
| Decision to act by the CEAB | June 2021 |
| CEAB approves the recommendations and initiates the consultation stage | June 2021 |
| Consultation | November 2021 – January 2022 |
| Working Group finalizes its recommendations | January-April 2022 |
| CEAB reviews and approves recommendations for changes | June 2022 |
| Engineers Canada Board reviews and approves recommendations | Fall 2022 |
| Implementation of changes to criteria/graduate attributes/interpretive statements | 2023/2024 accreditation cycle |

This timeline is based on traditional meeting dates for the three groups involved and are subject to change.  Moreover, this timeline assumes no substantial revisions of the Working Group's recommendations are requested by the CEAB or the Engineers Canada Board.

# 6. Conclusions

As the Working Group moved through the task assigned to it by the CEAB, it became apparent that the goal of the 30 by 30 initiative is one component of a larger, global movement towards the adoption of the principles of equity, diversity and inclusion (EDI).  As such, many of the recommendations this Group is making speak explicitly to EDI with the implicit understanding that the increased representation of women in the engineering profession is a component of this work.  The ultimate goal is to contribute to efforts currently underway by Engineers Canada, and the larger global community, to make the engineering profession a more inclusive and welcoming culture for women and marginalized groups.

The Working Group conceptualized its work using the principle of "30 *beyond* 30."  As the deadline for 2030 approaches, there is a risk that the 30 by 30 target will not be achieved.  The Working Group feels it is important to recognize that work on this area needs to be seen as a long-term, on-going effort.  As such, the recommendations included in this report are designed to implement changes within engineering education programs with the goal of ensuring longevity of the spirit of the 30 by 30 initiative rather than suggesting efforts to ensure equity, diversity and inclusion can be abandoned after 2030.

# Appendix 1 – List of Recommendations

Criteria
- Recommendation 1: Updates to criterion 3.5.3 Leadership
- Recommendation 2: Updates to criterion 3.5.4 Experience and competence of faculty members
- Recommendation 3: Change Graduate Attribute 8 from "Professionalism" to "Professionalism and Ethics"
- Recommendation 4: Change Graduate Attribute 10 from "Ethics and Equity" to "Equity, Diversity and Inclusion"

The interpretive statements
- Recommendation 5: Update to the Interpretive Statement on Graduate Attributes
- Recommendation 6: Engineers Canada definition of Equity, Diversity and Inclusion
- Recommendation 7: Update to the Interpretive Statement on Accreditation Unit (AU) Categories
- Recommendation 8: Update to the Interpretive Statement on Continuous Improvement

Supporting Documentation for the CEAB Criteria and Procedures
- Recommendation 9: Addition to Suggested interview questions for (onsite) visits regarding criterion 3.3.3 Academic Advising
- Recommendation 10: Addition to Suggested interview questions for (onsite) visits regarding criterion 3.5.1.1 Quality of the educational experience
- Recommendation 11: Addition to Suggested interview questions for (onsite) visits regarding criterion 3.5.3 Leadership
- Recommendation 12: Addition to Suggested interview questions for (onsite) visits regarding criterion 3.5.4 Experience and competence of faculty members
- Recommendation 13: Addition to Suggested interview questions for (onsite) visits regarding criterion 3.5.7 Authority and responsibility for the engineering program
- Recommendation 14: Addition to Suggested interview questions for (onsite) visits regarding general EDI issues

Encouraging recruitment and retention to the engineering profession
- Recommendation 15: Position statement on issues related to recruitment and retention

Volunteer management
- Recommendation 16: Composition of visiting teams
- Recommendation 17: Volunteer pool

General Recommendations
- Recommendation 18: Code of conduct
- Recommendation 19: Library of resources on EDI

# Appendix 2 – Terms of Reference for the CEAB Working Group to Respond to the Engineers Canada "30 by 30" Initiative

**Terms of Reference**
**CEAB Working Group to Respond to the Engineers Canada "30 by 30" Initiative**

Engineers Canada's Strategic Priority 3*: Recruitment, retention, and professional development of women in the engineering profession* highlights the need to drive cultural change in the engineering profession in order to attain a rate of 30% of new licenses awarded to women by 2030 ("30 by 30"). At their Fall 2019 meeting, the Engineers Canada Board approved the Strategic Priority's sub-strategy, which included direction to the CEAB to develop appropriate ways within the accreditation process to incorporate the goals of the 30 by 30 initiative.

