



SOMALI RENEWABLE ENERGY SKILLED WORKFORCE SURVEY REPORT



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2016 FORUM

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INTRODUCTION

The *Somali Renewable Energy Skilled Workforce Survey* sought to better understand the current and future labor force needs to effectively grow the Somali renewable energy sector, and gain insight to inform efforts to enhance the relevance and quality of in-country training programs. The survey, carried out with executives at fourteen renewable energy companies (including independent power providers), found that there is an evident gap in the supply of technically-trained laborers versus the demand for qualified workers.

Energy consumption across the Somali region is increasing, yet energy suppliers face significant hurdles in meeting this demand, such as issues with the enabling environment, technology, and access to capital, but perhaps the primary hurdle is their employment and technical skill need limitations. Specifically, employers pointed to the lack of a sufficiently skilled workforce, a result of insufficient education and training programs to adequately prepare prospective employees. Respondents similarly identified a lack of training programs available to current employees and an inability to provide high-quality on-the-job training as limitations to a stronger workforce. Investments are needed in order to improve existing technical training programs and provide additional training in specific operational areas of the renewable energy sector. To further support the development of high quality Somali educational and training programs, stronger linkages between existing Somali-based and international programs as well as linkages to the private sector need to be prioritized, which will raise the quality standards and fine tune the necessary skill set required for the renewable energy sector.

The report will first present a background of the emerging Somali renewable energy sector and will profile companies surveyed. Next, the report will identify existing gaps in the sector, highlighting the current capacity limitations within renewable energy companies to meet market demands. The report will then discuss the necessity to improve in-country training programs to prepare potential employees with the specific technical expertise needed for the sector to grow. Finally, the report will end with a series of recommendations for key areas of intervention.

RENEWABLE ENERGY MARKET OVERVIEW

The Somali energy market has grown in recent years, as a result of increasing demand for and consumption of energy products and services. Yet the distribution of these products (particularly into rural areas) remains disparate and expensive, making them largely inaccessible to portions of the Somali population. In comparison to electricity costs in Ethiopia and Kenya, at \$0.15 and \$0.06 per kw hour respectively¹, the tariff is prohibitive in the Somali region at around \$0.80 to \$1.50/kw hour.² Somali businesses struggle to operate and attract financing because locally manufactured products cannot effectively compete on price relative to imports due to the high cost of energy. Additionally, the continued reliance on charcoal in many rural areas is destroying the environment and has negative implications on public health indicators. This broader context underscores the growing need for more affordable, clean, and sustainable energy products throughout the region.

¹ IRENA, *Working Together to Build an East and Southern African Clean Energy Corridor* (Abu Dhabi: IRENA, 2013) <http://www.irena.org/DocumentDownloads/Publications/Africa%20Clean%20Energy%20Corridor%20brochure.pdf>

² Nuñez, J. N. "Powering Progress: The Potential of Renewable Energy in Somalia." One Earth Future Foundation. February 2015. Available online at www.shuraako.org/publications.

There is enormous potential in renewable energy production across the Somali region. Already, investments in the renewable energy industry in Africa and the Middle East are rapidly increasing, and in Somalia and Somaliland, more than 20 renewable energy related projects have begun in the last three years, focusing on solar home systems, renewable energy generation for mini-grids, solar street lighting, mixed-grid systems, and wind turbine installation.³ Conditions in this region are particularly suitable to the development of solar and wind technologies.

The Somali region has some of the best conditions in Africa for the development of the wind energy sector.⁴ Small windmills are already being used throughout the region to power irrigation; and could be expanded to support water extraction from boreholes and power ice making and refrigeration. Likewise, the solar energy sector also has the potential for expansion; the Somali region boasts some of the highest daily rates of solar radiation in the world.⁵ Solar technology has the advantage of a lower frequency of breakdown compared to other energy sources, which can help rural and remote communities access reliable power. Solar energy technologies are being used for various purposes in the Somali region, including water pumping, irrigation, lighting, and refrigeration of small fish in coastal villages.

Wind and solar technologies are particularly important for rural areas, where large power generators are too costly, inefficient, and not financially viable. Further development of renewable energy technologies is an effective alternative to meeting the energy demand throughout much of the country. However, growing this sector requires significant investments in technologies and human capital. While all respondents to the *Somali Renewable Energy Skilled Workforce Survey* indicated that demand for renewable energy products and services is increasing due to increased electricity consumption, they also agreed that costs can be prohibitive, driving the need for cheaper alternatives. Respondents also acknowledged that successful growth of this industry requires educating local communities on renewable energy technologies so that more people understand its uses and benefits. While knowledge of these products is growing, according to survey respondents, more informational resources are needed. Perhaps the most important finding was that the size of the Somali renewable energy workforce is not sufficient for renewable energy companies to meet future market demands. This was found to be a result of a lack of quality educational and training programs in specific renewable energy technologies, underscoring a need for significant investment in this area.

