



# A Market Assessment of the Current and Future Skills Needs For Economic Growth and Job Creation in Zambia in the Areas of Renewable Energy Power Generation & Distribution and Energy Efficiency

## 1. Country Context

Access to affordable, reliable and sustainable energy is one of the main drivers for social and economic development, resulting in better living conditions and access to new employment opportunities and enterprise development. However, only 31% of Zambians have access to electricity, of which 67% are in the urban areas and 4% in the rural areas.

Hydropower is the dominant energy source in Zambia, providing most of the Zambia's energy supply (93%), followed by diesel and coal fuelled energy plants (3%). Apart from hydro power, Renewable Energy (RE) such as solar, although having a huge potential to complement existing energy sources, are currently underexploited only providing limited amounts of energy to the Zambian population and the market penetration is very low. In 2015, an energy deficit of close to 700MW occurred, with demand standing at 1,949MW while supply only stood at 1,281 MW.

The importance of energy in Zambia's Vision 2030 and the Seventh National Development Plan (7NDP), takes a central stage, as energy is seen as an enabler for sustained economic growth. The Government of Zambia, through the 7<sup>th</sup> National Development Plan, stipulates to grow and diversify significantly its power generation and transmission capacities relying on new Renewable Energy sources such as solar, geothermal, wind, biomass, with the aim to ensure universal access to clean, safe, reliable and affordable energy, in line with national development priorities.

In addition, the Government has recognized Energy Efficiency (EE) as a priority issue because it can result in economic benefits, energy security, environmental protection and climate change mitigation. Enforcement of minimum efficiency standards for appliances, equipment and buildings can result in energy savings which could offer a unique opportunity to reconcile economic competitiveness with sustainable development and provide the added benefits of reducing the cost of energy and increasing energy productivity. Furthermore, improving EE in industry and manufacturing processes is important for firms to more sustainably use energy inputs and improve on their bottom line while limiting greenhouse gas and especially CO<sub>2</sub> emissions thereby contributing to Zambia's transition to a low carbon economy.

However, although the market is open for private sector investment in the RE&EE arena in Southern Africa, an important impediment is the lack of national capacities to generate and distribute RE as well as lack of capacity to implement EE measures and cleaner production in industry. On the supply side, graduates from technical vocational and education training (TVET) institutions are not equipped with the appropriate competencies and skills to meet the demand of the RE&EE sector. The mismatch between skills currently offered and the skills required by the private sector in the emerging areas of RE&EE is a critical bottleneck for the transformation to renewable energy. Skills are critical to ensure a smooth

transition and diversification of the energy mix, while contributing to economic growth, jobs and opportunities for development of enterprises along RE and EE related value chains.

## 2. The SkidRES Project

Only 4% of the rural population is grid-connected and increasing access to energy is of crucial importance to improve economic, social and human development in Zambia. Only part of the increased access will come from extending the national grid and decentralised electricity supply through mini-grids and individual solar home systems will represent a large share of future connections in rural areas. Engaging the private sector as energy service providers is crucial for expanding energy access in rural Zambia. This will require new and different skills. A large share of the new and intermittent power sources (solar, wind) to be integrated into the national grid will put new requirements on existing infrastructure (hydropower and grid management). For efficient integration, new technology and new skills are needed. In addition, these new power sources are expected to be operated by Independent Power Producers (IPPs) which, aside from technical aspects – such as RE installation and maintenance, software development, geothermal and geophysical skills, grid integration skills - will also require skilled people in financial modelling, business planning and development for RE investments.

Against this background the International Labour Organization (ILO) with funding from the Swedish International Development Cooperation Agency (Sida) is supporting the Kafue Gorge Regional Training Centre (KGRTC) implement a pilot project for skills development for the Renewable Energy (RE) and Energy Efficiency (EE) sub-sectors in Zambia. KGRTC, with its existing experience and expertise in hydropower and existing private sector engagement portfolio, has the potential to become a key player in skills development for RE and EE technologies. In addition, KGRTC is well placed to address and build knowledge in EE, especially in areas such as metering and analysis, grid optimization, smart grids and energy audits within the industry. Partnership with the private sector will enhance the institutional capacity development of KGRTC through increased outreach, impact, diversification, good governance and financial sustainability.

