

NAVIGATING DIVERSITY IN STEM

LEVERAGING FEMALE LEADERSHIP
DEVELOPMENT TO EXPAND DIVERSITY
AND UNLOCK INNOVATION

A WHITE PAPER BY
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Think deeply and honestly about your workforce. Consider the proportion of women. Consider whether you have women of all ages, and whether women are equally represented at different levels of the organisation... It's not only a question of equity. This is absolutely about the success of your organisation into the future.

- Dr Cathy Foley, Australia's Chief Scientist

EXECUTIVE SUMMARY

This White Paper provides practical strategies for STEM organisations in response to the recommendations from the Australian Government's 2024 *Pathway to Diversity in STEM Review*.¹ Specifically, it outlines how organisations employing STEM workers can **create inclusive workplaces that value diversity, through increasing the retention, promotion and leadership progression of female under-represented cohorts**.

It explores the role of female leaders within the context of the most significant challenges facing STEM organisations over the next decade. It describes how tailoring leadership development for women in STEM strengthens diversity and innovation at all levels and how an organisation can use this approach to increase its culture, innovation outputs and profitability. The impact of diversity on innovation is highlighted using examples from public and private sector STEM organisations.

The paper also offers recommendations for STEM organisations that want to leverage diversity for innovation to become market leaders. These solutions are informed by research and industry best practice, and five years of tailored female leadership development for STEM women by the author that is backed by strong evaluation. Solutions are presented as an integrated suite of strategies to address development of emerging and established female leaders, specifically from early- to mid-career across all STEM industries, from technology and cybersecurity to research and pharmaceutical sciences, engineering and aerospace, mining, and resources, Defence and data.

The recommendations provide a holistic approach that integrates formal, social and experiential learning approaches across the four stages of the *Pathway to Leadership Diversity*[™] cycle, specifically:

- **Implement** tailored leadership development for female STEM leaders at all levels, based on research, best practice and women's lived experience;
- **Augment** leadership training with role models, mentors and networks, which are critical enablers to the development of leadership skills for women and career advancement;
- **Accelerate** women into leadership roles through sponsorship and experiential development opportunities; and
- **Embed** leadership development and career progression through career planning,

Recommended accountability mechanisms and transparency measures are also provided to support organisational change.

NAVIGATING DIVERSITY

IN SCIENCE TECHNOLOGY ENGINEERING AND MATHEMATICS (STEM)

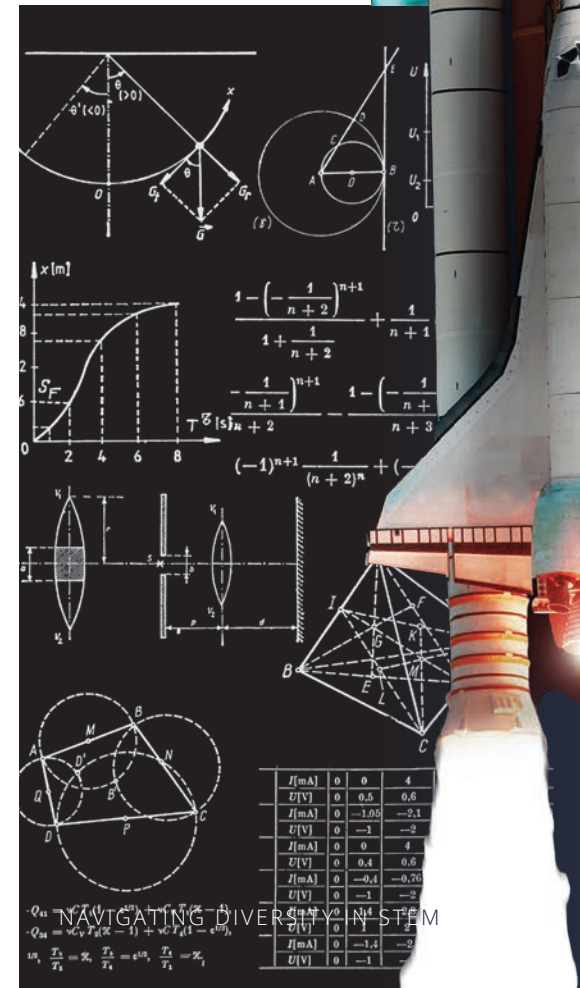
The recent *Pathway to Diversity in STEM Review*¹ reiterates the responsibility of STEM organisations to actively create diverse and inclusive workplaces. It has provided a range of recommendations to inform the systemic change in STEM needed in Australia to enable the sector to become more diverse, to include all people from historically underrepresented backgrounds, and to maximise the potential of its entire diverse population to meet its current and future workforce needs, secure its economy and fulfil its ambitions to be a STEM-powered nation.

The review was commissioned by the Australian Government to evaluate the delivery and impact of the Government's existing suite of women in STEM programs and related measures.² It examined how programs and policies contribute to overcoming barriers (cultural and structural) that limit the participation and retention of women and other underrepresented groups in STEM, to identify best practice initiatives to improve the diversity of the STEM workforce and leadership. It is informed by the Government's 2022 Jobs and Skills Summit and linked to the Government's commitment to widen the pipeline

of talent available to Australia's STEM sector and reach 1.2 million technology-related jobs by 2030.

One of the themes the Review provided insights and recommendations on was **the responsibility of organisations employing STEM workers to create inclusive workplaces that value diversity**.³ This theme specifically relates to leadership in the context of **retaining and supporting the career progression of underrepresented diverse talent**. The Review identified that:

- 'Proactive strategies to retain and promote diverse employees in leadership positions benefits organisational performance and can further drive efforts to increase diversity and inclusion from the top'.⁴
- 'There is strong evidence that retention of STEM professionals in STEM careers can be improved by: strengthening access to professional development, professional networks and mentoring programs'.⁴





To address this theme, the Review recommends that every Australian organisation employing STEM workers adopt and make public a plan to increase the retention and promotion of underrepresented cohorts, and commit to implement it in full.³ It further recommends the following embedded actions to retain and support underrepresented talent:

- STEM-employing organisations and governments should **create programs for future leaders from underrepresented cohorts to develop leadership skills and connections**⁵ and address any future leader skills gaps by 'implementing programs that focus on developing diverse employees and preparing them for leadership roles'⁵
- STEM-employing organisations and governments should **set up employee networks to provide support, inspiration and engagement for underrepresented cohorts**⁵

This White Paper supports STEM organisations to implement these recommendations through a focus on leadership development strategies for STEM women, to **retain, promote and support leadership progression for employees from female under-represented cohorts** and increase gender and intersectional diversity at all leadership levels across the STEM sector.