There is also a lack of effective state management over and delivery of energy, which has created a space for IPPS to grow without clear regulation. In particular, the provision of energy by private companies is increasing mostly in Somaliland. Nevertheless all local governments are beginning to prioritize the development of this sector. A regional energy policy created by the Somaliland government and efforts to draft laws to regulate the energy sector are vital steps in further developing this sector.

DEMOGRAPHICS

Eighteen companies received the online *Somali Renewable Energy Skilled Workforce Survey* and fourteen completed the survey representing the regions of Somaliland, Puntland, and South Central. This survey is an aggregation of private sector voices working in the renewable energy sector. Revenues of participating companies represent a sizeable share of the energy market, specifically in Somaliland, with combined revenues in excess of \$10 million. All respondents were senior level executives at their company, including owners,

³ Nuñez, J. N.

⁴ Hadley, S. and Farah, S.

⁵ Nuñez, J. N.

chief executives, and founders. All respondents indicated they have been in the industry for at least three years, while the majority has been working in the industry for five or more years. Participating companies span the spectrum of the renewable energy sector. The majority of respondents were IPPs, though respondents were also developers (of grids/mini-grids), installers, wholesalers, and manufacturing companies. Respondent companies are large employers for the Somali context who employ between 25 and 350 employees. Collectively, these companies employ more than 1,200 people, 83% of whom are permanent staff. Women are generally severely underrepresented in the renewable energy sector – on average only 5% of a company’s workforce are women. Currently, approximately 1% of permanent employees in these companies are foreign nationals.

Executives at these companies have a variety of experience in the renewable energy sector. One executive had previously served as a procurement officer on a USAID-funded project and became involved in the energy services sector in a private capacity. A few other respondents received training through development-related interventions, which helped them to strengthen their capacity. One respondent highlighted the inaccessibility of electricity to large sections of the Somali population in motivating him to pursue a career seeking to tackle the “electricity crisis” in the Somali region:

“ I grew [up] in a village where we didn’t have access to electricity. All I used for lighting to study was a kerosene lantern...At the age of 11, my family got access to electricity for the first time. It was exciting but also a beginning of another problem. My family was never able to use the amount of electricity we needed, because it’s expensive and we couldn’t afford it. Initially I thought electricity is a luxury thing that everybody pays for, but eventually I realized it’s a problem that is beyond my family; it’s a social problem that needs to be solved. ”

