Consultation Report on Draft Environmental Scan for 2025-2029 Strategic Plan

Fall 2022

In support of the 2025-2027 Strategic Plan, Engineers Canada developed this environmental scan to provide an overview of the foreseen factors that will have an impact on the engineering regulators, Engineers Canada, and the profession. The draft environmental scan was also circulated to the following groups for consultation:

- Canadian Engineering Accreditation Board (CEAB)
- Canadian Engineering Qualifications Board (CEQB)
- Chief Executive Officers Group (CEO Group)
- Engineering Deans Canada (EDC)

This consultation report highlights received feedback for the groups above.

Consultations feedback

Canadian Engineering Qualifications Board (September 18, 2022)

General feedback

- Trends that were presented to the CEQB in April 2022 should be considered.
- It is not clear what constitutes advocacy and what is out of scope.
- Fairness commissioners are another stakeholder that we should consider.
- Trends happening in other regulated professions should also be included.
- Regulators will stay relevant as long as industry's needs are met and that they continue to require that their employees be registered.
- Higher Education Institutions (HEIs)'s mandate is to educate, not develop workers. The system is built for regulators so that they can trust applicants have the requirements for licensure.
- Academic and experience competencies should be differentiated.
- Experiential learning is not the same as experimental learning and requires more resources.
- Main takeaways from the accreditation studies are that:
    - Accreditation Units should not be used anymore;
    - An experiential standard should be adopted; and,
    - Graduate attributes should be leveraged.
- It is not clear why regulators should be concerned with engineering education trends.
- Communications is an important skills engineers need.
- The CEQB needs to look at trends and define how its work can address them.
- A new generation is coming in and the profession should embrace diversity to remain relevant.
- The engineering profession has lost its relevancy. HEIs remain relevant because they adapt to the market, but regulators have not adapted. We need a vision that incorporates industry and the engineering regulatory system. The profession needs to decide where it wants to be in ten, fifteen years from now and plan accordingly.
- Under-represented groups are not the only ones experiencing barriers to entry to engineering licensure. Numbers need to increase among all groups.
- Under-represented groups have less opportunities and experience more barriers.
- The rapid electrification of the world, and how it will lead to increased economic opportunities.
- Technological changes in medical industries will require an oversight of the increasingly used home and personal devices.

- There is too much focus on Equity, Diversity and Inclusion (EDI) issues. It is presented in a patronizing fashion.
- Labour shortages will have an impact on the market and should be included.
- There is a push for deregulation and move the practice of engineering to qualified persons.
- Canada has an aging infrastructure, which might provide opportunities for engineers.
- What engineers can do to address fake news.
- Economic projections should be included as it drives the demand for engineering products and services.
- What factors students consider when deciding to become licensed or not.

Engineers Canada strengths

- Not constrained as much as regulators and can therefore be more innovative and bold.

Engineers Canada weaknesses

- Must receive regulators' support to undertake significant initiatives.
- Lot of complexity committees, not clear if they are all moving in the same direction.
- Overdependence on external contractors.

Engineers Canada opportunities

- Offer expertise to help regulators conduct the academic assessment of non-CEAB applicants.
- Offer national micro-credentials to international-trained applicants as an alternative to exams.
- Launch messaging to secure trust from public before the next engineering failure.
- Convince employers of the value of engineering licensure.
- Provide guidance on businesses' ethical obligations so that regulators can adopt them.

Engineers Canada threats

- Lack of long-term financial sustainability of the organization.
- Aging membership.
- Lack of internal employee succession for engineering businesses.
- Lack of vision as to where the profession should be in ten to fifteen years.
- Lack of engineering regulators' collaboration.

Other threats outside of Engineers Canada's mandate

- Public expectations vary, and in times of engineering failure, will question the reason why individuals were granted licenses.
- Regulators are already behind for the regulation of emerging disciplines.
- Imposition of fairness requirements by external bodies.
- Issuing of limited licenses by regulators to bring people under the regulatory umbrella (including technologists)
- Removal of engineering self-regulation.
- Lack of public knowledge that the iron ring ceremony is not equivalent to engineering licensure.
- Regulators are already behind in managing emerging disciplines.
- Public's expectations of change on demand.

- Lack of ability of engineers to proactively communicate to the public, and reacting, not addressing fake news.
- Lack of regulation of businesses' ethical obligations.

Chief Executive Officers Group (September 27, 2022)

- The Environmental scan should include demographic data, as it dictates if the profession will be sustainable or if regulators should adapt.
- The National Membership Survey should include demographic data.
- All regulators now require licensees to perform mandatory continuing professional development. This might result in accelerated departure and retirements from older generations.
- Learned in the environmental scan that we need better data to demonstrate value to the public.
- Some of the sentences could be taken out of context and be misinterpreted.
- Using the terms "women" and "female identifying" interchangeably is confusing and makes the text lengthy.
- Since the pandemic, individuals can work from anywhere in the world. Depending on the legislation, individuals can design or live outside the province while still performing engineering in a Canadian jurisdiction. Engineers that live in Canada can also perform engineering abroad. There needs to be some clarity as to a regulators' role in these situations.
- Engineers Canada could do research on what constitutes public interestS (as opposed to public interest).
- The Environmental scan should look into the governance structure of Engineers Canada.
- Putting what Engineers Canada is doing after the trends is limiting. The document should be structured as follows: trends, purposes, ongoing work.
- Research on new disciplines taught at accredited programs would provide an overview to regulators as to which areas of work is emerging.
- Thank you for the opportunity to participate in the process.