The terms 'women' and 'female' include cisgender (someone whose gender corresponds to their birth sex), transgender, non-binary and intersex people who identify as women or female. The term also refers to the intersectionalities of First Nations people; culturally and linguistically diverse people; people with disability; LGBTQIA+ people; neurodivergent people; people facing age-based discrimination; people living in remote areas and people with low socioeconomic status.

DIVERSITY UNLOCKS INNOVATION

The STEM sector faces three big challenges over the next decade which, if left unchecked, will negatively impact the advancement of STEM innovation. These include:

1. an ongoing **STEM skills gap and competition for workforce talent**,
2. ensuring the workforce is adequately skilled to stay at the forefront of **rapid technological change**, and
3. a growing requirement for **ethical and responsible approaches to innovation**.

Increasing diversity across the STEM workforce will unlock innovation through creating opportunities to (see Figure 1):

- increase the STEM talent pool,
- expand skillsets that enable rapid technological change, and
- access new perspectives that will be central to delivering ethical and responsible innovation.

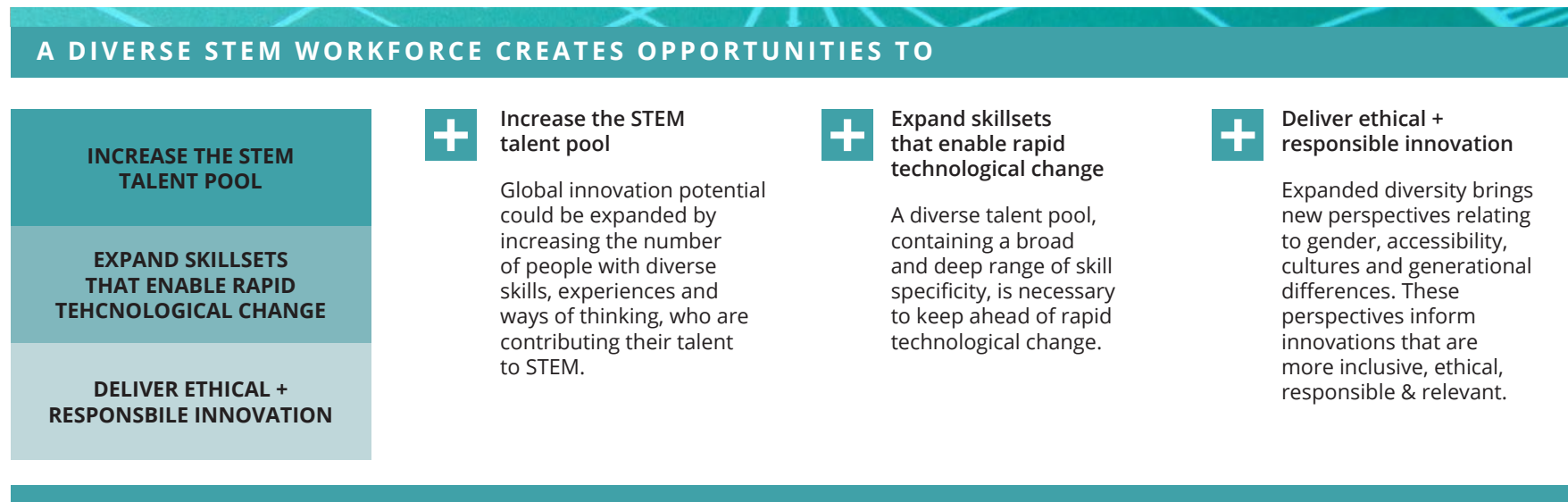


Figure 1: Opportunities Created by a Diverse STEM Workforce

Gender-diverse teams ‘produce more novel and higher-impact scientific ideas’ and are more likely to publish ‘more highly cited papers than same-gender teams.’¹³

Like many other countries, Australia has a significant technology skills shortage that is predicted to impede the economy, driven by lack of workforce diversity and too few people with the relevant skills and experience.⁶

It is estimated that Australia will require an additional 653,000 skilled technology workers by 2030.⁷ In addition, sectors such as engineering are facing global skills shortages at a time of increased demand. In Australia, skilled engineers are required across numerous sectors to meet concurrent national priorities, including transitioning to renewable energies and growing a sovereign nuclear submarine industry.⁸ Increasing the number of people with diverse skills, experiences and ways of thinking who are contributing their talent across the STEM sector will expand the workforce, reduce the STEM skills gap and decrease competition for talent.

The expanded skillsets accessible in a larger and more diverse STEM workforce will allow the sector to stay at the forefront of rapid technological change.

This will be necessary to realise the potential of two new innovation waves – the Digital Age and Deep Science – only achievable with a diverse talent pool containing the specificity, breadth and volume of skills required.

Diversity not only improves workforce growth, but it also increases global innovation potential by fostering different ways of looking at a problem, harnessing new ideas, and encouraging greater collaboration.

Diversity can increase growth and global competitiveness; support more effective decision-making; and result in better risk management.⁹

¹⁰ Expanding gender diversity and equity is one of the best ways to raise the enterprise culture that nurtures innovation – an inclusive culture is 44 times more effective in driving innovation than remuneration.¹¹ Gender diversity also increases the ‘economic value of innovation outcomes’ by up to 50%.¹²

A diverse workforce also enables STEM organisations to better address ethical considerations raised by innovations like artificial intelligence, biotechnology, and data science. Diversity ensures wider consideration of potential options for safeguarding and promoting equity and technology access, data privacy, algorithmic bias, and the potential consequences of scientific discoveries. Expanded diversity can also inform gendered, accessibility, generational, and cultural considerations that can result in more innovative and inclusive products or services.¹⁴

In addition, gender diversity at all levels of decision-making in STEM is needed to maximise innovation. Women’s input to decision-making expands the validity and relevance of the decision to the broader population. This is particularly relevant to areas including medical research and health services, access to vaccines, scientific research, public transport routes, public funding allocation, design of digital tools, online services, and product design and accessibility.