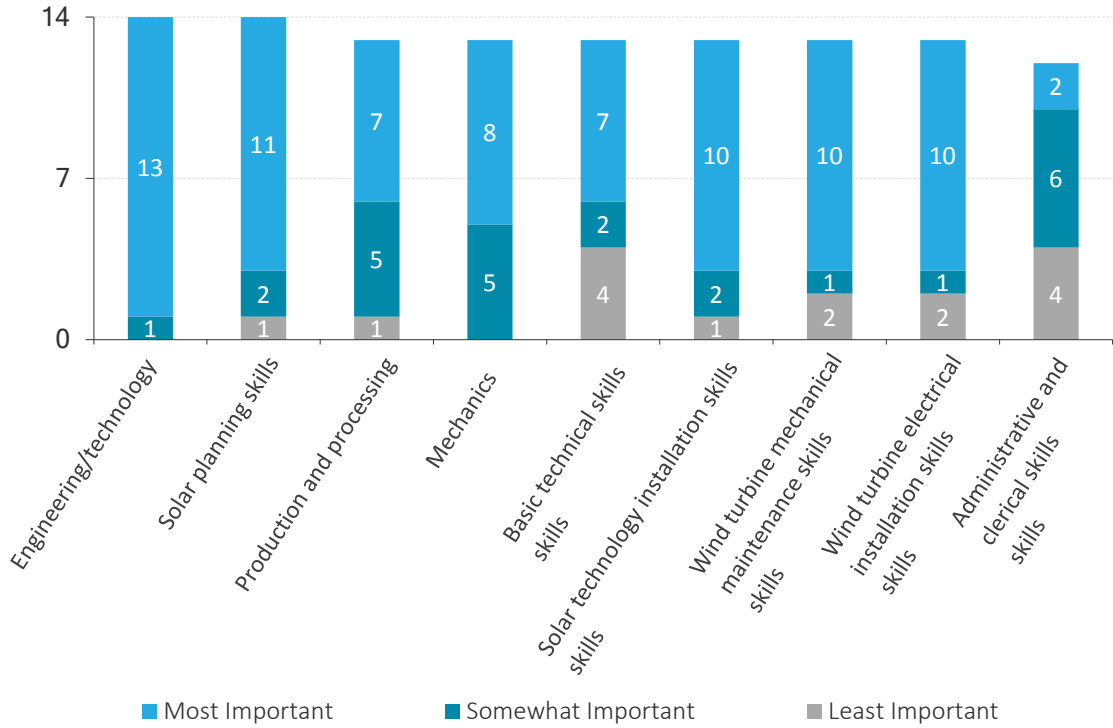
MARKET GAPS

Despite increased demand for energy and renewable energy products, significant gaps exist to meet this demand. Companies surveyed as part of this research highlighted two main gaps: 1) the lack of skilled employees who have received sufficient training; and 2) a need for quality training programs to develop current and future employees.

1) Skilled Employees

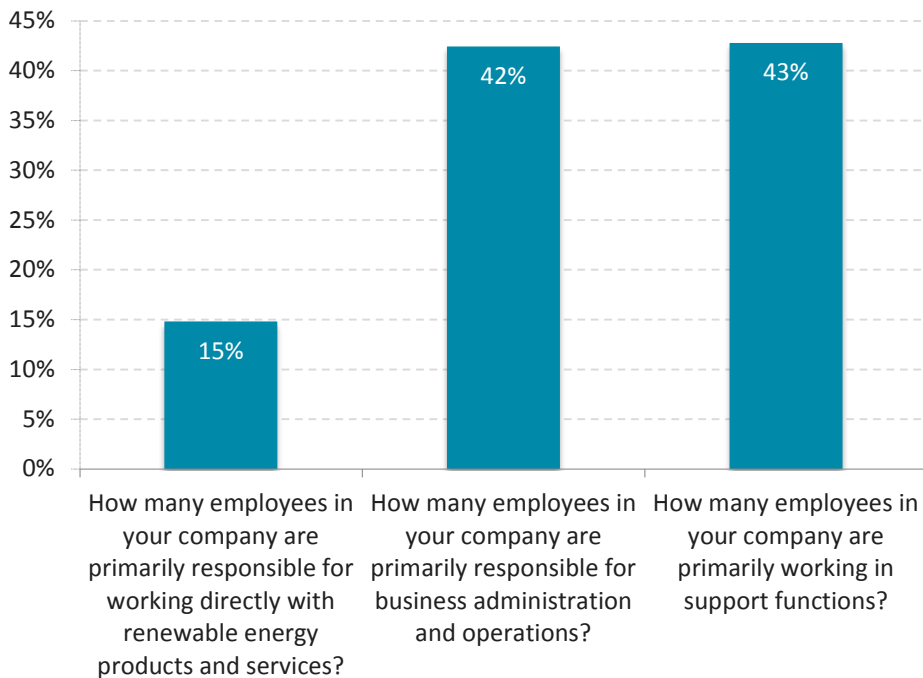
Of the respondents, 86% said that they are planning to hire people with specific renewable energy knowledge and skills over the next 12 months, indicating growing human capital demand. Survey respondents identified explicit skill set gaps in the renewable energy sector. The highest demanded skillsets were also the more difficult to recruit for, which included design skills (such as technical plans, blueprints, and drawings), management skills, construction and installation skills, engineering abilities, as well as technical expertise in specific renewable energy technologies. A pattern emerged among survey respondents between the gaps in current technical capacity (see Figure 1) and important subject matter expertise (Figure 4). Emphasis was placed on the more technical areas specifically, engineering and technology, solar planning and installation, and wind turbine maintenance and installation skills.

