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Harnessing Zimbabwe's Potential for Green Energy and Green Jobs in the Energy Sector

Submitted by The Labour and Economic Development Research Institute of Zimbabwe (LEDRIZ)

1 ZIMBABWE'S ENERGY SITUATION

Energy demand in Zimbabwe has been growing by over 2% per annum. However, the country produces only 1300MW of electricity versus a demand of 2200MW, meaning that only 59% of the country's energy demand is produced internally, leaving a national deficit of about 41%. This has stifled industrial production at national level across all economic sectors (both in the formal and informal economy). The 2015 Confederation of Zimbabwe Industries (CZI) State of the Manufacturing Sector Survey indicated that power cuts and shortages are amongst the five top structural bottlenecks negatively affecting industrial production. Unable to remain competitive as a result, some companies have responded by reducing the size of their workforce or shutting down completely. Power outages have likewise heavily disrupted the accessibility and availability of essential basic social services such as water and sanitation, education and health, which are basic socio-economic rights. The government has been trying to address this through load shedding and increasing imports.

Moreover, the main sources of energy in Zimbabwe are non-replenishable, i.e., wood, coal, electricity and petroleum. In 2009, the dominant source was wood fuel (61%), followed by liquid fuels (18%), electricity (13%) and coal (8%). This dependency on high-carbon wood fuel is major contributor to the production of greenhouse gas (GHG), climate change and thus environmental unsustainability. The 2014 Labour Force Survey revealed that 65.2% of the population still relied on wood for cooking, of whom 92.5% were living in rural areas. Despite the rural electrification programme, electricity usage in rural areas remained low, being only 5.3%.

In light of the above, sustainable and renewable energy has emerged as one of the anchors in national policies and developmental frameworks such as the National Energy Policy (2012), the Zimbabwe Agenda for Sustainable Socio-Economic Transformation (Zim-Asset) (2013–2018) and the National Response Strategy on Climate Change (2015). It also has great potential to create green jobs at all levels of society and in rural and urban areas.

2 GREEN JOBS FROM RENEWABLE ENERGY

According to the International Labour Organisation, jobs are green when they help to reduce negative impacts on the environment and lead to environmental, economic and socially sustainable enterprises and economies. In addition, jobs are green if they:

1. Improve energy and raw materials efficiency.
2. Limit greenhouse gas emissions.
3. Minimise waste and pollution.
4. Protect and restore ecosystems.
5. Support adaptation to the effects of climate change.

In this regard, renewable energy jobs fit perfectly with the above five criteria. However, according to the ILO, the transition towards renewable technology tends to have positive and negative effect on jobs in the following ways:

- Additional jobs are created.
- Some jobs are substituted.
- Certain jobs are eliminated.
- Many existing jobs are redefined.
- New jobs offset those that were lost. However, those who get green jobs will not necessarily be the same workers who were originally made redundant.

Therefore, all these effects need to be taken into consideration in policy implementation, including strategies to ensure that positives outweigh the negatives.

3 THE POTENTIAL FOR JOB CREATION IN RENEWABLE ENERGY VALUE CHAIN SYSTEMS

As indicated in Figure 1 (right), the potential for employment creation lies in the renewable energy value chain. The value chain encompasses the manufacture and distribution of renewable energy equipment, developing renewable energy projects, construction and installation associated with the development of renewable energy capacity, operation and the maintenance of renewable energy facilities as well as a range of cross-cutting activities that contribute to more than one of the other value chain stages.

The value chain system and employment potential applies for all the sub-sectors of renewable energy: wind, solar, bio-energy and hydropower.

4 THE DRIVERS OF RENEWABLE ENERGY PRODUCTION AND INVESTMENTS IN ZIMBABWE

There are five main drivers for adoption of renewable energy and job creation in Zimbabwe, namely:

1. Energy deficits from the traditional sources of energy.
2. High unemployment rate, especially among the youth.
3. The expansion of the informal economy.
4. Limited fiscal space for importing energy.
5. The national policy direction towards a sustainable energy mix.

