





# WOMEN IN CLEAN ENERGY

## KNOWLEDGE, GAPS & OPPORTUNITIES

Technology Collaboration Programme on Clean Energy, Education and Empowerment IEA MINISTERIAL MEETING SIDE EVENT, 7 November 2017

### women in clean energy

## THE C3E TCP GOALS



The Clean Energy, Education and Empowerment (C3E) Programme was created in 2010 as an initiative of the Clean Energy Ministerial (CEM) to enhance international collaboration and promote the leadership and participation of women in the clean energy transformation. In 2017, a decision was taken to organise the C3E's activities as an IEA Technology Collaboration Programme (TCP). This provides a strong foundation to the work and provides additional visibility to the C3E TCP's work globally. As a TCP, C3E joins a network of 6 000 experts participating in the **Energy Technology Network (ETN**), which engages in energy research and development, and can assist with the development of best practice sharing to support the goals of C3E. The 38 TCPs operating today involve nearly 300 public and private organisations in 53 countries.

The C3E TCP has four areas of focus:

Data collection 💶 💶 Awards programmes

- Career development 
  Dialogue
  Dialogue
- process of joining C3E.
- engagement of energy ministers.
- **Each C3E TCP** participating country is expected to take meaningful their own national contexts.





The C3E TCP will enable stakeholders from around the globe to gather scientific knowledge, share ideas, host events, and exchange views on how to increase knowledge about women in clean energy and implement concrete actions to improve diversity in the energy sector. It was formally established as a TCP in June by founding members Canada, Italy and Sweden. Several additional countries are in the

The C3E TCP offers broad visibility and leverages the high-level political

action to advance women in clean energy and close the gender gap in

## <u>MAPPING THE STATE OF GENDER</u> **IN THE CLEAN ENERGY SECTOR**



relies on the ability to attract and retain a diverse pool of talent capable of bringing fresh perspectives. Many countries have recognised the importance of harnessing all talent and closing the gender gap, noting that greater gender equity brings economic and social benefits to all.

However, the energy industry remains one of the most gender imbalanced sectors. Women make up substantially less than half of the workforce across the energy sector and continue to be underrepresented in leadership positions. Closing the gender gap is not only a moral and social imperative, but makes good sense for business, as studies show that diverse organisations perform better.

Currently, there is only limited gender-disaggregated data for the clean energy sector and there is limited knowledge about how to make the sector more gender equal. To remedy this data gap and help advance women in this sector, the C3E TCP seeks to collect and develop consistent, reliable data measuring women's participation in clean energy.

The C3E TCP's founding participants, Canada, Italy and Sweden, are launching this effort by preparing this overview of the gender issue globally and in their respective countries, based on available data.





### **POWER AND INFLUENCE**

## IIN THE PUBLIC SECTO

Women are key drivers of innovative and inclusive solutions. According to the United Nations (UN), there is established and growing evidence that women's leadership in political decision-making processes improves them.<sup>3</sup> Women are more likely to work across party lines through parliamentary women's caucuses – even in the most politically combative environments – and champion issues of gender equality.<sup>4</sup>

> When one woman is a leader, it changes her. When more women are leaders, it changes politics and policies.<sup>5</sup>

Michelle Bachelet,

Women's representation in energy policy is limited, across all levels of leadership. In a 2013 analysis of

### 72 countries, only 4 countries

(6%) worldwide had female ministers overseeing national energy policies and programmes.<sup>6</sup> Of the **39 countries** invited to the 2017 IEA Ministerial, the percentage was still low (10%) with only **4** women in the top jobs.

Share of female energy-related ministers in the European Union (2017)

Share of female energy-related ministers in the C3E TCP countries (1976-2017)



1. European Union, EU Who is Who: Official Directory of the European Union, 2017.

 Canada: Minister of Natural Resources Canada: 2 of 11 ministers have been female since department created in 1997; Minister of Energy, Mines and Resources (1976-1995): 2 of 12 ministers were female between 1976-1995; Minister of Environment and Climate Change Canada: 6 of 23 ministers have been female between 1976-2017; Italy: Ministry of Economic Development: 1 of 31; Ministry of Education, University and Research: 9 of 31; Ministry for the Environment, Territory and Sea: 2 of 31; Sweden: Minister of Energy: 4 of 15.