The *Pathway to Diversity in STEM Review’s*¹ evaluation highlights the importance of diverse leadership at all levels in organisations. Gender balance on boards and in senior management encourages better leadership and governance and contributes to better all-round board performance and increased corporate performance.¹⁵ Organisations with the greatest gender diversity in their executive teams are 48% more likely to financially outperform companies with the least gender diversity in their executive teams.¹⁶

Driving innovation through leadership gender diversity

As one of the top 50 innovative companies globally in 2021, pharmaceutical company Astra Zeneca uses diversity as a competitive advantage to push the boundaries of science and deliver life-changing medicine to patients. The company believes that 'creating space for women to thrive in their career paths in the STEM industry and beyond is critical to unlocking ground-breaking innovation and delivering the advances society needs'.¹⁷

The company has a target of equal gender representation in leadership by 2025. In 2022, they achieved 48% female representation in senior management positions across the organisation, and close to 50% female representation in senior management positions in their Research and Development function. There is still some work to be done, with 42% of Astra Zeneca's current Board members, and 36% of its current Senior Executive Team members being women.^{17, 18}

As part of its Global Inclusion & Diversity Strategy, Astra Zeneca intentionally creates spaces for, and champions, women in STEM. The company has a range of women's networks; provides targeted mentoring support for emerging female talent from senior women; provides visible career paths for women with critical science and technology skills; and has dedicated development programs for women to accelerate their careers, including leadership development.¹⁸



THE STATUS OF GENDER DIVERSITY IN STEM: A REALITY CHECK

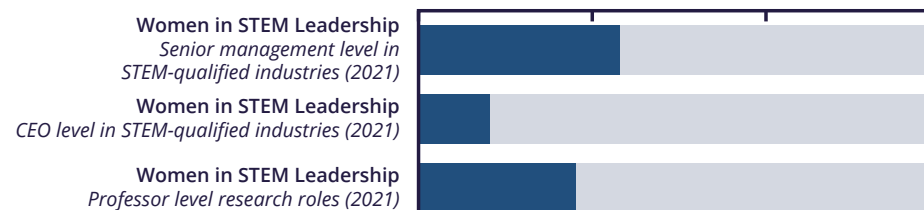
Women in STEM in Australia can experience limited access to opportunities to undertake career building activities that support their career advancement.

For example¹⁹:

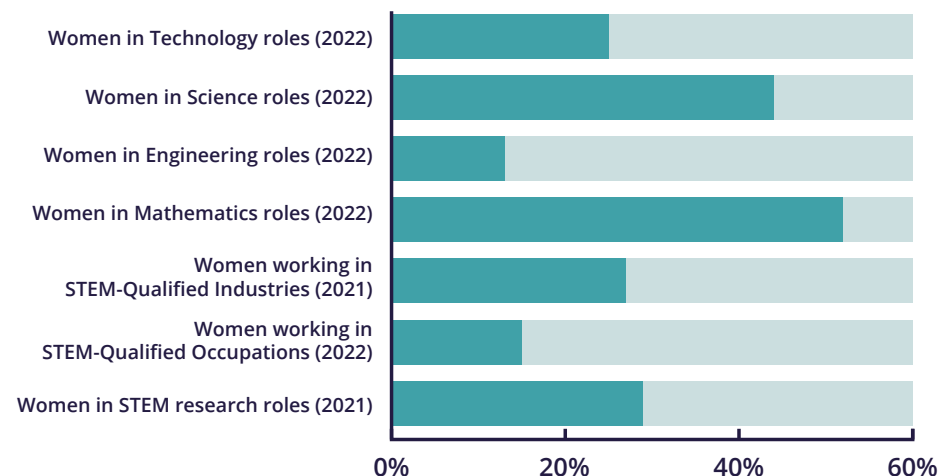
- Only half of professional STEM women promoted are actively encouraged by their manager to apply for promotion.
- More than 40% of professional STEM women are not provided equal opportunity to career advancement compared to men, and almost 25% are unnecessarily prevented from undertaking training and professional development due to working part-time.
- More than 60% of professional STEM women find that the impact on personal and family time prevents them from commencing or completing professional development.
- Almost 60% of professional STEM women find a lack of women in senior roles an obstacle to their career development.

In addition, women are opting out of current leadership climates. Studies have shown that women have less influence when in groups, on a team when they possess task expertise, and generally compared to men.²⁰ Research has also shown that women are more likely to have influence in gender-balanced task groups than majority-male task groups, and unbalanced gender compositions of leadership groups or committees specifically limit women applying to them.²⁰ The impact is that the current majority male make-up of STEM leadership is inhibiting gender diversity, and whether consciously or unconsciously, women are opting out, sometimes despite being offered opportunities.

STEM LEADERSHIP GENDER STATISTICS (AUSTRALIA)²¹



STEM WORKFORCE GENDER STATISTICS (AUSTRALIA)²¹



FEMALE LEADERSHIP DEVELOPMENT STRENGTHENS DIVERSITY

The *Pathway to Diversity in STEM Review* has reiterated that leadership and governance are critical to increasing diversity and inclusion in STEM.¹ Female leaders at organisational and sectoral levels have an important role in shaping the commitment, action and governance that will effectively deliver greater diversity and inclusivity in STEM. And not just senior leaders, but leaders at middle management levels, who are responsible for implementing gender equity policies,²² and emerging leaders, who are the leaders of the future.

Leadership development is a key enabler for women to achieve excellence in STEM and supports retention.^{23, 24} It also offers organisations an accessible approach to unlock the full talent potential of the STEM workforce, embed diversity and inclusivity into culture, become an employer of choice and experience all the innovation and profitability benefits that diversity offers. Additionally, the presence of more women in leadership roles

at all levels will draw other women into the organisation and up the leadership ladder and amplify attributes and behaviours that support a diverse and inclusive culture at all leadership levels.

Diversity is, therefore, an untapped force multiplier for attracting and retaining talent and unlocking the entire workforce potential, through:

- improving women's leadership skills
- demonstrating commitment to providing women meaningful career pathways and opportunities
- expanding women's contribution as leaders at all levels
- reaping the decision-making, innovation and economic benefits of female leaders.

Tailored leadership development is an important protective factor to negate barriers to career progression and leadership for women in STEM professions.

Investing in leadership development also leverages and strengthens other important protective factors including: formal continuing professional development, understanding self, voice and visibility, resilience, identifying and negotiating unconscious bias, resource networks and mentoring.²³

By investing in female leadership development, STEM organisations will achieve:

- the rapid expansion of quality leaders and a robust leadership pipeline
- competitive talent attraction, development, and retention
- a diverse and inclusive organisational culture that adapts to rapid technological change and prioritises ethical and responsible innovation.

Adapting organisational culture through gender-diverse leadership

Geoscience Australia is a trusted source of information empowering the Australian government, industry, and communities in their earth science decisions. One of the organisation's key strategic goals that underpins its ability to deliver its objectives to 'shape a strong economy, resilient society and sustainable environment' is 'ensuring a high performing organisation supporting sustainability, innovation and diversity'.²⁵

In 2013, the organisation called out its culture of male stereotyping, lack of career progression for women and lack of leadership diversity, recognising this as a barrier to becoming a high performing organisation that supports sustainability, innovation, and diversity. A program of awareness raising around unconscious bias followed, which began to shift the language, conversations, and norms within the organisation.