Canadian Engineering Accreditation Board (October 13, 2022)

General feedback

- Engineers play a role in a divisive and polarized society. Engineers also play a role in the deployment of technology and can apply the same skills to facilitate the political discourse.
- If regulators choose to impose a national exam for all, it might negatively impede the government's objective to increase access to engineering licensure. When the United States adopted a national entry exam, it created an additional barrier and resulted in a significant decrease in the number of licensed engineers.
- Canadians do not understand the lack of depth in the educational requirements of the Washington Accord.
- Engineering is increasingly being performed overseas, which makes provincial and territorial legislation difficult to apply.
- Society drives standards, not self-regulation.

- The Environmental scan should include the Six Grand Engineering Challenges.
- Immigration is required to sustain the Canadian standard of living, especially with the aging population.
- Technological advancement requires increased breadth and depth of knowledge. Making engineering education more in-depth means that the degrees would become increasingly specialized and siloed. Perhaps the depth of knowledge should be the domain of technologists, and engineering should focus on ensuring students have the breadth of knowledge and soft skills.
- Collaboration with Engineering Deans Canada will be critical.
- The data seems to unveil that CEAB programs are trusted and popular; enrollment is up. It is the licensure rate that is down. This looks like the fundamental issue lays with regulators, not CEAB.
- While software engineering is not an emerging trend anymore, the common theme is safety critical software. The report needs to mention artificial intelligence and its intersection with other professions.
- The Environmental scan should be more explicit about the rise of the offering of multidisciplinary engineering, and integration of other disciplines with engineering.
- Engineers Canada should consider other model academic examinations. Other models of academic examinations, other professions how assess entry to practice other professions and Washington Accord signatories and their impact on their accreditation system.
- European members now have the European Professional Card, which ca be used by member professions to be recognized in other country members. Canada is still struggling with internal mobility while others are recognizing the internationalization of engineering and developing international designations.
- Gathering data on where internationally trained engineering graduates come from could help Engineers Canada know where to focus its international activities and sign new accords accordingly.

Engineers Canada strengths

- All engineering regulators are involved and exchange information at the federal level for the benefit of mobility.
- Strategic planning process is a good way to ensure all Engineers Canada and committees are on the same page.

Engineers Canada weaknesses

- Have no authority on the regulation of the profession, even if there is a perception that Engineers Canada has the mandate.
- Accreditation visitors are volunteers, which changes the dynamic with HEIs.
- Relationship between EDC and Engineers Canada.
- Engineers Canada's governance model has a Board of volunteers reporting to volunteers. The CEAB should report to the CEO.
- There are different requirements across different engineering regulators.
- CEAB and CEQB volunteers' terms are too short compared to the knowledge required to be a productive member of these Boards.

- Lack of role clarity between the Engineers Canada Board, the CEAB and regulators as to who represents regulators and how to address their needs.

Engineers Canada opportunities

- Offer expertise to help regulators conduct the academic assessment of non-CEAB applicants.
- Offer national micro-credentials to international-trained applicants as an alternative to exams.
- Launch messaging to secure trust from public before the next engineering failure.
- Convince employers of the value of engineering licensure.
- Provide guidance on businesses' ethical obligations so that regulators can adopt them.

Engineers Canada threats

- Implementation of a national entry-to-practice exam.
- Lack of long-term financial sustainability of the organization.
- Lack of vision as to where the profession should be in ten to fifteen years.
- Lack of engineering regulators' collaboration.
- Microcredentials (threat to accreditation).

Engineering Deans Canada (October 25, 2022)

- Engineers Canada could lobby the federal government to require that its employees calling themselves engineers or practising engineering be licensed. Engineers Canada could also lobby for demand-side legislation in software engineering and legislative changes to privacy requirements.
- Reconciliation with Indigenous peoples is more than statements. It's about how engineering use the land and engineers' relationship with the land.
- Funding outreach activities that support younger demographics could help increase licensure. Institutions can help provided with funding.
- Trends related to the United States' engineering education were not included.
- In engineering education, a balance must be reaching between hard and soft skills.
- The environmental scan was well done and interesting.

Participants

Canadian Engineering Qualifications Board consultation, September 18, 2022

Volunteers

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- Marcie Cochrane, Member, Canadian Engineering Qualifications Board
- Frank Collins, Vice-Chair, Canadian Engineering Qualifications Board
- Roydon Fraser, Member, Canadian Engineering Qualifications Board
- Frank George, Past Chair, Canadian Engineering Qualifications Board
- Anil Gupta, Member, Canadian Engineering Qualifications Board
- Margaret Anne Hodges, Chair, Canadian Engineering Qualifications Board

- Amy Hsiao, Member, Canadian Engineering Qualifications Board
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Chief Executive Officers Group consultation, September 27, 2022

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Canadian Engineering Accreditation Board consultation, October 13, 2022

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Engineering Deans Canada, October 25, 2022

(Unavailable)