Public Private Development Partnership (PPDP) is an emerging development approach that enables the private sector to partner effectively with government institutions and international development partners as in this case to allow the KGRTC to contribute sustainably to socio-economic development in an environmentally sustainable fashion. This in turn will be pivotal in the development of the demand and supply side of renewable energy as well as energy efficient technologies. It will also provide a model for financial sustainability and replication within other training institutions and help promote achievement of inclusive green growth and development in Zambia.

The PPDP seeks to address the demand for technical and core work skills while also promoting stronger gender equality in the sector and in particular create increased employment opportunities for women, including young women in the energy sector.

This one-year pilot project will test and prepare for skills development in the renewable energy and energy efficiency areas and will be driven by current and future private sector and labour market needs. The immediate objective is to lay a foundation for a three-year PPDP that is anticipated to follow based on lessons learned during the implementation of the pilot. With strong engagement by the private sector the project aims to contribute to Zambia having a work force with skills demanded by especially the private sector for increased investments in renewable energy and energy efficiency measures thereby being able to tap into the rapid development of energy technology.

The intervention will, firstly, capacitate the KGRTC to offer skills for green jobs demanded by the energy sector (as well as private sector actors' part of the upcoming Public Private Development Partnership) and, secondly, contribute to creating a pool of renewable energy and energy efficiency technicians with skills demanded by the sector both in Zambia and within the sub-region. Ultimately, this will increase the access to affordable, clean, reliable and sustainable energy in rural areas, which in turn will contribute to economic development, improved livelihoods and poverty reduction. Over time, this will help create an enabling environment that allow for growth and job creation in the energy sector.

### 3. Objective of the Assignment

The ILO is contracting a consultant/service provider to undertake this market assessment in order to develop a better understanding of the market system for RE&EE and especially with regards to the opportunities and constraints for current and future skills development that is imperative for growing the sector. The demand for RE&EE skills is a function of the current demand for renewable energy and energy efficiency and current limitations to market development. Whereas the skills gap is one of the key constraints to development of the RE&EE sector there may be other constraints including political, social, environmental, legal and economic, which are equally important to understand in order to develop an overview of the market system for RE&EE.

This market system analysis (MSA) will therefore assess the broader market for renewable energy generation and distribution as well as energy efficiency to better understand the potential growth and job creation opportunities in this sector, but with a key focus on the skills needed to facilitate growth and employment creation. This analysis includes answering the following two key aspects:

- i. An overview of the market systems for renewable energy and energy efficiency focussing on the basic value chain and the supporting functions and the rules and regulations with a specific focus zooming in on the supply of and demand for current and future skills needs that are required to further grow and improve the performance of the RE&EE sector <sup>1</sup>
- ii. The identification of the key root causes and constraints with regards to current and future skills development that must be addressed as a basis for pinpointing where the project should target its interventions.

In order to get more in-depth information on the market system and the current and future need for skills to meet demand and grow this sector, the assessment should address, but not be limited to, the following questions:

#### 3.1 Demand side

- 3.1.1 What private sector companies and public institutions are currently operating in **renewable power generation and power distribution** as well as improving **Energy Efficiency**?<sup>2</sup>

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<sup>1</sup> This analysis requires the consultant/service provider to be familiar with the Market Systems Development (MSD) approach and in particular the ILO methodology for analyzing market systems, i.e. the "doughnut" approach

<sup>2</sup> It is important to distinguish throughout the analysis between RE power and distribution and EE in industry and manufacturing firms

- 3.1.2 What kinds of skilled workers are these companies and public bodies looking to recruit? What level of certification? Which type of jobs and occupations are needed?
- 3.1.3 From where are the private sector companies and public bodies recruiting qualified workers?
  - 1.1.3.1 Local training providers (public and private)?
  - 1.1.3.2 Other geographic areas of Zambia?
  - 1.1.3.3 From outside Zambia?
- 3.1.4 Are the employers **providing work based training** (apprenticeships, internships, industry attachments)?
- 3.1.5 Are employers aware of work based training modalities? Are they interested?
- 3.1.6 Which **soft skills** do employers require?
- 3.1.7 What types of contracts do the employers offer: Part-time? Fulltime? Long term? Short term? Temporary? Seasonal? Remote locations? Are the contracts complying with national labour laws and basic conditions of employment?
- 3.1.8 Are young women and men interested in setting up entrepreneurial activities in the generation and distribution of renewable energy?
- 3.1.9 What other constraints are companies in this sector facing?
  - Political?
  - Social?
  - Legislative?
  - Regulatory?