MANDATE:
1. To explore ways in which Engineers Canada's accreditation process can support the 30 by 30 initiative. This may include, but is not limited to (in no particular order):
    a. Position statements
    b. Accreditation criteria
    c. Interpretive statements
    d. Volunteer training
    e. CEAB practices or processes
2. To assess how other professional education accreditation bodies (both engineering and not, and both domestic and international) are addressing similar calls to action.

OUTCOMES
1. To produce a report outlining:
    a. The issue at hand from the perspective of HEIs, visiting teams, CEAB members, and regulators.
    b. A summary of accreditation practices around diversity and inclusion.
    c. A recommendation on how Engineers Canada's accreditation system can support the 30 by 30 initiative.
    d. Metrics that will allow for assessment of the success of proposed recommendations.
    e. An implementation plan to support any recommended changes.

ORGANIZATION
1. The working group will be Chaired by one member of the CEAB.
2. The working group will be composed of:
    a. An Engineers Canada Director appointee.
    b. An Engineers Canada senior leadership team representative.
    c. Two representatives of the CEAB, one to represent academia the other industry.
    d. Two representatives nominated by Engineering Deans Canada, preferably 30 by 30 Champions with accreditation knowledge.

3. The working group will be stood down by the CEAB when their mandate has been fulfilled.

MODUS OPERANDI:
1. All correspondence to be by e-mail between members and to be copied to all members.
2. The group will meet as needed either by teleconference or by web meeting.
3. Target date for the delivery of the report is December 31, 2020.

RESOURCES
1. The group may call on external experts as necessary to inform their work.
2. The CEAB Secretariat will act as administrative support to the group.

## Appendix 3 - Environmental Scan/Literature Review on efforts to increase the participation rate of women in engineering

| Organization | Practices | Source |
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| **Engineering** | | |
| IEA/UNESCO/WFEO | The International Engineering Alliance, the UN Educational, Scientific and Cultural Organization and the World Federation of Engineering Organizations are currently undertaking a review of the IEA Graduate Attribute and Professional Competencies Framework.<br><br>Proposed changes include:<br>1. Accommodate future needs of engineering professionals and the profession – strengthen the required attributes on team-work, communication, ethics, sustainability.<br>4. Incorporate UN Sustainable Goals – in the development of solutions that consider diverse impacts – technical, environment, social, cultural, economic, financial and global responsibility.<br>5. Diversity and Inclusion – include these considerations within ways of working in teams, communication, compliance, environment, legal etc. systems.<br><br>• Language throughout is being updated to be gender neutral (i.e., they/them vs. he/she) | IEA/UNESCO/WFEO GA/PC update consultation website |
| UNESCO | "Given the current and future global need for engineering, it is imperative that all human resources are used. Historically, women have been significantly underrepresented in engineering fields, typically making up only 10 – 20% of the engineering work force.<br><br>Through programmes that encourage women to pursue engineering studies and retain women engineers in the profession, UNESCO will help to fulfill this human resource need."<br><br>• Focus on development women-engineers in Africa. | UNESCO and Engineering |

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| Women in Engineering (WiE) (Standing Committee of the World Federation of Engineering Organizations) | Vision statement: "WiE will use her worldwide membership, collective power and technology to achieve an engineering profession which attracts, retains, promotes, and welcomes the inputs of women and other under-represented groups. Our skills will be used to create positive impact on the Sustainable Development Goals as we support outreach activities, capacity building, training, and empowerment of women to attain leadership positions, with equal compensations."<br><br>The Committee has four areas of focus:<br>1. Engineering Workforce Diversity and Capacity Building<br>2. Female Leadership and Empowerment<br>3. Engineering Strategic Indicators<br>4. Working in Partnership to address the Sustainable Development Goals, with a particular emphasis on Goal 5- Gender Equality, and its relationship with the other Goals. | Women in Engineering (WiE) |
| | • We will encourage women engineers in our countries to engage and provide our technical expertise and management skills in collaboration and teamwork with our male colleagues. We will perform roles that include Leadership, Coordination, Team Members, Team Builders and Collaborators.<br>• We will encourage working with all colleagues and with other disciplines since solutions will require a multi-disciplinary and multi-professions approach.<br>• We will work at capacity-building for young and mid-career engineering professionals with a focus on women engineers to increase and maintain the cohort of women engineers.<br>• We will identify and work with Champions and Role Models to inspire women to join and to continue their practice by fostering and securing opportunities for personal growth and support in this space.<br>• Our profession will also set an excellent example towards the achievement of SDG 5 – Gender Equality, leading by example by turning the Words into Action.<br>• We will encourage our male and female peers working in this space to serve as Champions and Role Models to inspire young women and mid-career women to continue or re-enter the profession to make difference in people's lives and quality of life in all countries of the world through our efforts. This is an exciting challenge and one that will need a sustained effort over the long term. | Declaration: Contributing to Global Sustainable Development Women Engineers Making a Difference with Men as Allies, "Turning Words into Action" (2018) |