5 CHALLENGES TO DEVELOPING RENEWABLE ENERGY AND CREATING GREEN JOBS IN ZIMBABWE

Creating green jobs in renewable energy has its own particular challenges. These include:

- *Competition for land use between bio-energy and large-scale solar projects and agricultural food production and food security.*
- *The high initial investment costs associated with project development, design, planning, and installation, and consultations with regulatory authorities, policy makers and communities.*
- *The high production cost of solar-generated electricity compared to those of the current national power supply, which discourages investments.*
- *High regulatory costs, which puts a premium on the cost of doing business in the renewable energy sector and limits investments and job creation. The Environmental Management Agency (EMA), for example, charges 1.5% of the total project cost upfront in order to obtain an Environmental Impact Assessment (EIA) certificate and the Zimbabwe National Water Authority (ZINWA) charges 10% of the revenue for non-consumptive water use for hydropower projects, thus making mini-hydro projects unviable (ZERA, 2015).*
- *The lack of a comprehensive labour market information system on employment levels in the renewable energy sub-sectors. This makes it difficult to determine the state of green energy jobs, potential green job creation, and projected demand for these jobs in order to inform future policy direction and interventions.*
- *The lack of effective private sector participation to fund renewable energy projects. As some mega renewable energy investment projects may take between 5 and 10 years to realise profits, local banks are less than*

Figure 1: The value chain system and employment potential



Figure 2: Potential providers of green energy jobs.



interested making investments. This is due to the lack of any guarantee about commercial viability or profitability.

- Lack of integration of decent work in green energy jobs. For example, jobs in bio-energy production (such as sugarcane plantation workers, construction workers for installing facilities and farm workers in bio-energy projects) are usually precarious, with low wages and serious decent work deficits.
- Lack of effective engagement (social dialogue) in national policy development by all stakeholders. Although investment in greener energy rests in job creation, trade unions are largely side-lined when it comes to renewable energy-related initiatives. Social dialogue is critical to maintaining peaceful labour relations.
- Potential job losses in the fossil fuel industry, as the transition to a greener energy sector involves switching to new and less labour-extensive technologies. This may in turn result in opposition to the transition to renewable energy.
- The slow response of educational institutions to provide requisite green skills (cognitive, technical and interpersonal). For example, there are only two higher learning institutions that currently provide specific and comprehensive programmes in renewable energy: the Mechanical Engineering Department at the University of Zimbabwe and Chinhoyi University of Technology.
- High brain drain in the engineering field.
- The limited number of highly qualified lecturers – especially those with PhDs – at tertiary institutions, which undermines the quality of human resources and educational services.

- The lack of specialised skills in renewable technologies that have a more ‘micro’ approach to renewable energies, such as those for the areas of energy storage, transmission, and standardisation processes in engineering systems, especially for medium- to large-scale projects.
- The lack of integration of entrepreneurial and ‘soft’ skills in tertiary degree programmes. These include strategy and leadership, negotiation, interpersonal communication, innovation skills, risk analysis, communication, sustainable procurement, business plans to market renewable energy, and carbon auditing and trading.
- Weak co-ordination between national development policies and those concerned with green energy and green skills development.
- The lack of information, especially in rural communities that show high potential for investment in renewable energies. These communities lack knowledge about the market potential for renewable energy, the potential for providing renewable energy services to customers, projects that can be successfully replicated, potential financial partners, and the means for establishing renewable energy systems.

6 WHO ARE THE POTENTIAL PROVIDERS OF RENEWABLE ENERGY JOB OPPORTUNITIES?

The potential players in investment in renewable energy who are critical to unlocking this area of future employment are shown in Figure 2 (above).

7 POLICY INTERVENTIONS AND ACTIONS

Greater policy coherence in land use

A sound policy framework is required to ensure a balance between land use for renewable energy installations and food production. Promoting renewable mega energy projects such as bio-fuels or solar should be done in a manner that encourages greater agricultural productivity and the use of degraded land. Biofuels, for example, play a critical role in increasing employment gains, especially in the rural economy, creating income streams, even for out-growers in rural areas. Thus, integrating food and fuel production should provide opportunities for synergies that allow overall improvements in the efficiency with which land-based resources are produced and used.

Incorporating renewable energy-based employment data into the national Labour Market Information System (LMIS)

Reliable, up-to-date statistics are critical to developing concrete policies and future policy directions. National statistical systems need to integrate and document data on number of jobs created in renewable energy and related sub-sectors. This will assist in tracking the state of the country's progress in renewable energy development. Other countries have already begun reporting on employment statistics in the renewable energy sector. Here, Zimbabwe should place particular focus on hydro, solar and bio-energy, as these sub-sectors have greater potential for employment gains.