FIGURE 1: What are the major technical skill gaps that currently exist in your company? (Rank in order of importance for your business needs)



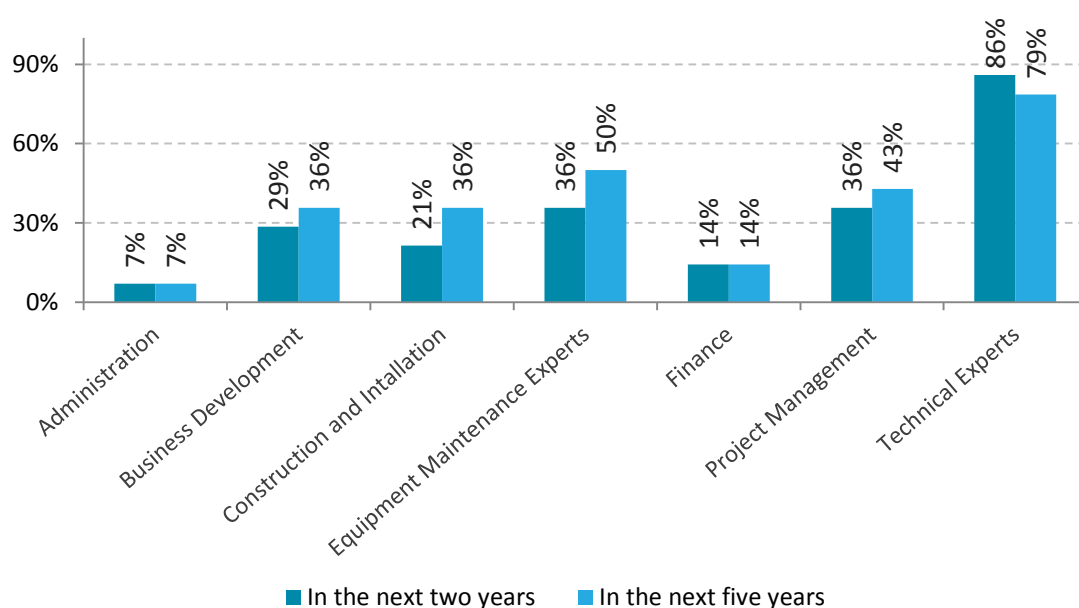
Analysis of the current staffing breakdown in the companies surveyed is indicative of the challenges faced in hiring skilled technical employees. Currently, less than 10% of a company’s workforce (on average) works directly with renewable energy services and products. While nearly 40% of a company’s workforce (on average) works in the areas of business administration, operations, or in support functions (See Figure 2).

FIGURE 2: Percent of employees (per respondent company) primarily responsible for the following



Employers indicated that they are urgently seeking to hire technical experts in the next two to five years (see Figure 3). Specifically, respondents indicated that technical managers, technical quality control officers, installation and maintenance professionals, electrical engineers, and project managers will be in highest demand. This staffing desire underscores the need to shift the balance between technical staff, operational staff, and support staff in these companies. Within five years, a greater percentage of employers stated that equipment maintenance professionals will need to be hired urgently; 36% of employers stated that this was an urgent need in the next two years, whereas 50% stated as much over the next five years. Likewise, business development positions will be increasingly important within five years; 36% of respondents stated as much in five years, whereas only 29% said these were urgently needed positions in the next two years. Project management, construction and installation positions will also be in increasing demand over the next five years.

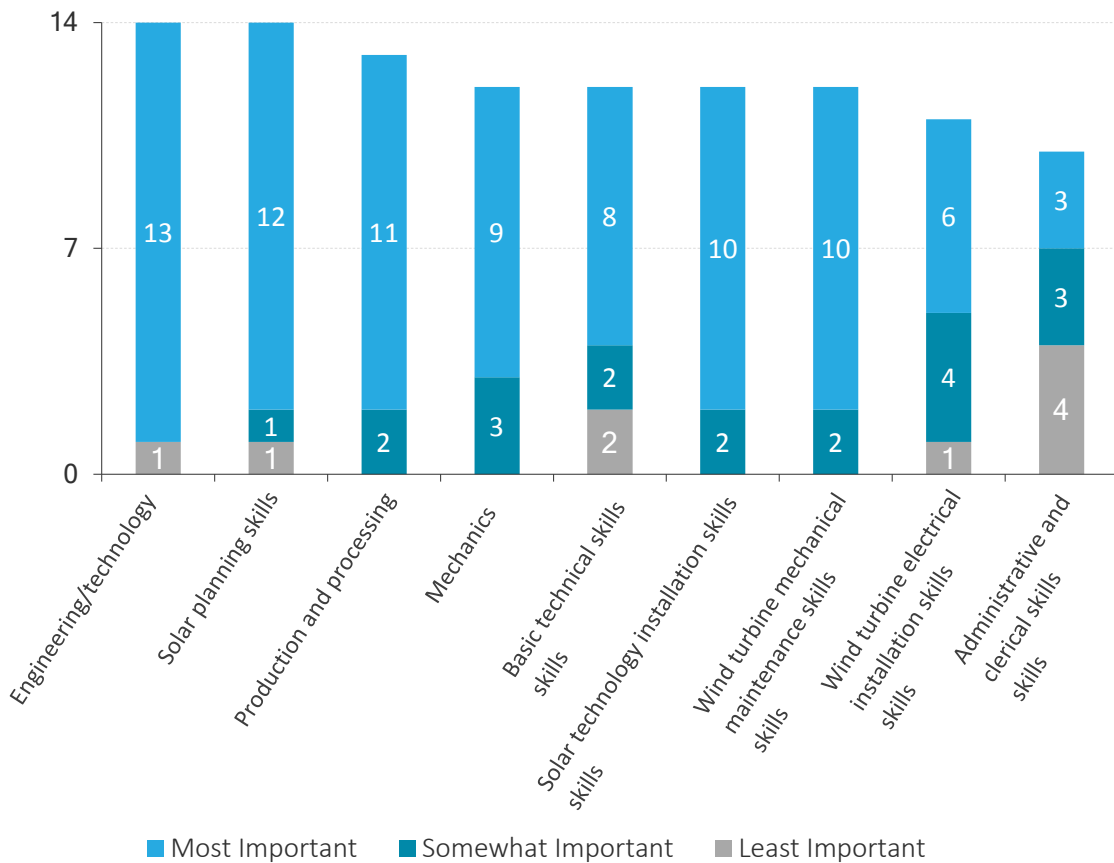
FIGURE 3: Jobs that will need to be most urgently filled in the next two and five years
(Select all that apply)