| | The Principles for action to activate the WFEO Strategic Plan through the WFEO Engineering 2030 Plan are: | WFEO Engineering 2030: A Plan to advance the achievement of the UN Sustainable Development Goals through engineering (progress report 2018) |
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| | 1. Address the need for more engineers - and encourage young people, boys and girls, to consider engineering as a career.<br><br>Supporting the following projects:<br>• Develop international frameworks and strategies to address diversity in engineering through joint projects with WFEO Standing Technical Committee on Women in Engineering, national members and the partnership with the International Network of Women Engineers and Scientists (INWES);<br>• Facilitate the work being done to encourage girls to consider STEM careers by WFEO associate member, WomEng, South Africa;<br><br>WomEng: 1 Million Girls in STEM<br>WomEng is an Associate member of WFEO and was established in 2006 with the objective of encouraging girls to consider STEM as a career by creating STEM awareness for girls and developing, mentoring and supporting them through their engineering journey.<br><br>The symbol of the campaign is WomEng's trademark pink hard hat. The ambition of the campaign is to challenge the age-old perceptions and stereotypes that exist in the engineering industry and instill a sense of belief and ambition to pursue engineering careers in girl children around the world.<br><br>The model for extending the reach of STEM awareness to 1 million girls is based on an exponential train-the-trainer scaling model, working with individuals and/or organisations passionate about STEM, such as WFEO member organisations, who can sign up for a #1MillionGirlsInSTEM toolkit to become an official WomEng Activator. The reach is tracked on a live Google Map showcasing the number of countries, cities and girls reached. | |

| | The #1MillionGirlsInSTEM campaign is a key component of WomEng's efforts to meet the Sustainable Development Goals. By investing in girls' education and creating gender equity for the entire engineering sector. | |
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| Engineering Council South Africa (ECSA) | Transformation Project<br>… [A]ccording to the ECSA database, the current profile of registered engineering professionals is not balanced in terms of gender and race. There are approximately 34 000 registered professionals in the ECSA database, of which more than 14 800 are registered professional engineers, i.e., engineering professionals with a degree from a recognised university. Of this total, females constitute only 3%, whilst blacks comprise less than 12%... In order to efficiently and equitably deliver on its mandate, the ECSA has to revisit its processes, systems, culture, infrastructure and even the legislation that governs it. | ECSA : About ECSA : Transformation<br><br>[The project seems geared towards making the registration process more accessible and transparent in general, rather than activities targeted at a specific gender/race.] |
| Engineering New Zealand | The Diversity Agenda is a joint initiative from Engineering New Zealand, the New Zealand Institute of Architects and ACE New Zealand, established to make engineering and architecture better professions for all.<br><br>Launched in early 2018 with an initial goal to see 20% more women engineers and architects, the campaign has since expanded beyond gender to encapsulate the full range of diversity and inclusion.<br><br>We encourage organisations across engineering and architecture, and firms that work within these industries, to sign up as a member to show they're serious about diversity and inclusion, and to benefit from access to our resources, events, tools, professional network and tips. | The Diversity Agenda |
| | We set up our women in engineering programme in 2011. Initiatives like our Women in Engineering Snapshot series use data from real engineering organisations to demonstrate that women are under-represented at all levels in the engineering profession. Not only that, but the gender pay gap in the engineering industry is higher than the national average.<br><br>Provides links to regional resources:<br>Diversity Works | Women in Engineering Programme<br><br>[Annual statistics were published for 2013-15, and it appears the Diversity Agenda project |