In 2019, CEO James Johnson recognised the critical role leadership climate plays in achieving the organisation's strategic goal and took disruptive steps to create the right leadership climate, implementing a plan to rapidly increase the representation of women on the organisation's Senior Leadership Team from 25% women to 50% women by 2021. This was affected by intentionally expanding recruitment pools to include high performing women, supported by a strong belief in the necessity of gender diversity, equality, innovation, and sustainability.

The enhanced diversity, equity, and inclusion practices of the new leadership climate included establishing diversity champions, increasing diversity messages in senior executive communications, updating policies and procedures to remove bias and unintended barriers to full workforce participation and add inclusive language, promoting flexible and part-time work, and updating recruitment policies and procedures. These practices had a rapid impact on the broader organisation's culture. Gender equity at all leadership levels is now prioritised. A significant shift in removing existing barriers has contributed to a stronger workplace culture that supports individual identities. By 2022, 89% of employees believed Geosciences Australia supported and actively promoted an inclusive culture, and 87% believed it practiced respectful inclusive behaviours.

The new culture supports Geoscience Australia's goal of being an employer of choice because they value people and their diversity, and they are committed to being inclusive, respectful, and innovative.

Companies with above-average diversity deliver 19% more revenue from innovation than companies with below average diversity.²⁶

DIVERSITY LEVERAGED INNOVATION

Over the next decade, diversity will be a key indicator of an organisation's **innovation impact** (represented by its culture, innovation outputs and profitability) and a measure of its ability to maintain relevance through its STEM talent, advance technological change, and support ethical and responsible innovation. STEM organisations that leverage diversity for innovation will become market leaders (Figure 2).

As an example, Digital Age innovation, built on supercomputing, artificial intelligence, and automation, will support innovation productivity impacts across all market sectors. Deep Science innovation, built on breakthroughs in biotechnologies, nanotechnologies, new materials, and other sciences, will revolutionise innovations in health, food, environment, and mobility.²⁷ Only market leading organisations – with a highly diverse workforce at all levels, an inclusive culture that prioritises ethical and responsible innovation, and the required range of relevant and anticipatory skillsets to be at the forefront of rapid technological change – will be placed to anticipate and shape these innovation waves. Organisations that de-prioritise diversity will experience skills gaps, retention challenges and competition for STEM talent that will leave them market followers struggling to maintain pace with rapid technological change (Figure 2).

GETTING AHEAD OF THE CURVE: LEVERAGING DIVERSITY



Market Leading characteristics

- + Workforce is highly diverse at all levels, including leadership
- + Diverse and inclusive culture translates to increased innovation and profitability
- + Has a robust and enduring leadership pipeline
- + Has a broad range of relevant and anticipatory skillsets
- + Investment in female leadership development is embedded in organisational DNA
- + Is an employer of choice that attracts, retains and develops its people
- + Is at the forefront of rapid technological change, anticipating and driving change
- + Prioritises ethical and responsible innovation



Market Developing characteristics

- + Invested in workforce diversity and has some level of diversity
- + Experiences some skills gaps, retention challenges and competition for human resources
- + Shadows rapid technological change
- + Considers ethical and responsible innovation
- + Intermittent investment in female leadership development



Market Following characteristics

- + Low workforce diversity
- + Experiences skills gaps, retention challenges and competition for human resources
- + Struggles to maintain pace with rapid technological change
- + Aims to embrace ethical and responsible innovation
- + Little to no investment in female leadership development



