## ENERGY TRANSITION SKILLS PROJECT REPORT

## STUDENTENERGY

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## **EXECUTIVE SUMMARY**

The Energy Transition Skills Project was developed by Student Energy in partnership with Ørsted to explore what is most important to young people when looking for employment and what barriers they face to entering the energy transition jobs labour market. By understanding the needs and aspirations of young people, the project aims to provide insight to young people, organizations, companies, governments, and other energy actors on how they can advance youth skill development and employment. Young people will be crucial actors in addressing the growing labour and skills shortages seen in the energy transition jobs market. This project aims to answer the following key research question:



STUDENT **ENERGY** 

### HOW CAN ENERGY ACTORS ALIGN WITH THE NEEDS AND ASPIRATIONS OF YOUNG PEOPLE TO MEET THE ENERGY TRANSITION'S WORKFORCE DEMANDS?

The project was launched in August 2022 and began with a literature review to understand current research on youth needs and aspirations related to employment, and to understand the future energy transition jobs market. An online survey was then conducted to gather the perspectives of young people between the ages of 18-35 on what is most important to them when looking for a job and what barriers they face to employment related to the energy transition. The outreach process was supported by various industry stakeholders and Outreach Partners, who are youth organizations and groups that supported Student Energy with outreach by sharing the survey with their communities. As of the publication of this report, the survey has collected 1811 responses from 93 countries around the world.

This report shares findings from the literature review and survey, including global, regional, and demographic insights and includes feedback on these results shared by stakeholders during consultation sessions. Using these findings, the report also outlines recommendations for both youth seeking jobs in the energy transition as well as various energy actors on how they can support youth skill development and employment. Additional information on the project's methodology and other materials related to the project can be found at the end of the report.

<sup>1</sup>For the purpose of this project, an energy transition job is employment that supports the energy transition. It can be within the energy sector or outside the energy sector, but all or some work responsibilities would contribute towards advancing the energy transition in some capacity.

## HIGHLIGHTED GLOBAL FINDINGS

- Youth respondents most commonly ranked Purpose of work (19.9%) as most important when looking for a job, followed by Opportunities for growth (14.8%) and Salary and compensation (13.8%). When ranking their top three priorities when pursuing a job, 44.5% of respondents chose Purpose of work, 44.4% chose Salary and compensation, and 42.3% chose Opportunities for growth.
- The majority of respondents (68.4%) think it is necessary to have a Science, Technology, Engineering, and Math (STEM) background to work on the energy transition.
- The most commonly selected barriers that respondents face to employment are: lack of awareness about existing job opportunities (47.6%), lack of available entry-level positions (46.0%), and lack of access to skills training (44.9%).
- 43.8% of respondents who received post-secondary education feel that it did not prepare them to pursue a career that advances the energy transition or were unsure how helpful their education was.
- The majority of respondents believe that skills training programs would help them learn the skills necessary to pursue the jobs they are interested in (64.8%). The second most common answer was internships, co-ops, or work-learn opportunities (54.8%).

## RECOMMENDATIONS

#### **FOR ENERGY ACTORS**

- To close emerging labour and skills gaps, employers in the energy transition sector must align job opportunities with the priorities of young people (purpose of work, salary and compensation, and opportunities for growth) to further support their interest in the sector.
- Educational institutions, employers, and other energy actors can make it clearer what skills and knowledge is necessary for young people to enter a career that advances the energy transition.
- As educational institutions may be slow to adapt to the skill needs of the energy transition, employers can help to close the education and skills training gap by making more entry-level positions available to youth, and developing youth skills training programs, ideally with the participation of youth.
- To ensure that the energy transition and subsequent labour transition is inclusive globally, employers must develop strategies to support diverse youth to enter the energy transition workforce by considering common barriers such as education gaps, citizenship restrictions, and discrimination.

#### **RECOMMENDATIONS FOR YOUTH**

- Youth should first seek to identify their career interests and values to align with labour needs and understand what kind of job opportunities in the energy transition they might be interested in.
- Recognizing that work on the energy transition requires many different kinds of skills and expertise, youth can reflect on and more clearly articulate the transferable skills they already have, and how they can apply them to work related to the energy transition.
  - To learn more about what opportunities exist to be directly and indirectly involved in the energy transition, youth should actively reach out to people in jobs and industries they are interested in to learn more about what skills are needed for different roles, how these professionals got to that point in their career, and how youth themselves can learn these skills.
- As advancing the energy transition requires all communities, sectors and industries to play their part, youth should advocate for energy transition skills development opportunities and training in their community, at their post-secondary institution and/or at their workplace, when possible.

This literature review aims to explore the workforce needs of the growing low-carbon energy sector, particularly in areas where the skills gap is widening, and to understand the extent to which young people can fill sectoral demand and establish careers in the energy sector. The purpose of this research project is to understand the barriers youth face in entering clean energy jobs, and to provide insights to public and private organizations on how to best support youth in entering the energy transition workforce. We believe **this research will be pertinent for energy sector employers, governments, educational institutions, and youth-serving organizations that support youth employment and capacity-building.** This report will also provide young people who wish to enter the energy transition jobs market with a better understanding of the actionable steps they can take when pursuing a job in this field. For the purposes of this research, we define youth as being between the ages of 18 and 35.

Findings from this paper carry important benefits for organizations and employers to better understand how they can improve hiring and retaining young people, and to develop a diverse workforce that represents and is accessible to youth, Indigenous communities, Black communities, people of colour, women, and other historically marginalized communities. Governments will also benefit from this research, as it will help to inform social policies that supports youth employment, removes barriers to energy transition jobs, and ensures labour demands are being met to deliver on climate and energy commitments. By better understanding the needs of young people and the barriers they face, youth-serving organizations and educational institutions will be able to develop resources and programs that will better prepare youth to enter the workforce, thus strengthening the capacity of workers new to these roles.

As the world moves towards a more sustainable energy future, we believe there will be an increase in energy transition jobs for youth to fill that are needed to meet global climate and energy commitments. The overall goal of this project is to answer the following research question: What are the workforce needs of the growing energy transition jobs sector and how can young people fill these needs and establish careers that support the transition? To inform our research and highlight the existing research gaps that we can address on this topic, Student Energy's literature review considers the following questions:

### WHAT DOES EXISTING LITERATURE SAY ABOUT CURRENT ENERGY AND LABOUR MARKET TRENDS AND THE SKILLS NEEDED TO MEET LABOUR DEMAND?

### WHAT DOES EXISTING LITERATURE AND RESEARCH SUGGEST ABOUT THE NEEDS AND DESIRES OF YOUTH WHEN SEARCHING FOR EMPLOYMENT?

Drawing upon a number of existing reports, news articles, commentaries, and stakeholder interviews on the topics of the growing skills gap, labour shortages, and talent needs within the context of the energy transition jobs sector, we identified that existing research on these topics fails to address the question of how young people can meet labour demands in the growing clean energy sector. The reports and articles featured in our literature review focus on the widening skills gap in the energy transition jobs sector and their findings as they relate to the needs of youth entering the market. Assessing the above questions in the context of the outlined benefits to stakeholders provides a basis for understanding the unique challenges faced by the low-carbon energy sector as it expands, as well as avenues for employers to address these specific challenges while also engaging with the perspectives of young people entering the clean energy transition workforce.

### QUESTION 1: WHAT DOES EXISTING LITERATURE SAY ABOUT CURRENT ENERGY AND LABOUR MARKET TRENDS AND THE SKILLS NEEDED TO MEET LABOUR DEMAND?

Overall, existing research and literature that the team reviewed aligns with Student Energy's assumptions about the future of the sector based on our work in the field and with youth. According to sources that were reviewed, the general trend is that there will be a substantial increase in job opportunities resulting from changes in the energy sector. A commentary by the International Energy Agency (IEA) (2021) notes that there will be an increase in clean energy jobs as the world transitions towards a cleaner global energy system. According to the IEA's Net-Zero Emissions (NZE) Scenario, an estimated 14 million new jobs will be created in the energy sector while 5 million could be lost in the fossil fuel industry by 2030 (Cozzi & Motherway, 2021). The authors dive deeper into job projections and add that clean energy industries would need 16 million workers, resulting in a total of over 30 million jobs being created in low carbon technologies by 2030 (Cozzi & Motherway, 2021).

The United Nations Environment Programme's Global Trends in Renewable Energy Investment report (2020) report further outlines that "governments and companies around the world have committed to adding some 826 gigawatts of new non-hydro renewable power capacity in the decade to 2030" (McCrone et al., 2020, p. 11). This will consequently require skilled labour to meet these commitments, especially in developing countries that have made significant investments into renewable energy technologies. According to the report, developing countries had committed to investing \$152.2 billion in renewable energy in 2019 compared to developed countries that had committed to \$130 billion (McCrone et al., 2020, p. 11). The idea that certain regions may experience more rapid growth over others aligns with research conducted by the IEA in their World Energy Employment report which notes that "energy infrastructure expansion in Asia Pacific is outpacing other regions" (Chen & Wetzel, 2022, p. 6). This also suggests that particular skills might be needed depending on energy trends and the landscape of certain regions.

An article by Axios Generate and a report from Danish Shipping, Wind Denmark and Danish Energy provide additional insight into workforce projections in the clean energy sector and further supports the idea that the energy sector will see an increase in job opportunities and labour demand. The article interviews the president of the Solar Energy Industries Association (SEIA), who projects the current solar and energy storage workforce of about 250,000 will quadruple and brings up the question of how the sector will find these employees (Geman, 2022). It also reports that the largest increase in opportunities will likely be in construction and installation of equipment such as wind turbines, energy efficiency upgrades, and solar panels (Geman, 2022). In terms of wind power, a report from Danish Shipping, Wind Denmark and Danish Energy that assesses the socioeconomic impacts of offshore wind investments notes that the global offshore wind market has grown about 30% each year between 2010 and 2018 and that 150 new projects will be completed globally in the next five years (Danish Shipping, Wind Denmark and Danish Energy, 2020, p. 9). This is a result of rapid advancements in technology improvement and highlights the importance of offshore wind in power supplies. As the offshore wind industry is projected to increase capacity 15-fold in the next twenty years, the study assesses that labour needs can increase by up to 3.5 million Full Time Equivalents (FTEs) if labour input is about 7.5 FTEs per megawatt (MW) in 2022 (Danish Shipping, Wind Denmark and Danish Energy, 2020, p. 6). The study breaks this down further by including research from the International Renewable Energy Agency (IRENA) (2018) that assesses labour input by profession for a 0.5 gigawatt (GW) offshore wind farm. According to this research, operators have a total assessed labour input of around 467 FTEs per GW, ship crews have around 1,423 FTEs, workers and technicians

have around 3,575 FTEs, engineers have 917 FTEs, outdoor experts have 1,186 FTEs, and indoor experts have 1,882 FTEs (IRENA, 2018, as cited in Danish Shipping, Wind Denmark and Danish Energy, 2020, p. 29 – 30).

While research points to a general upward trend in job opportunities in the clean energy sector, it also highlights that there is a shortage of skilled labour. This is due to a variety of different reasons, including high turnover, competitive hiring environments, and lack of new graduates with the required skills to fill open positions. An article by Rigzone describes that there are more opportunities than skilled workers to meet labour needs, shifting salary expectations (Exarheas, 2022). It also mentions that there is a shortage of employees in the oil and gas industry due to the overall aging of the workforce, early retirement, and workers leaving the industry and moving to other markets experiencing growth. These labour markets include industries such as renewable energy, mining, and life sciences (Exarheas, 2022). This is supported by the International Labour Organisation's (ILO) 2022 Global Employment Trends for Youth that finds employees in the clean energy sector tend to be older (Muro et al. 2019 as cited by Dasgupta et al., 2022, p. 86). The ILO suggests that this will evidently lead to more opportunities for young people as older workers retire, but also highlights the importance of supporting youth in gaining the necessary skills to fill these needs (Dasgupta et al., 2022, p. 86). Overall, the ILO also notes that there are very few countries that collect and analyze age-disaggregated data on employment in green jobs, making it challenging to understand youth employment in green jobs, including energy transition jobs. This information will be important in developing effective strategies and social policies to support youth in working on the energy transition (Dasgupta et al., 2022, p. 78).

