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Women in Adult and Vocational Education (WAVE) &
Xellence Pathways

JOBS AND SKILLS AUSTRALIA AUSTRALIA'S CLEAN ENERGY WORKFORCE: RESPONSE TO DISCUSSION PAPER



Xellence Pathways and Women in Adult and Vocational Education (WAVE)

Response to JSA Discussion Paper on Clean Energy Workforce (May 2023)

Acknowledgement

Women in Vocational and Adult Education (WAVE) acknowledge the traditional owners of our lands and waters – the Aboriginal and Torres Strait Islander Peoples – who are the first educators and the first teachers of this land.

We pay our respects to elders, past present and emerging and recognise that these lands and waters have never been ceded.

We support truth, treaty and reconciliation and the Uluru Statement of the Heart.

Always was, always will be Aboriginal land.

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EXECUTIVE SUMMARY AND RECOMMENDATIONS

WAVE and Xellence Pathways have come together to develop this submission in response to Jobs and Skills Australia's (JSA) discussion paper on capacity building for the clean energy sector. As the first capacity study to be conducted by JSA, it is imperative that the approach utilised be proactive, future oriented and lead to inclusive and sustainable outcomes designed to benefit all Australians and the nation.

Our submission highlights that:

- I. Australian workforce and education and skills sector are already gender segregated, fulfilling this mandate will require specific, deliberate planning, investment and work to change the story, when it comes to ensuring that the clean energy sector is delivering outcomes to all Australians.
- II. Make equity the core of JSA's mandate to sustainably address the needs of the Australian workforce over the next 10, 20 and 30 years, and better plan for the education pathways and address barriers to that education pathway.
- III. The barriers and 'equity issues' to be investigated by JSA are in fact known and as we contend well researched. This justifies the need for JSA to embed equity related aspects across the whole study from an early stage, rather than rely on more work on barriers to suffice as accounting for equity requirements.
- IV. Commitments by the Australian Government, and the advice, recommendations and agreed Principles for just energy transitions from the IEA must inform, be integrated into and shape JSA's Clean Energy Capacity Study and the wider Government strategies, policies and practices.
- V. While we recognise the pressure that governments are and will be increasingly under to put in place solutions for the many workers exiting jobs in a number of fossil fuel related , energy and mining companies, the composition of those workforces must not drive the approach required to scope and design sustainable inclusive and equitable education and training pathways into decent work for the broad clean energy/green skills sectors.

That Australia is a (very) late starter in the development of a comprehensive integrated transition plan for the economy of the future – clean, green and more automated- must not compromise the scope and quality of such a strategy or its component parts to satisfy pragmatic political pressures of the now.

Recommendations are provided at the end of this submission but core to these are:

1. Make equity the core of the plan to build capacity for Australia's Clean Energy industry, rather than an add on so that the systemic and structural barriers to learning and employment that are prevalent across our society can be negated.
2. Broaden the scope of the suggested definition of 'Clean Energy' for the capacity study to accommodate its makeup as a composite industry with a diversifying workforce. This is necessary so as not to restrict or silo the transforming industry and its future workforce into present day paradigms that negate the interconnected nature of the clean energy 'industry', its growing need for future (transversal) skills and the multiple learning pathways into the industry's workforce. A wider definition is also required to accommodate the reality of the

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learning journey for many in our community who do not have access to, or face structural and systemic barriers to explicit, continuous, resourced learning and employment pathways

3. Use the existing evidence base and build upon it rather than rely on more work on barriers to participation in work and learning, to suffice as accounting for equity requirements.

Our submission also:

1. Advises JSA that there is entrenched gender inequity in the clean energy industry worldwide
2. Provides evidence and highlights that by modelling the future Australian clean energy sector on current industry participation, and, drawing upon it for the future sector, gender inequity will be further entrenched.
3. Recommends that the central tenant of JSA's mandate should be that of equity to ensure that all other aspects of the mandate can be addressed including long term sustainability, identifying enablers and barriers to delivering clean energy education and training, and ensuring success of place-based success factors.
4. Refers to previous evidence and submissions provided by the women's movement including WAVE to the federal government on equity in renewable and clean energy sector
5. Makes recommendations on how these challenges can be addressed including systemic and structural reform that once and for all addresses the inequity in our national labour market and mitigates the risk that the inequality in legacy sectors is not translated into the future of Australia's clean energy industry.

It makes the call that experienced, skilled specialist organisations (such as Xellence Pathways and WAVE) should be employed and funded to undertake the work to apply a both gender lens and renewable energy workforce solutions to the sector to enable the recommendations and goals of the capacity study to be fulfilled.

PREVIOUS RELEVANT SUBMISSIONS

WAVE and other interested organisations have previously shared evidence and information about gender barriers to participation in recent investigations and submissions to the Federal Government including:

- Australian Government's Consultation on the [Employment White Paper](#)
- Response to the Australian Government's Discussion Paper on [Future Delivery of Foundation Skills in Remote Australia](#)
- Response to [Australian Apprenticeship and Supports Discussion Paper](#)
- Submission to Federal Government on new [skills and employment agency Jobs and Skills Australia](#)
- Response to Australia's development of [a new migration strategy](#)
- Submission to the [House Inquiry into the Perceptions and Status of VET](#)

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WHO IS WAVE?

WAVE is a national network of women involved in Vocational Education and Training (VET) and adult education. WAVE provides research, policy advice and advocacy to Australian and State/ Territory Governments on gender equity in skills and adult education policy and provides input into VET and adult education internationally. We are supported within each state by local representatives who, in turn, contribute collaboratively to national events and governance. Formed in 1985 WAVE is the first and only national independent, non-government organisation for Australian women and girls in the adult, community and vocational education and training sector/s.

Our mission is to advocate so that Australia's vocational education and training and adult education systems are equitable for all women and girls. Our vision is for a future where women and girls can participate fully in all aspects of work and democratic society, through equitable and transformative vocational and adult education.

Our Way of Working

WAVE undertakes its work within a feminist framework recognising that intersecting forms of discrimination and marginalisation can impact a person's capacity to access and benefit from Australia's vocational and adult education system/s. As such, WAVE is keenly aware of the importance of centering lived experience in our work. We advocate for the vocational and adult education system to enhance its inclusivity, relevance and affordability for those who may be left behind to provide a coherent voice for under-represented, vulnerable and marginalised groups.

The transformative power of inclusive education, training and lifelong learning that centre gender equity is at the core of WAVE's values.

As leaders in the areas of gender equity and vocational and adult education, WAVE is uniquely placed to provide expert advice to Australian and State/Territory Governments on ways that these systems can be equitable for all Australians. We can provide partners, members and stakeholders with deep understanding of the last 40 years of evidence in VET and adult education and gender equity from Theory of Change to Theory of Action and monitoring and evaluation of results.

We work in collaboration and in partnership with organisations, leaders and communities that share an appreciation of the breadth of challenges associated with gender inequity, especially as they relate to Australia's national adult education and skills system/s.

WAVE's mission is to partner with organisations and individuals with a shared commitment to social justice in the co-production of sound research and advocacy.

WHO IS XELLENCE PATHWAYS?

Xellence Pathways is a leading workforce-enabling hub for the Australian offshore wind industry, complementary technologies plus the underpinning supply chain. It is committed to identifying and meeting the workforce requirements to support the growth of the offshore wind industry plus the underpinning supply chain.

The transition to a clean energy sector is critical for Australia to achieve its targets for reducing emissions and unlocking the benefits of this transformation. The Reliable, Affordable, Clean Energy Cooperative Research Centre (RACE for 2030) is an essential collaborative mechanism to facilitate this transition, address the complex challenges involved, and maximise job creation for the energy workforce and the wider economy.

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Xellence Pathways is committed to promoting diversity and inclusivity and supports the need for greater representation of women in the energy sector. In line with this, Xellence Pathways is committed to supporting women in energy and promoting gender equality across the clean energy sector.

Xellence Pathways is committed to including equity for women and all as it will enable cultural changes in these sectors. It recognises the importance of diversity and inclusion in building a skilled and sustainable workforce for the offshore wind industry and its y and its underpinning supply chain in Australia. To achieve this, it will leverage its global partners' wealth of experience to create a roadmap that addresses the skills gap in the industry while always promoting equity and inclusivity in the workforce. It will ensure mechanisms that support diversity and inclusivity in the offshore wind industry and its underpinning supply chain are in place within the industries it supports, and work closely with the national network of women involved Vocational Education and Training (VET) and adult education.

Xellence Pathways will encourage greater cohesion and alignment across national and global initiatives related to renewable energy and workforce development. By working towards complementary goals, resources can be used more efficiently to maximise the impact and ensure that the Australian workforce is adequately prepared to meet the demands of the offshore wind industry and its underpinning supply chain. Xellence Pathways will collaborate with its partners alike to continue identifying and addressing barriers for women, the ageing workforce and other underrepresented groups.

Xellence Pathways will work closely with industry, all states and territories in Australia and New Zealand to meet their climate targets and ensure a sustainable and equitable future and partner with organisations that share their ethos and commitment to addressing the skills gap in the emerging offshore wind industry and its supply chain. By collaborating with like-minded entities and will play a crucial role in providing workforce solutions that enable the creation of new jobs, drive economic growth, and facilitate Australia's transition to a cleaner and more sustainable energy future that works towards net zero.

While energy providers and regulators are critical players in the Australian energy sector, Xellence Pathways recognises that other government agencies, industry associations, and non-governmental organisations will have important roles to play in the transition to a low-carbon economy.

A number of key stakeholders in the offshore wind industry, such as, project developers, equipment suppliers, research and development entities in Australia and more broadly in the global landscape, including Government, to understand specific workforce needs to develop tailored solutions. This will involve conducting labour market analyses, identifying skills gaps and training needs, roundtables, working with Jobs Skills Australia in designing and delivering workforce training programs, providing ongoing support for workers throughout the project lifecycle.

By supporting the workforce needs of the Australian offshore wind industry, Xellence Pathways will ensure that these projects are supported from an equitable and diverse workforce capacity thus allowing them to be completed successfully, on time, and within budget.

In Australia, the government has committed to achieving gender equality in the energy sector, and Xellence Pathways supports this commitment. Australia is one of the 13 member countries that have joined the Equality in Energy Transitions Initiative, a collaboration between the Clean Energy Ministerial (CEM) and the International Energy Agency (IEA), which aims to advance the transition to

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a low carbon economy by promoting women's participation in clean energy and closing the gender gap in the energy sector.

Xellence Pathways will support these initiatives and work towards promoting gender equality in the energy sector by providing equal opportunities and support for women in leadership roles across the clean energy sector, including the offshore wind industry and the underpinning supply chain. The company's approach emphasises the need to be agile and adaptable to respond quickly to emerging issues and opportunities, such as changes in the regulatory environment, technological advances, or market demand shifts.

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OVERVIEW

WAVE and Xellence Pathways welcome the opportunity to comment on the Discussion Paper issued by Jobs and Skills Australia (JSA) for the capacity study for Australia's workforce to transition to a clean energy economy.

The renewable energy sector requires a diverse and inclusive workforce. Gender diversity has emerged as a critical area that requires attention. While the representation of women in the industry has historically been low, there is a growing recognition of the importance of gender diversity and inclusion in the clean energy and renewable energy sectors.

The lack of gender diversity in the Australian clean energy sector is a complex issue that requires a multi-pronged approach. The industry needs to address the underlying cultural and structural barriers that limit women's participation in the industry.