Figure 2: Getting Ahead of the Curve: Leveraging Diversity

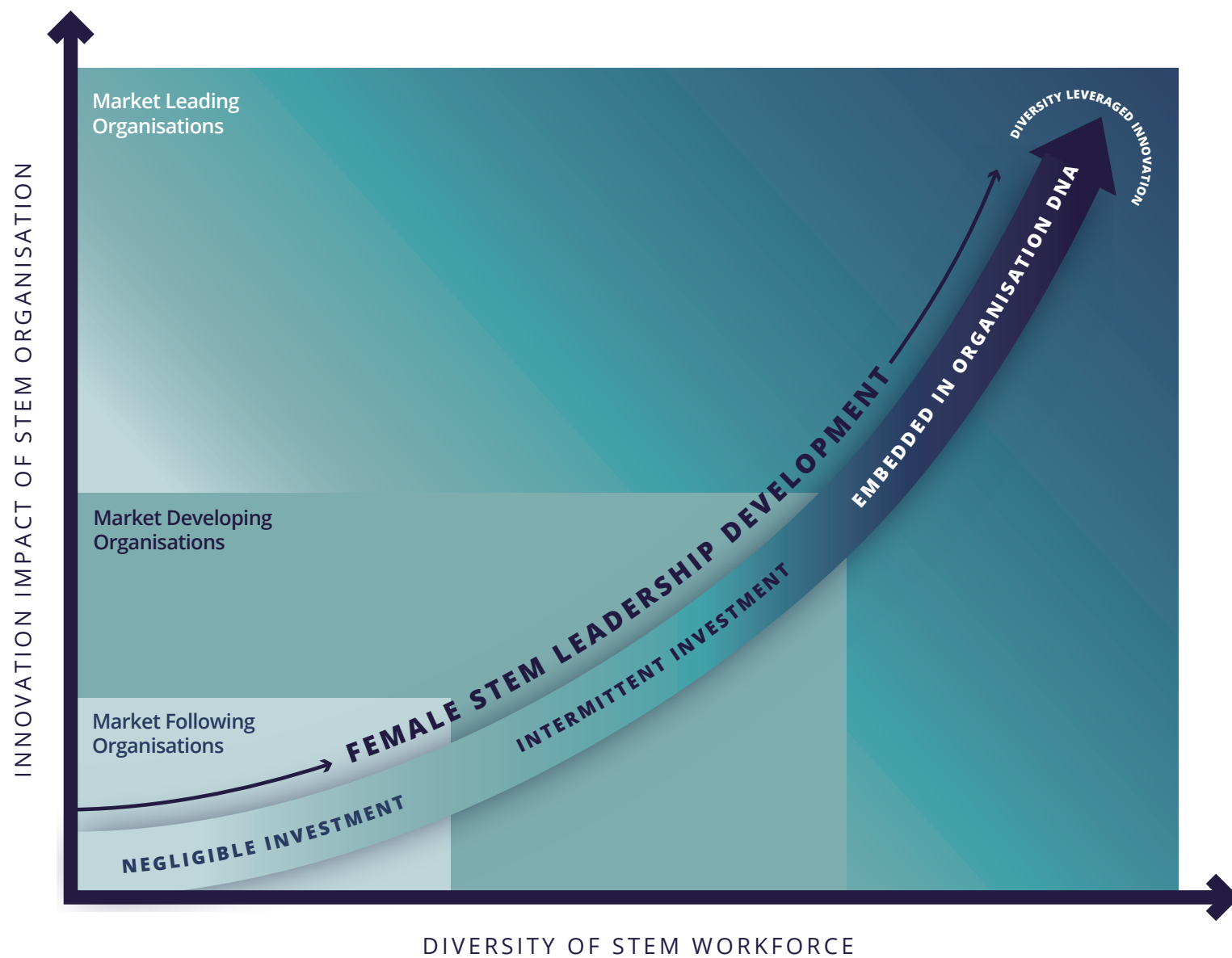


Figure 3: Female Leadership Development a Lever for Innovation

Given the important role of female leadership in strengthening an organisation's diversity, female STEM leadership development can act as a lever to expanded workforce diversity and diversity leveraged innovation, leading to the expansion of an organisation's **innovation impact**. (Figure 3).

STEM organisations that offer negligible investment in the leadership development of their female workforce will remain **market following**, experiencing a non-diverse workforce and culture, skills gaps and retention challenges that will limit their ability to maintain pace with rapid technological change, innovation outputs and profitability (see Figure 3 and Figure 2).

STEM organisations that offer intermittent investment in the leadership development of their female workforce will become **market developing**, experiencing some workforce and culture diversity that will support their ability to shadow rapid technological change and consider ethical and responsible innovation. They will continue to experience some skills gaps and retention challenges and will not maximise innovation and profitability potential.

The embedding of female leadership development into its organisational DNA will differentiate the **market leading** STEM organisations. These organisations embody a diverse and inclusive culture, allowing them to operate at the forefront of technological change, ethical and responsible innovation, and profitability. They have a robust and enduring leadership pipeline, and are an employer of choice that attracts, retains and develops outstanding STEM talent.

Aya Leadership & NuVasive: Partnering to Leverage Leadership Diversity

United States-based global medical device company, NuVasive, is a market leader in its field. NuVasive recognises the importance of gender diversity to innovation and organisational culture. One way that NuVasive prioritises the leadership development of its emerging female leaders is through its women's employee resource group, Women in NuVasive (WIN). Through WIN, employees can access networking activities and informal mentoring to support their leadership development. In addition, WIN hosts a biannual event for talented, emerging female leaders across the world to participate in a two-day formal leadership training with Aya Leadership, augmented by social learning within the group and conversations with the company's executive team. This tailored approach to leadership development has resulted in NuVasive's emerging female leaders feeling more confident, capable and empowered in their leadership roles, and increased retention and promotion of female leaders.

PATHWAYS TO LEADERSHIP DIVERSITY

For women, especially in male dominated industries and for women of colour, it can be challenging to find examples of leadership styles that resonate and encourage them to step into leadership. Without support and encouragement for leadership development from a mentor or manager, it can be difficult for women to know where to focus their leadership development efforts, how to ask for leadership development support, or what assistance or development to ask for. There are few programs and initiatives that focus specifically on supporting STEM women to develop leadership skills and experience.

In addition, for many women, leadership is not about authority or power, but rather recognising a societal need to make a difference and realising a vision for change.²⁸ Understanding that leadership occurs at all levels and doesn't require a leadership title or management responsibility is important. As such informal leadership roles within STEM such as being an expert or adviser in a field of knowledge, a mentor, leading a collaboration or an initiative, being a tutor, a lecturer, a committee member, or a team leader should be recognised as female leadership opportunities.



The *Pathway to Diversity in STEM Review* reinforces that STEM gender diversity programs and initiatives need to be evidence-based and informed by best practice.¹ To be effective, leadership development should consist of a holistic approach that integrates formal, social and experiential learning approaches across four key stages of the *Pathway to Leadership Diversity™* cycle (Figure 4):

IMPLEMENT tailored leadership development for female STEM leaders at all levels, based on research, best practice and women's lived experience;

AUGMENT leadership training with role models, mentors and networks, which are critical enablers to the development of leadership skills for women and career advancement;

ACCELERATE women into leadership roles through sponsorship and experiential development opportunities; and

EMBED leadership development and career progression through career planning.

Leadership development, particularly as part of a structured and systemic change, must be underpinned by allocated resources, structured opportunities, support processes, investment from senior executives, accountability mechanisms and transparency measures.