3. UN Women, In Brief: Women's Leadership and Political Participation. 4. Inter-Parliamentary Union (2008), Equality in Politics: A Survey of Men and Women in Parliaments. 5. WIP/The World Bank, The Female Political Career, 2015.

6. USAID/IUCN, Women at the Forefront of the Clean Energy Future, 2014.





President of Chile

A study by the European Institute for Gender Equality (EIGE), found that in 2011 women hold about 25.6% of high-level decision-making positions in the environment, transport, and energy sectors. The research also found that women's participation is higher in the environmental sector than in energy and transport, and the same holds true for parliamentary committees on these topics.

### 기기위로

Women's leadership in the corporate sector results in improved business performance.

Studies show that the number of women on boards across many sectors is minimal. Women are also underrepresented in senior leadership roles in the energy sector. The absence of women at the top means a loss of talent, ideas and innovation where they are needed the most.

Based on a survey of 90 renewable energy companies worldwide, women represented an average of 35% of the workforce (IRENA, 2016), a share greater than in the traditional energy sector, but lower than in the broader economy. There are currently 9.8 million renewable jobs globally - a number that could rise to 24 million by 2030 (IRENA, 2016); women are essential to filling this demand, and can help support the growth of the clean energy sector as a major global economic driver.

Ernst & Young's (EY) Women in Power and Utilities (P&U) Index tracks the number of women in the boardrooms of the world's largest utilities in revenue terms. In 2016, women made up only 16% of P&U boards, a rise of just 1% over three years. At this rate, it would take as long as 42 years to reach a level of 30% women on boards, and 72 years to attain 40%.

The study also highlights that having more women on boards makes good business sense and improves the bottom-line. Welldocumented evidence shows the links between the presence of more women on the board and increased profitability, return on investment and innovation.





A study investigating more than 1 500 companies found that having more women on their board of directors led to more investment in renewable energy and greater consideration of environmental risks in their financial decision making

(McElhaney, 2012).7

In the BRICS countries (Brazil, Russia, India, People's Republic of China and South Africa) and "the next eleven" countries9, narrowing the gender gap in employment could increase income per capita as much as 14% by 2010, and by 20% in 2030, according to research by Goldman Sachs.<sup>10</sup>

7. IRENA, Renewable Energy and Jobs Annual Review 2017.

- 8. Woolley, A. W et al. (2010), "Evidence for a collective intelligence factor in the performance of human groups", Science Magazine, 29 October 2010, 330 (6004), pp. 686-688.
- 9. N11 Countries or the Next 11 Countries refers to a group of eleven countries Bangladesh, Egypt, Indonesia, Iran, Mexico, Nigeria, Pakistan, the Philippines, Turkey, South Korea, and Viet Nam - which have emerging markets that could potentially become some of the world's largest conomies. Goldman Sachs (12 May 2015), N-11 Equity Portfolio (www.goldmansachs. com/gsam/docs/funds international/ brochures and sales aids/fund literature/advisor brochure n-l1 en.pdf). 10. Goldman Sachs (2008), Global Economics Paper No. 164: Women Hold up Half the Sky.
- 11. Canada: Data from Osler, Hoskin and Harcourt's 2016 Diversity Disclosure Practices report. Data is extracted from 130 energy companies (oil and gas; utilities and pipelines; clean technology) listed on the Toronto Stock Exchange (TSX) that are subject to the diversity disclosure requirements, www.osler.com/en/resources/governance/2017/2017-diversity-disclosure-practices-report-women; Italy: The data for Italy refers to the most representative state-owned energy compared to the most representative state-owned Sweden (processed by the Swedish Energy Agency).