To address this issue Australia's industry and skills policy must:

- ensure that equity and gender are embedded as a key feature and principle of education and training,
- use gender transformative practice to plan for the workforce and allocate resources including undertaking gender impact assessments on those labour force plans,
- address and change the structural and systemic barriers to equitable participation in the clean energy sector including changing culture, policies and practices to increase safety, address discrimination and enable inclusive workplaces that are supportive of flexible work, and diverse leadership.

We also note from the Government's Terms of Reference (TOR) to JSA for this study that, importantly, as well as a focus on 'clean energy' in the first instance,

It is expected that the Capacity Study will form the basis of further work to inform the Government's strategy for workforce planning as it pertains to delivering the energy transition and the transformation to a net zero economy by 2050¹.

Given the significance of this first Case Study and drawing on WAVE's previous submissions and the evidence supporting same to JSA, we reiterate our claim that this work must centre equity and especially gender equality, as a foundational principle to inform **ALL** aspects of the Study and its follow-on work. This insistence is also in accordance with the National Skills Agreement: Vision and Principles, August 2022².

In the case of 'clean energy' (and the wider green economy) and so this study by JSA for the Australian Government, the embedding of equity as a foundational principle is especially important for women, given the long history of the gendered nature of the politics of skill along with the seemingly entrenched nature of sex segregation in Australia's labour force. This is especially significant at this

¹ Australian Government (2023) *Clean Energy Capacity Study. Terms of Reference*. Jobs and Skills Australia/Australian Government. <https://www.jobsandskills.gov.au/work/clean-energy-capacity-study#:~:text=When%20will%20the%20Clean%20Energy,Minister%20for%20Skills%20and%20Training>.

² Australian Government (2022), *National Skills Agreement: Vision and Principles*. 31st. August 2022. Department of Employment and Workplace Relations, Canberra. <https://www.dewr.gov.au/skills-reform/national-skills-agreement-vision-and-principles>

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moment, as the shift to ‘clean energy’ and green skills is an economic and social imperative, but also encompasses industries and occupations that are already male dominated. This is reinforced by the reductive approach outlined in the Discussion Paper for JSA Capacity Study to inform the Government on workforce needs including skill development to sustain Australia's transition to clean energy and a net zero economy to meet our international obligations.

We recognise well the complexity and rapidity of changes underway and understand that this is also an area of definitional confusion with multiple descriptive terms and concepts that are either used interchangeably and/or overlap. This includes terms such as renewable energy and clean energy, as it does those referring to green jobs and green skills and the wider ‘green’ economy in which they all coexist. Some slippage and conflation are evident in the Discussion Paper.

Noting this, we contend that efforts to reduce the complexity by limiting scoping boundaries as has been done in relation to ‘clean energy’ rather than acknowledging the existing and growing inter-relationships as well as societal impacts from the beginning of this important study has the potential for decision-making detrimental not only to equity and inclusion, but also to future planning for the new and emergent industries, jobs and so careers in this space.

Goals and Principles for shared and equitable workforce planning and development.

We note JSA’s role to plan for and provide advice on the development of the workforce for Australia’s Clean Energy Sector. In particular the mandate that JSA has to:

- explore how the workforce opportunities created by clean energy can be shared across regions and with First Nations Australians, women, people with disability, ageing and Australians from culturally and linguistically diverse background

Our core contention is that as the Australian workforce and education and skills sector are already gender segregated, fulfilling this mandate will require specific, deliberate planning, investment and work to change the story, when it comes to ensuring that the clean energy sector is delivering outcomes to all Australians.

More importantly, to address the entrenched gender segregation of Australia’s workforce, and the inequality inherent in our systems and structures, JSA needs to make equity the core of its mandate so that it can sustainably address the needs of the sector over the next 10, 20 and 30 years, better plan for the education pathways and address barriers to that education pathway.

To that extent this submission will speak to the policy and workforce planning/development levers to enable this to occur.

To achieve this, we advocate that any education and training reform together with industry workforce planning and development, should have a set of policy goals and principles based on equality and equity. The evidence and implementation levers for this change are available for Governments and Industry. To achieve its mandate to “explore how the workforce opportunities can be shared” the capacity study must include recommendations that:

- I. Ensures equity and gender equality as a foundational principle and goal of all education and training policies, regulations and legislation.

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- II. Embeds equity as an organising principle applicable to all activities, policy and resourcing activities in vocational education and training (design, delivery, resourcing and funding, disaggregated data collection, evaluation).
- III. Creates a system that provides learners with access to affordable quality training relevant for us to live well (getting a job, occupational and industry mobility, entrepreneurship, active citizenship, care, democratic participation) with inbuilt mechanisms to tailor the system to the unique needs of women and girls in all their diversity.
- IV. Enables the system to be proactive rather than reactive (forecasts and plans for skills for the future and present by drawing upon expertise cognisant of our social, economic and educational needs).
- V. Creates a skills and education system with a broader definition of skills inclusive of knowledge, that builds broad capabilities required for participation in work, civic and social life.
- VI. Values and utilises the plethora of evidence and research that describes and presents evidence of inequity faced by women (including those with intersecting compounding barriers to participation in the workforce and skill development).
- VII. Creates and resources an agency (statutory authority) with the legislated function to consult, investigate, locate and address existing and potential barriers to equity in VET and provides advice and recommendations to Government.
- VIII. Builds capability and capacity of responsible officials, policy leaders and education and training sectors on gender equity and equitable policy and practices, through gender impact assessments in policy design processes and structures about education and training.
- IX. Ensures that equity and gender impact assessment are core organising features and principles of education and training funding, workforce planning, resource allocation, teacher and trainer development and strategic policy vision/setting.
- X. Targets and implements budget measures for training and education investments that increase women's participation and career pathways across the workforce including in emergent industries and occupations and, target men's participation in feminised industries.
- XI. Applies a gender lens to all processes that assign value to 'feminised' skills including assigned levels in the AQF and associated pay levels, competency standards and training packages, taking into account issues of comparative worth.
- XII. Funds training and education equitably, (addressing inequitable funding of feminised skill pathways compared to male dominated skill pathways).
- XIII. Centres the lived experience of diverse learners, recognising learning journeys are intersectional experiences and have higher opportunity costs for women.
- XIV. Develops a system that is built by educators for learners in partnership with industry and defines "industry" as inclusive of all workers, employment types and the need for our skills system to include sole traders, disability support workers, arts and cultural industries workers, together with 'blue collar' trades workers and workers in large finance, manufacturing or mining companies.
- XV. Develops an integrated Australian Education and Training System with the capacity to provide flexible and timely lifelong learning opportunities across the lifespan for all Australians, with recognised learning pathways from school education through VET and Adult Community Education to Higher Education.

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A note on international frameworks and agreements

In putting forward these points we draw from the evidence of such diverse organisations as the United Nations, UN Women, UNESCO, UNESCO-UNEVOC, the World Bank, the ILO, OECD, the World Economic Forum (WEF) and major consultancy firms such as KPMG and PwC, and significant research institutions internationally including our own Group of 8.

We support Australia's commitment to the UN's *2030 Agenda for Sustainable Development* (Agenda 2030) and the Sustainable Development Goals (SDGs) along with its central tenet of 'leave no one behind'. Our work is informed especially by SDGs 5 (Achieve gender equality and empower all women & girls); 4 (Ensure inclusive and equitable quality education and lifelong learning opportunities for all¹), and 8 (Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all).

Similarly, we acknowledge Australia's support of the *Marrakech Framework for Action: harnessing the transformational power of adult learning and education* (MFA) agreed at CONFINTEA VII and, in line with UNESCO's global initiative *Futures of Education* and calls for a new social contract for education², the commitments made in Australia's submission at the Transforming Education Summit (TES) convened in September 2022 in response to a global crisis in education. The *National Statement of Commitment*³ states (in part):

Australia recognises the power of education to transform lives and, through targeted actions and continuous improvement, is committed to meeting Sustainable Development Goal (SDG) 4 as a global benchmark for ensuring inclusive and equitable access to quality education and promoting lifelong learning. ...

To respond to current and emerging skills needs, Australia recognises the need to support equitable access to lifelong learning, including formal learning such as higher education and vocational education and training, as well as informal and non-formal learning. Lifelong learning has an important role in helping disadvantaged community members, for example, through improving adult literacy and numeracy, and developing digital literacy (pp. 1,2).

We also endorse the range of advice and advocacy from gender equity colleagues internationally, reflected in major policy frameworks in the European Union and in countries such as Canada, Germany and the United States all of which have a nation-wide gender equity framework, policy and impact/measurements system resourced to drive accountability, build capability and enable transformational change. Noting the scope of our role, we will contain our feedback to that relating to the national adult education and VET systems.

Linking to the SDG's

The shift to clean green economy and so an inclusive sustainable society where 'no one is left behind' underpins the intent of the Sustainable Development Goals (SDGs) to which Australia is a signatory. Gender in the context of sustainable development and renewable energy, including wind power, enables the achievement of key social, economic and environmental objectives expressed in the Sustainable Development Goals (SDGs). While we acknowledge the interrelationship of all the SDGs, the triangle of sustainable energy, jobs and gender objectives finds expression in a number of the SDGs.

Three of the 17 SDGs are closely interconnected:

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- SDG 7 (access to modern, clean, and sustainable energy)
- SDG 5 (gender equality and empowerment), and
- SDG 8 (inclusive growth and decent work)

Achieving SDG 7 is indispensable to a vibrant, clean and inclusive economy. The close interaction between the energy system and the broader economy implies a symbiotic relationship between SDGs 7 and 8.

The gender objectives expressed in SDG 5 shape the way the energy industry and the economy at large function, aiming to make them inclusive. Different strands of International Renewable Energy Agency (IRENA)'s work address aspects critical to these three SDGs. Over the years, IRENA has been providing empirical evidence on the socio-economic effects of renewable energy for member states and relevant stakeholders.

- SDG4 (Inclusive and equitable education and promote learning opportunities for all) is foundational for the knowledge and skills required for the present and future clean energy industries and workforce and underpins all SDGs including 7, 5, 8 and 9. It is imperative that the transformation underway in our schools, VET and adult learning sectors along with universities includes synchronised person-centred learning pathways relevant to our emerging 'green' futures.
- SDG 9 (Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation) is also of note.

To support informed policy making, the agency has published several reports that explore the transition's macroeconomic and social impact through indicators such as employment, GDP and welfare (IRENA, 2019c; 2019d; 2020). In addition, the agency is leading an initiative – the Sustainable Energy Jobs Platform, formally established in January 2020 – that brings together a group of international partners to study the preconditions for and the implications of a just energy transition³:

³.International Renewable Energy Agency (IRENA) (2020), *Wind Energy: A Gender Perspective*. IRENA, Abu Dhabi. <https://www.irena.org/Publications/2020/Jan/Wind-energy-A-gender-perspective>

CLEAN ENERGY & THE GREEN ECONOMY: A GENDER PERSPECTIVE

Introduction

There is a plethora of research that provides evidence that ‘sex segregation is alarmingly tenacious’⁴, and especially so when new technological interventions result in changes in work processes across industries and time that in turn impact skills, jobs and occupations and so labour markets⁵. While early studies across industries including printing, clothing, warehousing and engineering industries reveal the tenacity, the same trend has been documented since the recent emergence of the IT sector and associated jobs and career paths. As Cockburn revealed and Pocock confirmed, the associated disadvantages for women work out in complex ways but most always with a common result of sex-based differentiation.