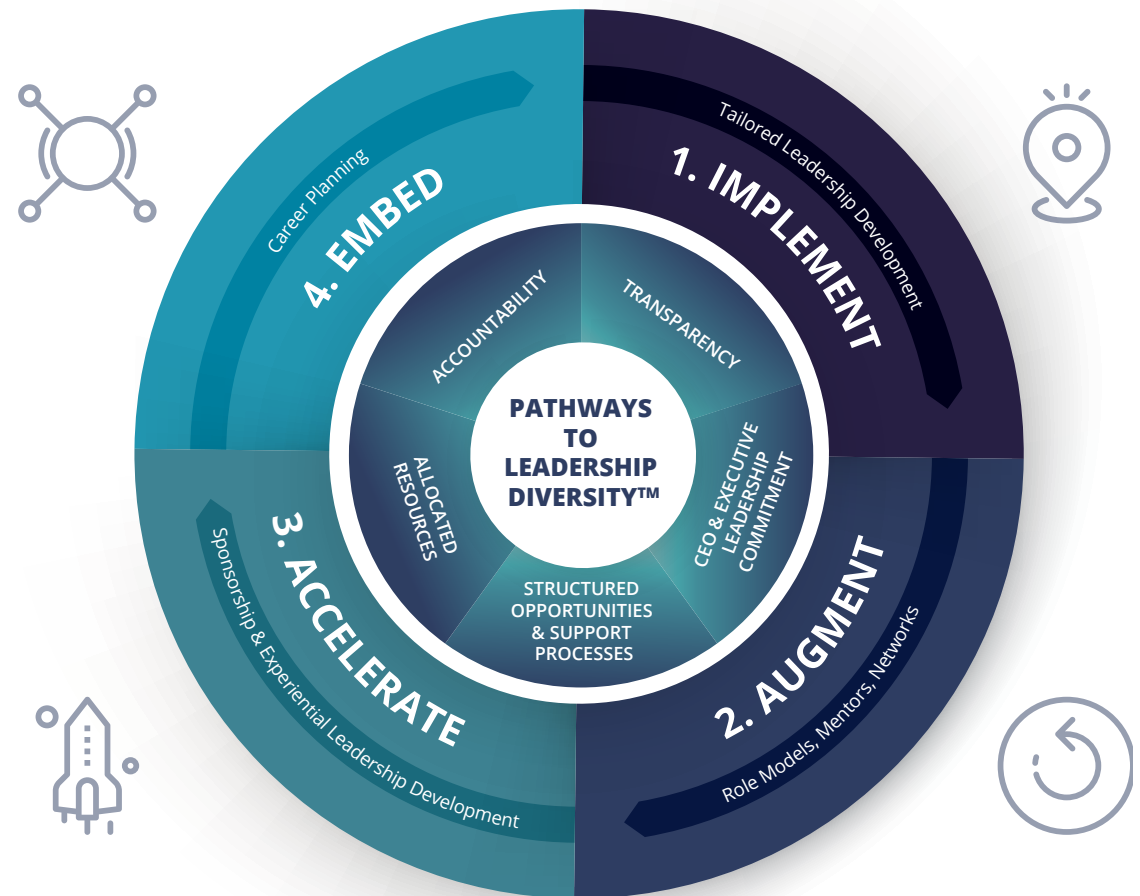


Figure 4: Pathway to Leadership Diversity™

The following pages explore the four stages of the *Pathway to Leadership Diversity™* cycle and provide recommendations for structured opportunities and support processes for each stage. Recommended transparency measures and accountability measures are also provided.

IMPLEMENT:

TAILORED LEADERSHIP DEVELOPMENT

Tailored leadership development for STEM women must be based on research, best practice and women's lived experience. It must elevate diversity and expand beyond traditional models of leadership.²⁹ It must leverage the 8 key protective factors that support women in STEM advance their careers and access leadership roles: tailored leadership development, formal continuing professional development, understanding self, voice and visibility, resilience, identifying and negotiating unconscious bias, resource networks and mentoring.²³ And leverage the inherent leadership strengths of women: strong communication, collaboration, empathy and compassion, aligning people with meaning and purpose, and developing others through coaching, mentoring and prioritising growth.³⁰

Tailored female STEM leadership development should be focused on middle managers and mid career women as well as early-career women and emerging leaders. It should be enduring and adaptable, focused on motivating and empowering people through uncertainty and adversity and understanding self as a leader.

Tailored leadership development directly aligns with the *Pathway to Diversity in STEM Review*¹ recommendations that STEM-employing organisations and governments should **create programs for future leaders from underrepresented cohorts to develop leadership skills**⁵ by 'implementing programs that focus on developing diverse employees and preparing them for leadership roles'.⁴



RECOMMENDATIONS TO LEVERAGE THE IMPACT OF TAILORED LEADERSHIP DEVELOPMENT

Intentionally invest in tailored leadership development for female STEM leaders at all levels in your organisation. Tailored leadership development should be informed by research and best practice and build a foundation of enduring leadership skills that will grow with them. It should support female leaders to develop a strong leadership mindset and an authentic leadership style, with a focus on expanding the following specific skills:

- a. people leadership skills
- b. successful communication and influence
- c. emotional intelligence
- d. decision-making skills
- e. the ability to lead collaboratively and adaptively to solve complex problems
- f. self-learning to lead confidently in challenging environments.

Partnering for Leadership Success

Dr Susan McGinty and Aya Leadership have been partnering with one of Australia's largest national technology organisations since 2019, providing unique, research-informed, tailored leadership development to more than 80 of its emerging and established female leaders. The organisation's strength, resilience and creativity derive from an inclusive culture that values diversity of thought, experience, and abilities, and it is committed to a respectful and inclusive workplace where people bring their whole selves to work. Having had a traditionally male leadership culture, the organisation recognises the benefits of female leaders on organisational culture and innovation outcomes and prioritises tailored leadership development to uplift its female STEM experts into leadership roles. The women who participated felt more confident, capable and empowered as leaders, and have gone on to roles with greater leadership responsibility, contributing to expanding the diversity and inclusivity of the workplace, and innovation outcomes. The organisation has had a year-on-year increase of 19-29% in women holding executive leadership roles over this period.

WOMEN IN THE RESEARCH SECTOR: THE NUCLEUS OF INNOVATION

The important role of leadership development for STEM women in achieving STEM excellence, retention and career progression also applies to the research sector^{24,31}. Tailored leadership development for early- and mid-career female STEM researchers offers a powerful and untapped resource to increase their confidence and skills to navigate the gender-based challenges of a research career. Tailored leadership development contributes to increased gender equity in the sector by enabling women to compete at higher levels of STEM excellence, access research grant funding, and apply for promotions. All of which enhances research innovation and will attract more women to the sector.

The National Health and Medical Research Council (NHMRC) requires institutions receiving funding to have policies in place to support gender equity in health and medical research, including strategies that address the underrepresentation of women in senior positions and leadership development for women; and strategies that encourage the recruitment, retention and progression of women in health and medical research.³²

The *Pathway to Diversity in STEM Review* recommends that Science in Australia Gender Equity (SAGE) receive further funding to support SAGE to develop and deliver a sustainable model for driving cultural change in higher education and research organisations.³³ SAGE's existing accreditation program helps remove barriers to women progressing in STEM research careers. Providing tailored leadership development for early- and mid-career female researchers would amplify both SAGE's and the NHMRC's efforts to drive cultural change in research organisations.

AUGMENT:

ROLE MODELS, MENTORS, NETWORKS

Role models, mentors and networks are critical enablers to career advancement for women, the development of leadership skills and the advancement of women in leadership^{24,34}. They specifically facilitate women in STEM to stay the course and excel in STEM and are effective retention approaches.^{24,29} Access to senior female role models, and female leader networks, shapes a woman's view of leadership in the workplace. It also builds confidence and helps motivate women to advance in their careers. The lessons imparted by female role models can be invaluable in building leadership capability. This is even more important for female STEM leaders as they provide

important examples of female STEM leadership that negates the masculine leadership mold of STEM and normalises female leadership in STEM.

The *Pathway to Diversity in STEM Review* acknowledges the important contribution of visible role models to the STEM diversity landscape. It recognises the important role of mentorship in creating a diverse and inclusive work environment that supports retention and career development for all employees. It specifically calls for the establishment of employee networks to provide support, inspiration and engagement for underrepresented cohorts.⁵



RECOMMENDATIONS TO LEVERAGE THE IMPACT OF ROLE MODELS, MENTORS AND NETWORKS

1. Support the internal and external network expansion of the women in your organisation through formal and informal networking activities, including by introducing them to people in your networks.
2. Provide them access to female and male role models and job shadowing opportunities.
3. Champion internal and external role models from underrepresented groups.
4. Create platforms within your organisation and across your industry for formal, informal, and peer mentoring.
5. Ensure all leaders are accountable for modelling inclusive behaviour.

