

## SADC's first open access project

### GreenCo's offtake from Ilute Solar PV in Western Province Zambia – Benefits Paper

This paper intends to set out the direct and indirect benefits of the 32MWp Ilute Solar PV Project (“Ilute”) in Sesheke, Western Province for stakeholders.

In a first of its kind structure in Africa, Ilute will sell all the power generated to GreenCo Power Services Limited (“GreenCo”), a Zambian company, which will trade this power both within Zambia and on the SAPP markets, thereby contributing to the power security as well as exports for the country. The construction of the project will involve USD 40m of foreign direct investment from leading investors, which is a clear signal of support for the reforms enacted in the Zambian electricity sector.

#### Socio-economic benefits to Zambia

The Ilute 32MWp solar PV project will provide the following socio-economic benefits to the country:

- The Ilute solar project will **create employment** for the locals during its construction, development, and maintenance for the life span (25 years) of the plant. Due to this being an infrastructure project, the main employment benefit is during construction, whereby Ilute is expected to create over 150 jobs for the locals in its construction phase, with an estimated value of 8-9 million ZMW. There will be further employment and skills development opportunities during operations, and it is estimated that around 0.5 to 1 million ZMW in annual salaries will be spent on local employment opportunities.
- As part of the CSR initiatives, the Ilute Solar PV project intends to spend around **USD 1.7 million (27 million ZMW)** over the life of the plant from its capital investment and project revenues **to support Community Development Projects** that will be initiated and owned by villages closest to the project site.
- The Ilute solar PV project increases security of electricity supply in the country and is able to provide **affordable green power** supply to consumers in Zambia.
- **Training, skills, and knowledge transfer** to the local employees during the construction and development of the Ilute solar PV project. The locals will gain valuable skills, experience, and knowledge necessary to support the development of the renewable energy sector in Zambia and contribute to building technical competency and human capital.

## Benefits to the Government of Zambia

- The Ilute solar PV project is a **Foreign Direct Investment of over USD 40 million** which will contribute to infrastructure development in the renewable energy sector in Zambia. The project's success will create precedent that projects can be financed in Zambia based on "Open Access", possibly catalysing the roll out of more power and other infrastructure projects in the country.
- The Zambia Revenue Authority (**ZRA**) **will gain revenue from the tax payments** made. Based on current tax assumptions, which have been validated by KPMG Zambia, it is predicted that the total corporation tax payable to ZRA is USD 19.4 million, with an additional USD 1.8 million paid on withholding tax. Additionally, the local jobs that will be created by the solar project will add to the tax contributions in the country.
- The Energy Regulation Board (**ERB**) will gain revenue from the generation license fees payable by the Generator (Ilute solar PV project) and the Energy Trader (GreenCo). **ERB** license fees will amount to 0.7% of the Total Annual Gross Revenue generated (estimated at USD 45 000 per annum)
- In addition, the project is set to prevent a contingent liability of up to USD 40 million on the Zambian government that would arise as a result of a sovereign guarantee in the implementation agreement had the offtaker of the power been the national utility, ZESCO. Nonetheless, ZESCO will still be adequately compensated through provision of Use of System (UoS) and System Operator services to GreenCo.

### Benefits to the National Utility (ZESCO)

The Ilute 25MW solar PV project will provide the following benefits to the Transmission System Operator:

- The integration of the solar PV plant at Sesheke will **increase the reliability of supply in the Southern grid**. The solar plant will connect directly to the 66 kV busbar at Sesheke substation. In the event that an outage occurs on the 220 kV network feeding Sesheke, power generated from the Ilute solar PV plant may be used to supply part of the load to Simungoma, Sioma and Katima Mulilo.
- The integration of the PV plant at Sesheke will reduce the overall loading of the transformer at Sesheke Substation during the daytime to less than 50%. Currently this transformer is operating near its maximum capacity. It also reverses the flow of power over this transformer which implies that as the 66kV network demand grows the load will be further reduced until such a time as when local load again exceeds the plant output. Depending on the season, time of day and loading demand across the network, the Ilute solar plant will contribute to reduction in transmission losses for loads in the Southern Grid.
- The grid integration of the Ilute solar plant will **reduce the overall transmission system losses** in the Southern Grid by ~2 MW, when the HVDC line is exporting power to NAMPOWER. **This equates to circa USD 500,000 per annum saving for ZESCO.**
- The Ilute solar plant will provide certain **upgrades to the existing Sesheke substation**. These upgrades will include i) Extension of the existing 66kV busbar at Sesheke substation ii) Enhanced system network protection and control and iii) Earth mat extension. The total cost of the upgrades for ZESCO's benefit is estimated to be USD 500 000. The upgrades to the existing substation will improve grid security in the Southern Grid.
- The construction of the Ilute solar project **will increase Zambia's electricity generation capacity** and **contribute to the diversity** of the country's electricity generation mix. As of 2021, Zambia's installed electricity generation capacity was dominated by hydro generation, accounting for 81.5%. Only 91MW of the 3318MW national installed electricity capacity was solar power.
- The Transmission System Operator (ZESCO) will benefit financially from the Ilute solar project through monetization of the transmission network. GreenCo will compensate ZESCO for the Use of System (UoS) and System Operator services, for the power generated by the Ilute solar project.

## IMPACTS (Using iMetric Data Platform)

iMetric helps to view and manipulate sustainable development impact data and track key decision metrics based on clear, consistent, and harmonized approaches to measuring social, environmental, and economic impact. The manufacturing, construction, and installation (MCI), and operations and maintenance (OM) of the 32MWp Ilute Solar PV plant will result in the following impacts between the years **2022** and **2047**:

### Economic value-added Impact

- Total Portfolio IPP Investment - The total capital and development expenditure in total IPP cost, as well as the share of private capital mobilised in the project is estimated to be about USD 40 million.

### Emissions

- The expected reduction in emissions from this project is expected to sit around 1,630,000 tCO<sub>2</sub>e.

### Energy Impact

- Total lifetime production with degradation of the Ilute Solar PV plant is estimated to be about 2,063GWh by 2047.

### Sustainable Development

- Impact by SDG - The UN's 17 SDGs are framed as aspirations or desired outcomes rather than as a neutral list of impact categories. The 5 major SDG's that the Ilute Solar PV plant will help contribute to are listed below:

