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Combined Project Information Documents / Integrated Safeguards Datasheet (PID/ISDS)

Appraisal Stage | Date Prepared/Updated: 11-May-2017 | Report No: PIDISDSA21212



BASIC INFORMATION

A. Basic Project Data

Country Zambia	Project ID P162760	Project Name Electricity Service Access Project	Parent Project ID (if any)
Region AFRICA	Estimated Appraisal Date 17-Apr-2017	Estimated Board Date 27-Jun-2017	Practice Area (Lead) Energy & Extractives
Financing Instrument Investment Project Financing	Borrower(s) Republic of Zambia	Implementing Agency Rural Electrification Authority	

Proposed Development Objective(s)

To increase electricity access in targeted rural areas in Zambia.

Components

- Component A - On-grid Electricity Access Expansion
- Component B - Off-grid Electricity Access Expansion
- Component C - Development of NES, Capacity Building and Project Implementation

Financing (in USD Million)

Financing Source	Amount
International Development Association (IDA)	26.50
Total Project Cost	26.50

Environmental Assessment Category

B - Partial Assessment

Decision

The review did authorize the preparation to continue

Note to Task Teams: End of system generated content, document is editable from here.



A. Introduction and Context

1. **Zambia is a resource rich, lower-middle-income country with a population of close to 17 million.** In 2016 gross domestic product (GDP) was US\$19.7 billion, equating to a per capita income of around US\$1,181. Zambia has made significant socio-economic progress over the past two decades and achieved average growth of 7.4 percent between 2004 and 2014. However, since mid-2015, external headwinds and domestic pressures have intensified and economic growth has slowed considerably to 2.9 percent in 2015 and is estimated at 3.3 percent for 2016.
2. **In 2015/16 global and domestic conditions for growth deteriorated and the price of copper—typically 77 percent of Zambia’s exports—fell further from its 2011 peak.** This reduced the value of exports and opened a trade deficit which, in turn, exerted a downward pressure on revenues, widening the fiscal deficit. Domestic pressures were in the form of: (i) high fiscal deficits that reduced confidence in the economy; (ii) low and late-onset rainfall in 2015, which undermined agricultural incomes and lowered water levels in the country’s main hydro reservoirs, leading to increased power outages. Further, the strengthening of the US dollar (US\$) in 2015 put pressure on the Zambian Kwacha (ZMW) which, combined with lower confidence, led to the local currency losing 41 percent of its value against the US dollar.
3. **Close to the end of 2015, the Government of the Republic of Zambia (GRZ) and the Bank of Zambia acted to contain the impact of ebbing confidence with monetary policy measures.** These measures restored stability of the Kwacha, which appreciated by 12.2 percent between January and December 2016, helping to curb inflation from its peak of 22.9 percent in February 2016 to 6.7 percent recorded in March 2017. Low inflation and exchange rate stability have permitted the Bank of Zambia to loosen monetary policy starting in November 2016. However, fiscal policy challenges have remained, with a fiscal deficit close to 10 percent (on a commitment basis) and debt remaining above 50 percent of GDP in 2016.
4. **Due to prevailing constitutional provisions, five elections were held in the ten-year period 2005 – 2015. In January 2016 a new constitution that has limited the conditions under which fresh elections can be held came into force.** The August 2016 elections that went in favor of the incumbent President and political party were held under the new constitution and it is therefore expected that a full five-year term shall be served. This raises cautious optimism that there is political space for reform in 2017 and over the medium-term. In October 2016, GRZ presented its economic recovery plan, “Zambia Plus,” which provides a framework for restoring fiscal sustainability, closing the twin deficits (fiscal and current account), and ensuring that structural reforms are carried out to boost the non-copper economy. GRZ has requested the support of the World Bank, International Monetary Fund, and other partners to make the recovery plan a success. Accordingly, GDP growth is forecasted to rise to 4.0 percent in 2017 and 4.2 percent in 2018. The forecasts are subject to upside and downside risks, but the return of investor confidence in the fourth quarter of 2016 (evidenced by over-subscribed bond auctions), the bold measures adopted by GRZ (including the removal of fuel subsidies), and a rally in copper prices (November 2016) suggest that the economic circumstances should be improving.
5. **The rapid and sustained growth achieved from the early 2000s to 2014 was insufficiently inclusive and, despite the economy doubling in size, poverty remains widespread.** The 2015 Living Conditions Monitoring Survey (LCMS) Report of GRZ’s Central Statistical Office shows that an estimated 40.8 percent of Zambians live in extreme poverty (below US\$1.90 per day, purchasing power parity terms) and poverty is higher among women. Rural poverty, at 76.6 percent, is more than three times the rate of