In addition to having an older demographic of workers, the energy sector is also largely male-dominated. According to a report prepared by Diversio as a part of Equal by 30, women make up 32% of the energy sector workforce while racial and ethnic minorities make up 22% (Diversio, 2021, p. 5). The IEA also notes that there are significantly more men that work in the energy sector than women and that this gap is twice as large in the energy sector relative to other industries. This research also finds that "wages for

female employees are almost 20% lower than for male employees, with the gap being somewhat greater than in non-energy firms" (Haramboure et al., 2022). This gender wage gap generally increases with age across sectors until the age of 40, however the gap continues to increase with age in the energy sector until about the age of 50. The gender wage gap in the energy sector is due to a number of reasons, including wage structures, access to positions and firms with higher wages, individual bargaining power, discrimination, and an emphasis on networking, all of which puts women at a disadvantage (Haramboure et al., 2022). In addition, findings from Diversio's report share that women of colour, women



with a disability, and women facing mental health challenges face larger barriers in the workplace (Diversio, 2021, p.8). These findings suggest the need for improved equity and inclusion strategies within the energy sector to attract and retain a more diverse workforce, including young women, gender diverse individuals, and youth from minority communities.

In terms of what specific skills are being sought after, the IEA's World Energy Employment Report (2022) highlights that there is a large demand for high-skilled labour as post-secondary education, such as a university degree or vocational certificates, is often required for the sector (Chen & Wetzel, p. 20). The report notes that such advanced skills usually offer higher salaries and that established industries such as oil and gas offer higher wages (Chen & Wetzel, 2022, p. 20). This is supported by other research on skills needed for the future renewable energy sector which notes that both high-skilled employees, which are often professional, managerial roles, and medium-skilled employees, who occupy supervisory or technician roles, with ICT and STEM skills will be needed (Arcelay et al., 2021, p. 4). It also emphasizes the need for interdisciplinary knowledge and skills, such as entrepreneurship, business and customer awareness, finance, legal literacy, self-management, problem solving, and teamwork, as well as other digital and sustainability skills sought after by other sectors (Arcelay et al., 2021, p. 4 - 5).

Existing literature further notes the importance of soft skills that are required to work in the energy sector and in energy transition jobs. Electricity Human Resources Canada (EHRC) has conducted research that looks at the skills of recent Canadian graduates entering the electricity sector from various post-secondary STEM to understand what skills are sought after and what skills gaps exist. The report identifies active listening, speaking, critical thinking, reading comprehension, self-awareness, social perceptiveness, collaboration, time management, judgment and decision-making, and active learning as necessary skills most important to employers in the Canadian electricity sector (Skill savvy: Professional skills needs for Canada's electricity sector, 2020, p. 6). After surveying different employers and educational institutions, EHRC's research found that 70% of respondents felt students and new graduates had gaps in some of these skills that were identified (Skill savvy: Professional skills needs for Canada's electricity sector, 2020, p. 18). This hints at the demand for non-technical skills as well as a disconnect between what skills are needed in the sector versus what skills students are learning. It also speaks to the ill preparation of youth to meet the needs of the sector's labour

Overall, the literature found that there will be an increase in job opportunities as the world advances the energy transition, especially in developing countries and regions that have made significant investments in clean energy technologies. While the number of jobs in the sector is projected to increase, there is currently a shortage of skilled workers due to high turnover, competitive hiring environments, an aging and retiring workforce, and a lack of skilled new graduates. The energy sector also experiences a lack of diversity in its workforce and there is a need to improve diversity, equity, and inclusion strategies. Finally,

market.

there is a large demand for a variety of different skills, including higher level skills gained from post-secondary education, professional and managerial skills, ICT and STEM skills, interdisciplinary knowledge and skills, and general non-technical skills.

### QUESTION 2: WHAT DOES EXISTING LITERATURE AND RESEARCH SUGGEST About the needs and desires of youth when searching for Employment?

We found very few sources that specifically survey the needs and desires of youth looking for employment in the clean energy sector as a whole. Instead, we found sources that discuss the aspirations of young people when looking for general employment, or within specific industries in the clean energy sector, such as electricity. Our research team also reviewed literature that discussed the general perspective of employees working in the energy sector that did not focus on young people. Sources varied in terms of their geographic scope, ranging from being global to regional focuses.

Looking more broadly at the priorities of young people when looking for general employment, the Deloitte Global 2022 Gen Z and Millennial Survey notes that pay was the top reason for why many youth had left their job in the last two years (Deloitte, 2022). In terms of attraction and retention, the report notes that it is important for companies to align with the values of young people and that work/life balance and opportunities for growth within the company were also important to them when choosing an employer. According to survey results, those who were satisfied with their company's social and environmental impact as well as efforts to improve diversity and inclusion in the workplace were more likely to stay in their role for more than five years (Deloitte, 2022).

Research from the Energy Outlook 2021/2022 created by Brunel and Oilandgasjobsearch. com focuses on the oil and gas industry and energy sector as a whole. Key findings from the Energy Outlook 2021/2022 supports insights from Deloitte's research as well as labour trends identified in the first part of this literature review. According to the Energy Outlook 2021/2022 report, the biggest challenges the industry is facing in workforce development are an aging workforce and a consequent skills shortage (Brunel, 2022, p. 8). In addition, it notes that 43% of the workforce is looking to leave the energy sector in the next 5 years with 25% of workers between the ages of 25 and 29 being more likely to leave than older workers (Brunel, 2022, p. 19). Similar to what was found in Deloitte's research, this age group cites personal lifestyle changes, low salary, and lack of good benefits as their reasons for leaving (Brunel, 2022, p. 19). The report also looks at other factors related to attraction and retention in the energy sector, such as prevalence of workplace discrimination and how this might affect employees.

Our research team also reviewed existing reports that looked at specific industries in certain geographical regions. This includes EHRC's Generation Impact: Future Workforce Perspectives (2020) report that surveyed Canadian youth to understand their interest in working in the electricity industry and how the industry can better attract and retain young talent. Similar to the perspectives of global youth outlined in Deloitte's report, Canadian youth prioritize job security and higher salaries. It was also found that young Canadians value the purpose

and impact of their work as well as having a healthy work-life balance (EHRC, 2020, p. 7). In addition, Canadian Millennials and Gen Zs had more positive impressions of the renewable energy sector while nuclear, natural gas, and coal had more negative impressions (EHRC, 2020, p. 12). Overall, the biggest barrier to youth employment in the Canadian electricity industry that the report found was the lack of knowledge and awareness youth had about opportunities and working conditions that exist in the industry (EHRC, 2020, p. 4).

A report developed by Accenture focused on youth aspirations for green jobs in the Asia Pacific region highlights that 77% of young people in the region aspire to work in the green economy in the next 10 years (Casati et al., 2022, p. 2). Similar to sentiments found in Deloitte's and EHRC's respective reports, youth in the Asia Pacific region also view salary as most important in finding a green job while job location and stability were second and third most important (Casati et al., 2022, p. 8). Respondents were also surveyed on their impressions of different industries, similarly to EHRC's research, and results showed that young people were more likely to avoid industries perceived as "having an adverse impact on the environment", such as chemicals manufacturing, mining, energy, and utilities (Casati et al., 2022, p. 15).

Finally, other sources discussed the barriers that youth face in entering the workforce and skill development. A different report by Deloitte focused on how businesses can prepare the next generation of the workforce for the digital industrial revolution notes that some barriers include lack of access to resources, lack of knowledge about what careers are available and therefore what skills are needed, lack of opportunities, lack of tools and training, others' lack of belief in youths' abilities, and other systemic issues (Armstrong et al., 2018, p. 11). The Global Youth Survey conducted also found that 39% of respondents felt their formal education did not provide them with the skills required for the jobs they were interested in (Armstrong et al., 2018, p. 13). This aligns with findings from the ILO's 2022 Global Employment Trends for Youth report which asserts that while many young people are aware of climate issues and the need for an energy transition, their level of understanding varies and is sometimes limited in many countries. As a result, they often do not see green jobs as potential career options due to misconceptions about them and because they have never been presented as opportunities (Dasgupta et al., 2022, p. 78). In Canada's State of Youth Report, Canadian youth reported similar challenges and their perspectives generally align with those of global youth found in Deloitte's and Accenture's reports. In this report, Canadian youth cited lack of access to technology, professional networks, and career development opportunities as barriers to employment (Canadian Heritage, 2021, p. 54). They noted that marginalized youth are especially impacted by these challenges and face unique barriers to skill development and employment compared to the general Canadian youth population, such as discrimination in the workplace (Canadian Heritage, 2021, p. 56).

Existing literature ultimately found that young people are motivated by social impact and that salary, alignment of values with those of the company, opportunities for growth, and job stability are important to them when considering different jobs. Some barriers to young

people's employment include lack of knowledge or misconceptions that they have about job opportunities or about different industries, lack of access to resources, lack of knowledge about what skills are needed, lack of opportunities, and other systemic barriers.

#### CONCLUSION

Overall, the literature review of existing research on labour trends supports our hypothesis that there will be an increase in job opportunities in the clean and low-carbon energy sector. As a result, there is also a growing need for young talent to fill opportunities and address the skills shortage, however the sector is struggling to attract and retain young people. There is also evidence of a widening skills gap as the sector continues to see turnover from an aging workforce and as young people face challenges in acquiring the necessary skills to enter the workforce.

While there is some literature on the perspectives of young people when seeking employment or careers in specific industries, there is a lack of research on global youth perspectives specifically on the energy sector as a whole. On the perspective of youth, the literature suggests that while some young people are interested in pursuing careers in the energy sector, there is more that the energy sector can do to align itself to the needs and interests of young people and to better communicate to them the benefits of working in the sector. In addition, many youth face barriers to skill development and employment that should be addressed to prevent widening the skills gap further.

After confirming labour trends and better understanding the experience of young people when searching for jobs in the energy sector, this literature review shows that there is a need to connect these pieces of knowledge and bridge the gap between employers and young people. Student Energy's research on energy transition skills therefore aims to dive deeper into the barriers that young people face in skills development and employment as well as understand their aspirations and priorities in the context of the energy sector. Findings from this research will inform our recommendations to the private, government, and education sectors on how they can support young people and bridge the skills gap. These findings will also demystify information about energy transition jobs for young people and inform our recommendations to youth on how they can support their own skill building and career development.

## SURVEY INSIGHTS

## **DEMOGRAPHICS**

FIGURE 1. PERCENTAGE OF RESPONSES BY REGION



- The largest proportion of responses comes from Sub-Saharan Africa with 20.1% while the smallest proportion comes from the OECD Pacific region with 3.2%.
- ► The largest proportion of respondents are between the ages of 25-30 (38.5%), followed by those between the ages of 18-24 (35.3%) and those between the ages of 31-35 (26.2%).
- Most respondents received some form of postsecondary education with the most common response being undergraduate education (42.5%).

- 49.4% of respondents identify as men, 48.2% identify as women and 1.6% identify outside of the gender binary.
- 77.1% of respondents live in a large city or suburb near a large city versus 22.7% that live in a small city or town or in a rural community.
- About 68.1% of respondents self-identify as being part of a minority community.

#### SURVEY INSIGHTS

The following table highlights respondents' interest and experience working in the energy transition:

#### TABLE 1. RESPONDENTS' INTEREST AND EXPERIENCE IN THE ENERGY TRANSITION

INTEREST AND EXPERIENCE IN THE ENERGY TRANSITION	TOTAL RESPONSES	PERCENTAGE
I am currently working in the fossil fuel sector	82	4.53%
I am currently working in the renewable and clean energy sector	214	11.82%
I currently work in a job that supports the energy transition	390	21.54%
I want to work in the renewable and clean energy sector, or in a job that supports the energy transition	704	38.87%
I am not interested in working in the renewable and clean energy sector, or in a job that supports the energy transition	167	9.22%
I am interested in work that supports the energy transition, but don't know much about what jobs exist or how to get involved	662	36.55%
I am currently studying in a program related to the energy transition	355	19.60%

### **SUMMARY OF GLOBAL INSIGHTS**



Youth respondents most commonly ranked Purpose of work (19.9%) as most important when looking for a job, followed by Opportunities for growth (14.8%) and Salary and compensation (13.8%). When ranking their top three priorities when pursuing a job, 44.5% of respondents chose Purpose of work, 44.4% chose Salary and compensation, and 42.3% chose Opportunities for growth.