We also recall a study undertaken by WAVE for eS4W and the Government in 2011 on emergent occupations and industries and viable work for women⁶. This purpose of the study (*Viable work*) was to:

build a map of potentially viable work for Australian women by identifying industries & occupations with viable career pathways – work that is emergent and falls in identified areas of existing and/or potential skills shortages. It includes work in non-traditional male-dominated fields - where the existing participation of women workers remains at a very low ratio. ... (T)o provide a foundation from which to devise strategies to identify and target areas where initiatives for women and girls can be implemented to increase and support their engagement and inclusion in industries and occupations that offer career paths, sustainable employment, transferable skills and financial benefits (p.5).

The then green economy already characterised as ‘an emergent, fast-growing industry’ was selected as a focus of this study as it represented an area that was wide open for entry to women seeking economic satisfaction⁷. In 2011 (as now) women were concentrated in feminised fields of training and work as summarised:

⁴ Pocock, Barbara (1988), *Demanding skill: women and technical education in Australia*. Allen and Unwin, Sydney. <http://hdl.voced.edu.au/10707/32165>

⁵See: Cockburn, Cynthia (1985), *Machinery of Dominance* London: Pluto; Cockburn, Cynthia (1987) *Two-Track Training: Women in the Youth Training Scheme* London: Macmillan and further explication in Pocock, Barbara (1988). The Cockburn studies are regarded as classics.

⁶ Butler, Elaine, Woolley, Robyn & Shewring, Fiona (2011), *“I can’t think of any occupation women can’t do!”: career pathways for women and girls: emergent and non-traditional occupations and industries (viable work)*, WAVE/eS4W, Melbourne. <https://wave.org.au/wave-viable-work-report-2011/>
<http://hdl.voced.edu.au/10707/215748>

⁷ See especially sections The Green economy & Emergent (Green) industries, Butler & Woolley (2011 pp. 12-15)

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- Women are under-represented in emerging and growth areas with better than average remuneration opportunities, such as “green” industries, technology, mining and managerial occupations.
- Women are concentrated in casual and part-time work, which makes them vulnerable in times of economic downturn while also providing them with less opportunity for work-based training and career progression.
- Women’s earnings on average are below those of men.
- Significantly more women than men live in poverty at or below the poverty line (p.6).

It also met the criteria for viable work, viz:

- have a good record of employment opportunities, supported by identifiable pathways to careers that evolve from such employment;
- recognise skills, and expertise in pay levels and work conditions and/or offer above average remuneration opportunities;
- expect growth or are sustaining themselves, and
- plan for and promote future needs that include women (p.6).

At the time of the report (*Viable Work*), while noting Australia’s slow engagement in proactive planning & implementation of strategies including skills policies for what was being recognised as ‘the second greatest economic transformation after the Industrial revolution’ in the international VET community, WAVE’s review of international (especially in Canada and Europe) and Australian studies highlighted agreement that:

- The green economy is a subset of the entire economy rather than running parallel or outside of it.
- The need for integration and a holistic approach.
- Coalescence around broad definitions for green economy and its component parts, existing and emergent.
- Impetus had increased in the systematic and comprehensive data gathering in Australia to prepare for a workforce necessary to make the shift to a low carbon or ‘environmentally friendly’ economy, but it was accompanied by ongoing debate, and rarely if ever included gender analyses.

It commented that:

It is likely that the evolution of green jobs will increase as new industries emerge and changes to accommodate carbon trading and reduction of environmentally damages processes practices are implemented in existing industries. This will largely benefit male dominated industries such as engineering, plumbing, electrical and other construction trades along with some manufacturing industries. New occupations will also emerge in line with the shift to a green economy. However, to benefit fully from this epochal shift, the Australian workforce must be skilled, up- skilled, and re-skilled, with industry resourced to maintain sustainable employment bases, industries, and workplaces.

Given the male dominated profile of the industries and occupations most likely to benefit from emergent and green skills, the need for cultural change and proactive targeted strategies to engage increasing numbers of women and girls into training and employment in these industries is timely (pp.14-15).

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This previous work along with that undertaken from 2011 to the present time both adds to WAVE's expertise but also provides our strong understanding of what is at stake in this JSA case study around not only clean energy but also the transition to a net zero economy by 2050.

While it is a highly significant moment for women's economic futures, it is also critical for ensuring an equitable, inclusive and sustainable education and training system with the capacity to help build an educative base for sustainable futures for our nation and the planet.

We utilise findings from that Report along with sources from recent research cited below to inform our comments.

Contextualising Clean Energy – jobs for today and jobs (for all) for tomorrow

Clean Energy is a global/regional/national and local evolving 'industry' located within the realities of increasing climate change challenges, rapid technological advances, geopolitical destabilisation, global competitiveness and a post-industrial revolution (4IR/5IR) in which labour forces are transforming rapidly amid multiple disrupters⁸. The WEF Insight Report *Future of jobs report 2023* (May 2023) continues the practice since 2016 of 'tracking the labour-market impact of the Fourth Industrial Revolution, identifying the potential scale of occupational disruption and growth alongside strategies for empowering job transitions from declining to emerging roles' (p.4).

While reporting on structural labour market churn and structural reconfiguration of labour markets for the next five years (pp.28-33), it predicts that the green transition will not only disrupt labour markets over the next decade but will also create significant new job opportunities as large-scale global action to transition to green economies accelerates (p.23). While acknowledging that governments play a key role driving and facilitating the green transition, Australia is credited as one of the countries that is now leading 'green skills intensity in Government and the Public Sector' (p.34), which is very pleasing to learn. In relation to energy transition and climate-change mitigation jobs the 2023 Insight Report states:

Another area survey respondents expect to grow quickly, which currently employs a relatively small number of people, are jobs in renewable energy and those related to climate change mitigation. This is reflected in almost universal expectations of growth for Renewable Energy Engineers and Solar Energy Installation and System Engineers among respondents who identified these as common roles in their organisation. The same holds true for Sustainability Specialists and Environmental Protection Professionals that are expected to grow by 33% and 34% respectively, translating to growth of approximately 1 million jobs. This is in line with business leaders' expectations for the green transition and climate-mitigation investments to drive job growth... This expectation continues the growth in green jobs that labour markets around the world have witnessed in the past four years ... (p.33).

This latest issue in identifying themes important to workers notes not only the growing preference for diversity, equity and inclusion (DEI) at work but also that workers across age ranges indicate dissatisfaction about training opportunities, and data suggesting that fewer women than men are

⁸ World Economic Forum (WEF) (2023a), *Future of jobs report 2023. Insight Report*. May 2023 WEF, Geneva. <https://www.weforum.org/reports/the-future-of-jobs-report-2023/>

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trained (p15). Of significance not only to this JSA Capacity Study scope but also to Government, it advises:

The coming years represent a generational opportunity for businesses and policy-makers to embrace a future of work which fosters economic inclusion and opportunity, sets in place policies which will influence not only the rate of growth but its direction, and contribute to shaping more inclusive, sustainable and resilient economies and societies (p.15).

While acknowledging a 'mixed picture', the 2023 WEF Insights Report concludes:

Global macro trends and disruptions create an ever-more complex environment for policy-makers, employers and workers to navigate, and uncertainty and volatility remain high... Thus, while, in early 2023, pessimistic predictions regarding the jobs impact of the green transition and generative AI dominate the media headlines, these areas have also been identified as some of the largest drivers of future job creation... . (W)e hope that this report will contribute to an ambitious multistakeholder agenda to better prepare workers, businesses, governments, educators and civil society for the disruptions to come, and empower them to navigate these social, environmental and technological transitions (p.61).

Clean energy in Australia

The Clean energy sector in Australia consists of a variety of businesses large and small across a range of 16 identified technologies (to date). According to the Clean Energy Council and documented in its 2021 publication *Empowering Everyone: Diversity in the Australian Clean Energy Sector*⁹ it

remains a masculine world, with more than 60 per cent of the workforce identifying as men. The representation of women drops further as we focus in on senior leadership roles or board positions (p.9)

The clean energy workforce is described as a 'mature' workforce with the majority of workers aged between 30-49 given its reliance in skills and experience (p.12) and 68% born in Australia (p. 13). The participation of First Nations peoples in its workforce (0.8%) is mainly in small scale renewable energy sector, mostly as sole traders or in organisations that employ less than 20 staff (p.11). While LGBTIQ+ representation in 2021 was 13% of the workforce (p. 11) that of people with disability was only 3% (p.15). When investigating workforce diversity in the clean energy sector, 19% of employees reported having experienced disadvantage at work due to their 'diversity'.

The key themes that emerged when clean energy employees were asked about how their working lives may have been affected by their 'diversity' is reported in *Empowering Everyone: Diversity in the Australian Clean Energy Sector*:

The top concern relates to sexism. Women in the clean energy sector experience different forms of bullying and harassment, and it is not uncommon for a woman to

⁹ Clean Energy Council (CEC) (2021), *Empowering Everyone: Diversity in the Australian Clean Energy Sector*. CEC, Australia <https://www.cleanenergycouncil.org.au/resources/resources-hub/empowering-everyone-diversity-in-the-australian-clean-energy-sector>

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feel that they have been ignored or excluded on discussions where they had a contribution to make. Some women feel that they have been overlooked for promotion or that they are expected to carry out higher duties for lower salaries than their male counterparts.

Other issues relate to:

- workplace entitlements, particularly around parental leave, which are not always applied equitably in non-traditional family settings such as same-sex couples
- ageism, which was felt by some employees, particularly talented young employees commenting that older colleagues are given priority for promotion despite performing at a lower level of competency
- language and visa status, particularly at the recruitment stage, which were highlighted as bases for discrimination
- caring duties, for both children and adults, which were noted as rationales for employees being excluded from projects (p.16).

This information is both significant and useful, as it illustrates that many of the barriers to be investigated by JSA as 'equity issues' are in fact known and as we contend well researched. This is further justification of the need for JSA to embed equity related aspects across the whole study from an early stage, rather than rely on yet more work on barriers to suffice as accounting for equity requirements.

The Clean Energy Council of Australia advises in its report *Skilling the energy transition*¹⁰ that the Australian energy sector is preparing for a 'period of extraordinary growth and development as Australia accelerates towards a fully clean energy power system and positions itself as a global clean energy superpower' (p.2). The Council advises that careers across Australia's clean energy sector are varied and multiple, with a workforce that it divides broadly into large scale renewable energy careers¹¹ and careers in small scale renewable energy ventures¹² indicating an industry wider and more diverse than the mainly technical centred in the JSA Discussion paper. To both illustrate and reinforce our concern we cite the Clean Energy Council's description of their industry:

Renewable energy employers include developers responsible for planning, negotiating, and designing new wind, solar and battery farms. Primary and subcontractors are involved in the construction and then operation and maintenance of these large-scale projects in civil, mechanical and electrical occupations. In the small-scale sector, rooftop solar design and installation companies operate at residential, commercial, and industrial sites.

¹⁰ Clean Energy Council (CEC) (2022), *Skilling the energy transition*. Clean Energy Council, Australia. https://assets.cleanenergycouncil.org.au/documents/CEC_Skilling-the-Energy-Transition-2022.pdf

¹¹ Large scale renewable energy careers cover Planning and design (engineers, legal, finance etc), Construction and installation (engineers, civil trades and technicians, machine operators) and Operation and maintenance (engineers, trades & te).