This map is without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries, and to the name of any territory, city or area





A study by the MIT Center for Collective Intelligence analysed group decision making and found that greater diversity, including more women, leads to better decision making. The study drew on the fact that women are sometimes stronger at reading non-verbal cues and ensuring that everyone's voice is heard.8





Sources: Data compiled by the C3E TCP countries.<sup>11</sup>

(ENEL, ENI, GSE, TERNA, ACEA, A2A, HERA); Sweden: Swedish Companies Registration Office, Infotorg and Statistics

## WOMEN IN SCIENCE, TECHNOLOGY, **ENGINEERING AND MATH FIELDS (STEM)**



Gender gap in science: Women as a share of total reserchers, 2013 or latest year available



■ 0% to 30% ■ 30.1% to 45% ■ 45.1% to 55% ■ 55.1% to 70% ■ 70.1% to 100% ■ Data not available This map is without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries, and to the name of any territory, city or area.

Data in this map are based on headcounts (HC), except for Congo, India and Israel which are based on full-time equivalents (FTE). Data for China are based on total R&D personnel instead of researchers. Data for Brazil are based on estimations. Data for Australia, Canada and the United States are not available from UNESCO and hence are sourced from Elsevier, Gender in the Global Research Landscape, 2017. This report used as a proxy for researchers, authors who have published articles, reveiws and conference proceedings that have been indexed in Scopus, Elsevier's indexing and abstracting database. Sources: UNESCO Institute for Statistics, October 2015 and Elsevier 2017.

Attracting more women to pursue higher education in STEM fields will expand and diversify the pool of skills and talents and is crucial to boosting innovation in the economy.

Women make up substantially less than half of the workforce in STEM fields and across the clean energy sector. They are less likely to enrol in STEM education or take up technical positions due to biased views of gender roles.<sup>12</sup> Isolation, male-dominated work environments, ineffective executive feedback, and a lack of support are factors pushing women to leave science, engineering and technology jobs.<sup>13</sup>

The C3E TCP seeks to both inspire more women to enter into clean energy careers and also to retain the current female clean energy workforce. Without engaging women, countries are leaving half of the potential energy workforce out of the talent pool, hampering the current and future STEM-driven economy and economic growth.

12. IRENA, Renewable Energy and Jobs Annual Review 2017. 13. Sylvia Ann Hewlett and Laura Sherbin with Fabiola Dieudonné, Christina Fargnoli, and Catherine Fredman, (2014), Athena Factor 2.0: Accelerating Female Talent in Science, Engineering & Technology, Center for Talent Innovation.

Averaged across regions, in 2014 women accounted for less than a third (28.8%)of those employed in scientific research and development (R&D) across the world.14

Preliminary data collected from C3E TCP countries confirm that, despite the high level of education of women in new technologies and science, the glass ceiling to career progression still exists.

14. UNESCO Institute for Statistics (2015), UIS Fact Sheet: Women in Science. 15. OECD (Italy and Sweden 2014, Canada 2013), Data related to science, mathematics and computing, and engineering, manufacturing and construction, Bachelor's or equivalent level (ISCED2011 level 6) and Master's or equivalent level (ISCED2011 level 7), http://stats.oecd.org/viewhtml.aspx?datasetcode=EDU\_GRAD\_FIELD&lang=en#.



Women represent 52% of the world population, but make up only 30% of science researchers globally, according to the United Nations.



Source: Data compiled by the C3E TCP countries.<sup>15</sup>

## LEADERS IN THE CLEAN ENERGY FIELD



Working in a male-dominated sector such as energy can be challenging, but nonetheless very rewarding. Overall representation of women in the sector is poor – particularly in the clean tech start-up industry, which results in less diversity of ideas. Senior leadership should be recruiting, championing, and taking the same risks with women as they do with men in this industry to create a more inclusive culture.

Annette Verschuren, Chair and CEO of NRStor Inc., Canada.