urban poverty, at 23.4 percent. Inequality is high in Zambia, with a Gini coefficient of 0.56 in 2015. According to the 2015 LCMS, the top 10 percent of Zambians received 56 percent of 2015 income and the bottom 40 percent just 5 percent, while 60 percent of the population shared just 12 percent of the national income. Efforts are needed not only to restore faster economic growth, but also to ensure planned pro-poor policies are implemented so that growth is more inclusive.

B. Sectoral and Institutional Context

6. **Electricity is the second most important energy source in Zambia after wood fuel, providing about 10 percent of the national energy supply.** The installed generation capacity is about 2,700 MW and the main source of electricity generation is hydropower, which represents over 90 percent of electricity production. The mining industry is the largest consumer category, accounting in 2015 for 52 percent of the national electricity consumption, followed by the residential sector at 29 percent.
7. **The electricity supply industry in Zambia is dominated by the vertically integrated utility company ZESCO Limited (ZESCO).** The utility is wholly state-owned through the Industrial Development Corporation (IDC), the holding company for the majority of state-owned enterprises in Zambia. ZESCO owns and operates over 90 percent of the generation, transmission, and distribution assets in the country and supplies electricity to all grid-connected consumers, with the exception of some of mining consumers in the Copperbelt Province, which are served by Copperbelt Energy Corporation (CEC), a private company that purchases bulk power from ZESCO for onward supply to the mines. Electricity consumption by the mining industry accounts for over 50 percent of total consumption. The electricity sector is overseen by the Ministry of Energy (MoE), which provides policy guidance. The independent Energy Regulation Board (ERB) is responsible for licensing, tariff setting, and quality of supply and service standards for all segments of the energy sector (including fuel and electricity) in accordance with the provisions of the 1995 Energy Regulation Act as amended in 2003. ERB sets electricity tariffs for all consumers with the exception of the mining industry and other large consumers, which are set through long-term power purchase agreements (PPAs). The Rural Electrification Authority (REA) is responsible for electrification in rural areas and manages the Rural Electrification Fund (REF).
8. **The electricity sector faces numerous challenges and its poor reliability and quality of supply, combined with the low levels of access to electricity services, have a significant adverse impact on the national economy.** In response to power shortages, firms are forced to invest in self-generation presenting significant additional cost, especially for smaller firms.¹ A survey of 720 firms² conducted between December 2012 and February 2014, showed that 27 percent of firms owned or shared a generator and the remainder of the firms experienced losses that averaged at approximately 7.5 percent of annual sales.
9. The electricity sector faces three main challenges:
 - a. **Electricity demand growth has outpaced generation capacity expansion.** Electricity demand in Zambia has been growing at an average rate of 4 percent per year. Generation capacity expansion has however not matched this growth in demand leading to power shortages. This was exacerbated in 2015 and 2016 when, due to lower than expected rainfall, water levels in the country's main

¹ Foster V., Steinbuck, J., (2009). *When do Firms Generate? Evidence on In-house Electricity Supply in Africa*. Energy Economics 32, 505 – 514.

² World Bank Enterprise Surveys. Available at: (<http://www.enterprisesurveys.org/data/exploreeconomies/2013/zambia>).