ACCELERATE:

SPONSORSHIP AND EXPERIENTIAL LEADERSHIP DEVELOPMENT OPPORTUNITIES

Sponsorship is an important support and empowerment mechanism for accelerating women into senior leadership roles through connecting women to powerful sponsors. Sponsors create space at the table for women, advocate for their advancement, and give them the opportunities, exposure, encouragement, and feedback needed to succeed. This is especially needed at the mid-leadership levels, where women often stall in their careers. And it is expressly needed for women in STEM, who are under-sponsored.³⁵

Beyond traditional mentoring, effective sponsorship provides recipients with proactive career support and advocacy from people in power that improves objective career outcomes including promotions and pay increases.³⁶ Proactive sponsorship can help reduce some of the challenges that can limit women advancing in STEM, including gender-based bias in career advancement opportunities and decisions, exclusion from influential networks and the “backlash effect” women can face when they advocate for themselves.³⁵

For recipients, sponsorship can provide up to a 30% increase in high-profile assignments, promotions, and pay.³⁷ Organisations embracing a sponsorship wave will benefit from enhanced talent development, performance, job satisfaction and retention of recipients, and stronger networks and collaboration across the organisation. Sponsorship works effectively as a

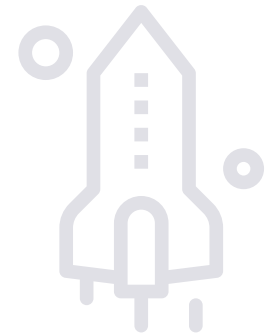
spectrum of behaviors that allows various types of commitment.³⁶

Women also need to be given on-the-job learning opportunities to extend their leadership experience, learn different parts of the business, participate in new ways, and learn from others.²⁹



RECOMMENDATIONS TO LEVERAGE THE IMPACT OF SPONSORSHIP

1. Create a wave of sponsorship for women across your organisation by asking every board member and senior leader to sponsor at least one woman. Duplicate the model for mid-level leaders to sponsor early-career women and emerging leaders.
2. Decide whether your sponsorship program will be formal or informal. Ensure its aims are linked to strategy and business imperatives to stimulate buy-in. Ensure leaders are accountable through performance assessment as a Key Performance Indicator.
3. Provide support, resources, and training to those who wish to explore sponsor relationships.
4. Sponsors can take the following actions across the sponsorship spectrum to support and advance STEM women in their organisation:
 - a. share your 'insider knowledge' about how to advance in the organisation
 - b. strategise with them about how to get ahead, and identify specific developmental needs
 - c. encourage them to take advantage of every opportunity that comes their way
 - d. invite them to meetings
 - e. speak positively about them in rooms of influence
 - f. introduce them to senior leaders and influential people
 - g. assign them high visibility projects and development opportunities
 - h. put their name forward for roles, representational opportunities, and committee and board participation
 - i. publicly advocate for their promotion.



RECOMMENDATIONS TO LEVERAGE THE IMPACT OF EXPERIENTIAL LEADERSHIP DEVELOPMENT OPPORTUNITIES

1. Develop pathways to expand women's contribution to committees and decision-making across your organisation.
2. Create a platform for women in your organisation to share their expertise and shine through speaking and via panels and working groups.
3. Construct opportunities for formal and informal leadership, workplace mentoring and job shadowing for emerging and established leaders at all levels.
4. Ensure all women have access to career development opportunities that are appropriately resourced, fit within their work hours and are captured within a learning development plan.

EMBED:

CAREER PLANNING

Effective career planning, incorporating leadership development and progression, brings all these elements together to ensure STEM women are empowered to become the best leaders they can. It also supports leadership succession planning – building a strong leadership pipeline for your organisation.

The *Pathway to Diversity in STEM Review*¹ highlights the need to support underrepresented individuals throughout their career for them to realise their potential in STEM, and the need to increase the visibility of career pathways for underrepresented cohorts. It recommends organisations develop a succession plan using a skills matrix to identify future STEM leaders, addressing any skill gaps by implementing programs that focus on developing diverse employees and preparing them for leadership roles.⁴



RECOMMENDATIONS TO LEVERAGE THE IMPACT OF TAILORED LEADERSHIP DEVELOPMENT

1. Implement meaningful career progression planning at all levels in your organisation, underpinned by appropriate learning development plans consisting of formal, social and experiential learning opportunities that are supported, prioritised and resourced.
 - a. Have clear and defined pathways for professional development and promotion that are inclusive and flexible.
 - b. Introduce meaningful professional development plans for all staff.
 - c. Ensure equal and flexible access to professional development for women at all levels.
2. Review performance evaluation processes and ensure they are consistent and inclusive – free of bias or discrimination.
3. Communicate promotion and professional development opportunities via timely and transparent processes.
4. Link leaders' accountability to staff talent management through performance assessment as a key performance indicator.

CREATING A CULTURE OF ACCOUNTABILITY AND TRANSPARENCY

The *Pathway to Diversity in STEM Review* emphasises the critical role of accountability and transparency in increasing diversity and inclusion within STEM organisations and ensuring cultural and systemic change¹. It explicitly recommends that 'organisations employing STEM workers should demonstrate accountability and transparency to accelerate change' and offers a range of specific measures⁵ that have been incorporated below.

Effective systemic change should use evidence-based policies and programs, be supported by strong incentive and accountability structures to ensure initiatives are making a difference and be integrated at the point of program inception.³⁸ Organisational commitment, leadership and accountability (via governance structures) are known to be fundamental to achieving the systemic level organisational change that will advance women in leadership.¹

Effective accountability with regard to your organisation's leadership diversity strategies requires having relevant governance structures and translating goals, plans and policies into actions and measurable outcomes. It includes robust mechanisms that articulate ownership of actions and measures results.