¹² , indicating a scoping of clean energy wider and more diverse Small scale renewable energy careers: Planning and design (designers - engineers or electricians, legal, finance etc.) and Construction, installation, operation & maintenance (electricians, trade assistants, roofers). P.9

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The clean energy sector consists of people working in Australia's capital cities and in regional areas. There are people on the ground, in offices, operating large machinery, at the top of wind turbine towers or underground at hydro power plants. There are people working with wind, water, the sun, and the earth (p.7).

There is a heavy reliance on technical skills, particularly engineers and electricians, in designing, installing, operating, and maintaining Australia's clean energy systems. According to the Clean Energy Council's report *Empowering Everyone: Diversity in the Australian Clean Energy Sector*, more than 50 per cent of employment in renewable energy is in engineering-type roles, including electrical and mechanical trades. Some of these roles are highly specialised, such as turbine or blade technicians for the wind sector, geotechnical engineers for the hydro sector or power system modelers for grid connection. **As systems age over the coming decades, there will also be a requirement for technical people with specific skills that support the recycling and reuse of clean energy systems. Just under half the clean energy workforce is in non-engineering fields, including finance, business, law, IT, sales, agriculture, safety, training, communications, and community engagement** (p.8; Our emphasis).

In addition to this wider conceptualisation of the clean energy industry, the list of 65 existing jobs displayed alphabetically by sector (wind, solar, hydro, battery), whether associated with university education &/or VET as well as demand status (skills adequately met, some shortages & demand not being met consistently with skills shortages in each region) (pp.10-11) rather than reducing the categories highlights the complexity we emphasise in this submission.

In its September 2022 report, *Skills development, and inclusivity for clean energy transitions*¹³, the International Energy Agency (IEA), while focusing on the need for the development of robust inclusive educational and skills programs designed to address the skills development of workforces for energy transitions concurs with the WEF insights:

Ongoing energy transitions and decarbonisation efforts are poised to bring profound shifts in the sector's employment, including massive new opportunities for job creation in clean energy. At the same time, traditional energy sectors will experience declining job opportunities. In most cases, this will require the development of both new programs of education, certification, and vocational training along with targeted upskilling or reskilling programmes for the existing workforce (p.2).

It contends that clean energy transitions will reshape the workforces of today and tomorrow, that training, upskilling, and reskilling programs are essential to support workers (including those seeking 'future skills', those in 'traditional' energy sectors as well as others from non-traditional sectors) during energy transition. Importantly, skills training programs must ensure inclusion for all members of society:

For energy transitions to be truly people-centred, the diversity of the energy workforce must be a paramount consideration in policy and programme design for

¹³ International Energy Agency (IEA) (2022). *Skills Development and Inclusivity for Clean Energy Transitions*. IEA Publications <https://www.iea.org/reports/skills-development-and-inclusivity-for-clean-energy-transitions>

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training and skills development. Women, in particular, are heavily underrepresented in the energy labour force.

This marks a decisive wake-up call for course-correction to ensure that the future energy workforce is more inclusive, gender-balanced, and enabling of equal opportunity compared to the energy sector of today. A number of initiatives are already underway around the world to support this outcome, which target education and skills training programmes to specific groups, notably women, youth and marginalised communities.

Importantly, many of the massive post-pandemic economic recovery plans that are now being implemented around the world could have a transformative impact on increasing equality and diversity in the energy workforce. Many of the programmes prioritise skills training for women, Indigenous populations or other marginalised groups (p.10; Our emphasis)

Selected existing programs and initiatives that embrace inclusive approaches for qualifying workers for a low carbon economy and future clean energy jobs, with examples from Canada, India, South Africa and the EU Skills Agenda are included amongst those highlighted in the IEA report (pp. 12-26). Examples are provided for reskilling and upskilling programs covering skills training for coal workers, workers in oil, gas, and auto sectors (pp.27-43). The IEA report also explicates selected targeted programs for clean energy training that target women, youth and marginalised communities, including one example from Victoria (Growing our clean energy workforce initiative, p.58)¹⁴ (pp.49-59).

A possible strategy for consideration

A future initiative suggested by Xellence Pathways in collaboration with WAVE follows to demonstrate the value it will bring to this work expertise, knowledge and experience in applying a gender equity lens to the emerging clean energy industry:

Xellence Pathways aims to bring industry together to support WAVE and support and drive structural and cultural change in offshore wind, renewable energy, and the underpinning supply chain. It is an opportunistic time, as we are building the industry to address the underrepresentation of women in the energy sector and ageing workforce to provide the necessary support and collaboration.

Through Xellence Pathways, industry leaders will have the opportunity to collaborate and share best practices on how to attract, train, and retain a diverse workforce. The program will focus on industry providing women with the necessary technical and leadership skills to advance in their careers and take on leadership roles in the industry.

Xellence Pathways will work with universities, research organisations, Vocational and Education providers and other stakeholders to develop new programs of education, certification, and vocational training that meet the needs of the rapidly evolving clean energy sector. It will offer

¹⁴ <https://www.solar.vic.gov.au/training-workforce-development>

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targeted upskilling and reskilling programs to help the existing workforce adapt to the changing job market and take advantage of new opportunities in the clean energy sector.

By bringing together industry leaders and other stakeholders, Xellence Pathways aims to create a collaborative and inclusive culture in the energy sector, where women and other underrepresented groups have equal opportunities to succeed and contribute to the industry's growth and development. This aligns with the goals of the International Energy Agency (IEA) as outlined in their September 2022 report, which emphasises the need for skills development and inclusivity to support clean energy transitions and create new job opportunities while addressing the challenges faced by the existing workforce.

In recent years, there has been growing recognition that the workforce needs to change direction to ensure that it is equitable and inclusive for all individuals, regardless of their background, age, gender, ethnicity, or other factors. This includes a focus on creating opportunities for the ageing population, who are often overlooked in discussions about workforce development. To achieve this, industry structures must be adapted to create a more welcoming environment that is attractive to individuals from all walks of life.

One of the key reasons why it is important to create a more inclusive and equitable workforce is that it helps to ensure that everyone has access to the same opportunities, regardless of their age, gender or background. This is important not just from a social justice perspective, but also from an economic perspective, as it enables businesses and industry to tap into a wider pool of talent and helps to drive innovation and growth. At the same time, creating a more inclusive workforce can also help to address skills shortages in certain areas and a better transition into clean energy jobs of the future, as it will encourage a greater diversity of people to pursue careers in industries that may have traditionally been dominated by a particular demographic.

However, achieving a more inclusive and equitable workforce is not something that can be achieved overnight. It requires a concerted effort from employers, industry bodies, policymakers, and other stakeholders to create an environment that is supportive of diversity and inclusion. This may involve a range of strategies, such as providing training and development opportunities for underrepresented groups, establishing more flexible working arrangements to accommodate individuals with caring responsibilities, ageing, and working to eliminate bias and discrimination in recruitment and promotion processes. By taking these steps, it is possible to create a workforce that is more diverse, resilient, and better equipped to meet the challenges of the future. Together Xellence Pathways and WAVE will include gender impact assessments in the policy design processes and structures about education and training and be integral in the build of an integrated Australian Education and Training System that provides flexible and timely lifelong learning opportunities across the lifespan for all Australians.

Green jobs and/or social jobs; STEM and/or STEAM skills?

In January of this year, recognising that 'jobs that support more social inclusion and greater environmental sustainability will be critical to realising ... a vision for (inclusive and sustainable)

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economic growth and development – as will finding the talent to deliver it’ (p.3) the World Economic Forum (WEF) issued a White paper - *Jobs of Tomorrow: Social and Green Jobs for Building Inclusive and Sustainable Economies*¹⁵. It aims both to attempt to quantify the rising need for social and green jobs by 2030 to meet inclusion and climate targets, as well as being “a call to action for governments and businesses to prioritize investment in these jobs, the systems that ensure workers receive fair wages and the skills to thrive in these roles” (p. 3). Sweden, Norway and Denmark were selected as the benchmark countries, as their economies are the top 3 ranked on the WEF’s *Energy Transition Index*.

This WEF *Jobs of tomorrow* Report advises that three foundational social institutions – education, healthcare and care sit alongside each other and:

Form the key building blocks that enable people to create human capital, participate in society and generate economic progress. These, in turn, generate socioeconomic mobility, allowing people to enhance their economic outcomes within their lifetime and across generations. as noted in the World Economic Forum’s Global Social Mobility Index. As demographics transform globally and the world’s population ages and grows, ensuring adequate social infrastructure will require expanded education, healthcare and care systems (p.6)

That education and training are central echoes the findings in WEF’s May 2023 *Future of Jobs* Report that predicts large scale growth in education. It states that ‘jobs in the Education industry are expected to grow by about 10%, leading to 3 million additional jobs for Vocational Education Teachers and University and Higher education Teachers’ and that **‘analytical thinking and creative thinking remain the most important skills for workers in 2023’**, with the former considered a core skill by more companies than any other skill with creative thinking (a cognitive skill) ranking second (p.6; p.38-43¹⁶).

We contend that this is a powerful illustration of complementarity that challenges the ongoing focus in ‘STEM’ skills for jobs in the clean energy and related industries rather than STEAM and obscures a highly gendered discourse. While advising that 6 in 10 workers will require training before 2027 and so access to adequate training opportunities, and of note in pursuing new skills pathways for clean energy ,the Report also notes that the skills reported to be increasingly important are not always reflected in upskilling strategies (p.7).

In its *Jobs of tomorrow* White Paper WEF selected a cluster of 12 categories of ‘green jobs’ for its analysis (p.7) and included a wider range related to ‘clean energy’ than the focus on the JSA Discussion paper. An overview of the number of green jobs (those requiring specific green skills) that comprise unmet need by the economy and sector in 2030 in Australia is detailed (2.2, Table 11, p.14). The WEF advises that if climate targets are to be met, there is also a need for roles to increase from those

¹⁵ World Economic Forum (WEF) (2023b), *Jobs of Tomorrow: Social and Green Jobs for Building Inclusive and Sustainable Economies*. WEF, Geneva. https://www3.weforum.org/docs/WEF_Jobs_of_Tomorrow_2023.pdf

¹⁶ This WEF Insight report contains a lengthy section on skill (Section 4, **Skills Outlook**: Expected disruptions to skills, Core skills in 2023, Skills evolution 2023-2027, Top industries for increasing skills requirements; Reskilling and upskilling priorities in the next 5 years- the evolving skills landscape 2023-2027, Training supply-demand mismatch, supply and demand for skills, Formal education, Sectoral priorities for ‘soft skills’ et al (pp. 36-48) that is highly relevant to the Capacity Study but beyond the scope of this submission to explicate or enlarge on. Similarly, Section 5, **Workforce strategies** (including comment about barriers, DEI and public policies to enhance ‘access to talent’ is both relevant and informative but beyond the scope of our submission in terms of time and size.

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currently associated with green jobs. This is also the challenge for both JSA and education and skills bodies.

The WEF analysis found that each of the 10 countries covered needs a significant boost in the number of social and green jobs. While the JSA Capacity study focuses on Clean Energy, the co-relationship between social and 'green' jobs is something that is outside of the Study's scope so not being overtly considered in an integrated way. Given both the polarity of sex-segregated workforces of both and the opaqueness of the inter-relationship, the action recommended in the WEF White Paper is worth consideration.