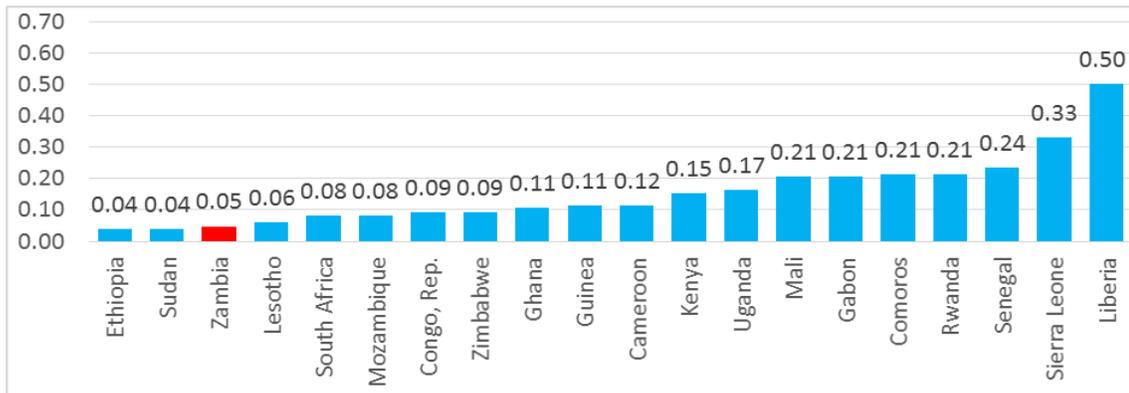
hydro power reservoirs dropped significantly, leading to nationwide load-shedding of up to 12 hours per day on a rotational basis. Furthermore, although Zambia is endowed with significant resources for power generation, no new plants have been commissioned between 1977 and 2014. This was due to a period of excess capacity that lasted until the early 2000s when demand began to catch up with supply. The poor financial position of the electricity sector, lack of an adequate planning and procurement framework, and an overall high-risk environment, made new investments in generation difficult. It is only recently with the commissioning of the 360 MW Kariba North Bank Extension in 2014, and the 120 MW Itezhi-Tezhi Hydro and 300 MW Maamba Collieries power plants, both commissioned in 2016, that new generation plants have been brought on-stream. Despite installed capacity now being higher than peak demand, plant availability, reserve requirements, and variable hydrological conditions mean that the risk of power shortages remains.

- b. **The power sector is not financially sustainable.** Electricity tariffs in Zambia remain among the lowest in Sub-Saharan Africa. In 2016, it was estimated that the Zambian power sector loses approximately US\$300-400 million due to underpricing. As a result, there is insufficient revenue to cover operations, maintenance, and the capital expenditures required for plant refurbishment and expansion. This difficult financial situation was exacerbated when in 2015 and 2016, due to the significant drop in hydro reservoir water levels, ZESCO was forced to start importing costly emergency power. There are two broad consumer categories in the electricity sector: the non-mining retail category, whose tariffs are set by the ERB; and the mining sector, where tariffs are governed through long-term PPAs. For both of these categories, tariffs and revenues are in general below cost recovery.

Following the August 2016 elections, the newly formed Government re-affirmed its commitment to the financial sustainability of the sector. This was reflected in the President's address to the National Assembly in September 2016 and the November 2016 budget address by the Minister of Finance. Specifically, GRZ plans to fully implement an earlier decision on providing financial support to ZESCO to cover the cost of emergency electricity imports that cannot be recovered through the prevailing tariffs, and to adjust tariffs to reach cost recovery levels by 2019. As part of the first steps in implementing this commitment, ZESCO has submitted a tariff application to the ERB that aims at increasing tariffs by 75 percent (except for the energy charge under the life-line tariff, which will remain at the current level of ZMW0.15 (US\$0.0.15) with expanded coverage up to 300 kWh, while the fixed monthly charge will increase by 75 percent). In parallel, GRZ has held negotiations with the mining industry, and it is expected that agreement shall be reached for an upward tariff adjustment. In addition, ERB has commissioned a Cost of Service Study (CoSS), expected to be completed by the end of 2017 that will provide an objective basis for tariff determination in Zambia.



Figure 1. Average Electricity Tariff in Sub-Saharan Africa (US\$)



c. **Access to electricity, especially in rural areas, is strikingly low.** The overall national electricity access rate, defined as connection to the grid, is low at 31 percent³. More than 67 percent of the population in urban areas, and only close to 4 percent in rural areas, have access to electricity.⁴ As part of the national strategy document, Vision 2030, GRZ has set electrification targets at 90 percent for urban and 51 percent for rural areas to be reached by 2030. However, at the current pace, these targets are not expected to be achieved. The rural electrification target is based on the electrification of Rural Growth Centers (RGCs) through grid extensions, mini-hydro, and solar installations as outlined in the Rural Electrification Master Plan (REMP) of 2008. It is expected, however, that the definition of access will become more granular once the recently launched Multi-Tier Framework (MTF) survey, supported by the World Bank, is completed by end-2017.⁵

10. **While the overall access rate in Zambia has been steadily increasing, rural access has stagnated at 4 percent.** Significant progress in increasing access for urban households has been achieved due to several factors, including a clearer institutional mandate of ZESCO, more commercially attractive consumers with higher use of electricity per capita, more widely available transmission and distribution