Creating an enabling, stable and supportive macro-economic environment

A stable macro-economic environment acts as a catalyst for private sector investment in renewable energy technologies. Given that the initial investment cost in renewable energy technologies is relatively high – especially if it is a large-scale initiative – the right choice of supportive incentives is critical. Such incentives include time-bound green subsidies, lower interest rates, feed-in tariffs, and exemption from certain regulations. Support for creating green small and medium enterprises (SMEs) should be regarded as a priority. This will assist in unlocking employment gains (especially for youths, who form the bulk of the unemployed) in the value chain system for renewable energy products and services. However, such support must

be carefully designed and provided in a transparent manner to avoid abuse of resources.

Balancing trade-off benefits from renewable energy and livelihoods

In many instances, renewable energy projects such as mega hydropower, bio-energy and solar have resulted in the displacement of local populations, and occasionally the relocation of entire villages, thereby adversely affecting local livelihoods. It is therefore critical that proposals for large-scale renewable energy projects fully offset negative effects by providing a social plan that is supported by adequate budgetary resources. Displaced inhabitants must be adequately compensated. Careful planning, social dialogue and thorough social and environmental assessments and mitigation are vital to redressing the adverse effects.

In the event of attracting of foreign direct investments in the renewable energy sector, emphasis should be placed on adhering to environmental protection systems, developing comprehensive social plans in case of livelihood disruption, technology and skills transfer, and promoting forward and backward linkages with domestic industry in order to boost local employment and income.

Integrating renewable energy technology and green skills in the National Education and Skills Training Policy

Zimbabwe's National Education and Skills Policy should combine education, training and capacity building from early childhood in order to foster wider public and industry support for a low-carbon energy sector. The policy should be able to address the skills mismatch and shortages for essential occupations in all renewable energy sub-sectors. This can be done by increasing higher academic institutions that offer specialised courses on renewable energy at all levels, as is the case in developing countries such as Tunisia and emerging economies like India.

The policy should also integrate specialised training with a more 'micro' approach for each renewable energy sub-sector. This can be effected through vocational training colleges. Countries such as Belgium, Greece, Poland, Portugal, and Tunisia have already recognised the potential of the green economy as a source of jobs for the unemployed and have developed appropriate vocational courses in green skills. In the case of Zimbabwe, specific attention should be paid to areas of renewable energy-related information and communication technologies, energy storage and

transmission, and product standardisation processes in engineering systems.

This same policy should likewise pay specific attention to the gender dimensions of green skills development. In terms of careers, females remain underrepresented in life and physical sciences, engineering, manufacturing and construction, all of which have strong links to renewable energy. Special effort should be made to make these areas of study and related occupations more attractive to females where skills shortages are particularly acute, for example, energy auditors, engineering consultants, and equipment installers.

Greater policy coherence

In addition to those of the Ministry of Environment, Water and Climate, the Government has other sectoral policies that embrace climate change-related issues. Examples include the Zimbabwe National Employment Policy Framework, the Energy Policy, the Biofuels Policy and the upcoming Climate Policy and Solar Policy. Improved policy co-ordination will result in greater effectiveness in employment creation.

Establishing an energy bank

The lack of capital with which to finance renewable energy production is one of the barriers to unlocking potential employment. In this regard, establishing an energy bank is vital, as energy security is equally important as food security. The energy bank can provide business start-up loans with manageable interest rates to both households and larger projects. New potential investors can also obtain longer-term loan financing with greater ease, since most traditional financial institutions lack an appreciation of the renewable energy business whose investments can take longer to reap profits.

In addition, as part of the recent move for transition from informality to formality, loan facilities should also be tailor-made to support green SMEs and renewable energy initiatives for the informal economy.

Investing in renewable energy is complicated and requires a very specific approach. The approach used to establish Agribank, a financial body that supports and boosts agriculture production and productivity, could be replicated in the renewable energy sector. Lessons can also be drawn from the Grameen Shakti Rural Bank of Bangladesh, which provides micro-credit for solar installations targeting the rural poor, especially women.