### **TOP THREE PRIORITIES**

## FIGURE 3. JOB PRIORITIES RANKED FIRST, SECOND, AND THIRD MOST IMPORTANT WHEN LOOKING FOR A JOB BY SURVEY RESPONDENTS



- The majority of respondents think it is necessary to have a STEM background to work on the energy transition (68.4%).
- The most commonly selected barriers that respondents face to employment are: lack of awareness about existing job opportunities (47.6%), lack of available entry-level positions (46.0%), and lack of access to skills training (44.9%).
- 56.2% of respondents who received post-secondary education said that it has prepared them to pursue a career that advances the energy transition, whereas 30.2% feel that it did not and 13.6% were unsure.

- 40.1% believe that energy-specific skills and knowledge will be most important or most valued in the energy transition jobs market.
- The majority of respondents believe that skills training programs would help them learn the skills necessary to pursue the jobs they are interested in (64.8%). The second most common answer was internships, co-ops, or work-learn opportunities (54.8%).

#### SURVEY INSIGHTS

FIGURE 4. WHAT DO YOU THINK WOULD HELP YOU LEARN THE NECESSARY SKILLS FOR YOU TO PURSUE THE JOBS YOU ARE INTERESTED IN?



In the open-ended question where respondents could describe anything else about their experiences that may not have been captured by the survey, the most commonly mentioned themes included lack of experience as many internships and entry-level roles require previous work experience and lack of policies and support from governments for youth skills development and employment in the energy transition. Other commonly mentioned themes involved lack of access to opportunities for skill development and employment due to financial barriers, location restrictions, citizenship and language barriers, lack of network, and nepotism. Some respondents who identified as women noted gender inequality and discrimination as barriers.

## **REGIONAL INSIGHTS**

#### FIGURE 5. MOST IMPORTANT PRIORITIES WHEN LOOKING FOR A JOB BY REGION



#### **REGIONAL INSIGHTS**

#### FIGURE 6. BARRIERS TO EMPLOYMENT IN ENERGY TRANSITION JOBS BY REGION







3.9%

0.92%

1.64%

3.45%

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## **EASTERN EUROPE AND CENTRAL ASIA**

**GLOBAL RESPONSES** 

EASTERN EUROPE AND CENTRAL ASIA RESPONSES

FIGURE 7. PRIORITIES RANKED AS MOST IMPORTANT WHEN LOOKING FOR A JOB BY RESPONDENTS IN EASTERN EUROPE AND CENTRAL ASIA



### EUROPE

**GLOBAL RESPONSES** 

**EUROPE RESPONSES** 

FIGURE 8. PRIORITIES RANKED AS MOST IMPORTANT WHEN LOOKING FOR A JOB BY RESPONDENTS IN EUROPE



ENERGY TRANSITION SKILLS PROJECT

#### **REGIONAL INSIGHTS**

## **GREATER CHINA**

**GLOBAL RESPONSES** 

**GREATER CHINA RESPONSES** 

#### FIGURE 9. PRIORITIES RANKED AS MOST IMPORTANT WHEN LOOKING FOR A JOB BY RESPONDENTS IN GREATER CHINA



## **INDIAN SUBCONTINENT**

**GLOBAL RESPONSES** 

INDIAN SUBCONTINENT RESPONSES

#### FIGURE 10. PRIORITIES RANKED AS MOST IMPORTANT WHEN LOOKING FOR A JOB BY RESPONDENTS IN THE INDIAN SUBCONTINENT



ENERGY TRANSITION SKILLS PROJECT

#### **REGIONAL INSIGHTS**

## LATIN AMERICA

**GLOBAL RESPONSES** 

LATIN AMERIC

#### FIGURE 11 PRIORITIES RANKED AS MOST IMPORTANT WHEN LOOKING FOR A JOB BY RESPONDENTS IN LATIN AMERICA



## **MIDDLE EAST AND NORTH AFRICA**

**GLOBAL RESPONSES** 

## FIGURE 12. PRIORITIES RANKED AS MOST IMPORTANT WHEN LOOKING FOR A JOB BY RESPONDENTS IN THE MIDDLE EAST AND NORTH AFRICA



ENERGY TRANSITION SKILLS PROJECT

**REGIONAL INSIGHTS** 

## **NORTH AMERICA**



## OECD PACIFIC

**REGIONAL INSIGHTS** 

**GLOBAL RESPONSES** 

DECD PACIFIC

FIGURE 14. PRIORITIES RANKED AS MOST IMPORTANT WHEN LOOKING FOR A JOB BY RESPONDENTS IN THE OECD PACIFIC



30

### SOUTHEAST ASIA AND PACIFIC



#### **REGIONAL INSIGHTS**

## **SUB-SAHARAN AFRICA**



32

# DEMOGRAPHIC INSIGHTS

#### AGE

TABLE 2. PRIORITIES RANKED AS MOST IMPORTANT WHEN LOOKING FOR A JOB BY AGE GROUP

JOB PRIORITY	18-24	25-30	31-35
INCLUSIVE AND SUPPORTIVE WORK CULTURE	8.98%	8.28%	7.89%
JOB SECURITY	10.39%	11.34%	15.57%
OPPORTUNITIES FOR GROWTH	15.59%	14.53%	14.07%
PERSONAL VALUES ALIGN WITH THE EMPLOYER/COMPANY'S VALUES	10.24%	9.30%	9.81%
PURPOSE OF YOUR WORK AND ABILITY TO MAKE AN IMPACT	21.89%	21.51%	14.93%
SALARY AND COMPENSATION	13.07%	14.83%	13.43%
WORK FLEXIBILITY	8.82%	9.16%	10.02%
WORK/LIFE BALANCE	11.02%	11.05%	14.29%

- Respondents between the ages of 31-35 ranked job security as most important (15.6%) to them when pursuing a job with purpose of work coming in close second (14.9%). Respondents ages 18-24 and 25-30 ranked purpose of your work as most important (21.9% and 21.5% respectively).
- 14.8% of respondents between the ages of 25-30 ranked salary and compensation as most important. Similarly, 30.3% of respondents between the ages of 25-30 selected opportunities not paying enough as a barrier to their employment in the energy transition.
- 40.5% of those between the ages of 18-24 selected mentorship the most as something that would help them to develop the necessary skills to pursue a career in the energy transition. 32.6% of those between the ages of 25-30 and 29.8% of those between the ages of 31-35 selected mentorship.

#### **DEMOGRAPHIC INSIGHTS**

#### FIGURE 17. POST-SECONDARY EDUCATION PREPARATION TO ENTER THE ENERGY TRANSITION JOBS MARKET BY AGE GROUP

46.8% of respondents between the ages of 18-24 selected 'No' or 'Unsure' when asked if their postsecondary education has prepared them with the skills needed to pursue a career in the energy transition. 44.3% of respondents between the ages of 25-30 and 40.0% of respondents between the ages of 31-35 also selected 'No' or 'Unsure'.



### **EDUCATION**

67.4% of those who completed a PhD degree, 66.7% of those who completed trade school, and 65.4% of those who completed a Masters degree felt that their education has prepared them with the skills needed to pursue a career in the energy transition.



## FIGURE 18. POST-SECONDARY EDUCATION PREPARATION FOR THE ENERGY TRANSITION JOBS MARKET BY TYPE OF COMPLETED EDUCATION

## URBANIZATION

#### TABLE 3. PRIORITIES RANKED AS MOST IMPORTANT WHEN LOOKING FOR A JOB BY URBANIZATION

JOB PRIORITY	LARGE CITY	SUBURB NEAR A large city	SMALL CITY or town	RURAL Community
INCLUSIVE AND SUPPORTIVE WORK CULTURE	8.75%	10.23%	5.21%	9.00%
JOB SECURITY	11.76%	11.08%	13.68%	14.00%
OPPORTUNITIES FOR GROWTH	13.99%	11.65%	20.20%	17.00%
PERSONAL VALUES ALIGN WITH THE EMPLOYER/COMPANY'S VALUES	9.52%	11.65%	8.79%	9.00%
PURPOSE OF YOUR WORK AND ABILITY TO MAKE AN IMPACT	20.31%	21.02%	17.59%	20.00%
SALARY AND COMPENSATION	15.45%	11.08%	12.70%	11.00%
WORK FLEXIBILITY	7.97%	12.78%	8.79%	11.00%
WORK/LIFE BALANCE	12.24%	10.51%	13.03%	9.00%

Those living in small cities or towns most commonly ranked opportunities for growth as most important to them (20.2%) whereas those living in large cities (20.3%), suburbs near large cities (21.0%), and rural communities (20.0%) most commonly ranked purpose of work as most important. 15.5% of respondents living in large cities ranked salary and compensation as most important. 31.1% of respondents living in suburbs near a large city, 28.7% of respondents living in large cities, 25.7% of respondents living in rural communities, and 21.9% of respondents living in a small city or town selected opportunities not paying enough as a barrier to their employment in the energy transition.

## **GENDER**

#### TABLE 4. PRIORITIES RANKED AS MOST IMPORTANT WHEN LOOKING FOR A JOB BY GENDER

JOB PRIORITY	MEN	WOMEN
INCLUSIVE AND SUPPORTIVE WORK CULTURE	9.30%	7.62%
JOB SECURITY	12.36%	11.89%
OPPORTUNITIES FOR GROWTH	16.67%	12.59%
PERSONAL VALUES ALIGN WITH THE EMPLOYER/COMPANY'S VALUES	9.30%	10.39%
PURPOSE OF YOUR WORK AND ABILITY TO MAKE AN IMPACT	17.46%	22.75%
SALARY AND COMPENSATION	13.83%	13.86%
WORK FLEXIBILITY	8.39%	10.05%
WORK/LIFE BALANCE	12.70%	10.85%

- 22.8% of women and 17.5% of men most commonly ranked purpose of your work as the most important to them when pursuing a job versus. Opportunities for growth came in close second as most commonly ranked first for men (16.7%) whereas Salary and compensation was second most commonly ranked first for women (13.9%).
- 72.1% of men and 64.8% of women believed it is necessary to have a background in STEM.
- 16.1% of women and 13.6% of men selected discrimination in the workplace as a barrier to their employment in the energy transition.

<sup>2</sup>While data analysis was done on the differences in responses of non-binary and other self-identifying participants, these results are not discussed in this section to avoid drawing conclusions that may not be accurate due to small sample numbers.

## **MINORITY COMMUNITIES**

Youth respondents were asked to identify whether they belong to any of the following minority groups:



#### **PRIORITIES OF MINORITY COMMUNITIES**

Participants were asked about whether they belong to a minority group, as the perspectives of these groups are often underrepresented in conversations about climate and energy. This information provides a nuanced understanding of the difference in perceptions of job priorities, skill development, and barriers to entering the energy transition market based on the participant's background.