### **3.2 Supply Side**

For **each** of the occupational categories identified in the demand analysis (Q1.1.2 above), the consultant/service will address the following:

- 3.2.1. Are training providers (KGRTC, vocational training centres and private training providers) offering programs that are in demand by private sector companies?
- 3.2.2. What relevant programs do KGRTC, vocational training centres and private training providers offer?
- 3.2.3. What is the level of certification offered at the end of each training program?
- 3.2.4. What is the duration/length of time required for each training program?

- 3.2.5. What is the cost for each program?
- 3.2.6. How many students enrol in these programs each year, paying attention to sex disaggregated data?
- 3.2.7. Are funding opportunities available for students to access these programs? What are these funding opportunities?
- 3.2.8. What are the challenges preventing or discouraging women from enrolling in the programs at KGRTC, vocational training centres or private training providers?
- 3.2.9. Are there relevant entrepreneurial training programs offered in KGRTC, the vocational training centres and/or private training providers? Which ones?
- 3.2.10. What are the main challenges that face KGRTC and vocational training centres in offering relevant training programs?
- 3.2.11. What rules and regulations govern the provision of technical and vocational training to existing and start-up companies in the sector?

#### 4. Description of Tasks

The Consultant/Service provide is expected to undertake the following tasks during the assignment with a focus on RE&EE:

- 4.1. Distinguish between renewable energy power generation and distribution on the one hand and energy efficiency on the other hand
- 4.2. Develop comprehensive and relevant instruments for data collection to gather information on the proposed questions (above) taking into account the ILO MSA methodology;
- 4.3. Apply the data collection instruments to conduct in-depth research, including but not limited to, focus group discussions, key informant interviews, to identify the skills that are required by the private sector and the supply of these skills by vocational training centres and private training providers.
- 4.4. Analyse collected data to establish the demand driven skills requirements by the private and public sector in the immediate term, as well as skills demand projections in the medium (1-3 years) and long (3-5 years) term.
- 4.5. Establish the level of awareness of and interest in enrolling for technical, vocational and education training among youth and women, especially in the RE/EE sector
- 4.6. Establish the level of awareness of and interest in entrepreneurship along the RE/EE value chain among youth and women.

- 4.7. Identify entry points for work-based training opportunities with the private sector companies and vocational training centres through which students can acquire hands on training.
- 4.8. Establish recruitment practices of private sector companies in the RE/EE sector.
- 4.9. Establish opportunities and willingness of private sector companies and public energy bodies to partner with KGRTC, vocational and training centres and/or private training providers through a structured engagement modality/approach which can be pursued i.e. through formal partnership agreements/MOUs.
- 4.10. Identify funding opportunities at provincial and national level through which students can apply to enable them access technical and vocational training.
- 4.11. Through consultation, identify practical communication channels through which access to information (such as programs offered by KGRTC, vocational training centres and private training providers, funding opportunities available) can be used.
- 4.12. Make recommendations for how to increase women's and youth's participation in technical training for the RE/EE sectors
- 4.13. Make recommendations on potential quick wins through which the project can leverage in the immediate, medium (1-3 years) and long term (3-5 years).

**Gender equality, diversity and inclusion of vulnerable groups must be explicitly addressed throughout the assessment**

## 5. Methodological Approach

The methodological approach may be adjusted by the Consultant/Service provider in consultation with the SkiDRES project team, provided the purpose of the assessment is maintained and the expected outputs produced are of the required quality.

The methodology should include:

- i. Framing of the assignment within the overall Market System Development (MSD) approach of Sida and the ILO (the "Doughnut" for understanding markets)
- ii. A desk review of project documents, national policies, regulations influencing the sectors, and other relevant literature and documentation.
- iii. Access other relevant information sources such as national and provincial statistics to identify existing skills demand and supply gaps in these sectors.
- iv. Design an effective and comprehensive data collection tool and methodology for the skills demand and supply analysis to be used.

- v. Conduct both qualitative and quantitative analysis of collected data on skills demand and supply aspects.
- vi. Consultations and interviews with relevant stakeholders / organizations including Project team.

## 6. Project Support

The project team shall provide technical support to the Consultant/Service provider. This support shall include:-

- i. Make available relevant documents such as the Project document and other relevant documents produced by the ILO for similar assignments
- ii. Introduce the consultant to KGRTC and other TVET institutions, the national private sector companies and Swedish MNEs, key implementation partners and other relevant stakeholders
- iii. Organize the MSA inception report validation workshop
- iv. Distribute the MSA draft report for review and consolidation of comments to be sent to the Consultant/Service provider
- v. Quality control of reports submitted
- vi. Providing clarity and/or guidance during this assignment.