The overlap in future skills demanded and current skills gaps are significant. The shifts identified in projected hiring needs over the next five years, as well as the emphasis placed on the importance of technical expertise over office support functions, are indicative of an urgent need to strengthen the labor force in key technical skill sets in order to promote industry growth. In addition, labor market needs over the next five years are indicative of the broader growth potential of the renewable energy industry, where greater emphasis will be placed on business development, installation, and maintenance of energy technologies, over general operational and support functions. Highly trained technical employees are urgently needed to satisfy these market demands.

When respondents were queried on what subject matter expertise potential employees should possess, similar results emerged (see Figure 4). The majority of private sector players are seeking more advanced skills – engineering/technology, solar planning/design, and wind turbine installation. The least important subject matter expertise was that of the support function, specifically administrative and clerical skills.

FIGURE 4: Which of the following subject matter expertise do you think is most important for your future hiring needs? (Rank in order of importance for your business needs)



Companies struggle to fill technical vacancies due to the lack of a sufficiently skilled workforce in the country. To address weaknesses in the local labor force, half of the companies reported hiring foreign nationals to supplement and strengthen their current staff, and others mentioned hiring temporary local employees and having employees work overtime (see Figure 5 below).

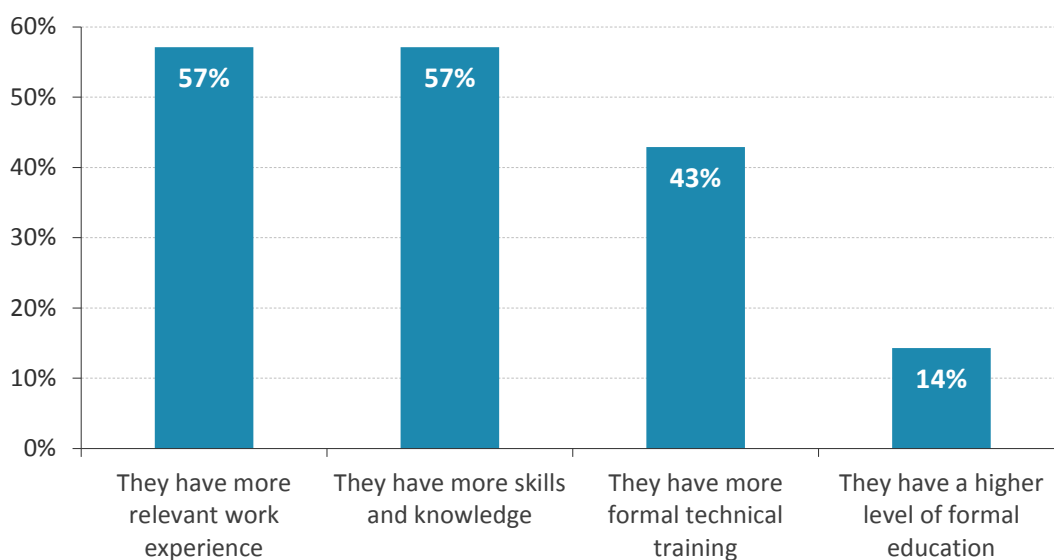
FIGURE 5: What steps has your company taken in the last 12 months to deal with difficult to fill vacancies? (Select all that apply)

| ANSWER OPTIONS | RESPONSE PERCENT | RESPONSE COUNT |
|--|------------------|----------------|
| Temporary local hires were made | 64% | 9 |
| Employees worked overtime | 57% | 8 |
| Temporary foreign hires were made | 50% | 7 |
| Work was outsourced | 43% | 6 |
| Vacancies were filled internally through retraining | 36% | 5 |
| Someone without qualifications was recruited and trained | 21% | 3 |
| The company was restructured | 14% | 2 |