Adequate budgetary support for climate change policies and climate related strategies

Zimbabwe has established sound government machinery and institutions, policies and developmental frameworks to deal with climate change and renewable energy development. In fact, the development of sector-specific policies such as the Climate Policy, Bio-fuels and Solar Policies is underway in order to harness the potential in renewable energy. However, without adequate budgetary support, it will be impossible to effectively implement these enlightened and comprehensive policies and strategies that have potential to unlock job creation. It would be disheartening to observe such policies gathering dust due to a lack of resources.

Gender mainstreaming in renewable energy technologies

The majority of green energy jobs are highly technical and mostly found in the construction, manufacturing and engineering fields where females are significantly under-represented, thus perpetuating gender inequality. In order to avoid exclusion of females, gender mainstreaming must be placed at the centre of policy planning, formulation, monitoring and evaluation and all other strategic interventions on job creation in renewable technologies in both urban and rural areas.

Intensified Research and Development (R&D)

Additional cutting-edge research and development is required in supporting renewable energy investments, given that the renewable energy sector is relatively new to Zimbabwe in comparison with to other countries. This necessitates an increase in targeted financial support, especially in the areas of climate science and services, technology and knowledge transfers between universities, research centres, and the public and private sectors. SIRDC is already undertaking pilot projects but faces financial constraints as far as upgrading them to more widespread implementation.

Applying the 'just transition' principle in transitioning to greener energy sector and green jobs

Transitioning to a greener energy sector has both positive and negative effects on employment. It requires workers to adapt and ensure that the workforce is kept abreast of skills and qualifications changes during this time. In the event that workers lose jobs due to adjustments within the workplace or as a result of restructuring, retraining is critical to improving their future employability.

Both the government and employers should consider supporting 'just transition' programmes, as these encompass social protection (pensions, retrenchment packages and gratuities).

Active labour market policies

Improving assistance with job searches, job counselling, training and labour market information targeting opportunities in green energy sectors is vital. In addition, public works programmes in climate-sensitive infrastructure, such as dams and road infrastructure, should be promoted in climate change-sensitive geographical locations.

Strengthening national social dialogue mechanisms on renewable energy

Social dialogue should be at the centre of policy making, implementation, and the monitoring and evaluation of national green energy-related processes. Effective dialogue between the government, business and trade unions will foster national ownership and awareness of environmental issues and jobs related to renewable energy. This will act as a catalyst for establishing win-win partnerships to create green jobs. Models of good practice from which to draw lessons on effective social dialogue include France (Grenelle), Germany (Building Pact), Spain (Kyoto), and South Africa (South African Green Economy Accord of 2011). These developed strong relationships with their social partners and harnessed political commitment when co-ordinating green economy initiatives.

Applying the principles of Decent Work to the renewable energy sector

It is critical that the social partners (business, government and labour) ensure that decent work principles are applied to existing and newly grown renewable energy enterprises and supply chain systems. This includes the stages of policy design and at the workplace. The Decent Work Country Programme for Zimbabwe (DWCP-Z) is a tool that social partners can use to strengthen decent work

in greening the energy sector.

Expanding the role of trade unions

Trade union involvement in the green economy, and renewable energy and climate change in particular, must be increased and strengthened. Trade unions should continue to demand a voice in policy decisions and political debates related to greening processes and creating green jobs, not to mention a fuller role when it comes to monitoring the effective implementation of decent work principles in the 'new' renewable sector. Here, in addition to their regular mandate, trade unions must also undertake training courses on skills for green jobs and participate in encouraging workers with designing environmentally friendly workplaces.

CONCLUSION

Investing in renewable energy technologies is a promising option for combining the multiple goals of climate change mitigation, a low-carbon economy, employment creation (especially among the youth, thereby taking advantage of the growing number of young people out of work), energy security and sustainable development. Green investments are also an important component for supporting entrepreneurial initiatives, skills development and technology transfer, all of which are critical to economic growth and development.

Greening the energy sector means investment in renewable energy technologies which include wind, solar, bio-energy and hydropower.

Adopting green technologies is expected to contribute not only to lowering carbon emissions, but improvement in national energy production and security, employment creation, access to energy, poverty reduction and improved livelihoods without adverse effects on the climate.

© Photograph of workers installing solar panels, Impact Solar Energy Zim, 30 Garth Road, Borrowdale, Harare.

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