It also supports our call for the widening of the scope of the JSA Capacity Study, rather than limiting the focus to what are rapidly becoming outdated understandings and silo-ing of rapidly evolving, cross cutting and inter-related areas of our economy and future skills needs:

Inequality and sustainability are important issues for policy-makers, business leaders and populations globally. This provides an impetus for adequate and targeted investments to expand the social and green sectors and associated jobs, supported by public and private re-employment policies and job-transition support. **In addition, such policies will need to be accompanied by training, upskilling and reskilling initiatives as well as innovative social protection measures to secure livelihoods.**

By quantifying the unmet need, this report aims to serve as a call to action for businesses and governments to invest in social-sector job creation and training, alongside greening all sectors investing in green-skills development and helping prepare industries and the workforce for the demands and jobs of tomorrow (p.20: Our emphasis).

Clean energy in Australia: Policy challenges and commitment for a just transition

The International Energy Agency's (IEA) review - *Australia 2023 Energy Policy Review* notes the positive actions underway to update our nation's climate change and clean energy strategies with the recommendation that we continue to strengthen policies and long-term goals to ensure targets are met:

This report finds that Australia can make sufficient progress on emissions reductions by 2030 to align with the goal of net zero by 2050. However, stronger efforts are needed to improve energy efficiency and boost clean energy investment. A whole-of-government approach is needed to end the country's high reliance on fossil fuels. The IEA review calls for an updated net zero emissions reduction plan for 2050 to guide implementation across all parts of government. A national energy and climate information system is also needed to track progress towards reaching these targets¹⁷.

The IEA Review cites the announcement made by Australia at COP 26 in November 2021 that Australia had joined the Equal by 30 campaign¹⁸ 'as a public commitment to work towards equal pay, equal

¹⁷ International Energy Agency (IEA) (2023), *Australia 2023. Energy Policy Review*. IEA publications.

<https://www.iea.org/reports/australia-2023>

¹⁸ See: <https://www.equalby30.org/> nd, for the campaign, <https://www.equalby30.org/about-campaign>

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leadership and equal opportunities for women in the clean energy sector by 2030' (p.31). It continues, stating that 'The Australian Government has endorsed the campaign's four key public sector principles and is developing tailored commitments outlining the concrete action to accelerate the participation of women in the clean energy sector' (p.31). This is of direct relevance to the content of this submission and is highly significant for the JSA Clean Energy Capacity Study approach and processes and decisions.

The Review notes that while active steps are being taken on reskilling and jobs under the forthcoming National Energy Workforce Strategy, 'Australia's energy transition will **require a whole-of-government just energy transition strategy at both federal and state and territory levels, boosting job opportunities and skills for the transition and securing the social licence to construct and operate the necessary infrastructure**' (p.12, our emphasis). The Strategy will necessarily be 'people-centred' and will require 'a pipeline of highly skilled and diverse workers to support the energy transition' (p.30).

Drawing on recent experiences and best practices from around the world', the IEA Global Commission on People-Centred Clean Energy Transitions has adopted a set of actionable recommendations for governments, industry and citizens, along with a set of Principles for just energy transitions, viz:

- Decent Jobs and Worker Protection
 - Design transitions to maximise the creation of decent jobs
 - Develop tailored government support for communities and workers as well as focus on skills and training
 - Use social dialogue, robust stakeholder and policy coordination to deliver better outcomes.
- Social and Economic Development
 - Ensure that policies enhance social and economic development, and improve quality of life for us all
 - Prioritise universal clean energy access and the elimination of energy poverty
 - Maintain and enhance energy security, affordability and resilience.
- **Equity, Social Inclusion and Fairness**
 - **Incorporate gender, equality and social inclusion considerations in all policies**
 - **Ensure fair distribution of clean energy benefits and avoid the risk of disproportionate negative impacts on vulnerable populations**
 - **Integrate the voices of younger generations in decision making.**
- People as Active Participants
 - Involve the public through participation and communication
 - Use insights from behavioural science to design effective behaviour change policies
 - Enhance impact through collaboration and exchange best practice (p.31).

We contend that these commitments by the Australian Government, and the advice, recommendations and agreed Principles for just energy transitions from the IEA must inform, be integrated into and shape JSA's Clean Energy Capacity Study and the wider Government strategies, policies and practices.

While we recognise the pressure that governments – national and state/territory are and will be increasingly under to put in place as a matter of urgency solutions for the many workers exiting jobs in a number of fossil fuel related , energy and mining companies, the composition of those workforces must not drive the approach required to scope and design sustainable inclusive and equitable education and training pathways into decent work for the broad clean energy/green skills sectors.

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It would appear from ongoing announcements (such as the increase in apprenticeships for 'clean energy') that action is already underway, preceding (and perhaps compromising) the JSA Capacity Study and its positioning in the range of 'complementary policy settings' detailed in the Attachment to the TOR (p.4) to advocate for meaningful positive and proactive change. We sincerely hope this is not the case.

That Australia is a (very) late starter in the development of a comprehensive integrated transition plan for the economy of the future – clean, green and more automated- must not compromise the scope and quality of such a strategy or its component parts to satisfy pragmatic political pressures of the now.

The Gender Pay Gap in the Energy Sector

The Understanding Gender Gaps in Wages, Employment and Career Trajectories in the Energy Sector report¹⁹ utilises matched employer-employee data from the OECD LinkEED project, which combines data from both employers and employees to analyse the impact of the firm on workers' wages and firm-level outcomes. This approach allows for a more comprehensive analysis of the role of worker characteristics such as skills and gender in determining wages and other outcomes.

It supports that women in the energy sector are less likely to remain at a given firm than men, and this trend is not present in the non-energy sector. Detailed insights into the factors influencing gender gaps in wages, employment, and career trajectories in the energy sector. Data shows that women are more likely to leave the labour market than men at all ages in both the energy sector and non-energy sector.

Women employed in the energy sector are much less likely than men to leave for another firm within the sector at all ages, while men advance in their careers by moving to more productive and high-wage firms within the sector. Studies highlights that this trend increases the gender wage gap between firms with age. Moreover, the study shows that a higher share of women are leaving the energy sector for other sectors compared to men, which is the opposite trend observed in the non-energy sector.²⁰

Gender pay gap was further investigated, with the wage gap within firms, by decomposing it into differences in tasks and responsibilities and differences in bargaining and discrimination, following Card et al. The results showed that the bargaining and discrimination component is relatively more important in the energy sector than in the non-energy sector.

This suggests that gender norms and biases of both employers and employees are significant factors in negotiating and setting wages in the energy sector. The distinction between these two components is critical as public and corporate policies to address them may vary. Addressing issues related to recruitment and advancement practices requires policies that focus on the division of responsibilities, while policies that target gender norms and biases are needed to tackle issues related to negotiations and wage-setting.

¹⁹ International Energy Agency. (2020). Understanding gender gaps in wages, employment and career trajectories in the energy sector. Retrieved from <https://www.iea.org/articles/understanding-gender-gaps-in-wages-employment-and-career-trajectories-in-the-energy-sector>

²⁰ International Energy Agency. (2020). Understanding gender gaps in wages, employment and career trajectories in the energy sector. Retrieved from <https://www.iea.org/articles/understanding-gender-gaps-in-wages-employment-and-career-trajectories-in-the-energy-sector>

CURRENT STATE OF GENDER INEQUITY IN THE ENERGY AND ALIGNED INDUSTRY SECTORS

Having described the entrenched gender inequity in current industry settings, the reality is that there is global evidence of the barriers that women face to entering into the clean energy sector.

According to a report by Power Africa²¹, women are underrepresented at all levels of the energy sector. In Africa, for example, women represent only 20% of the workforce in the energy sector, and most of them work in administrative and support roles. In developed countries, the situation is slightly better, but women are still underrepresented in technical and leadership roles. According to a report by the International Renewable Energy Agency (IRENA)²², women make up only 32% of the global renewable energy workforce.

Challenges Faced by Women in the Energy Industry

There are many challenges that women face in the energy industry, including bias and discrimination, lack of role models, and limited access to training and mentorship. A report by the World Bank²³ notes that women entrepreneurs in the renewable energy sector in developing countries face significant challenges, including limited access to finance, lack of information, and cultural barriers. Women in the energy sector also face challenges related to work-life balance, as many roles require long hours and frequent travel.

Cultural and Structural Changes Needed to Advance Gender Equality

To advance gender equality in the energy sector, cultural and structural changes are needed. This includes changing the perception of women in the industry, addressing bias and discrimination, increasing access to training and mentorship, and promoting work-life balance. Companies need to develop policies and practices that promote gender diversity, such as flexible work arrangements, gender-neutral hiring processes, and diverse leadership teams.

World Strategies and Evidence to enable Clean Energy and Transitional Pathways for Women

The transition to clean energy presents an opportunity for women to play a more prominent role in the energy industry. According to a report by the Renewables Consulting Group (RCG)²⁴, the global

²¹ Power Africa. (2019). Gender Diversity in the Energy Sector <https://www.usaid.gov/powerafrica/gender>

²² International Renewable Energy Agency (IRENA) (2019) Renewable Energy: A Gender Perspective <https://www.irena.org/publications/2019/Jan/Renewable-Energy-A-Gender-Perspective>

²³ World Bank. (2019). Breaking the Gender Barrier: Unlocking the Full Potential of Women Entrepreneurs in Renewable Energy in Developing Countries <https://openknowledge.worldbank.org/bitstream/handle/10986/31241/9781464813517.pdf?sequence=1&isAllowed=y>

²⁴ Renewables Consulting Group (RCG). (2020). Offshore Wind Industry Gender Diversity & Inclusion. <https://www.globalwomennet.org/diversity-inclusion-offshore-wind-sector/>

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offshore wind sector could create up to 900,000 jobs by 2030, and women could make up a significant portion of the workforce. The report notes that the industry needs to take steps to attract and retain women, including promoting flexible work arrangements, providing training and mentorship opportunities, and addressing gender bias and discrimination.

The energy sector has traditionally been male-dominated, but there is a growing recognition of the need for greater gender diversity in the industry. To achieve this, cultural and structural changes are needed, along with policies and practices that promote gender equality. The transition to clean energy presents an opportunity to promote gender diversity in the industry, and companies and organisations must take steps to attract and retain women in the sector.

The under-representation of women in senior managerial positions in the energy industry is a long-standing issue, with women comprising less than 14% of senior managers in energy-related sectors (OECD/IEA, 2021)²⁵. However, companies with more women in senior executive roles have been found to outperform those with lower representation. S&P 500 companies with women in senior management above the median had a 30% higher return on equity and a 30% lower earnings risk compared to lower-ranked peers' (IEA, 2021)²⁶.

The IEA has acknowledged the limited data available on gender gaps in the energy sector and has taken on the role of co-ordinator for the Clean Energy, Education and Empowerment International Initiative (C3E international) to improve knowledge and data collection efforts to accelerate progress on diversity and inclusion. The IEA Gender Initiative has also begun collecting better disaggregated data on gender and energy while strengthening methodologies. The IEA has built a composite of energy firms versus firms in other industries to analyse gender diversity in senior management and board membership positions. (IEA, 2021).