Respondents indicated that foreign nationals come with more relevant work experience, stronger skill sets, stronger technical background, and a relatively higher education level than Somali nationals (see Figure 6 below). Respondents reported hiring foreigners from the

United States, France, Kenya, India, and elsewhere in Asia, either on a temporary or permanent basis. It can be difficult to attract foreign nationals as a result of ongoing safety and security challenges and pay scale differentials. Respondents indicated that foreign nationals are much more expensive as they are typically more highly educated and need to be incentivized financially to take local positions.

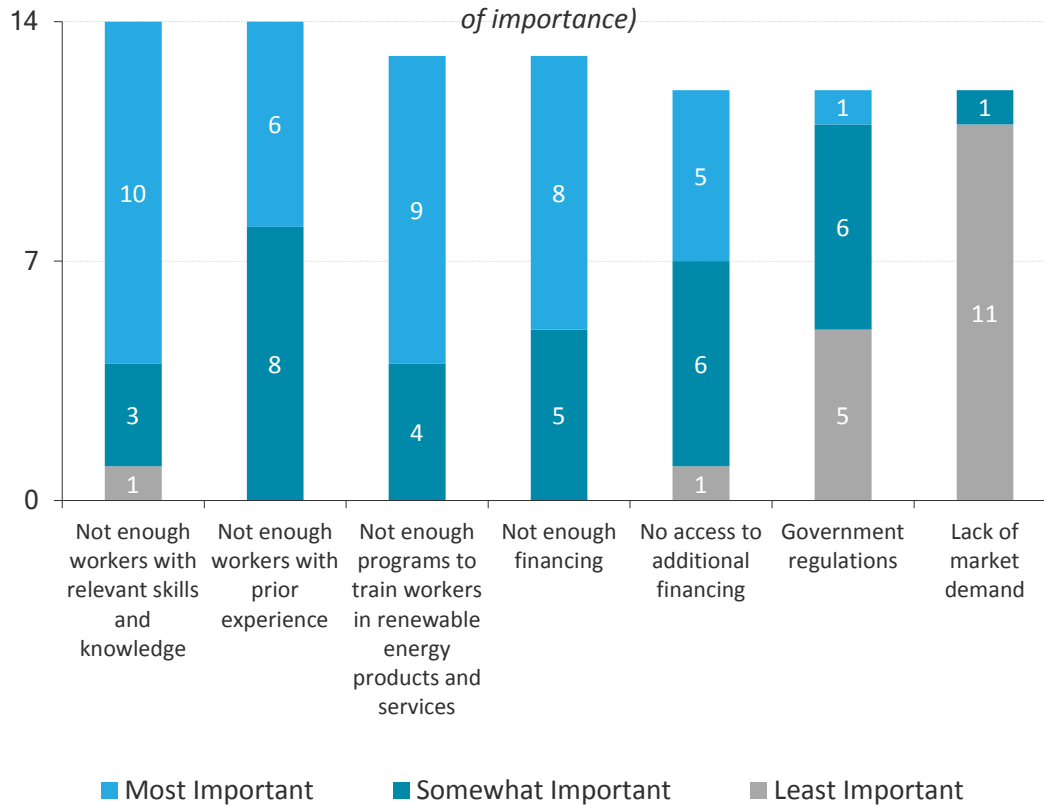
FIGURE 6: If you have hired foreign nationals, why have you chosen to hire/contract foreign nationals? (Select all that apply)



Over 50% of respondents acknowledged a general lack of access to finance as an additional significant challenge. Limited financing limits companies' ability to invest in staff training and professional development. Greater access to financing is crucial for a capital-intensive sector such as energy. To keep pace with market demand, renewable energy companies will require access to more capital with favorable repayment terms so that those companies can acquire the most efficient and durable technology and build out the requisite energy infrastructure to reach end-users.