#### TABLE 5. PRIORITIES RANKED FIRST WHEN LOOKING FOR A JOB BY MINORITY COMMUNITY

JOB PRIORITY	BLACK	INDIGENOUS	PERSON OF Colour	LGBTQIA2S+	PERSON WITH A DISABILITY
INCLUSIVE AND SUPPORTIVE WORK CULTURE	7.35%	7.60%	8.52%	12.04%	11.76%
JOB SECURITY	9.00%	17.02%	13.35%	10.47%	16.47%
OPPORTUNITIES FOR GROWTH	21.09%	16.41%	10.51%	10.47%	9.41%
PERSONAL VALUES ALIGN WITH THE EMPLOYER/ Company's values	9.48%	10.64%	7.10%	10.99%	7.06%
PURPOSE OF YOUR WORK AND ABILITY TO MAKE An Impact	22.75%	11.55%	21.02%	24.08%	18.82%
SALARY AND COMPENSATION	13.98%	12.77%	17.05%	14.66%	14.12%
WORK FLEXIBILITY	8.29%	11.85%	8.81%	8.38%	12.94%
WORK/LIFE BALANCE	8.06%	12.16%	13.64%	8.90%	9.41%
## TABLE 6. PRIORITIES RANKED FIRST WHEN LOOKING FOR A JOB BY RESPONDENTS THAT IDENTIFY AS A PART OF A MINORITY COMMUNITY AND RESPONDENTS THAT DO NOT

JOB PRIORITY	MINORITY	NON-MINORITY
INCLUSIVE AND SUPPORTIVE WORK CULTURE	8.47%	8.35%
JOB SECURITY	12.42%	11.55%
OPPORTUNITIES FOR GROWTH	15.21%	14.03%
PERSONAL VALUES ALIGN WITH THE EMPLOYER/COMPANY'S VALUES	9.21%	11.01%
PURPOSE OF YOUR WORK AND ABILITY TO MAKE AN IMPACT	19.16%	21.49%
SALARY AND COMPENSATION	14.88%	11.19%
WORK FLEXIBILITY	9.46%	8.70%
WORK/LIFE BALANCE	11.18%	13.68%

- Black youth respondents most commonly ranked purpose of work as most important to them when pursuing a job (22.8%) with opportunities for growth as a close second (21.1%).
- ► Indigenous youth respondents most commonly ranked Job security as most important to them when pursuing a job (17.0%) with Opportunities for growth as a close second (16.4%).
- ▶Youth respondents that identified as people of colour ranked purpose of work as most important (21.0%) while salary and compensation was second most commonly ranked as first (17.1%).
- Respondents that identified as a part of the LGBTQIA2S+ community most commonly ranked purpose of work as first and ranked it as first (24.1%).
- >Youth respondents with disabilities most commonly ranked purpose of work as first (18.8%) and job security was second most commonly ranked first (16.5%).
- Overall, 14.9% of youth respondents that identified as a part of a minority community ranked salary and compensation as first. 11.2% of respondents who do not identify as a part of a minority group ranked salary and compensation as first.

FIGURE 19 BARRIERS TO EMPLOYMENT IN ENERGY TRANSITION JOBS BY MINORITY COMMUNITY



LACK OF ACCESS TO SKILLS TRAINING

- LACK OF AWARENESS ABOUT EXISTING JOB OPPORTUNITIES
- LACK OF AVAILABLE ENTRY-LEVEL POSITIONS
- **DISCRIMINATION IN THE WORKPLACE**
- OPPORTUNITIES ARE NOT PAID OR DO NOT Pay enough
- I HAVE NOT FACED ANY BARRIERS IN PURSUING AN ENERGY TRANSITION JOB
- I AM NOT INTERESTED IN PURSUING AN Energy transition Job
- OTHER
- 51.8% of Black youth respondents and 47.6% of Indigenous youth respondents selected lack of access to skills training as a barrier to employment in the energy transition. 42.1% of youth respondents who do not identify as a part of a minority group selected lack of access to skills training as a barrier.
- 19.0% of Indigenous youth respondents, 18.8% of respondents that identify as a part of the LGBTQIA2S+ community, 18.6% of Black youth respondents, and 18.6% of respondents with disabilities selected discrimination in the workplace as a barrier to employment. 10.6% of youth respondents who do not identify as a part of a minority group selected discrimination as a barrier.
- 37.2% of youth respondents with disabilities selected opportunities do not pay enough as a barrier to employment. 25.4% of youth respondents who do not identify as a part of a minority group selected this answer as a barrier

FIGURE 20. OPPORTUNITIES, TOOLS, AND RESOURCES THAT MINORITY RESPONDENTS BELIEVE WOULD SUPPORT THEIR SKILLS DEVELOPMENT



#### **OTHER INSIGHTS**

80.6% Indigenous youth respondents felt that a STEM background is necessary to pursue a career in the energy transition. 66.0% of youth respondents who do not identify as a part of a minority group felt that a STEM background is necessary.

## SOCIOECONOMIC STATUS

FIGURE 21. POST-SECONDARY EDUCATION PREPARATION FOR THE ENERGY TRANSITION JOBS MARKET BY PERCEIVED SOCIOECONOMIC STATUS



- Youth respondents that ranked themselves lower on the socioeconomic ladder felt that their post-secondary education did not prepare them with the skills needed to pursue a career that advances the energy transition or were unsure how helpful it was. Youth respondents that ranked themselves higher felt that their education did prepare them.
- 75.0% of youth respondents that placed themselves on the second rung of the ladder (at the bottom) selected skills training programs. 47.1% of respondents that placed themselves at the very top of the ladder selected skills training programs.

## **INTEREST AND EXPERIENCE IN ENERGY**

#### TABLE 7. PRIORITIES RANKED FIRST WHEN LOOKING FOR A JOB BY INTEREST AND EXPERIENCE IN ENERGY



- Youth respondents who currently work in the fossil fuel industry ranked job security and work flexibility as most important (both 17.1%) and purpose of work was second most commonly ranked first (14.6%).
- Youth respondents who currently work in the fossil fuel industry felt that a background in STEM is necessary to work on the energy transition the most (81.7%) compared to respondents with other backgrounds and interest in energy.
- Youth respondents who currently work in the fossil fuel industry selected lack of access to skills training the most as a barrier to their employment in the energy transition (54.9%). Those who are interested in working on the energy transition but do not know how to get involved selected lack of awareness about existing job opportunities the most as a barrier (58.3%).
- Youth respondents who currently work in the fossil fuel industry felt that their post-secondary education has prepared them with the skills necessary to pursue a career that advances the energy transition the most (79.7%). Those who are not interested in pursuing a career related to the energy transition felt that their postsecondary education has not prepared them the most (44.0%).
- Youth respondents who currently work in the fossil fuel industry most commonly selected skills training programs as a solution that would help them learn necessary skills (59.8%) while getting a Masters degree was second (40.2%) and internships, co-ops, or work-learn opportunities was third (39.0%). Youth respondents who want a job related to the energy transition selected skills training programs the most as something that would help them learn necessary skills (73.3%).



## RECOMMENDATIONS FOR ENERGY ACTORS

- ř?
  - 1. To close emerging labour and skills gaps, employers in the energy transition sector must align job opportunities with the priorities of young people (purpose of work, salary and compensation, and opportunities for growth) to further support their interest in the sector.
- . Educational institutions, employers, and other energy actors can be more clear about the skills and knowledge necessary for young people to enter a career that advances the energy transition.
- -
- As educational institutions may be slow to adapt to the skill needs of the energy transition, employers can help to close the education and skills training gap by making more entry-level positions available to youth, and developing youth skills training programs, ideally with the participation of youth.
- To ensure that the energy transition and subsequent labour transition is inclusive globally, employers must develop strategies to support diverse youth to enter the energy transition workforce by considering common barriers such as education gaps, citizenship restrictions, and discrimination.

## RECOMMENDATIONS FOR YOUTH

- 1. Youth should first seek to identify their career interests and values to align with labour needs and understand what kind of job opportunities in the energy transition they might be interested in.
- A A
- 2. Recognizing that work on the energy transition requires many different kinds of skills and expertise, youth can reflect on and more clearly articulate the transferable skills they already have, and how they can apply them to work related to the energy transition.
- 3. To learn more about what opportunities exist to be directly and indirectly involved in the energy transition, youth should actively reach out to people in jobs and industries they are interested in to learn more about what skills are needed for different roles, how these professionals got to that point in their career, and how youth themselves can learn these skills.
- 4. As advancing the energy transition requires all communities, sectors and industries to play their part, youth should advocate for energy transition skills development opportunities and training in their community, at their post-secondary institution and/or at their workplace, when possible.





## DISCUSSION

## UNDERSTANDING YOUTH PRIORITIES AND INTERESTS

Results from the Energy Transition Skills Survey show that youth who are interested in energy transition jobs have similar priorities to other global youth looking for employment. Similar to respondents of Deloitte's Global 2022 Gen Z and Millennial Survey, respondents of the Energy Transition Skills Survey also prioritize salary and opportunities for growth. However, 19.9% of respondents selected purpose of work and ability to make an impact while only 11.9% selected work/life balance, which was prioritized by respondents of the Global 2022 Gen Z and Millennial Survey. While the purpose of work was most commonly ranked as most important to respondents of the Energy Transition Skills Survey, it is important to note that overall, 44.5% of respondents chose "purpose of work" in their top three priorities when looking for a job, 44.4% chose "salary and compensation", and 42.4% chose "opportunities for growth".

The open-ended question at the end of the survey provides more insight into what is important to some youth respondents that chose to answer. While results from the survey show that overall, young people are purpose-driven and interested in opportunities to have a positive impact, written answers to the open-ended question note that many youth who chose to answer mentioned having financial difficulties or that opportunities did not pay enough to be able to sustain themselves in current economic conditions. This is also supported by the 44.4% of respondents who selected "salary and compensation" in their top three priorities.

The biggest barriers I have experienced so far with the job search is [finding paid or well-paid positions] for people starting out in their careers, and I don't see this changing rapidly in the foreseeable future unless governments and organizations commit more resources to the energy transition."

**Youth Respondent** 

It is evident through the survey results that young people have varying priorities when it comes to seeking employment. When looking at careers related to the energy transition, young people should reflect on their own personal interests and values that may align with certain job opportunities. The energy transition is a systemic process which will give rise to job opportunities across all sectors and industries that will offer varying benefits and create different kinds of impact. Youth can reflect on this by utilizing resources such as Student Energy's Energy Systems Map, which is a great starting point to learn more about all the components, processes, and issues involved with the energy system and where they can play a role based on their interests. Another resource young people and other job seekers can use to understand themselves better and explore different careers includes the International Labour Organisation's (ILO) guide: How to choose my future profession? A step-by-step guide for job seekers.

This guide provides job seekers with examples of different transferable skills, fields and sectors, prompts to think about values and interests, and guidance on how to create a strategy and plan to find employment (ILO, 2021). One way to start documenting this process is by utilizing Dr. Ayana Elizabeth Johnson's **Climate Action Venn Diagram.** This is a tool that prompts people to think about what brings them joy, what they are good at, and what climate and energy solutions are needed in their local communities. The intersection of these three circles is the 'heart' of one's individual climate action goals, which can be a helpful starting point for young people beginning their climate and energy job search.

When looking to attract and retain young professionals in the energy transition sector, employers in the energy transition sector must align job opportunities with the priorities of young people (purpose of work, salary and compensation, and opportunities for growth) to further support their interest in the sector. Globally, opportunities tailored to young people must offer competitive salaries, opportunities for advancement and professional development, and the ability to create a positive impact that contributes to systems change. Opportunities that offer these benefits should clearly and transparently indicate so in their job descriptions so that this is communicated effectively to youth. This includes sharing compensation, the impact the position will have on contributing to the energy transition and positive social impact, and what programs or opportunities the organization offers for professional development in the job description. Examples of youth-centred opportunities for growth that employers can implement include a young professionals committee to provide young staff with opportunities to lead and share their perspectives on the growth of the organization, mentorship programs that pair young staff with senior staff, or stipends to be used on extra professional development or skills training.

Employers looking to attract young people in specific regions should note how their priorities may be different from those of global youth in order to align their opportunities appropriately. For example, youth respondents in Eastern Europe and Central Asia ranked "work/life balance" as most important (24.1%) while youth respondents in Greater China ranked "alignment on personal values" as most important (15.2%). Understanding differences in priorities based on the region is important for making job opportunities more attractive to young people, especially in regions that have committed significant investments in the energy transition and where jobs are projected to grow exponentially in certain industries.

I think one way in which the renewables sector could become as effective as oil and gas companies in attracting talent is by having clearer and more attractive streams to entry. The fossil fuel community [has] a strong pull both in terms of salary and career progression which the green economy is less effective at promoting.

By providing increase[d] training and skills opportunities prospective entrants would see renewables jobs as being more attractive. Eventually renewables could compete with fossil fuel salaries too."

Differences in youth priorities also exist between age groups, minority groups, and gender. For example, 15.6% of respondents between the ages of 31-35 ranked job security as most important to them when pursuing a job, while 21.5% of respondents between the ages of 25-30 and 21.9% of respondents between the ages of 18-24 ranked purpose of work as most important. In addition, 14.8% of respondents between the ages of 25-30 ranked salary and compensation as most important to them and 30.3% of respondents between the ages of 25-30 indicated opportunities not paying enough as a barrier to their employment in the energy transition. These findings show that priorities may change with age; older respondents may be further along in their careers and are now looking for more job security, while millennials between the ages of 25-30 may be at an age where they are looking for more financial independence and stability. Changing priorities based on age and generation differences is evident in LiveCareer's Different Generations in the Workplace 2022 Study which finds that baby boomers (those born between 1946-1964) prioritize job security whereas Generation Z (those born between 1997-2012) prioritize purpose-driven work and work/life balance (Szczepanek, 2022).