³ In addition, 4.6 percent of households have access to lighting energy through Solar PV systems

⁴ Electricity access is defined in the national living conditions survey as access to the national grid. Central Statistics Office, Living Condition Monitoring Survey 2015

⁵ The MTF was developed to monitor and evaluate energy access under the Sustainable Energy for All (SE4All) initiative launched by the United Nations in 2011 to achieve universal access to modern energy services by 2030. The MTF approach goes beyond binary measurement of energy access as “having or not having an electricity connection” or “relying or not relying on solid fuels for cooking” by considering various service levels and attributes, such as availability, quality, reliability, health/safety, convenience, and affordability, and multiple technology options (e.g., grid and off-grid electricity). The MTF measures access on a tiered-spectrum, from Tier 0 (no access) to Tier 5 (the highest level of access). Tier 1, for instance, includes basic applications such as task lighting, radio, and phone charging.

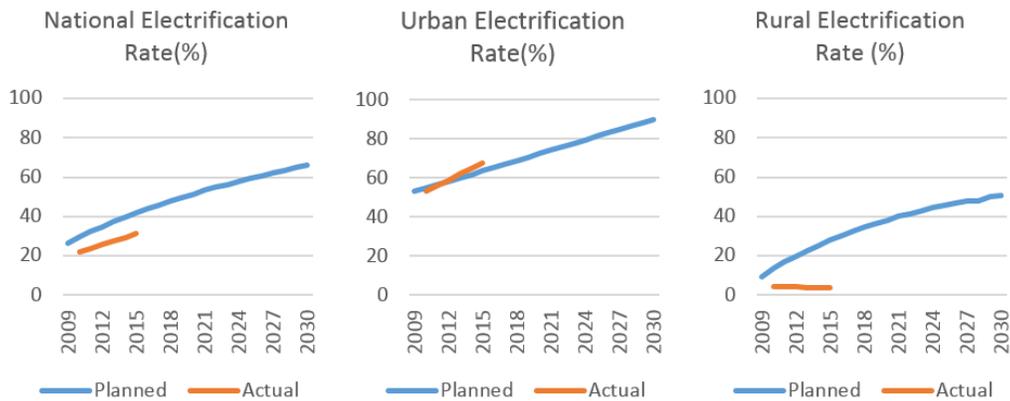


network infrastructure, and interest from the development community (see Figure 2). Another factor was the successful testing and implementation of the World Bank-funded Output-Based Aid (OBA)/connection subsidy program under the Increased Access to Electricity Services Project (P077452), which closed in 2015, and the ongoing Electricity Access for Low-Income Households Project (EALIH; P146636) grant funded by the Global Partnership on Output Based Aid (GPOBA) with proceeds from the Swedish International Development Agency (SIDA). These two projects combined have enabled over 120,000 low-income households in urban and peri-urban areas to have access to electricity services by significantly reducing the burden of the fees for grid connection.

11. **Low population density makes increasing access in rural areas more challenging.** The World Bank's previous initiatives have focused on urban and peri-urban areas where the combination of high population density, existing networks, and higher per capita energy use would lead to lower unit costs per connection and increase the likelihood of financial sustainability. In rural areas, however, Zambia has one of the lowest population densities in Southern Africa (excluding Lusaka and Copperbelt provinces, the population density of other provinces varies between six and 31 persons per square kilometer), which makes providing access particularly challenging. In addition, affordability of the connection fees for grid access remains a major barrier for the rural population. With almost 77 percent of the rural population in Zambia living below the poverty line, the current grid connection fee and the requirement that it is paid up-front presents a significant barrier to access even where the grid exists.
12. **The cost of providing on-grid access is made more prohibitive due to network extension choices.** The current network expansions are being carried out using standard three phase technology and standard conductor and equipment sizes, which lead to over-specified medium voltage (MV) and low voltage (LV) networks in rural areas. Achieving GRZ's access targets, especially in rural areas, will therefore require revamping of current approaches, including a review of the existing institutional framework, adoption of low cost grid extension technologies, finding a solution to affordability impediments through providing Output-Based Aid, and introduction of alternative off-grid rural electrification solutions. Preliminary analysis⁶ indicates that the least cost option to provide electricity access for over 50 percent of the population is through off-grid solutions, mainly through mini-grid and stand-alone solar PV systems.