RECOMMENDED ACCOUNTABILITY MECHANISMS

- 1. Inclusive leadership behaviours.**
Establish and model inclusive leadership behaviours consistent with the organisation's diversity goals – for leaders, managers and all employees. Introduce mandatory diversity and inclusion training for all leaders and managers.
- 2. Strategic Plan.**
Set strong leadership diversity goals within the organisation's Strategic Plan. Ensure each step of the *Pathway to Leadership Diversity™* cycle is linked to the organisation's Strategic Plan.
- 3. Accountable owners.**
Establish clear ownership for all accountability measures across the *Pathway to Leadership Diversity™* cycle – this will include senior leaders, first-line managers and participants.
- 4. Targets.**
Set gender targets for leadership representation at all levels, and targets for participation in leadership development activities. Investigate and address disparity in participation and promotion rates.
- 5. Resourcing.**
Ensure each step of the *Pathway to Leadership Diversity™* cycle is resourced (including appropriate budgets and time)
- 6. Flexibility and Relevance.**
Approach each step of the *Pathway to Leadership Diversity™* cycle with flexibility to ensure it is accessible, relevant, and tailored to individuals' current experience, career goals and availability.
- 7. Clarity.**
Provide clarity around the expectations of activities and who will participate.
- 8. Career planning.**
Set expectations for the number of career planning conversations per year. Establish consistent career planning processes.
- 9. Performance Agreements.**
Include specific Key Performance Indicators related to each step of the *Pathway to Leadership Diversity™* cycle in the performance agreements of all participants, participant line managers and senior leaders. Introduce inclusion as a core leadership competency.
- 10. Feedback.**
Establish a process for receiving and responding to feedback from participants.
- 11. Check-ins.**
Establish regular check-ins for participants, managers, and accountable owners.
- 12. Accountability metrics.**
Set relevant accountability metrics for each step of the *Pathway to Leadership Diversity™* cycle, captured in the organisation's business plan and track progress. Benchmark against leading practice and industry peers.



Transparency of your organisation's leadership diversity goals and leadership development strategies for female leaders is important in providing clarity, building trust, and enabling accountability at all levels across the organisation. It is the first step in implementing a leadership development pathway that will successfully embed into the organisation's culture.

RECOMMENDED TRANSPARENCY MEASURES

- 1. Communication.** Undertake clear and frequent communication to all employees, the Board, and other relevant stakeholders, addressing the following elements:
 - a.** The organisation's vision for gender equitable leadership representation and the reasons for undertaking leadership development activities for women.
 - b.** Specific goals the organisation has set related to leadership gender diversity, and how they link to the organisation's strategic plan.
 - c.** Specific leadership development activities, how they will be undertaken, who will be involved, and other associated processes.
 - d.** Associated accountability metrics and what data will be collected.
 - e.** How accountability data will be disseminated – including via strategic reporting and ongoing internal updates to the organisation.
- 2. Accessibility.** Make your diversity goals and objectives easily accessible to all employees and the public.
- 3. Metrics.** Ensure accountability metrics are incorporated into strategic reporting and progress reports are publicly available.
- 4. Clarity and Consistency.** Be clear and consistent about the inclusive behaviours expected of leaders, managers and all employees.

The background is a dark blue gradient with several glowing, semi-transparent cubes scattered throughout. Some cubes are in sharp focus, while others are blurred in the background, creating a sense of depth. There are also bright, multi-pointed starburst or lens flare effects in various colors (white, yellow, orange) scattered across the scene, particularly concentrated in the lower-left and upper-right areas.

“We cannot afford to lose anyone. We must harness the potential of all people with a curious mind, a spark for problem-solving and a keenness to build up and change our world.”

- Pathway to Diversity in STEM Review Panel

CREATING YOUR OWN PATHWAY TO SUCCESS

Diversity and inclusion underpin three of the biggest challenges facing STEM over the next decade: the **STEM skills gap and competition for workforce talent**, **rapid technological change**, and **ethical and responsible innovation**.

Promoting diversity and inclusion is of significant benefit in STEM sectors yet remains an ongoing challenge, and many STEM disciplines continue to lack representation from women and underrepresented minorities. Encouraging underrepresented groups to pursue and remain in STEM careers is essential to harness the full potential of the STEM workforce.

By implementing the recommendations captured in this White Paper, including investing in tailored leadership development programs for women in STEM at all levels, STEM organisations can begin to amplify their efforts to create more diverse and inclusive workforces. Greater diversity can help these organisations:

- attract, retain and develop diverse talent
- expand gender diversity in leadership
- leverage the benefits of female leadership
- amplify their innovation potential

- increase profitability
- become a market leader and employer of choice
- build a robust and enduring leadership pipeline.

The *Pathway to Diversity in STEM Review* recommends that the Australian Government take action to make STEM workplaces safer and more diverse and inclusive, by changing processes for the administration of Government grants and procurements for STEM-related programs, services or activities.³⁹ This will specifically require action to expand representation of underrepresented cohorts in leadership roles.³⁹

STEM organisations should be prepared for these government expectations to come into force. Organisations must also comply with the new Workplace Gender Equality Procurement Principles.⁴⁰ Noting the broad impact on diversity that increased diverse leadership representation can achieve, expanding leadership diversity practices through intentional leadership development will support these expectations.

WHAT'S NEXT?

If you would like an expert partner to support you to grow your organisation's performance, innovation, and long-term sustainability through diversity, I would love to work with you. I can assist you in the following ways:

- Identify and help you implement adaptive opportunities to achieve diversity leveraged innovation through applying the *Pathway to Leadership Diversity*TM framework to your organisation,
- Identify where your organisation sits on the diversity scale,
- Provide a diversity capability assessment, and
- Deliver tailored leadership development.

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ABOUT THE AUTHOR

YOUR LEADERSHIP DIVERSITY PARTNER

Dr Susan McGinty is an award-winning scientist and global STEM leadership development expert, speaker and author. The CEO and Founder of Aya Leadership, Susan is a specialised leadership development partner for STEM and Security organisations that prioritise diversity. She is inspired to transform the profile of leadership in STEM to achieve innovation sustainability, uplift women in STEM into leadership roles, and enable diversity and equity in STEM. She supports STEM leaders and organisations across the world. Her thought leadership and tailored leadership programs have global impact.

Susan was awarded the 2023 Women in STEM Leadership *'Leader of the Year'* Award for her work supporting the leadership development of women in STEM globally. She was also a finalist in the 2023 Women's Agenda Awards *Emerging Leader in Tech*, the 2023 Australian Women in Security Awards *Best Industry Initiative Supporting Diversity, Inclusion and Equality*, and the 2023 Recalibrate Gender Equity Awards, *CEO/Board*.

Susan has a PhD in Medicinal & Organic Chemistry, a Master of Leadership, and 25 years' experience in STEM, Defence and National Security, and STEM leadership development. She is a member of the Board of Women in STEM Leadership and a strategic partner of the Australian Women in Security Network and the

Australian Institute of Professional Intelligence Officers. In 2022, as part of her Master of Leadership, she undertook research into Female STEM Leadership, for which she won the Deakin University Dean's Prize.

In 2023, Susan co-authored the #1 international best-selling book 'Women Transforming the Landscape of Science and Tech'. In 2021, she was identified by The Australian Business Journal as one of the 20 Australian leadership experts to watch.

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