## 7. Expected Deliverables & Timelines

The expected deliverables shall be:

- i. An **Inception Report** outlining the methodology, the respondents, tools, questionnaires and suggested itinerary for field work.
- ii. The **draft** MSA report
- iii. The **Final** MSA report

All deliverables are expected to be completed within **2 months**, beginning in Mid -September 2019 and concluded latest by 30<sup>th</sup> November 2019 as outlined below:-

- a. Week 1 & 2: Inception Report

The report shall contain a comprehensive methodological overview i.e. what, who, when, where and how the MSA will be carried out to especially address the skills demand and supply questions. The inception report should include a data collection matrix (dimensions, indicators, sources of verification) and the data collection instruments. This inception report will be validated at a constituent's workshop.

- b. Week 3 & 4: Draft MSA Report

The draft and final report should follow the format indicated in part d (iii) below. The draft report should be submitted to the Project Coordinator, who will circulate it to key stakeholders (donor, ILO technical specialists, constituents, and partners) for comments on factual issues for clarification. The Project Programme Officer will consolidate the comments and send these to the Consultant within 7 days after the submission of the draft report.

c. Week 5, 6 & 7: Final MSA Report

The Consultant will present a final MSA report with key findings and conclusions at a stakeholders' workshop with the relevant audiences. This report must include relevant analysis and recommendations for program implementation that cover the different dimensions of the MSA as well as suggested interventions for a possible 3 year follow-up project. The final report will be presented to the ILO.

d. The final MSA and skills demand and supply analysis report should contain the following, in English:

- i. Electronic and hard files with all raw and data analysis details (e.g. table of response rates – full, partial, non-response etc.) in Excel or other agreed format.
- ii. Electronic copies of draft and final reports in English, not more than 25 pages, excluding annexes.
- iii. The report format should include, but is not limited to the following sections:
  - a. Table of contents
  - b. List of acronyms
  - c. Executive summary
  - d. Background and MSA overview of the Sector explaining the core value chain, the supporting functions and the rules and regulations
  - e. Supply side analysis
  - f. Demand side analysis
  - g. Gender equality, diversity and vulnerable groups analysis
  - h. Objectives and skills demand and analysis survey questions
  - i. Pre-situational analysis methodology (to include project/survey locations, sampling design and sample size, questionnaire design and development, training, field work, data entry and processing, data analysis, limitations to the study).
  - j. Results to be presented in narrative, tables/graphs, matrixes and pictures.



- k. Conclusions and recommendations
- l. Proposed intervention models for a 3 year follow-up PPDP project
- m. Annexes (to include references, definitions of key constructs, tables and figures, questionnaires and other data collection instruments).

NOTE: Printed copies and an electronic of the final report in English should incorporate input, feedback and comments on the draft report.

## 8. Payment Schedule

The following payment schedule will apply:

- 1) 30% upon acceptance by the ILO of Inception report
- 2) 40% upon acceptance by the ILO of Draft MSA report
- 3) 30% upon acceptance by the ILO final MSA report

## 9. Profile of the Consultant/Service provider

### 9.1 Required qualifications & experience

- Demonstrated knowledge of the energy sector, renewable energy and energy efficiency concepts and methodologies.
- Proven expertise experience in undertaking at least one, but preferably more Market Systems Assessments (MSAs).
- Proven expertise and experience in conducting skills demand, supply and gap analysis surveys within the technical, vocational and education training sector, including techniques in participatory research, data collection and analysis, and proposal of action points.
- At least 7 years' experience in skills development and employment promotion related projects, with extensive experience in undertaking qualitative and quantitative analytical research.
- University degree from a recognized university, in education, economics, engineering, development studies, business administration and management or other closely related field.
- Good knowledge and understanding of the Zambian education and TVET system.
- Strong analytical and report writing skills in English.

**The ILO welcomes applications from service providers as well as individual consultants. The required qualifications and experiences may require two or more consultants to submit joint proposals.**

Submit your proposal by email to: [lusaka@ilo.org](mailto:lusaka@ilo.org) addressed to the Director, ILO Country Office for Zambia, Malawi and Mozambique, Lusaka by **6<sup>th</sup> September 2019**.