Minority groups also differ in terms of their priorities. While most groups ranked purpose of work as most important, Indigenous youth respondents commonly ranked job security as first. Overall, 14.9% youth respondents that self-identified as a part of a minority community chose salary and compensation as first while 11.2% of those who do not identify as a part of a minority group chose salary and compensation as first. In terms of gender differences, 22.8% of women and 17.5% of men ranked purpose of work as most important. Opportunities for growth came in close second as most commonly ranked first by men (16.7%) whereas salary and compensation was second most commonly ranked first by women (13.9%). Salary and compensation may have been prioritized by minority groups and women due to wage gaps that currently exist across the global economy, as previously discussed in our literature review.

## ALIGNING ON SKILLS DEVELOPMENT FOR The energy transition

The Energy Transition Skills Survey provides interesting insight into the perception that respondents have of the skills and knowledge needed to pursue energy transition jobs. For example, the majority (68.4%) of respondents believe that a STEM background is necessary to pursue a career that advances the energy transition. In addition, 40.1% believe energy-specific skills and knowledge are the most important skill sets to have. While a STEM background and energy skills and knowledge are important, the scale and scope of the energy transition requires skills and knowledge from all backgrounds and in all sectors. This is supported by findings from the literature review that highlight a large demand for high-skilled and diverse labour across the energy sector, rather than in specific industries and fields (Arcelay et al., 2021, p. 4).

As part of our research for this report, Student Energy also conducted consultation sessions with several leading organizations in the energy industry. These consultations yielded insights supporting the survey findings as well. For example, in an interview with Electricity Human Resources Canada (EHRC), they noted that there is a large demographic shift due to older generations retiring that is being seen globally in all industries and sectors. This is resulting in a shortage of workers and therefore a growing need for a variety of skill sets. Young peoplewho now make up more than half of the global population (Khokhar, 2017)– will be crucial in addressing this shortage. However, there is significant competition across all industries to attract and retain young, skilled talent. The Leadership Group for Industry Transition (LeadIT) notes that rather than a specific skills gap, there is more of a conceptual gap regarding the need for a Just Transition and systemic understanding of the energy transition. Ørsted provided similar feedback on respondents believing energy-specific skills to be the most important set of skills needed to pursue an energy transition job. They note that in-demand skill sets are often not energy-specific but are rather more generic, such as having the right level of general literacy and STEM skills. In addition, many professions are becoming harder to enter than they previously were and these generic skill sets are sometimes needed to even get into additional education or training programs, which is a challenge seen in some markets.

I think that it's really difficult to understand how to enter the industry while undertaking an undergraduate degree and which [internships or extracurriculars] would provide the most useful skills to get a job. My understanding is that the industry has been evolving a lot in the past years and therefore so have the skills required for positions in the sector.

Furthermore, it seems very difficult to gain entry into the industry as many jobs I have come across seem to require a high level of relevant education or previous experience while entry level jobs are voluntary positions or [have] low salaries, which I can't afford to take up in this economic climate."

#### **Youth Respondent**

In terms of specific skills that are needed to participate and contribute to the energy transition, young people must understand that the energy transition is a systemic process that requires skills and expertise from all sectors and industries. While there is always room to gain and improve new skills, young people often already have relevant skills needed to start working on the energy transition, but do not realize this as they believe they need specific skills or are unaware of how their skills can be applied. Young people should seek to better understand what kind of energy transition work is in demand in their community and region, and how they can articulate what skills they already have that are transferable to this work. This can be done by doing research on the general labour market in their region to get a sense of what jobs contribute to the energy

transition and what skills are in demand. Young people should also reflect on their past work, volunteer, school, and extracurricular experiences to identify what knowledge and skills they have that will be transferable to energy transition jobs in their communities. For example, valuable project management skills a young person may have gained from working on a community project is transferable to project or program management roles, such as managing a local energy conservation initiative or program. Another example includes social media expertise and communication skills that are important for social media marketing roles, but that would also be transferable to roles where an organization would need to communicate energy and climate knowledge to the general public through awareness building and advocacy campaigns.

While many respondents who received post-secondary education believe it has prepared them with the necessary skills to pursue a career that advances the energy transition, it is important to note that a large proportion of respondents (43.8%) do not feel their education has prepared them or were unsure. 46.8% of global youth respondents between the ages of 18-24 answered "No" or "Unsure" when asked whether their education has prepared them with necessary skills. This could point to the widening skills gap felt by younger generations and the idea that educational institutions might not be keeping up with current labour market trends and are misaligned on what skills are actually needed by employers. There is also a difference in perception between youth respondents of different regions. For example, 57.7% of North American respondents answered "No" or "Unsure" the market to do with variations in regions'

education systems and curriculums, and therefore the need to assess what could be transferable from other regions that may be more effective. This includes understanding the unique differences of each region in order to develop effective, localized strategies to improve skill development for energy transition jobs.

> When looking at the differences in perspectives on education, 67.4% of respondents who completed a PhD degree, 66.7% of respondents who completed trade school, and 65.4% of respondents who completed a Masters degree answered "Yes" when asked if they feel that their post-secondary education has prepared them with the skills needed to pursue a career that advances the energy transition. This could suggest that vocational education and additional university education is effective at preparing students with the necessary skills to pursue a career in the energy transition. However, when asked what would be helpful to their skill development, only 11.0% of all respondents chose trade school.

believe much of the barriers to entry not only [in] the energy sector but [also in] many other industries lie with employers, educators and governments not really being on the same page with respect to what they need from each other to promote entry into different industries.

For example, employers don't communicate what skills they need to educators and each other so educators don't really teach transferable skills[,] and governments don't align regulations and funding to the needs of educators and employers to support their developments. There's also such little data or universal way to benchmark measuring skills and adapting those frameworks to suit the changing nature of globalization, economic and environmental change. Additionally, many employers across sectors prioritize profit at the expense of training and [long-term] succession planning so training [entry-level] employees falls to the wayside and fewer and fewer people with little to no experience can hope to enter these positions."

Youth Respondent

All of these insights further suggest that young people are not sure what skills are necessary to pursue energy transition jobs and that formal and informal educational institutions and programs could be more effective in preparing them with these skills. This aligns with feedback provided by the Canadian Colleges for a Resilient Recovery (C2R2) who indicate that identifying skills gaps and providing subsequent training to address these gaps is a large challenge in their work. As a result, educational institutions, employers, and other energy actors must first work together to align on what skills and knowledge will be necessary for the energy transition jobs market. Establishing what skills are necessary will support educational institutions in developing more effective curriculums to help students develop these skills. Energy actors must then effectively communicate to young people what these skills are and which educational programs would be helpful for them to develop these skills. One way energy actors might be able to do this is by creating spaces for cross-sectoral collaboration, such as through networks, coalitions, or advisory councils formed of educational institutions, employers, government representatives, student representatives, and other energy actors. Canadian Colleges for a Resilient Recovery (C2R2) is one example of an organization that has implemented this approach by developing advisory networks made up of different stakeholders from various sectors, including young people. These spaces help to bring together the expertise and perspectives of stakeholders to identify skills gaps and support development of tailored training programs and strategies for addressing these skills gaps.

### LEARNING OPPORTUNITIES FOR YOUTH

In terms of interest in working on the energy transition, energy actors have a large opportunity to recruit young people into the energy transition workforce as many are already interested in working on the energy transition. The most common response from respondents of the Energy Transition Skills Survey when asked about their interest and experience in working on the energy transition was that they want to work on the energy transition (38.9%). In addition, 36.6% of respondents answered that they are interested, but don't know how to get involved. This aligns with results that show the most commonly selected barrier faced by respondents was lack of awareness about existing job opportunities (47.6%). This was followed by lack of available entry-level positions (46.0%) and lack of access to skills training (44.9%). As a result, the Energy Transition Skills Survey shows that while young people are interested in work related to the energy transition, the main challenges that prevent them from employment include lack of awareness about existing opportunities, lack of available entry-level opportunities, lack of access to effective skills training, and misalignments that were mentioned earlier on what skills are necessary to pursue a career in the energy transition.

When asked about what would be helpful to respondents to gain necessary skills for an energy transition job, 64.8% of respondents selected "skills training programs" and 54.8% selected "internships, co-ops, or work-learn opportunities". The third most commonly selected option varied between mentorship, financial resources, and undergraduate or masters degrees for different regions. In general, the third most commonly selected option for respondents who identified as a part of a minority group (Black, Indigenous, Person of colour, LGBTQIA2S+, Person with a disability, etc.) was financial resources. This aligns with our previously mentioned concept that the well-documented wage gap experienced by different groups may have had an effect on what they prioritize when looking for a job and therefore what they think would be most helpful to develop skills necessary for a job in the energy transition. Global societal inequalities and intersectionalities may affect why and how certain groups and regions experience different barriers, thus resulting in these communities having different or greater needs than those that experience less inequality.

In the open-ended question of the survey, some respondents provided more details about the lack of opportunities they feel exist, or have experienced first-hand. Some specify that this is often due to lack of access caused by a variety of factors. Many youth respondents who chose to answer the open-ended question noted lack of experience as a large barrier to accessing entry-level positions. This is because many entrylevel positions now require more relevant work experience than what youth are able to attain due to various systemic barriers. These include financial constraints such as post-secondary education programs being unaffordable for youth or relevant opportunities for experience not paying enough. Location restrictions are also a barrier as some youth are based in remote or rural communities that have few opportunities, requiring them to relocate to other communities or seek employment abroad. International work can be an additional financial constraint and brings in new challenges such as citizenship and language barriers as some positions require candidates to have a certain level of proficiency in specific languages, may require candidates to be of certain nationalities, and qualifications attained in their home countries are not always transferable internationally.

Many job descriptions for entry level positions are [very] demanding. You just graduated, and for a simple internship or junior position they want: 8 years of experience, at least a master's degree (PhD is an [a]dvantage), fluency in English and French, ... [etc.] [T]hose at the beginning of their careers don't have [the] means to enter [b]ecause the standards are impossible to reach ... [I]f we are lucky [to get] a paid position, [it] will barely cover the minimum costs to live.

It's hard. We are [burned out], and we can't even afford [to pay] our own bills ... I never find the space to be heard or to echo all the voices and chats I've heard with friends and colleagues about it. In developing countries this reality is even worse. We feel that nothing we do will ever be enough to have the bare minimum of financial independence. Thank you for the space to be heard and the great work you do."

Youth Respondent

After lack of experience, political instability or lack of government support was the second most commonly mentioned barrier by respondents who chose to share additional insights in the open-ended question. In their responses, youth asserted that governments play a key role in creating policies that lay the foundation for a Just Transition in their countries, which will then foster new job opportunities and training programs to meet these commitments. This aligns with Student Energy's previous research. In the **Global Youth** Energy Outlook, which gathered over 40,000 youth perspectives on the energy transition, youth respondents identified 'government willpower, policies, and regulations' as the largest barrier to achieving a sustainable energy transition (38.4%). Government policies and investments are also crucial in developing more effective educational curriculums that align with the energy transition and financial resources and mechanisms for young people to pursue these paths. Thus, young people believe governments are drivers of the energy transition and therefore share responsibility in job creation and skill development. In one of our consultations with ICLEI, they stipulated that local governments often differ between each other in terms of their priorities when it comes to creating jobs for young people. In addition, governments are sometimes uncertain about what strategies to employ to support youth employment and skill development.

Overall, educational institutions, employers, and other energy actors must make more entrylevel positions available to youth, create more skills training opportunities, and improve access around how they raise awareness about existing opportunities to get involved in the energy transition. This can be done through collaboration on new curricula or micro-credentials that students can take to learn energy transition skills. Energy actors can also collaborate on developing more experiential learning opportunities, such as co-ops, student internships and

other work-learn opportunities, to support youth in building the experience needed to enter the workforce. Governments must support efforts to increase youth employment in the energy transition and improve skill development by creating financial mechanisms and incentives to support youth, such as scholarships, grants, and subsidies. They can also collaborate with educational institutions and employers to develop youth employment and skill training programs, and develop financial incentives and subsidies for employers to hire young people and develop on-the-job training opportunities. When raising awareness about these opportunities, energy actors must create youth engagement and communication strategies to meet young people where they are, ensure they are accessible to communities, and ensure they are promoting these opportunities effectively. This could involve campus recruitment events to meet young people in person at their schools, in-person or online information sessions, and simply tailoring messaging and job descriptions about different opportunities to ensure they clearly outline what skills and knowledge is needed for the role and so they align with the priorities of specific youth communities.