It is important for our future energy pathways to share information about the industry, universities, and research organisations to reach younger generations. Providing role models and information on the different opportunities available in the sector is crucial in attracting more women to the industry.

The importance of retaining the talents already working in the sector or transitioning from oil and gas, particularly women, and avoiding patterns that cause women to leave. The energy business is changing rapidly, and novel skills, different kinds of talents, continuous education, and versatility are essential to respond to the needs of a carbon-neutral society.

According to a report by the Renewables Consulting Group (RCG) in partnership with the Global Wind Energy Council (GWEC) and the Global Women's Network for the Energy Transition (GWNENET)²⁷, the offshore wind sector has a significant gender gap, with women representing only 21% of the workforce. The report provides an analysis of the current state of gender diversity in the sector and recommendations for advancing gender equality.

²⁵ <https://www.oecd.org/corporate/OECD-Corporate-Governance-Factbook.pdf>

²⁶ IEA (2021), Women in senior management roles at energy firms remains stubbornly low, but efforts to improve gender diversity are moving apace, IEA, Paris <https://www.iea.org/commentaries/women-in-senior-management-roles-at-energy-firms-remains-stubbornly-low-but-efforts-to-improve-gender-diversity-are-moving-apace>

²⁷ Closing the Gender Gap: Advancing Gender Diversity in the Offshore Wind Sector GWEC | GLOBAL WIND REPORT 2022 <https://gwec.net/wp-content/uploads/2022/03/GWEC-GLOBAL-WIND-REPORT-2022.pdf>

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A report by the International Renewable Energy Agency (IRENA)²⁸ provides an overview of the status of women in the renewable energy sector worldwide and identifies best practices for improving gender diversity. The report found that women represent only 32% of the renewable energy workforce and calls for greater gender diversity to promote a more inclusive and sustainable energy transition.

The World Bank's *Breaking the Gender Barrier* report focuses on the role of women entrepreneurs in the renewable energy sector in developing countries and provides recommendations for improving gender diversity. The report highlights the potential for women to drive the growth of the renewable energy sector while addressing gender inequalities and creating economic opportunities.²⁹

The Energy2Equal program, launched by International Finance Corporation (IFC) in partnership with the Government of Canada in 2019, aims to increase women's participation in the renewable energy sector in Africa³⁰. As part of the program, IFC commissioned a workforce study which found that women are underrepresented in leadership roles and are largely concentrated in corporate support functions. The study recommends that companies take steps to strengthen the talent pipeline for women and embed gender equality in their corporate culture. The report suggests that companies can take steps to improve the talent pipeline for women, including embedding gender equality in corporate culture and improving workplace policies and practices to attract, retain, and promote more women. Enhancing corporate competitiveness, driving innovation, and reducing risk are among the benefits of supporting women to join the ranks of corporate leaders.

The previously quoted report from Power Africa³¹ emphasises the need to promote women's leadership and participation in the sector to achieve a more inclusive and sustainable energy future.

Finally, the *Women in Wind: The Untapped Potential* report by the Global Wind Energy Council (GWEC) and the Global Women's Network for the Energy Transition (GWNET) provides an analysis of the gender gap in the wind energy sector and recommendations for advancing gender equality. The report highlights the untapped potential of women in the wind energy sector and calls for greater efforts to promote gender diversity and inclusion.³²

²⁸ International Renewable Energy Agency (IRENA) (2019) Renewable Energy: A Gender Perspective <https://www.irena.org/publications/2019/Jan/Renewable-Energy-A-Gender-Perspective>

²⁹ World Bank. (2019). Breaking the Gender Barrier: Unlocking the Full Potential of Women Entrepreneurs in Renewable Energy in Developing Countries <https://openknowledge.worldbank.org/bitstream/handle/10986/31241/9781464813517.pdf?sequence=1&isAllowed=y>

³⁰ Women's Participation in The Renewable Energy Workforce in sub-Saharan Africa: Identifying Barriers and Opportunities for Women as Leaders & Employees https://www.ifc.org/wps/wcm/connect/region_ext_content/ifc_external_corporate_site/sub-saharan+africa/resources/womens_participation_in_the_renewable_energy_workforce_in_sub_saharan_africa

³¹ Power Africa. (2019). Gender Diversity in the Energy Sector <https://www.usaid.gov/powerafrica/gender>

³² *Women in Wind: The Untapped Potential* Global Wind Energy Council & Global Women's Network for the Energy Transition, 2019.

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Will Gender Inequity be baked into the Clean Energy Industry? Current Industries and inequity JSA has mapped current industry and role classifications to inform the basis of jobs and roles that the clean energy sector can utilise.

The legacy sectors that are being drawn from to plan Australia's Clean Energy industry is gender segregated.

Based on the mapping and the description of the envisaged clean energy workforce as outlined in the paper, this means that JSA's mandate for a sharing of the workforce opportunities is, significantly limited and if this is not recognised and addressed, any modeling and planning will in fact 'bake in' inequity.

To demonstrate, our analysis of gender using the 2021 August Australian Bureau of Statistics analysis of Major ANZIC Classification Groups shows that all but Administrative and Support Services is male dominated.

ANZIC Name	% Women
Mining	16.30%
Manufacturing	27.10%
Electricity Gas Water and Waste Services	28.90%
Construction	12.50%
Transport, Postal and Warehousing	28.90%
Administrative and Support Services	65.80%
Professional Scientific and Technical Services	47.60%

ABS, *Labour Force, Australia, Detailed August 2021*

Unfortunately, many of the classifications do not disaggregate much further than the major classification. However other evidence and research provides us further evidence of the segregated labour markets that JSA have identified as key to the establishment of the Clean Energy sector – specifically;

- The ABC reported in 2018 that across the mining sector in Australia 'women comprise only 4.5 per cent of technicians, 11.1 per cent of machinery operators and drivers, and 13 per cent of labourers'³³.
- We also note that according to the Australian Human Rights Commission's 2010 report *Women in Mining: Examining the Gender Composition of the Mining Workforce in Australia*, sexual harassment was a significant problem in the industry, with 25% of women respondents reporting that they had experienced sexual harassment at work. The report also found that women were less likely than men to report incidents of sexual harassment, with only 10% of women reporting incidents to their employer.
- In addition to this, the Workplace Gender Equality Agency (WGEA), tells us that the gender pay gap in the Australian mining industry was 14.2% in 2020, based on full-time total

³³ Connell, C., & Cloughton, D. (2018, May 22). *Women in Mining: Dig the changing face of Australia's mining industry*. Retrieved from ABC News: <https://www.abc.net.au/news/2018-05-22/dig-the-changing-face-of-mining-as-women-make-inroads/9786020>

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remuneration. This means that women working full-time in the mining industry earn on average 14.2% less than men in equivalent roles.³⁴

- According to the *2022 Gender Insights* report from the Workplace Gender Equality Agency and Bank West Curtin University, the manufacturing industry added some \$1200.00 to the overall gender pay gap in Australia in 2020-2021 with construction sector adding '\$2,100 (8%) to the national gender pay gap'.³⁵
- According to UNSW report on the Australian Construction industry 'Men dominate senior 'technical', operational careers, while women congregate in junior, support roles and non-fee-earning professions such as human resources and marketing. Early enthusiasm by women about construction professions and their future careers in the sector decreases with increased exposure to the workplace as they experience relative disadvantage and inequality in pay, development and promotional opportunities compared to their male counterparts (Dainty et al., 2000). These experiences take their toll with women leaving the construction professions almost 39% faster than their male colleagues (APESMA, 2010).'³⁶
- According to Engineers Australia,³⁷ 'women constitute 16% of Australian engineering graduates – and only 13% of the engineering workforce with significantly less girls and young women considering it as a careers option due to poor perceptions "it is mainly seen as male-dominated and challenging" and lack of support for girls to do STEM pathways.
- Internationally the energy sector is male-dominated 'and its workforce continues to be unrepresentative of the population and workforce at large'³⁸ with globally '76% fewer women than men working in the energy sector... (and globally)... women working in the sector earn 15% less than men, even when controlling for skill level'.

While JSA's Discussion Paper maps the current jobs and job roles across industries to the potential future clean energy sector, the reality is that without understanding the lived experience of this sector on women, and how to address it, any reform and planning will continue to disadvantage and discriminate against women, due to the fundamental barriers that women face to participation in the workforce.

Existing Gendered Participation in Learning³⁹

We also know that the education and training pathways to these jobs also reflect the same gendered nature.

³⁴ Workplace Gender Equality Agency. (n.d.). *WGEA Data Explorer*. Retrieved from <https://www.wgea.gov.au/data-statistics/data-explorer>

³⁵ Duncan, A., Mavisakalyan, A., & Salazar, S. (2022). *Gender Equity Insights 2022: The State of Inequality in Australia*. BCEC|WGEA Gender Equity Series, Curtin Business School, Bankwest Curtin Economics Centre.

³⁶ APESMA 2010 in Galea, N., Powell, A., Loosemore, M., & Chappell, L. (2018). *Demolishing Gender Structures*. Sydney: University of New South Wales.

³⁷ Engineers Australia. (June 2022). *Women in Engineering: Identifying avenues for increasing female participation in engineering by understanding the motivators and barriers around entry and progression*. Engineers Australia.

³⁸ International Energy Agency (IEA). (2022, August 8). *Gender and Energy Data Explorer: Detailed data on gender gaps in the energy sector in employment and wages, senior management, entrepreneurship and innovation*. Retrieved from IEA: <https://www.iea.org/data-and-statistics/data-tools/gender-and-energy-data-explorer?Topic=Employment&Indicator=Gender+wage+gap+conditional+on+skills>

³⁹ ABS, Education and Work, Australia (May 2022) [Education and Work, Australia, May 2022 | Australian Bureau of Statistics \(abs.gov.au\)](https://www.abs.gov.au/education-and-work)

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As recently as the 10th of November 2022, the Australian Bureau of Statistics released data on engagement in work and/or study⁵. At a headline level it tells us that of the 14.5 million Australians that were engaged (partially or fully) in work and or study (15-74 years):

- 71% of men were fully engaged in work and/or study.
- 50% of women were fully engaged.

More women (16.8%) than men (14.6%) were enrolled in study (again 15 to 74 years) and notably of those enrolled in non-school qualification, more women than men studied in degrees (Bachelor Degrees 39.7% women to 38.3% men; post graduate degrees 20.6% women to 16% men) and diploma/advanced diploma levels (12% women to 11.6% men) with more men (27%) studying at Certificate III and IV level than women (17.8%) This gendered segregation is even more pronounced when one considers that overall there is a relatively even split between men and women with a non-school qualification (between the ages of 15-74 – 63.1% men and 63.3% women). Interestingly of all people with education:

- Women aged 15-74 hold more bachelor degrees than men – 35.2% women to 28.8% men
- Men aged 15-74 years hold more certificate/Diploma/Advanced Diploma (32.7% men) than women (26.6% women)

What is also powerful to understand through the ABS release is that the education of women is not translating through to well-paid secure work. We can see this in through the Labour force status by non-school qualifications.

- Women with Bachelor level more likely to work part time (26.1% women to 11.4% men), are more likely to not be in the labour force (19.1% women to 13.1% men)
- Women with qualifications “below bachelor level (AQF 3 4 and 5 to 6) are much more likely to work part time than men (32.3% women to 11.2% men) and are much more likely to not be in the labour force (25.6% women to 17.3% men)

The ABS also notes that ‘442,000 people were studying for a non-school qualification in a science, technology, engineering or mathematics (STEM) field. Almost three-quarters (73%) of current STEM students were men.’ And further that ‘While 82% of architecture and building students were men, reflecting the overall STEM trend, 73% of all students studying for a non-school qualification in health were women.’