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| | Champions for Change<br>Recommended reading from the Ministry for Women | and accord have replaced these activities.] |
| Engineers Australia | Engineers Australia is committed to an engineering profession that is as diverse as the community it serves and as the peak body for Australian engineering, we must lead the way. This commitment involves working across cultural, institutional, societal and organisational factors with our members, industry partners, government agencies, academia and the broader community that limit diversity and inclusion in the profession. Engineers Australia is committed to achieving at least 30% female representation on the Board of Directors, College Boards and other National Committees by 2020.<br><br>Diversity and Inclusion Position Statement lists the following commitments (among others) from Engineers Australia:<br>Engineers Australia is committed to representing and supporting our profession towards achieving a more diverse and inclusive workforce. We demonstrate this commitment by participating in a number of activities, including the following:<br>• Promoting Gender diversity through participation in the Male Champions of Change<br> (MCC) STEM group<br>• Ongoing focus on gender balance and female membership through the national Women in Engineering Committee<br>• Promoting diversity and inclusion best practice as an active member of the Diversity Council<br><br>As part of our commitment, Engineers Australia will continue to assist industry partners and academia achieve their diversity and inclusion goals by providing meaningful resources addressing important areas such as:<br>• Gender pay gap analysis<br>• Diverse representation on industry speaking panels<br>• Recruitment process review<br>• Unconscious Bias<br>• Mentoring and Sponsorship programs<br>• Workplace Culture Review<br>• Flexible working environments | Diversity and Inclusion Strategy |

| | • Evaluating and encouraging parental leave for all employees | |
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| Institution of Engineers Sri Lanka | Content behind a membership portal wall. | Chapter of Women Engineers |
| ABET | ABET seems to be doing spotlight work on gender and diversity issues in general, but an over-arching policy/program seems to be absent. | Search results for "gender" and "diversity" provide a variety of blog articles/statements. |
| | Inclusion, Diversity and Equity Advisory Council<br>Reporting to the Board of Directors, the Inclusion, Diversity and Equity Advisory Council (IDEAC) promotes and develops evaluation methods and metrics for improving inclusivity, diversity and equity within ABET, its activities, its volunteer base and its accredited programs consistent with ABET Principles of Diversity and Inclusion. | Inclusion, Diversity and Equity Advisory Council (IDEAC) |
| Engineering Council of the United Kingdom | The Engineering Council seems to be doing spotlight work on diversity issues in general, but an over-arching policy/program seems to be absent. | Page tag for "diversity and inclusion" provide a variety of blog articles. |
| Colegio Federado de Ingenieros y de Arquitectos de Costa Rica (CFIA) | Mission<br>Promote female engineers and architects in their comprehensive professional development, by promoting their participation in the work of the CFIA and its member schools with respect for ethical and humanistic values and for the benefit of Costa Rican society.<br><br>Vision<br>Consolidate a platform of support and development of participation and commitment through mechanisms that promote pertinent strategies, such that they generate the integral development and professional updating of the Engineers and Architects, supporting the fulfillment of duties and rights.<br><br>General objective<br>Generate a constant participatory space of our Engineers and our Architects, within the Federated College of Engineers and Architects, both in the projects of their respective professional areas, and in the decision-making processes within the CFIA.<br><br>Goals | Gender Joint Commission |

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| | • Provide support in terms of training and logistics, to the various projects presented by the CFIA professionals.<br>• Generate exchanges with various public and / or private organizations focused on the development of professionals.<br>• Promote an approach of our colleagues to the work of the CFIA and their respective Assemblies, Boards of Directors, commissions and associations.<br>• Encourage exchanges and participation in related events, training and continuous and comprehensive professional training for our colleagues.<br>• Carry out an annual systematization and monitoring of the activities carried out by the Engineers and Architects involved in various national and international spaces and projects, both in the public and private sectors. | |
| The American Indian Science and Engineering Society, the National Society of Black Engineers, Leading Hispanics in STEM, and the Society of Women Engineers | "The Coalition has collaboratively created a comprehensive plan to change the public perception of engineering and encourage a diversified field of study, one that includes more women and members of other underrepresented groups… [the goal is] to achieve our common goal of producing 50,000 underrepresented minority and women engineering graduates annually by 2025."<br><br>Strategy is based on five factors:<br>1. Common agenda strategies<br>2. Shared measurement metric strategies<br>3. Mutually reinforcing activities strategies<br>4. Continuous communication strategies<br>5. Backbone support and governance strategies | The 50K Coalition |
| **Professional Education Program Accreditation** | | |
| Canadian Psychological Association | The Section on Women and Psychology (SWAP) creates a community of researchers, teachers, and practitioners interested in the psychology of women and feminist psychology, to advance the status of women in psychology, to promote equity for women in general, and to educate psychologists and the public on topics relevant to women and girls. | Section on Women and Psychology (SWAP) |
| Statistical Society of Canada | Terms and Duties:<br>• To study the participation of women in Statistics in Canada; to develop and maintain a database of current and historical information about such participation. | Women in Statistics Committee |