Innovation, sustainability and digitization are the key enablers of the transition to a clean energy world. The potential of technology innovation and network digitization is enormous, in terms of contribution not only to reaching decarbonization targets, but also to stimulating employment opportunities. In addition, we will see as a result an increased representation of women in the energy sector, in roles and positions which have traditionally been occupied by men. Without doubt, a greater predominance of women in the sector requires a structured, long-term plan, with education at its heart. We have to encourage women to build their careers in the STEM disciplines, fighting off the prejudices they face. Only through a cultural and educational shift will we be able to achieve equal rights, not only in the energy sector, but across the whole economy and society.

Patrizia Grieco, Chairman of ENEL S.p.A., Italy.



Why do you care about ensuring (gender) diversity in your organisation? - A diverse organisation reflects better the world we are acting in and creates an improved working atmosphere. It also broadens the recruitment base when looking for new talent. How is Vattenfall working with attracting more women to the company? - By showing that we have gender diversity in top management and by making sure that we have at least one female candidate in all new recruitment processes





Magnus Hall, CEO of Vattenfall, Sweden

## DID YOU KNOW?

### women in clean energy



Companies in Chile, Ghana and Papua New Guinea have noticed that when women are the ones operating heavy mining equipment, such as trucks and excavators, the machinery is better maintained and operating costs are lower.

According to the law 120/2011, in Italy all listed companies must reserve one third of the board of directors positions for women (significantly called, in Italian, "quote rosa", i.e. "pink quotas").<sup>16</sup>

A Manifesto for women's workplace gender equality was recently presented by Sandra Mori, Coca-Cola's General Counsel for Europe and President of Valore D, the first Italian association of large companies that promotes women's leadership. The pronouncement was signed by **160** companies, including the main energy companies, to defeat gender inequality and promote female workforce participation, especially for top-management positions.<sup>18</sup>

When the Swedish Energy Agency began to think about which researchers were portrayed in their Energy magazine and the importance of also showing that there are women in energy research, the proportion of women portrayed in the magazine increased from **33%** (2003-13) to **62.5%** (2013-16).<sup>21</sup>

**Amplification** is a practice that ensures female voices are being heard. Once a woman in the room makes a key point other women (or men) can repeat it, giving credit to its author.

The education system does not always encourage women to work in the energy sector. A career test for high school students recommended that a girl become a hairdresser. When changing the gender in the test, she was advised to become an electrician.

16. Italian Parliament, Law 120/2011 http://pariopportunita.formez.it/sites/all/files/L120%2012.07.2011.pdf.

- 19. https://engineerscanada.ca/diversity/women-in-engineering/30-by-30.
- 20. Report from the National Electrical Safety Board of Sweden, Mapping of electrical installers and professionals
- 21. Ola Westberg, Press contact Swedish Energy Agency
- 22. Sovacool, B. (2014) "What are we doing here? Analyzing fifteen years of energy scholarship and proposing a social science research agenda". In Energy Research and social science 2014:1, pp. 1-29



### "#WhereAreTheWomen?"

Over **1 100 male** academics, researchers, and NGO representatives have signed a pledge **to not be** part of male-only panels in recognition that public discourse is improved by better gender balance.<sup>17</sup>

> Engineers Canada has a goal to raise the percentage of newly licensed women to 30% by the year 2030.19

There are nearly 41 000 certified electrical installers in Sweden. Only about 150 are women.<sup>20</sup>

Did you know that less than 16% of authors publishing in energy journals are women?<sup>22</sup>

17. Bloomberg (2017), "Respond to All-Male Panels", www.bloomberg.com/view/articles/2017-04-18/how-women-should-respond-to-all-male-panels. 18. Corriere della Sera (2017), http://static.valored.it/ storage/documents/sala-stampa/Corriere della Sera - Manifesto Valore D.pdf.







### FOR MORE INFORMATION ON:

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HOW TO JOIN THE C3E TCP: C3E-TCP@IEA.ORG

> ON THE C3E TCP: WWW.IEA.ORG/TCP/ CROSS-CUTTING/C3E/