In addition to this, the ABS release also noted that of the 297,00 people ‘aged 15-74 years were employed as apprentices or trainees (including school-based apprentices or trainees) 75% were male’.

Australia’s Skill System reflects, reinforces, and reproduces our gendered workforce.

The recent submission provided by WAVE and Gender Equity Victoria to the Senate Inquiry into Jobs and Skills Australia highlights evidence about how our skills system perpetuates inequity and our gendered segregated labour market.

On the latest NCVER Figures we can see that men overwhelmingly occupy ‘trade’ qualifications:

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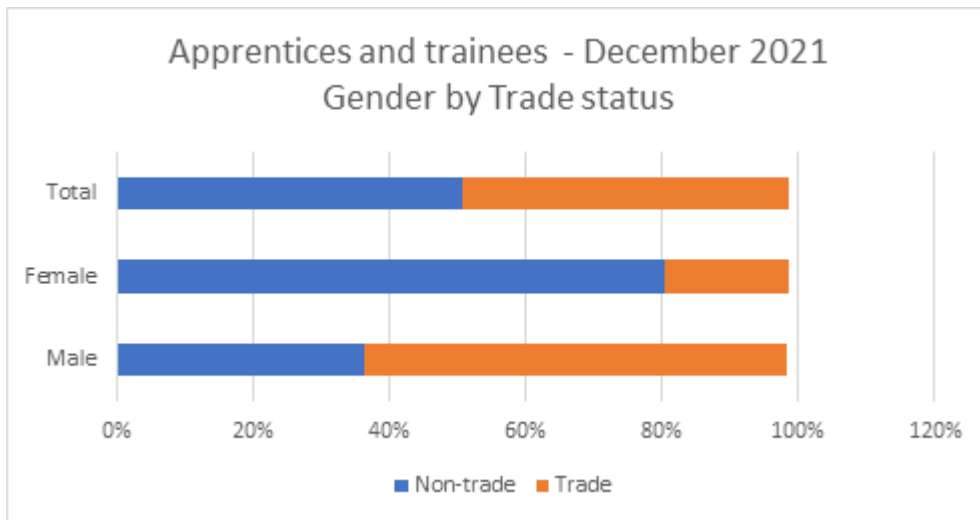


FIGURE 1 NCVER APPRENTICES AND TRAINEES - DECEMBER 2021 X GENDER X VOCSTATS

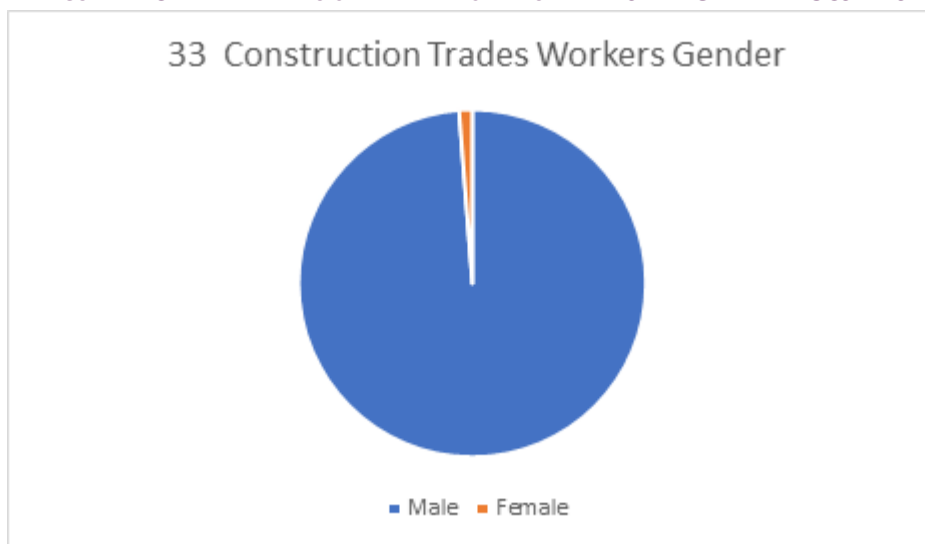


FIGURE 2 NCVER APPRENTICES AND TRAINEES - DECEMBER 2021 (OCCUPATION (ANZSCO - NTIS) GROUP BY GENDER - 33 CONSTRUCTION TRADES VIA VOCSTATS

And women in the Carer and Aide courses:

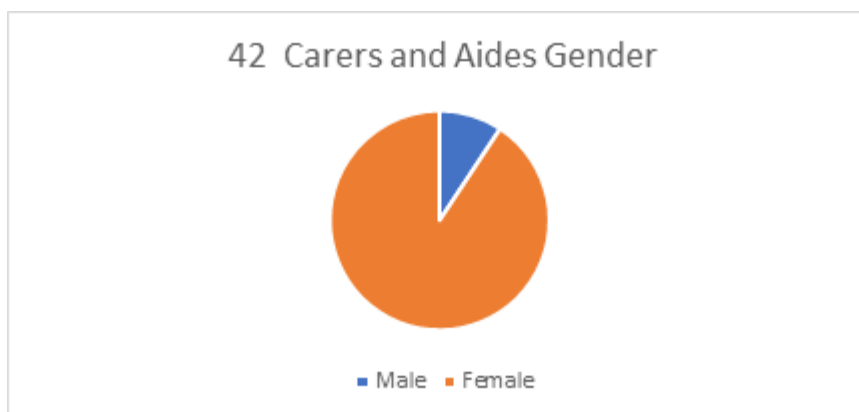


FIGURE 3 NCVER APPRENTICES AND TRAINEES - DECEMBER 2021 OCCUPATION (ANZSCO - NTIS) GROUP BY GENDER 42 CARERS AND AIDES

These both reflect the prevailing industry and occupational job segregation as reported by the Australian Bureau of Statistics where Health care and social assistance had the highest proportion of

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women (77.9%) whereas Construction had the highest proportion of men (87.3%).⁴⁰ In addition the following graph shows the **percentage of women and men employed in two of the most gendered industries** – Health care and social assistance (feminised) and Construction (male-dominated) over the last 5 years. By reading the data with a gender lens, we can compare how segregated the sectors are, noting the intransigence in this segregation over that time period.

Percentage Comparison of Male vs Female Employment: Construction and Health Care & Social Assistance Sectors 2016-2020

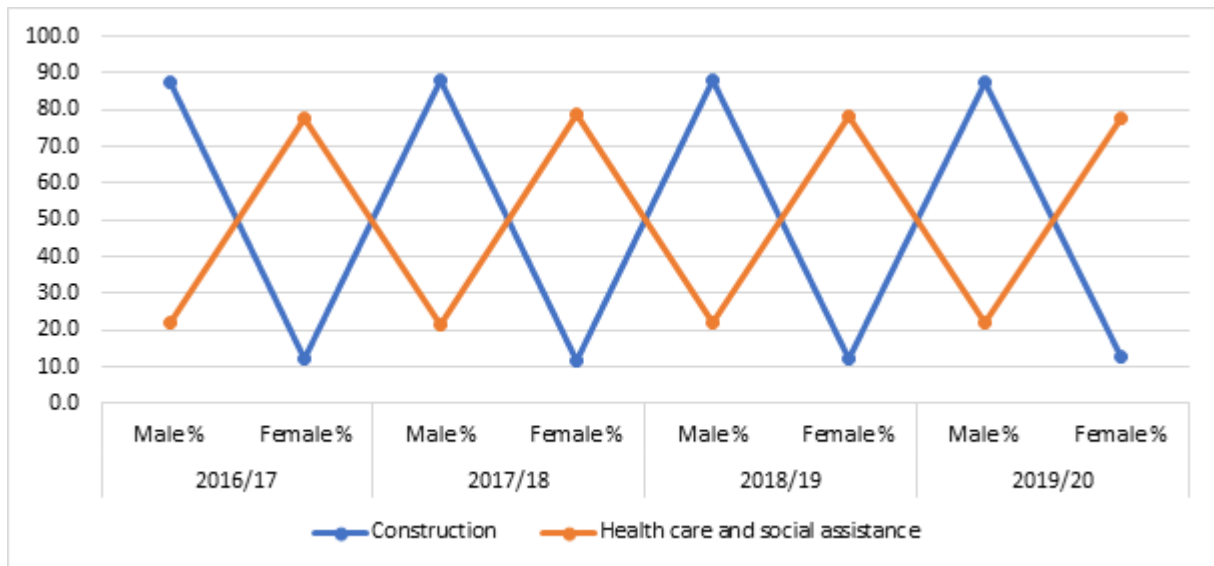


FIGURE 4 EMPLOYMENT BY INDUSTRY. TAKEN FROM ABS CONSTRUCTION SECTOR AND HEALTH CARE & SOCIAL ASSISTANCE SECTOR⁴¹

Experiences of learning and work

The reasons for the barriers to gender equitable participation are well known and range from structural and systemic barriers to cultural and behavioral barriers.

The perpetuation of this gender segregation lies in discrimination, and structural inequity and if this is not addressed as part of the plan and recommendations provided by JSA, then again, the mandate will not succeed. The evidence of this discrimination as reflected in the pay gap, gender-based workplace violence, and ongoing entrenched levels of women's participation are regularly reported.

Women in Trades

The learning and workplace experience for those people whose gender is the minority of a sector/industry perpetuates inequality.

For instance – women in male dominated trades do not experience safe, equitable workplaces or learning pathways.

⁴⁰ Australian Bureau of Statistics (current), Gender indicators, Canberra: ABS website. [Gender indicators | Australian Bureau of Statistics \(abs.gov.au\)](https://www.abs.gov.au/statistics/people/people-and-communities/gender-indicators-australia/latest-release#key-seriesand-indicators)

⁴¹ Australian Bureau of Statistics (current), *Gender indicators*, Canberra: ABS website. <https://www.abs.gov.au/statistics/people/people-and-communities/gender-indicators-australia/latest-release#key-seriesand-indicators> .

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The WA 2022 Report into Sexual Harassment in the FIFO workforce in the WA Mining Sector⁴² tells stories of:

- A woman while working for a contractor had a near-miss incident with a haul truck she was driving. She informed us the site supervisor told her he would make the safety investigation 'go-away' if she had sex with him. This same woman says she was told she would have to 'get on her knees' if she wanted to get 'her shirt' – this meant a permanent job with the mining company.
- One woman told how she was knocked unconscious in her donga and awoke to find her jeans and underpants around her ankles. 'I felt sick, ashamed, violated, dirty and very confused', she said.
- Another told that a man forced his hand down her top numerous times in front of other workers and no one did anything.
- One woman told of a supervisor telling her of sexual jokes and comments being made about her by others. She became upset and the supervisor's response was to force himself on her, kissing and hugging her.

From RMIT 2020 Report for the Victorian Government on Women in Construction⁴³ we know that the attitudes to female workers in construction are negative and discriminatory. The report quotes from the lived experience of women and cites their voices including:

'Being asked to give an opinion and then having it dismissed.'

'Customers thinking you don't know what you are doing.'

'I wouldn't be able to make it and that I should get a 'girls' job' ',

'Belittling, assuming I know nothing.'