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| | • To recommend, monitor, and be a focal point for liaisons with other societies and organizations concerned with promoting the participation of women in their professions.<br>• To stimulate professional contact among the members of the Society and the interchange of ideas related to the Society's objectives, to Statistics in general, to the improvement of the status of professional women statisticians, and to the specific challenges associated with the participation of women in the profession.<br>• To promote research on scientific issues pertaining to women.<br>• To stimulate interest in the study of Statistics among women students.<br>• To foster opportunities for women members to assume active roles in the Society, at professional meetings, on governing boards, and on committees.<br>• To promote and strengthen the participation of women in the Society. | |
| Technology Accreditation Canada | TAC seems to be doing spotlight work on gender and diversity issues in general, but an over-arching policy/program seems to be absent. | Search results for "women," "gender" and "diversity" provide a variety of blog articles/statements. No related content from 2020. |
| **Tangential Evaluation Processes** | | |
| International Standards Organization | Gender equality is a key component of social responsibility, and the empowerment of women and their equality in society is underlined in ISO 26000, Guidance on social responsibility.<br><br>This standard aims to eliminate bias and promote parity through recommending that organizations have a balanced mix of men and women in governing structures and management, ensure both sexes are treated equally when it comes to recruitment, career opportunities and pay, and make sure the needs of men and women are given equal consideration in company decisions and activities.<br><br>Touches on areas of:<br>• Avoidance of complicity<br>• Discrimination and vulnerable groups | ISO 26000: Guidance on social responsibility |

| | • Labour practices <br> • Fair operating practices | |
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| Standards Council of Canada | SCC is proactively taking steps to increase the representation of women in standardization and to ensure that standards are gender neutral. <br><br> Strategy and Workplan has three components: <br> • Improving gender representation <br> • Building gender expertise into standardization systems <br> • Contributing sound research | Gender and Standardization Strategy, 2019-2025 |
| **Peer-Reviewed Literature** | | |
| *Will the Head of Engineering Please Stand Up? The Underrepresentation of Women in Engineering* <br><br> (UK) | • Engineering is "a profession where gender segregation begins at school, continues through to the workplace and is underpinned by gender stereotypical views of what constitutes 'men's work' and 'women's work.' <br> • Barriers to women in traditionally male-dominated industries: <br>    o Cultural practices that disadvantage women (presenteeism, long work hours, expectations of infinite availability) <br>    o Lack of representational mentors <br>    o Lack of acceptance/flexibility in educational settings <br>    o Gender stereotypes and discrimination <br> • "Breaking down the barriers and in particular, making it easier for women to enter skilled occupations in higher-paying male-dominated industries/occupations is widely considered to be one of the ways forward for improving gender equality. It is recognised that we urgently need to increase the numbers of women in engineering/STEM based on the business case argument, linked to the idea that this will help to address the skills gap and improve productivity in the sector. But until the gender power relations in engineering organisations (Sharp et al. 2012) are tackled, women will remain the outsiders in this male world. Women are deterred from engineering due to its 'masculine' and 'dirty' image (Powell and Bagilhole 2006; Evetts 1998) from a young age and many of those who do enter the sector change career or leave." <br> • "Perhaps the presence of more women professionals in a better 'gender-balanced' environment could lead to a more supportive culture, where women are assessed on their performance as engineers and not on their | Durbin, S. & Lopes, A. (2017). Will the Head of Engineering Please Stand Up? The Underrepresentation of Women in Engineering. In Broadbent, K., Strachan, G., & Healy, G. (Eds.). *Gender and the professions: International and contemporary perspectives* (pp. 169-183). Routledge. |