Noting that 47.6% of youth respondents selected lack of awareness of job opportunities as a barrier to entering the energy sector, young people are encouraged to actively reach out to people in jobs and industries they would be interested in learning more about to understand what skills are needed for these roles and how to learn them. Young people can start by asking peers, teachers or other people they are already connected with who may have more insight into these opportunities or who may know someone else in these roles that they can connect them to. Other strategies young people can use to connect with industry professionals include looking into their educational institution's alumni networks to see if there are any alumni in positions they are interested in, attending networking events being hosted in their communities or online, and researching employees from relevant organizations on their website or on employment and professional networking platforms such as LinkedIn. Young people should plan how they want to engage with industry professionals and be intentional about what they would like to learn from these conversations. This involves doing research on the person they would like to meet, preparing questions and topics they would like to learn more about, and engaging with the intention of creating a meaningful connection with the individual. The ILO provides some guidance on how to do this in their How to choose my future profession and How to organize my job search guides, however additional resources on networking can be found from career and employment centres, employment websites, through research, and in the Energy Transition Skills Project's Action Toolkit.

## **ENGAGEMENT STRATEGIES AND UNDERSTANDING YOUNG PEOPLE'S NEEDS**

As evidenced in our data, different communities of youth have varying needs, experience different challenges, and therefore require specific resources and solutions to equitably support them. Understanding this, energy actors must create targeted strategies to

support youth that recognize these differences rather than taking a one-size-fits-all approach. EHRC shared feedback in their consultation pointing to the need for more equity, diversity, and inclusion strategies, noting that the energy sector is historically white and male-dominated, as young people want to see more diverse workplaces. This is evident in the results of the Energy Transition Skills Survey as 16.9% of respondents who identified as a part of a minority group selected discrimination as a barrier to their employment. While discrimination was not the most commonly selected barrier by respondents who identified as a part of a minority group, these results show that there is a difference in how respondents answered based on their experiences as minorities and that there are different barriers and factors that energy actors should consider when engaging with different communities.

Differences in young people's experiences based on their identities is also seen in the openended question. For example, some respondents that identify as women shared that they have experienced discrimination or other barriers in energy transition jobs due to their gender. Some respondents shared that there is still a bias against women in some fields and that navigating professional environments is difficult due to imposter syndrome, preference for men over women, or lack of accommodations or security to make women feel safe and included.

I feel that I already have the skills to work in the energy transition but employers are less interested in giving me [a chance] because I'm not a man. I have seen multiple men with the same or less skills and experience than [I do] get promoted into green energy positions that I want and have applied for. Some of these men have even admitted this to me."

#### **Youth Respondent**

Energy actors must improve representation in energy transition-related workplaces and fields by developing employment and skill development programs that are specifically designed for equity-deserving groups, such as "women in energy" programs or mentorship opportunities. Energy actors must also consider the unique needs of each community to create accommodations that will allow them to feel safe and included so they can carry out their work effectively. For example, this could include implementing flexible work hours for youth who may be pursuing educational studies at the same time, or who may have family care responsibilities, providing access to a multi-faith space that can be used for prayer, or a childcare center for staff. This ensures that different youth communities are receiving equitable and effective support that meet their unique needs.

Energy actors must also consider regional differences between young people in order to create programs and solutions that work effectively for youth in different local contexts. This involves considering the regional differences in the Energy Transition Skills Project's results, but also committing to meaningful youth engagement to better understand the

needs of young people in different local and demographic contexts. This can be done by creating or consulting a team of stakeholders with expertise on local youth perspectives and employment, including youth themselves, that are dedicated to creating strategies to engage with youth from underserved communities. When hiring, engaging with, or consulting young people, it is important to ensure youth are compensated fairly for their time and work that directly benefits and supports the work of energy actors.

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As an environmental engineer from Cameroon, I have faced numerous challenges when it comes to finding employment or internships. One of the major difficulties is that there are limited opportunities available in my country and region for someone with my qualifications. This means that most positions require me to travel long distances and often abroad, which can be expensive and difficult to manage logistically. Additionally, language barriers can make it hard for employers outside of Cameroon to understand the value I bring as a potential employee or intern.

Another issue I've encountered is [biased hiring] decisions based on nationality rather than merit or experience level—something not captured by this survey but unfortunately common among job seekers around the world who come from different countries than those they are applying to. It's disheartening when you know you have all the necessary skills yet cannot get past these biases without overcoming other obstacles first such as gaining local contacts through networking events or having references vouching for your abilities within their network circles before even being considered seriously by prospective employers.

Finally, another barrier has been accessing resources related to skill development; while many courses exist online now at low cost (or free) depending on where one looks - this was not always so easy, especially if living remotely like myself – so learning new relevant skills has taken more time [and] due diligence compared [to] others who may live closer [to] cities with greater access options available to them[,] making competition much tougher [to gain] employment prospects overall. Despite these challenges though, I remain determined to continue developing professionally and pursue career goals despite any odds stacked against me."

**Youth Respondent** 



Recognizing that every sector and industry must play their role and contribute to the energy transition, there will be a need for upskilling and re-skilling of employees to meet these demands. If it is appropriate to do so within their individual contexts, youth must continue to voice their unique needs to their community, post-secondary institution, and/or workplace and advocate for energy transition skills development opportunities and training. This could be as simple as participating in projects such as the Energy Transition Skills Project that aim to amplify the perspectives of young people on employment and skills development. Youth can also meet with their educational institution's faculty or organization's leadership to propose resources that can be used to build competence on the energy transition or suggest development of new resources to teach energy transition skills. Finally, youth can share their needs and interests with local political representatives and employment and labour organizations to advocate for policies that will support youth skills development and employment in the energy transition.

Below are some case studies and examples of programs and initiatives in different regions around the world that are working to address the skills gap and support youth employment in the energy transition.

## STUDENT ENERGY CAREER TRAINING (GLOBAL)

Student Energy Career Training is a 4-month cohort-based program aimed at young people between the ages of 18 and 30 who are interested in pursuing a career that advances the energy transition. The program develops skills such as project management, data analytics, interdisciplinary teamwork and leadership through hands-on learning experiences that are necessary for them to land an internship or entry-level role in the energy sector. The program consists of two stages: a general curriculum track, and practicum projects focusing on a particular "challenge" complemented with coaching and technical training from Student Energy and partner organizations. This experiential learning component of the program allows partner organizations to support young people in building technical and soft skills while also providing them with valuable practical experience and mentorship.

### ► LEARN MORE ABOUT SE CAREER TRAINING AND OUR PARTNER ORGANIZATIONS HERE.

## ØRSTED AND NJIT (USA)

Ørsted and the New Jersey Institute of Technology (NJIT) signed a 10-year agreement in 2021 that will create \$1.5 million in new scholarships and professional development opportunities for undergraduate students at NJIT. These scholarships and opportunities aim to support students interested in pursuing careers in offshore wind, particularly those from underrepresented communities, through financial support and mentorship opportunities, as well as the creation of new co-op, internship, and full-time job opportunities. The partnership will also support STEM outreach initiatives and programs for elementary to high school students at NJIT.

### LEARN MORE ABOUT THE PARTNERSHIP HERE.

## RES4AFRICA MICRO GRID ACADEMY (SUB-SAHARAN AFRICA)

The Micro Grid Academy (MGA) is a vocational capacitybuilding program created by RES4Africa Foundation, an organization focused on advancing SDG 7 and supporting the energy transition in Africa. The program focuses on young people and developing a skilled and conscious workforce in order to implement decentralized renewable energy solutions that will improve access to energy and bolster job creation in the region. The program consists of a theoretical and practical curriculum to support youth from a wide range of backgrounds to develop the technical skills needed to work on energy. The program also provides financial awards and mentorship to young talent working on innovative energy projects to help launch their projects, and building a network of alumni and local professionals that can support participants through peer mentorship. Since launching in 2018, the program has supported 800 participants across East Africa.

► LEARN MORE ABOUT THE MICRO GRID ACADEMY HERE.

## **GIRLS4RURALS (NEPAL)**

Girls4Rurals is an initiative developed by Rural Development Initiative (RDI) and Himalayan Innovations that aims to build a network of young women and girls who develop and implement their own community climate and energy projects. Some projects led by Girls4Rurals members include educational programs for teenagers and children on renewable energy, and supporting the energy transition in rural communities by helping to implement and maintain clean energy technologies in these communities. Examples include a campaign where Girls4Rurals members collect unused solar panels from urban areas to be installed and maintained by members in rural communities that could benefit from them. These projects and programs help to train and empower young women and girls to work on renewable energy projects that support their communities.

#### LEARN MORE ABOUT GIRLS4RURALS AND THEIR PROJECTS HERE.

# METHODOLOGY

The Energy Transition Skills Project was led by a team of researchers at Student Energy in partnership with Ørsted. The project consisted of a literature review, global youth survey, and stakeholder feedback consultations.

## **PHASE 1: LITERATURE REVIEW**

Before designing the Energy Transition Skills survey, Student Energy's research team began by conducting a literature review to better understand what evidence already exists on the topic and what knowledge gaps could be addressed through this project. The literature review looked at 32 existing reports, news articles, commentaries, and stakeholder interviews that discussed topics related to the global energy skills gap, labour shortages, talent needs, employment barriers, and youth perspectives on the future job market. The process for choosing which sources to review was guided by two questions:

WHAT DOES EXISTING LITERATURE SAY ABOUT CURRENT ENERGY AND LABOUR MARKET TRENDS AND THE SKILLS NEEDED TO MEET LABOUR DEMAND FOR THE ENERGY TRANSITION?

WHAT DOES EXISTING LITERATURE AND RESEARCH SUGGEST ABOUT THE NEEDS AND ASPIRATIONS OF YOUTH WHEN SEEKING EMPLOYMENT IN THE ENERGY TRANSITION?

## PHASE 2: GLOBAL YOUTH SURVEY

## **SURVEY DEVELOPMENT**

When developing the global youth survey, we were interested in understanding how the experiences of young people may differ based on their identities and the communities they are a part of. As a result, the survey consists of eight demographics questions to understand the age of participants, education levels, country they are based in, population density of where they live, gender identification, whether they identify as a part of a minority community, socioeconomic status, and interest and experience in energy. Participants were able to choose "Prefer not to say" for all questions or skip the question, and questions were developed with inclusive language in mind.

The other eight core questions of the survey focus on participants' perspectives on energy transition jobs and skill development. Three questions focus on what is most important to participants when searching for employment and their perceptions of energy transition jobs, and four questions focus on understanding what barriers participants face to skill development and what would be most helpful to their skill development. The last question of the survey is an open-ended question that allows participants to discuss anything about their experience or thoughts that have not already been captured by the survey. This was done to ensure participants have an opportunity to share additional thoughts as well as clarify their perspectives.

### **OUTREACH**

The Energy Transition Skills Project collected 1811 valid global responses from youth around the world between October 2022 and February 2023. Participants were recruited through Student Energy's own organic outreach as well as through Pollfish, a market research platform that uses Random Device Engagement to reach participants organically and reduce survey bias. Organic outreach consisted of putting out a call for Outreach Partners through our various communication channels as well as inviting organizations directly to be Outreach Partners. For this project, Outreach Partners are organizations and groups, particularly that are youth-led, that supported Student Energy significantly with promoting the survey by sharing it with their networks through their own communication channels and word-of-mouth. A list of Outreach Partners can be found in the Partners section of this report.

### **DATA CLEANING AND ANALYSIS**

The Energy Transition Skills Survey targeted youth between the ages of 18 and 35. Respondents who answered that they were younger than 18 or did not disclose their age were not able to participate. Other than this age requirement, there were no other criteria put in place to collect specific responses and respondents were able to skip any questions they did not want to answer. Any responses that did not disclose age or failed the spam check question were removed from analysis.