The findings from the survey indicate that the size of the skilled workforce has potential for growth and that the existing capacity of current and prospective employees needs to be strengthened. Broadly speaking, the lack of a sufficient number of workers with relevant skill sets and knowledge was generally seen to be the most important challenge faced by companies in this sector (see Figure 7). Likewise, respondents frequently mentioned that there were not enough prospective employees with prior relevant experience, forcing employers to look outside of Somalia and Somaliland for skilled labor.

FIGURE 7: What are the biggest challenges you face to implementing renewable energy services and products? (Rank from highest to lowest level of importance)

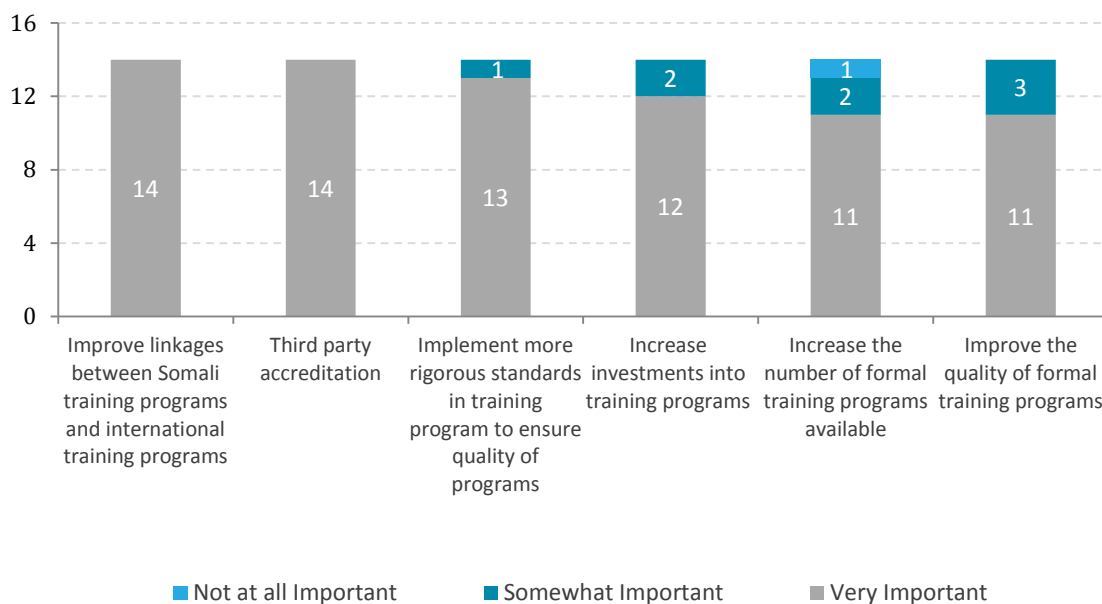


2) Training & Education Programs

All survey respondents acknowledge the lack of sufficient education and training programs (including universities, training centers, certificate programs, Technical Vocational Education Training (TVET) programs) as one of the primary challenges in developing a stronger sector. The vast majority of respondents (92%) reported that the lack of sufficient training programs in the renewable energy sector was an important challenge faced in the growth of this industry. All respondents reported that investments to improve education and training must be increased to ensure the development of higher quality, in-country training and educational programs. While respondents indicated that 25% of employees (on average) are hired directly from universities or technical educational training programs, their skillsets tend to be weak and perceived by employers as barely sufficiently qualified to tackle more technical roles. With a lack of viable training programs, 93% of respondents train new hires on-the-job in order to develop the necessary skills.

Pointing to a broader lack of high quality and high standard technical training programs, respondents highlighted a number of ways to improve these programs, explicitly stressing the importance of outside support. Specifically, respondents ranked suggestions for how to improve workforce development programs in the Somali renewable energy sector. The strongest ranked recommendation is to improve linkages between Somali and international technical programs and establishing third-party accreditation mechanisms (see Figure 8 below). Respondents also considered implementing more rigorous standards to ensure high quality programming, increasing investments into training programs, and increasing the number of training programs as important.

FIGURE 8: How could the workforce development programs in the Somali renewable energy sector be improved? (Rank according to level of importance)



Gaps in subject matter expertise also contribute to the reported quality ranking of training programs in existence. Survey respondents pointed to the importance of establishing training programs focusing on specific subjects. A dominant majority (92%) stated that the Somali renewable energy sector needs programs that train students in specific renewable energy technologies, such as solar and/or wind. A majority of respondents also mentioned the importance of training programs in engineering, construction and installation, electrical maintenance and installation, and project design and management (see Figure 9 below).