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| | gender. This requires a greater change effort and flexibility from employing organisations, an increased self-reflection from men and greater help from those experienced women in engineering to support the young women contemplating or just starting out in engineering (Durbin 2015)."<br><br>• "Understanding the educational backgrounds and employment experiences of those who choose a career in engineering offers some insights into why women do or do not choose this career path. It also helps to explain why there are so few women in engineering, where cultural and gender stereotypes are played out from the critical formative years, when very little help and support from teachers and careers advisers is available, through to the workplace where there are a myriad of challenges for female engineers." | |
| *The use of quality assurance instruments and methods to integrate diversity aspects into health professions study programmes*<br><br>(Germany) | <u>Abstract</u><br>With the increasing diversity in our population, future medical doctors need to have adequate diversity and gender competencies in order to provide adequate and good quality of medical care. Diversity, especially sex and gender aspects, were therefore systematically integrated into the new modular medical curriculum at Charité – Universitätsmedizin Berlin. The aim was to integrate diversity aspects into further study programmes of the Charité Berlin by assessing the current degree of integration and the relevance for the professional work of students and graduates and identifying suitable and effective quality assurance instruments.<br><br>The impact of the integrated diversity aspects can only be evaluated within the accreditation process. In order to increase and improve the awareness of students and faculty members of diversity aspects and issues the support by a gender and diversity change agent with the integration and by lecturing on this subject is important. A gender and diversity sensitive accreditation process contributes to the reflexivity and awareness of the faculty members involved.<br><br><u>Notes</u><br>• Gender equality was driven by the HEI which implemented:<br>   o A change agent program (embedded in the quality assurance portfolio)<br>   o Augmented accreditation criteria (i.e. internal up-versioning of external criteria to include EDI language) | Ludwig S., Roa Romero Y., Balz J., et al. (2018). The use of quality assurance instruments and methods to integrate diversity aspects into health professions study programmes, *MedEdPublish,* 7(1), 53. https://doi.org/10.15694/mep.2018.0000053.1 |

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| | o Updated curriculum/teaching materials<br>o A working group on equality | |
| *Gender Inclusive Engineering Education*<br><br>(General) | Chapter 7: Implementing and Embedding Gender Inclusive Engineering Education<br>• Gender-aware curriculum may not survive from one instructor to the next, so leadership support in an HEI is important<br>• "Accreditation bodies have considerable power and influence over the curriculum and the leverage to change it. Historically, accreditation criteria were often cited as a reason to maintain the status quo, and many proposed curriculum initiatives foundered on the accreditation rock."<br>• Cites changes to Australia's criteria in 2008:<br>   o Gender balance in academic and support staff<br>   o Inclusive environment—gender, culture, social differences—encouraging diversity and the development of the individual<br>   o Flexible structure adaptable to student backgrounds and individual learning abilities<br>   o "By making issues of gender and inclusivity explicit in their accreditation processes, Engineers Australia is expressing its commitment to the goals of gender inclusive engineering education and requiring universities to pay attention to it."<br>• If gender issues are not studied, no changes can be expected (data, benchmarking and meta-analysis)<br>   o Study of numbers of women cannot be the sole focus<br>   o Study of interventions to encourage women is also required | Mills, J., Ayre, M. & Gill, J. (2010). *Gender Inclusive Engineering Education.* Routledge. |
| *Student guidance and attention to diversity in the processes of quality assurance in higher education*<br><br>(US/European) | • Study of 51 organizations from 20 countries (primarily in Europe and the USA) that undertake some form of HEI program quality evaluation<br>• Found that most guidelines include general criteria about diversity<br>• Advocating for more specific criteria that touches all aspects of a students' time at the HEI (driven by the HEI's own internal QA process)<br>   o "Specific criteria should comply with the following overall objectives: improve the quality of institutions and programmes, promote students' integral development, provide guidance and support and promote diversity in the university community."<br>   o "These criteria should be similar for the accreditation of institutions and programmes, taking into account the general nature of the first | Ferreira, C., Vidal, J., & José Vieira, M. (2014). Student guidance and attention to diversity in the processes of quality assurance in higher education. *European Journal of Education, 49*(4), 575-589. [https://www.jstor.org/stable/26609243](https://www.jstor.org/stable/26609243) |