The country where each respondent was based was collected through a text-box response. As a result, submitted answers that provided a city or region rather than a country were re-coded to the country that the city or region was based in. Some questions provided the option for respondents to select "other" as their answer and submit a text-response; these text responses were reviewed to ensure they were valid responses and removed accordingly if not. The same process was used for the open-ended text-box question at the end of the survey where respondents could share any additional information that may not have been captured by the survey. For example, if a respondent answered "N/A" or an invalid answer in the open-ended text-box question, this answer was deleted. Answers that were difficult to interpret or that did not offer enough information were also deleted, such as if a respondent only answered with a few words where it was difficult to understand exactly what they wanted to convey.

Answers to the open-ended question were also coded based on themes that were mentioned in the answer, such as lack of experience, gender, or language barriers. The number of times each theme was brought up was then counted to see which themes were most prevalent in respondents' answers.

#### **METHODOLOGY**

## **COP27 EVENT**

Student Energy presented initial findings from the Energy Transition Skills Project at COP27 in Sharm El-Sheikh in November 2022 alongside Ørsted and in conversation with the International Labour Organization (ILO). This event was held at the Danish Pavilion at COP27 and involved a presentation of initial insights from the first 1,275 responses that were collected. It also consisted of a panel discussion with speakers from Ørsted, the ILO, and Student Energy where they shared their thoughts on these insights and what is needed to support youth skill development and employment in the energy transition.

## **PHASE 3: STAKEHOLDER CONSULTATIONS**

### **CONSULTATION DESIGN**

After collecting responses from global youth for the Energy Transition Skills Survey, the Student Energy team wanted to collect feedback from different industry stakeholders to understand their perspectives on the skills gap and on the survey results. As a result, Student Energy held consultations with different stakeholders in our partner network to gather feedback on the project, particularly to understand how these results could affect current strategies for hiring and engaging with young people, what challenges they face when it comes to workforce development and youth engagement, and whether they foresee any opportunities for growth and to bridge the skills gap.

Stakeholders representing government, labour and workforce development organizations, energy companies, and research and academia were invited by Student Energy to share their feedback in two ways. Participants could schedule a 30-minute meeting with the Student Energy team via Zoom, an online meeting platform, to discuss their thoughts face-to-face, or they could share written feedback by email by responding to some or all of the prompts provided by Student Energy. The prompts involved questions about general reflections on insights from the project as well as more specific questions related to opportunities and challenges they face to youth employment and skill development in the context of their work.

## LIMITATIONS

There are several important limitations to the Energy Transition Skills Project that should be considered when interpreting the results. One main limitation of the project is that some survey questions may be subject to interpretation by respondents due to the nature of the question or wording choices. For example, one demographic question at the beginning of the survey asks respondents to place themselves on a ladder that represents people in their community where the top of the ladder are those with the most money, most education, and most respected jobs, while the bottom are those who have the least money, least education, and least respected or no job. This question was meant to determine the perceived socioeconomic status of respondents which can be a factor in different respondents' experiences with skill development and employment. However, this question could be interpreted differently based on different local contexts and is subject to individual respondents' interpretation of what information this question is trying to collect.

#### **METHODOLOGY**

Another limitation of the survey includes how survey outreach was done to collect responses. As previously mentioned, the research team used a combination of organic outreach and Random Device Engagement support from Pollfish, a market research platform. As a result, survey responses also vary as responses gathered from Pollfish were submitted by random participants while responses gathered from Student Energy's own organic outreach are most likely from our own network, who are young people already engaged with the energy transition. In addition, while all survey questions were the same, the survey was hosted on two platforms to be able to use these two methods of outreach. These variations in survey participants based on how they were engaged and which platform they completed the survey on may cause some biases in the data.

Due to limited time, resources, and the wide global scope of this project, another limitation is the number of responses the project received. The original goal of the project was to gather at least 5,000 global responses, however as of March 2023, the project has collected 1811 valid responses. In addition, some regions and countries received fewer responses than others or are overrepresented in the data. For example, the largest proportion of survey responses come from North America and Sub-Saharan Africa, which is likely due to Student Energy's wide network and reach in these regions, whereas only 3.2% of responses come from the OECD Pacific region.

As a result of the above limitations on time and resources, we elected not to conduct a statistical regression analysis on the survey responses. This means that all stated survey insights throughout this report represent the raw number of responses we received and are not claims of statistical significance. This was done to avoid overgeneralizations and extending the interpretation of our results beyond the integrity of our data.

> Finally, the survey was only available in English due to time and resource constraints to be able to translate the survey into multiple languages. This made the survey inaccessible to non-English speakers and limits the pool of respondents to those who are able to read and write in English. Text answers submitted in other languages had to be translated using basic translation tools such as Google Translate.

While the Student Energy team is committed to sharing results from the project as objectively and transparently as possible, discussions and recommendations made in this report are subject to researcher bias.

## PARTNERS

## **FOUNDING PARTNER**



https://orsted.com/

## STAKEHOLDER CONSULTATION PARTICIPANTS



Les Collèges canadiens pour une relance économique résiliente

https://resilientcolleges.ca/





https://www.industrytransition.org/

https://electricityhr.ca/



https://iclei.org/



https://orsted.com/

- Academy for Sustainable Innovation
- Asian Environmental Youth Network (AEYN)
- Danish Youth Climate Council
- Enduata Emaa Community Based Organisation Group
- European Youth Energy Network
- Generation Climate Europe (GCE)
- Green Career Centre
- Kwanzaa Eco Farm Initiative
- ManEco Foundation

- OUTREACH PARTNERS
- Poder Green Consulting
- ▶ Reap Benefit
- Renew Watts Technologies
- ► SDG7 Youth Constituency
- Smart Youth Network Initiative
- Student Energy at All Nations University
- Student Energy at IPN
- Student Energy at ITSPR
- Student Energy at Jomo Kenyatta University of Agriculture and Technology (SE-JKUAT)

- Student Energy at Tamil Nadu National Law University (TNNLU)
- Student Energy at the University of Calgary
- Student Energy at University of Buea
- ►YES-Europe
- YOUNGO Green Jobs Working Group
- YOUNGO Renewable Energy Working Group
- ▶ Youth Climate Lab

## GLOSSARY

The following are definitions of different words that appear in the Energy Transition Skills Project that were provided to participants when completing the survey.

## DEFINITIONS

ENERGY TRANSITION:	"The energy transition is a pathway toward transformation of the global energy sector from fossil-based to zero-carbon by the second half of this century" (IRENA).	INDIGENOUS:	"Indigenous peoples are inheritors and practitioners of unique cultures and ways of relating to people and the environment. They have retained social, cultural, economic and political characteristics that are distinct from those of the dominant societies in
ENERGY TRANSITION JOB:	For the purpose of this research, an energy transition job is employment that supports the energy transition. It can be within the energy sector or outside the energy sector, but all or some work responsibilities would contribute towards advancing the energy transition in some capacity.	PERSON Of Colour:	"A person whose skin pigmentation is other than and especially darker than what is considered characteristic of people typically defined as white" (Merriam-Webster Dictionary).
ENERGY Skills:	For the purpose of this research, energy skills are defined as professional skills and knowledge needed to pursue job opportunities that support the energy transition.	LGBTQIA2S+:	An acronym for lesbian, gay, bisexual, transgender, queer/questionning, intersex, asexual, two-spirit, and other gender identities and sexual orientations.
YOUNG People:	For the purpose of this research, young people are defined as being between the ages of 18 – 35.	FOSSIL FUEL:	Fossil fuels are used for energy and were formed from ancient plants and organisms. They primarily refer to coal, oil, and natural gas (source: National Geographic).
NON-BINARY:	A non-binary person is someone who defines their gender identity and experience outside the man/woman binary.	SYSTEMS Thinking:	Systems thinking is a method of thinking about the world from the perspective of connectivity and relationships between different parts
TRANSGENDER:	A transgender person is a person whose gender identity does not coincide with the sex they were assigned at birth.		or stakeholders. It is focused on understanding where your problem or solution is situated within the more extensive system and the relationships that impact it.

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## APPENDIX A. SURVEY QUESTIONS

## ENERGY TRANSITION SKILLS SURVEY Ørsted & student energy

## **INTRODUCTION**

Led by Student Energy and supported by Ørsted, the Energy Transition Skills Project aims to understand what young people (18-35) are looking for when pursuing a career, and what barriers they face to securing or finding jobs, particularly one that is related to sustainability and the energy transition.

Your answers to this survey will contribute to a youth-led effort to improve the way that employers and other organizations invest in young people's skill development, hiring, and education, by better aligning with youth needs and aspirations. The results will be presented in a report in 2023, to provide insights to the public, youth organizations, and employers on how best to attract and support youth entering the sustainability workforce.

You do not need in-depth knowledge or experience with energy issues to participate in this survey. You must be between the ages of 18-35 years old to participate.

Definitions for words that have an asterisk (\*) beside them are provided.

The survey contains a maximum of 17 questions and should take approximately 5 minutes to complete.

## **ABOUT STUDENT ENERGY**

Student Energy is a global youth-led organization empowering young people to accelerate the sustainable energy transition, engaging 50,000+ young people in over 120 countries. A registered Canadian charity, Student Energy has over 13 years of experience in building impactful programs by and for young people, including the International Student Energy Summit, Student Energy Chapters, the Student Energy Fellowship, Career Training, and the **Energy System Map**. Learn more about Student Energy at www.studentenergy.org, or on all social media platforms @studentenergy.

## **TYPEFORM SURVEY PRIVACY NOTICE**

Your privacy is important to us. Any information you share will be used to inform our study on the energy skills gap and youth perspectives on jobs that support the sustainable energy transition. The data and findings from this research will be used to develop a final report and recommendations for energy actors on how they can better support skills development and align opportunities in the energy transition with the priorities of young people. The data set from this survey may be used in additional reports, presentations, or publications at our discretion.

Your participation in this survey is voluntary. Your responses will be anonymous and cannot be linked directly to you in any way, and you may stop participating at any time without penalty.

#### APPENDIX A. SURVEY QUESTIONS

Incomplete questionnaires will be deleted.

Non-identifying personal information is requested at the beginning of the survey and is optional.

The information you submit through this survey is processed by Typeform on behalf of Student Energy and is stored by Amazon Web Services (AWS) on its servers, which are located in the United States. The information we collect from you is meant for internal use only and will only be shared with third parties who are partners of the research project. An overview of their privacy policy and full Terms of Service and Privacy Policy can be found here:

https://www.typeform.com/help/a/what-happens-to-my-data-360029581691/

Upon completion, all survey data will be downloaded from Typeform and be retained by Student Energy for analysis and potential future use.

If you have any questions about privacy, please contact us at privacy@studentenergy. org. If you wish to refer to our Privacy Notice, please click on the following link: https:// studentenergy.org/privacy-notice/.

### POLLFISH SURVEY PRIVACY NOTICE

Your privacy is important to us. Any information you share will be used to inform our study on the energy skills gap and youth perspectives on jobs that support the sustainable energy transition. The data and findings from this research will be used to develop a final report and recommendations for energy actors on how they can better support skills development and align opportunities in the energy transition with the priorities of young people. The data set from this survey may be used in additional reports, presentations, or publications at our discretion. The data set may be shared with project partners.

Your participation in this survey is voluntary. Your responses will be anonymous and cannot be linked directly to you in any way, and you may stop participating at any time without penalty. Incomplete questionnaires will be deleted.

Non-identifying personal information is requested at the beginning of the survey and is optional.

The information you submit through this survey is processed by Pollfish on behalf of Student Energy and is stored on its servers. Pollfish's privacy policy can be found here:

https://www.pollfish.com/terms/respondent

Upon completion, all survey data will be downloaded from Pollfish and be retained by Student Energy for analysis and potential future use.

If you have any questions about privacy, please contact us at privacy@studentenergy.org. If you wish to refer to our Privacy Notice, please click on the following link: https://studentenergy.org/ privacy-notice/.

By participating, you consent to the use of the information you provide for the purposes outlined above.

l agree



#### **DEMOGRAPHICS QUESTIONS**

#### 1. What is your age?

To participate in this survey, you must be over the age of 18.