FIGURE 9: What other training programs do you think the renewable energy sector in Somalia and Somaliland needs? (Select all that apply)

| ANSWER OPTIONS | RESPONSE PERCENT | RESPONSE COUNT |
|--|------------------|----------------|
| Training in specific technologies (solar power, wind turbines, etc.) | 92% | 12 |
| Construction and installation | 77% | 10 |
| Engineering | 77% | 10 |
| Electrical installation | 69% | 9 |
| Electrical maintenance | 69% | 9 |
| Project design | 69% | 9 |
| Project management | 54% | 7 |
| Project finance | 46% | 6 |
| Financial accounting | 39% | 5 |
| Operations and management | 39% | 5 |
| Supply chain management | 39% | 5 |
| Mathematics and sciences | 31% | 4 |

Respondents thought that building strong skill sets amongst existing and prospective employees was a vital step in advancing the sector. 93% of respondents train their employees on the job. All respondents reported they would pay for formal training programs,

and 86% said they were willing to bring foreign experts to lead these programs. This further underscores the importance of building linkages with foreign players to strengthen the Somali renewable energy sector.

Likewise, all respondents expressed an interest in training future employees and identifying and building talent by launching internship and apprenticeship programs at their companies. The survey highlighted a few key areas for these programs to address some of the most in-demand skills and characteristics, including installation, system design, sales, equipment and maintenance, engineering and project management. Specifically, management, design, and problem solving were viewed to be amongst the most important skills employers desired in new hires; while reliability was the most important character trait (See Figure 10 below).

FIGURE 10: Most important skill sets and character traits by number of respondents (Select all that apply)

| ANSWER OPTIONS | MOST IMPORTANT |
|--|----------------|
| Design (including technical plans, blueprints, drawings, models) | 9 |
| Management skills | 9 |
| Reliability | 9 |
| Honesty, integrity, loyalty | 8 |
| Problem-solving | 8 |
| Teamwork | 6 |
| Foreign languages | 5 |
| Information management | 5 |
| Learning ability | 5 |
| Customer service | 4 |
| Willingness to work overtime | 4 |
| Building and construction | 3 |
| Computers and electronics | 3 |
| Mathematics | 3 |
| Manual dexterity | 2 |
| Chemistry, biology, other sciences | 1 |

These findings emphasize the importance of further investing in educational and training programs to better train Somalis in market-driven skillsets and renewable energy technologies. By investing in such programs, renewable energy firms would rely less on foreign labor, while bolstering the Somali labor force.

RECOMMENDATIONS

As demand for electricity products and services grow, finding affordable solutions that reach all regions is vital to support ongoing renewable energy development. Given that conditions in the region are optimal for the development of solar and wind energy, further investments in this industry, and particularly in the training of the labor force, are needed to allow companies to successfully grow and expand.

Our report highlighted key areas of future intervention, focusing on the development of a highly skilled and trained workforce with a diversity of technical expertise, an injection of finance to support broader growth and expansion of the industry, and increasing linkages between Somali-based firms and international actors in the renewable energy space.

The following recommendations highlight specific avenues for intervention to help strengthen and expand the Somali renewable energy workforce:

- *Establish new training programs and strengthen existing programs that specifically focus on building the technical capacity of students in renewable energy technologies, engineering, project design and management, installation and maintenance.*
- *Link company demands to workforce supply by collaborating with renewable energy sector employers to identify skill gaps in the existing labor force, and by developing and strengthening training programs that focus on developing these gaps.*
- *Establish new and support existing Sustainable Energy Business Associations as a representative body for private sector companies to coordinate with stakeholders, promote linkages, and work to improve workforce skills training.*
- *Build networks with technical training programs and universities in other countries to support the incorporation of internationally recognized curricula into new and existing training programs on identified priority areas. Implement internationally recognized certification of these programs that meet quality standards.*
- *Bring international experts in renewable technologies to the Somali region to teach at universities and training programs and provide on-the-job training for employees to encourage skills-transfer.*
- *Engage technically skilled and qualified diaspora linked to sustainable energy companies or teaching institutions in their host country to bridge the skills gap.*
- *Support the implementation of formal on-the-job training programs for companies to provide current employees with the requisite skill sets that further develop the capacity of the renewable energy workforce.*
- *Implement structured internship and apprenticeship programs for companies in cooperation with universities and TVET centers.*
- *Create partnerships and exchanges with established renewable energy companies in other countries to support further exchange of knowledge and best practices to strengthen the Somali renewable energy sector.*
- *Promote employment opportunities within the sector and its benefits.*



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