'Often people will address a male in my presence, even when I'm superior to that worker and that worker cannot answer anyway.'

The RMIT report also tells of a female worker describing how information relevant to the progression of her role was withheld because she was female, and that she was not an accepted member of the workplace:

'I've walked up to someone I didn't know very well and he's kind of a guru. He had more tickets and more qualifications than anybody in our depot. There was this tricky piece of equipment, so I walked up to a small group of them, and I said, 'What's this?' I was curious as to this new equipment that we were installing. His response was 'Secret men's business'.

⁴² Western Australia Parliament Legislative Assembly (2022). *Community Development and Justice Standing Committee, Report 2 'ENOUGH IS ENOUGH' Sexual harassment against women in the FIFO mining industry*. Perth: Western Australia Parliament.

[https://www.parliament.wa.gov.au/Parliament/commit.nsf/\(Report+Lookup+by+Com+ID\)/EF1DF1A3F5DF74A848258869000E6B32/\\$file/20220621%20-Report%20No%202.pdf](https://www.parliament.wa.gov.au/Parliament/commit.nsf/(Report+Lookup+by+Com+ID)/EF1DF1A3F5DF74A848258869000E6B32/$file/20220621%20-Report%20No%202.pdf)

⁴³ Holdsworth, S., Turner, M., Scott-Young, C.M., & Sandri, K. (2020). *Women in Construction: Exploring the Barriers and Supportive Enablers of Wellbeing in the Workplace*. RMIT University, Melbourne. <https://researchrepository.rmit.edu.au/esploro/outputs/report/Women-in-Construction-Exploring-the-Barriers-and-Supportive-Enablers-of-Wellbeing-in-the-Workplace/9921970128201341>

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The broader evidence of women in male dominated trades constantly tells us of the ‘hostile environment’⁴⁴ and prevailing culture that is a significant barrier to retention. The Australian Sex Discrimination Commission identified that gendered workplace violence is a major reason why women leave these male dominated sectors along with ‘targeting and victimising women who raise complaints about these incidents’.⁴⁵

Mistreatment of Female Apprentices

Similarly, discrimination and harassment of female apprentices is prevalent.

Not only do significant number of women in male dominated trades experience harassment but also, young women. The Fifth National survey on Sexual Harassment in Australian Workplaces tells us that disproportionately young people experience harassment at rates significantly higher than the total population. Whereas 33% of the total population experiences harassment for those 15-17- 47% have experience sexual harassment – and 18-29 - 46%.⁴⁶

RMIT’s report identifies a consistent theme in its research that the persistence of consequence free behaviour results in the mistreatment of female apprentices⁴⁷ and cites research from 2017 that demonstrates the connection between ‘male dominated industries’ and ‘tolerance of bullying, particularly apprentices’⁴⁸ and from 2009 that spoke of the need to improve support and ‘responsiveness to complaints about workplace discrimination are considered essential for enabling tradeswomen to succeed in their careers’.⁴⁹

We know from feedback to TWA, that there is a need to make the workplace/site safer for apprentices, particularly women.⁵⁰ Key stakeholders and members advise that, apprentices do not feel safe in their work due to:

- Risk to losing job if they have to take extended time off – particularly for parental or care requirements (a particular risk to women) It was noted that construction industry and project plans are often based on a minimum of 50 to 60 hours of work per resource per week. This expectation and norm of work hours alienate 51% of the potential workforce to this sector.
- Poor behaviours on the worksite where, often, bullying and harassment is more than common, it is condoned and encouraged through unconscious bias
- Persistent sexual harassment in the workplace and poor recognition that a healthy respectful environment is good for all workers.

In January 2022, the Queensland Training Ombudsman provided a report to the state’s Minister for Employment and Small Business and, Minister for Training and Skills Development on *support provided Apprentices and Trainees, with a focus on female apprentices in male dominated occupations*. This review included an analysis of existing literature on the matter and found that “trade occupations are traditionally the domain of males” and “the percentage of women in these occupations has remained

⁴⁴ ibid

⁴⁵ ibid

⁴⁶ Australian Human Rights Commission 2022 *Time for respect: Fifth national survey on sexual harassment in Australian workplaces*

⁴⁷ Holdsworth, S 2020 p7

⁴⁸ Jones et al 2017 in Holdsworth, S. 2020 p 14

⁴⁹ Shewing 2009 in Holdsworth, S. 2020 p18

⁵⁰ Feedback to Consultation undertaken by Tradeswomen Australia and National Association for Women in Construction (NAWIC) in preparation for their submission to the Australian Government, for “Australian Apprenticeship Support Services”.

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relatively unchanged since 1988”⁵¹ further, the analysis identified a set of key challenges consistent with symptoms of gendered drivers of inequity driven by gendered stereotypes of work and skill. These include:⁵²

overcoming societal and cultural norms

lack of female role models

lack of engagement through familial and social networks

despite numerous STEM programs on offer, there is a view that school curriculums do not encourage female participation in trade-based classes or work experience

employers that are resistant to employing female tradespeople

workplace cultures that support and condone workforce bullying

lack of or ineffective human resource policies and practices to respond to workplace bullying

lack of appropriate facilities on worksites

The report also goes onto identify the segregation of male and female apprentice completion rates across different sectors.

⁵¹ Queensland Training Ombudsman *Review of support provided to Queensland Apprentices and Trainees, with a focus on female apprentices in male dominated occupations 2022*

⁵² *ibid*

RECOMMENDATIONS

To create a diverse and inclusive workplace that attracts and retains talented women, promotes equal pay and career opportunities, and ultimately contributes to the success of organisations and the rapidly evolving energy sector, we make the following recommendations to JSA for its clean energy workforce capacity study.

That:

1. Make equity the core of the plan to build capacity for Australia's Clean Energy industry, so the needs of the industry sustainably occur over the next 10, 20 and 30 years and better workforce planning and development can occur that addresses the barriers to education and workforce participation.
 - 1.1. Further to this, JSA should amend its terms of reference so that equity is not a siloed component of the capacity planning, but rather a core foundation across all parts of the work, to broaden opportunities for the workforce, not, reduce them
2. To broaden the suggested definition of 'Clean Energy' for the capacity study to accommodate its makeup as a composite industry with a diversifying workforce. This is necessary so as not to restrict or silo the transforming industry and its future workforce into present day paradigms that negate the interconnected nature of the clean energy 'industry', its growing need for future (transversal) skills and the multiple learning pathways into the industry's workforce. A wider definition is also required to accommodate the reality of the learning journey for many in our community who do not have access to, or face structural and systemic barriers to explicit, continuous, resourced learning and employment pathways Draw from and build upon the existing research and evidence base on equity, and intersectional gender equality rather than rely on more work on barriers to participation in work and learning, to suffice as accounting for equity requirements.
3. Integrate the IEA's recommendations and agreed principles for just energy transitions to inform and shape JSA's Clean Energy Capacity Study and the wider Government strategies, policies and practices.
4. All data that goes into planning for the future workforce should be segregated by gender and other intersectional barriers to learning and workforce participation, to reveal the opportunities to address inequity in the future clean energy workforce. Workforce Planning decisions and forecasts consider equity across all components of the Clean Energy Sector's composition.
5. Consideration be made to labour supply chains to the Clean Energy industry and the capacity that they have to either disrupt or risk equality outcomes or enable them within the Clean Energy Industry.
6. Ensure an equitable and inclusive process for identifying skills needed for the industry and each developer, experienced and skilled organisations in equity, the sectors and workforce planning (such as Xellence Pathways) should be employed and well funded to:

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- 6.1. Ensure diversity in the team conducting the study: The team should have a diverse representation of gender, race, age, ethnicity, and other backgrounds to bring different perspectives to the table. Advisory Committees and working groups must include persons with equity and gender equity expertise.
- 6.2. Collect, utilise and publish disaggregated data on workforce skills and gender. Data should be disaggregated to identify any gender gaps in the current workforce's skills.
- 6.3. Analyse gender gaps in the current workforce's skills: The data collected should be analysed to identify any gender gaps in the current workforce's skills. This analysis should include identifying any barriers or biases that may have contributed to these gaps.
- 6.4. Engage with stakeholders including women in the industry, to identify the skills needed for the clean energy sector's existing and evolving workforce including its developer workforce.
7. The development of inclusive training programs based on the analysis of the gender gaps and stakeholder engagement and incorporating an inclusive STEAM approach, that provide opportunities for women to acquire the relevant and timely skills needed for the clean energy sector's existing and evolving workforce including its developer workforce.
8. JSA build a business case for gender equality and equity in Australia's Clean Energy Industries that is used as the basis of national workforce planning. This business case must be specific to the industry, use compelling data (quantitative and qualitative), and be understood by key stakeholders.
9. Workforce Development Plans for Australia's Clean Energy Industry need to transparently address and drive accountability to enable gender inequity in the Clean Energy industries. Key workforce metrics should be analysed and reported by gender as standard business practice with risks to equity routinely assessed and mitigated.
10. Programs to develop the workforce must include both promotion and engagement of women to the sector AND, cultural change of the sector, particularly given the legacy industries that are being drawn upon to build the industry.
11. Address gender imbalances in the workforce by implementing policies and practices that promote diversity and inclusion in recruitment and hiring processes, including outreach to women in STEM/STEAM fields and creating opportunities for mentorship and networking. Develop strategies to actively recruit and retain women in the workforce, including outreach to women's groups, creating job descriptions and requirements that do not unnecessarily exclude women, and implementing programs and initiatives that support diversity and inclusion in the workplace.
 - 11.1. Implement training and mentoring programs to provide women with the skills needed to succeed in the energy sector, including technical skills, leadership and management skills, and opportunities for career development. Develop and implement training and mentoring programs that address the specific needs and challenges faced by women in the energy sector. This could include training in technical skills, leadership and

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management skills, and providing opportunities for career development and advancement.

- 11.2. Encourage women to remain in the energy sector by providing opportunities for career advancement, such as promotion and lateral moves to higher-paying positions, as well as providing family-friendly policies that allow for flexible work arrangements. Develop and implement policies and programs that support women's career advancement, such as providing opportunities for promotion and lateral moves to higher-paying positions and implementing family-friendly policies that allow for flexible work arrangements such as telecommuting, flexible work hours, and on-site childcare.
- 11.3. Provide women with opportunities for career development, such as leadership and management training, networking opportunities, and mentoring programs. Develop and implement programs and initiatives that provide women with opportunities for career development, such as leadership and management training, networking opportunities, and mentoring programs.
12. Create a workplace culture that supports diversity and inclusion, including promoting women to leadership positions, recognising and rewarding employees who support diversity and inclusion, and fostering an environment that values and respects differences. Develop and implement policies and practices that promote a culture of diversity and inclusion and safe workplaces, including promoting women to leadership positions, recognising and rewarding employees who support diversity and inclusion, and fostering an environment that values and respects differences among employees.
13. Funding and industry workforce planning policies for Australia's Clean Energy sector fully embed equality and equity as central to implementation of any reform, rather than have equity as a standalone or add on to the reform and planning.
14. Address the gender wage gap by conducting regular wage audits to ensure that there is no discrimination in pay based on gender. This should include analysing wage differentials by occupation, skill level, and years of experience. Conduct regular wage audits to identify and address any disparities in pay based on gender. This could include analysing wage differentials by occupation, skill level, and years of experience, and taking steps to address any disparities found.

-END