- **a.** Under 18
- **b.** 18-24
- **c.** 25-30
- **d.** 31-35
- **e.** Over 35
- f. Prefer not to say

#### 2. What is your highest level of education?

- a. Undergraduate
- **b.** Masters
- **c.** PhD
- d. Certificate or Diploma
- e. Trade school
- f. High School
- g. Prefer not to say

#### 3. Where are you located? Please type the country or skip the question if you would prefer not to say.

a. Enter your country here

#### 4. Which of the following best describes the area you live in?

- a. Large city
- **b.** Suburb near a large city
- c. Small city or town
- d. Rural
- e. Prefer not to say



- 5. Which of the following most accurately describe(s) your gender identification? Please select ALL that apply.
  - a. Man
  - **b.** Woman
  - c. Non-binary\*

A non-binary person is someone who defines their gender identity and experience outside the man/woman binary.

d. Transgender\*

A transgender person is a person whose gender identity does not coincide with the sex they were assigned at birth.

- e. Agender/I don't identify with any gender
- f. Prefer to self-identify
- g. Prefer not to say
- ► 6. Prefer to self-identify. Please self-identify your gender identity/identities that were not listed.

Conditional Question.

- a. Type your answer here
- 7. Do you identify with or belong to any of the following communities? Please check ALL that apply.
  - a. Black
  - **b.** Indigenous\*

Indigenous peoples are inheritors and practitioners of unique cultures and ways of relating to people and the environment. They have retained social, cultural, economic and political characteristics that are distinct from those of the dominant societies in which they live (United Nations).

- **c.** Person of colour\*
- A person whose skin pigmentation is other than and especially darker than what is considered characteristic of people typically defined as white (Merriam-Webster Dictionary).
  - **d.** LGBTQIA2S+\*
- An acronym for lesbian, gay, bisexual, transgender, queer/questionning, intersex, asexual, two-spirit, and other gender identities and sexual orientations.
  - e. Person with a disability
  - **f.** Prefer not to say
  - g. Other

#### APPENDIX A. SURVEY QUESTIONS

8. Think of a ladder from 1-10 representing people in your community where you live. At the top of the ladder (10) are the people who have the most money, the most education, and the most respected jobs. At the bottom (1) are the people who have the least money, least education, the least respected jobs, or no job. The higher up you are on this ladder, the closer you are to the people at the very top; the lower you are, the closer you are to the people at the very bottom. Where would you place yourself on this ladder from 1 to 10?

a. 10 (top)
b. 9
c. 8
d. 7
e. 6
f. 5
g. 4
h. 3
i. 2
j. 1 (bottom)
k. Prefer not to say

#### 9. Which of the following statements apply to you right now? Select ALL that apply.

Definition of Energy Transition: a pathway toward transformation of the global energy sector from fossil-based to zero-carbon by the second half of this century, to reduce CO2 emissions to limit climate change. (IRENA)

a. I currently work in the fossil fuel sector

**b.** I currently work in the renewable and clean energy sector

**c.** I currently work in a job that supports the energy transition (e.g. a climate or energy educator, city planner, policy analyst, organizer, public servant, builder, etc.)

**d.** I want to work in the renewable and clean energy sector, or in a job that supports the energy transition

**e.** I am not interested in working in the renewable energy sector, or in a job that supports the energy transition

**f.** I am interested in work that supports the energy transition, but don't know much about what jobs exist or how to get involved

**g.** I am currently studying in a program related to the energy transition (e.g. sustainability or environmental studies, engineering, energy project management, etc.)

#### **ENERGY TRANSITION JOBS**

#### 10. What would be your ideal energy transition job\*?

Definition of Energy Transition Job: For the purpose of this research, an energy transition job is employment that supports the energy transition. It can be within the energy sector or outside the energy sector, but all or some work responsibilities would contribute towards advancing the energy transition in some capacity.

**a.** Starting my own company or developing my own product

- **b.** Working at a renewable energy company
- c. Working in government
- d. Research/academia
- e. Non-profit organization
- f. Grassroots or community organizing
- g. Other

#### 11. Please rank which of the following options are most important to you when pursuing a job with 1 being the MOST important and 8 being the least important.

**a.** Personal values align with the employer/ company's values

**b.** Work flexibility (e.g. Work From Home option, flexible work schedule)

- c. Salary and compensation
- d. Opportunities for growth

**e.** Work/life balance (e.g. firm boundaries on work hours and vacation time)

**f.** Purpose of your work and ability to make an impact

**g.** Job security (e.g. permanent or long-term contracts, full-time employment)

h. Inclusive and supportive work culture

#### 12. Do you feel that you need a background in STEM (science, technology, engineering, mathematics) to work on the energy transition?

- a. Yes
- b. No
- **c.** Unsure

#### **SKILLS DEVELOPMENT**

#### 13. Have you faced any barriers that made it difficult for you to pursue energy transition jobs? Select ALL that apply.

a. Lack of access to skills training

**b.** Lack of awareness about existing job opportunities

- c. Lack of available entry-level positions
- d. Discrimination in the workplace
- e. Opportunities are not paid or do not pay enough

**f.** I have not faced any barriers in pursuing an energy transition job

**g.** I am not interested in pursuing an energy transition job

**h.** Other

14. Do you feel that your post-secondary education has prepared you with the skills needed to pursue a career that advances the energy transition?

- a. Yes
- b. No
- **c.** Unsure

#### 15. What kind of skills do you think will be the most important or most valued in the energy transition jobs labour market in the near future?

Definition of Systems Thinking: A method of thinking about the world from the perspective of connectivity and relationships between different parts or stakeholders. It is focused on understanding where your problem or solution is situated within the more extensive system and the relationships that impact it.

**a.** Technical skills and knowledge, energyspecific (ex. engineering, energy or sustainability knowledge, construction, installation, maintenance, etc.)

**b.** IT and digital skills (ex. software engineering, data science and analysis, Internet of Things, etc.)

**c.** Systems thinking\* skills or knowledge (ex. critical thinking, writing and communication, project design, social impact, etc.)

**d.** Entrepreneurial skills and knowledge (ex. business acumen/skills, creativity, innovation, project management, sales, etc.)

**e.** People skills (e.g., collaboration, speaking, good judgment, active listening, etc.)

#### 16. What do you think would help you learn the skills necessary for you to pursue the jobs you are interested in? Select ALL that apply.

- **a.** Trade school
- **b.** Undergraduate degree
- c. Master's degree
- d. PhD degree
- e. Skills training programs
- f. Mentorship

**g.** Financial resources (grants, investments, award money)

**h.** Internships, co-ops, or work-learn opportunities

i. Other

#### **OPEN-ENDED QUESTION (OPTIONAL)**

If you would like to, please use this space to share your thoughts about your experience with skill development and/or looking for employment that may not have been captured by the survey. For example, if you feel that there are barriers you have faced that were not addressed by this survey, you may use this space to elaborate. This section is optional.



## APPENDIX B COUNTRIES IN EACH REGION AND NUMBER OF RESPONSES BY COUNTRY

Country	Total
Albania	1
Algeria	11
Argentina	17
Australia	36
Austria	2
Bangladesh	13
Belgium	4
Benin	2
Bolivia	1
Botswana	3
Brazil	31
Burkina Faso	2
Burundi	1
Cameroon	10
Canada	176
China	203
Colombia	33
Côte d'Ivoire	1
Cyprus	1
Czech Republic	1
Democratic Republic of the Congo	1
Denmark	6
Ecuador	1
Egypt	45
El Salvador	3
Eswatini	1
Ethiopia	43
Fiji	4
Finland	1
France	46
Germany	9
Ghana	14

Country	Total
Greece	1
Guatemala	1
Haiti	1
Honduras	1
India	187
Indonesia	69
Iraq	7
Ireland	2
Israel	1
Italy	29
Japan	21
Kenya	55
Lebanon	1
Liberia	1
Madagascar	1
Malawi	3
Mali	1
Mexico	58
Morocco	29
Mozambique	1
Namibia	1
Nepal	3
Netherlands	6
Niger	4
Nigeria	143
Oman	1
Pakistan	10
Panama	1
Papua New Guinea	2
Peru	24

Country	Total
Philippines	33
Portugal	4
Russia	83
Rwanda	3
Samoa	1
Saudi Arabia	1
Senegal	1
Sierra Leone	1
Singapore	3
Solomon Islands	1
South Africa	39
South Korea	1
Spain	2
Sri Lanka	4
Sudan	9
Sweden	4
Switzerland	4
Taiwan	1
Tanzania	2
Thailand	1
The Gambia	2
Trinidad and Tobago	3
Tunisia	1
Turkey	24
Uganda	8
United Arab Emirates	1
United Kingdom	31
United States of America	102
Vietnam	16
Zambia	6
Zimbabwe	5
Grand Total	1785

## APPENDIX C. STAKEHOLDER CONSULTATION QUESTIONS

**Research Consent:** Please take some time to read and sign the Privacy Notice and Research Consent Form.

## **ABOUT THE ENERGY TRANSITION SKILLS PROJECT**

Led by Student Energy and supported by Ørsted, the Energy Transition Skills Project will explore how the global skills gap and growing workforce needs can be addressed by investing in young people and aligning with their needs and aspirations. By surveying 5,000 - 10,000 youth ages 18 – 35 around the world, we will identify what young people are looking for when pursuing a career, and what barriers they face to securing or finding jobs, particularly one that is related to sustainability and the energy transition. A final report will be developed based on research findings to provide insights to the public, youth organizations, and energy actors on how they can better support youth skill development and employment in the energy transition.

## LEARN MORE ABOUT THE PROJECT AND ACCESS THE INITIAL INSIGHTS REPORT HERE.

## **STAKEHOLDER CONSULTATION PROCESS & QUESTIONS**

Anticipated Outcomes: To gather feedback from each stakeholder on the Energy Transition Skills Project, including feedback on findings from the literature review and any initial survey insights. The consultation will also help the Student Energy team understand industry perspectives on:

- ▶ How these insights could affect current strategies for hiring and engaging with young people
- Challenges when it comes to workforce development in terms of upskilling and reskilling staff for energy transition jobs, and attracting and retaining young people
- Opportunities for the growth of energy transition jobs and engaging young people

## **HOW TO PROVIDE FEEDBACK:**

Stakeholders can review the Initial Insights Report and provide comments in 2 ways:

- By responding to any or all of the following questions by email or by downloading this document, in point form or as general overarching reflections.
- ▶ By scheduling a 30-minute meeting with the Student Energy team via Zoom.
- Discussion Prompts

## **GENERAL QUESTIONS ABOUT YOUR ORGANIZATION:**

Do the findings from the literature review summary and initial survey results found in the report resonate with what your organization is sensing about your future workforce?

- What challenges does your organization face when it comes to attracting and retaining young employees? Is this a priority for your organization?
- ▶ What challenges does your organization face when it comes to preparing employees for the energy transition future (e.g., in terms of upskilling and reskilling)?
- Are there any programs or policies that you think are needed to close the skills gap and improve skill development for young people? (e.g., government wage subsidies to hire youth, more internships for students in universities and colleges, stipends, training programs at your organization, etc.)

### **REFLECTIONS ON THE "INITIAL FINDINGS REPORT":**

- What is your initial feedback on the survey results so far? Is there anything you found particularly interesting or surprising about these insights?
  - ► For example: 75.3% of respondents so far think it is necessary to have a STEM background to work on the energy transition is this true to your organization?
  - How could these results affect your organization's current strategies for skill development, recruitment and youth engagement?

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# **ADDITIONAL RESOURCES**



ENERGY TRANSITION SKILLS Project final report



ENERGY TRANSITION SKILLS PROJECT COMMUNICATIONS KIT



ENERGY TRANSITION SKILLS PROJECT PLEDGE OF SUPPORT



STUDENT ENERGY'S ENERGY SYSTEM MAP



ENERGY TRANSITION SKILLS PROJECT WEBSITE



STUDENT ENERGY'S YOUTH Engagement principles



STUDENT ENERGY WEBSITE

- ILO Guide: How to choose my future profession? A step-by-step guide for job seekers
- ILO Guide: How to organize my job search? A step-by-step guide for job seekers and those that support them
- ILO Guide: How to work in the green economy: Guide for young people, job seekers and those that support them
- Dr. Ayana Elizabeth Johnson's Climate Action
  Venn Diagram and
  Instagram for examples on how to fill out the diagram
- Youth Foresight
- Youth Advocacy Resources Hub

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