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| | and the specific nature of the second, as well as the diversity of the systems involved." <br>• Some diversity criteria are observed to be very specific (i.e., speaks to individual groups) while others are more general and cite 'diversity' itself as the goal <br>    ○ Accreditation can support these efforts by ensuring that HEIs have sufficient resources to meet their goals | |
| *Defining Equity Indicators for Benchmarking Women's Participation in Science and Engineering Faculties across Canada* | • The pipeline problem: "reflecting both insufficient flow of women into science and engineering positions and leakage or attrition of women from the field." <br>• "There is evidence to suggest that systemic problems such as lack of research support and institutional policies and practices impact tenure and retention of women." <br>    ○ "Female faculty are important role models for women studying in science and engineering disciplines." <br>• More accurate (and more) data is required to be able to track trends to develop targeted interventions. <br>• "A sound strategy to improve the representation of women in science and engineering requires attracting and retaining women at all levels of academia from graduate programs to hiring of new faculty and to achieving tenure and promotions." | Smit Quosai, T., Davidson, V., Ghazzali, N., Moloney, C., & Vassileva, J. "Defining Equity Indicators for Benchmarking Women's Participation in Science and Engineering Faculties across Canada." *Women in Engineering and Technology Research PROMETEA Internal Conference,* Paris (France), 2009. |
| **Grey Literature** | | |
| *Are the Urgent Issues of Today Driving a Rethinking of what "Quality" Means for Accreditation and Higher Education?* | • HEIs have the stated goal of contributing to amore equitable society <br>• "Accrediting organizations have long paid attention to equity issues, with standards <br>• and policies that address, e.g., diversity, inclusion and campus climate, much of this focused on race and gender. The issue is: Is this enough moving forward?" <br>• "Three ways in which accreditation can be more exacting and intentional with their standards and policies are to (1) assure and, where needed, strengthen equity expectations in standards, (2) intensify and expand attention to accountability grounded in equity (e.g., more energetic use of data especially focused on inequities related to student success) and (3) scrutinize campus climate with greater emphasis on race and equity." | Eaton, J. (2020). Are the Urgent Issues of Today Driving a Rethinking of what "Quality" Means for Accreditation and Higher Education? *Inside Accreditation,* July 2020. https://www.chea.org/sites/default/files/pdf/Inside-Accreditation-July%202020_FINAL.pdf |

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| | • Accreditors of HEIs have two additional challenges in their work:<br>    ○ "…current approaches to race and equity challenge such fundamentals as current practice of academic freedom..." (how much influence can an accreditor expect to have in HEIs?)<br>    ○ COVID-19 is redirecting resources (financial, human, intellectual) away from this area and towards immediate/necessary student services (such as foodbanks, housing, employment, mental health supports) | |

# Appendix 4 – Partial List of Questions for use by visiting teams to assess the presence and depth of EDI and 30 by 30 awareness and instruction in programs

- Do HEIs have a 30by30/EDI statement?
- What examples can be provided that show awareness and training on EDI of faculty, staff, graduate and undergraduate students?
- Are the EDI or 30by30 activities primarily handled by specific faculty or staff?
- What Champion groups or other entities are active to promote the goals of 30by30 or EDI?
- How effective have the efforts towards accomplishing 30by30 goals been to date?

- What are the student experiences of EDI and 30by30?
- From a student perspective, how effective have 30by30 and EDI initiatives been?
- From an administrative staff perspective how effective have 30by30 and EDI initiatives been?
- Have there been instances of Harassment or active discouragement of any person or group from this program?
- As a student, would you choose this major again based on the 30by30 or EDI policies and culture as you see it?

- What has happened when 30by30 or EDI issues were brought forward?
- Were these issues addressed adequately or appropriately?
- Who has been responsible for addressing issues that have arisen?

- Is there adequate regulator engagement?

- Is the engagement from program officials done in an ad hoc manner?
- Is the engagement from program officials supported by senior management?
- Are 30by30 and EDI issues considered equally by both men and women?
- What are the policies surrounding 30by30 for search committee membership?
- Is there an appropriate statement regarding 30by30 and EDI on job postings?
- What is the knowledge and attitude towards 30by30 and EDI of program leadership?
- How are women students being supported?
- How are women faculty being supported?
- What actions are being undertaken by the program regarding recruitment and retention of women?