Figure 2. Electrification progress in urban and rural areas in Zambia (percentage)

⁶ Preliminary analysis indicates that the least cost option to reach universal access in Zambia by 2030 is to reach 47 percent of the population, living mainly in the more populous regions, through grid extension and densification; to reach 10 percent, mainly living in the north, through isolated mini-grids (mainly solar PV mini-grids); and to reach the remaining 43 percent, dispersed throughout the country, through stand-alone solar systems (offgrid.energydata.info).



13. Scaling-up rural access will require a revision of the rural electrification approach and instruments.

The responsibility for rural access lies with REA, established by the Rural Electrification Act of 2003. REA’s functions include administering the REF,⁷ developing and implementing rural electrification plans, tendering electrification projects, and providing subsidies to developers. REA’s operations are based on the REMP. The REMP identifies a total of 1,217 RGCs, areas that exhibit the potential for increased economic activity with access, hence making electricity service provision viable. Initially, the electrification of RGCs only covered public buildings, such as schools, health clinics, and local government facilities. Following a policy decision in 2012, the REMP’s scope was expanded to include the connection of households and commercial establishments in close proximity to electrified RGCs. Despite the existence of the REMP, the rollout of rural access has been slow and, at the current rate, the 2030 targets will be missed by a significant margin. In the RGCs covered under the REMP, which includes around 40 percent of the off-grid population, about 79.9 percent of the identified least cost electrification options were based on grid extensions, about 19.8 percent based on solar systems, and less than one percent on mini hydro solutions. The main assumption behind the REMP was that, once electricity services were made available at an RGC, particularly through grid extensions and/or mini-grids, the local rural households would then take advantage of this availability and would connect to the grid. However, the rate of electrification uptake by rural households and micro and small enterprises (MSEs) located in the catchment areas of the RGCs has been far less than expected even in grid-connected areas. Furthermore, for the remaining 60 percent of the rural population, which is not located in the catchment area of the identified RGCs, there is no electrification plan. In addition, REA has not fully exploited the advances in access technology and innovations in delivery and business models, e.g., pay-as-you-go (PayGo). Low-cost technologies, such as Single Wire Earth Return (SWER) and the shield wire system for grid extensions, and solar photovoltaic (PV) mini-grids, are not reflected in the REMP. Neither REA nor ZESCO have geospatial planning capability, a powerful aid for optimizing the implementation of access programs. Therefore, scaling-up rural access will require a revision of the rural electrification approach and instruments, including an update of the REMP and development of a National Electrification Strategy (NES) based on recent technological innovations and successful private-sector driven rural electrification alternatives. Development of geospatial planning capability could assist ZESCO and REA in changing the direction, phasing, better targeting of beneficiary communities, and more effective delivery of household electrification in rural areas.

⁷ The REF receives financing from (i) a 3 percent levy on ZESCO electricity bills to non-mining consumers; (ii) national budget appropriations; and (iii) grants and loans from CPs.



14. **Inadequate and unpredictable public funding for rural electrification has also affected the pace of electrification.** To achieve the target of 51 percent access in rural areas by 2030, the REMP estimated that financing of about US\$50 million per annum would be required just to electrify the RGCs. There are no rural electrification programs for providing access to the rural population living away from the RGCs. Funding of the REF has been poor; since the establishment of REA, the US\$50 million per annum level of funding has not been achieved at any point. In general, the 3 percent levy for rural electrification collected on all retail electricity bills is not remitted in full to the REF. Inadequate financing of the REF also limits the growth of REA's operational capabilities, which in turn hampers rural access efforts. Also, even though remitting electricity levy collections in full would significantly improve REA's operational capacity, the amount would still fall short of the annual requirements estimated in the REMP. Due to the magnitude of resources required to achieve GRZ's electrification targets, all sources of funding should therefore be mobilized, including from the private sector, particularly for electrification of the non-RGC rural areas as there are neither any plan nor public funding available for electrification of households in these areas.
15. **Private sector participation in the provision of access has been limited, mainly due inadequate access to finance and nascent enabling regulatory environment.**⁸ The financial sector in Zambia continues to experience high interest rates and a severe shortage of liquidity. According to the *The Global Competitiveness Report 2015–2016*,⁹ companies in Zambia consider access to financing the main constraint to growth. Loans to MSEs and off-grid energy companies are constrained by an insistence of the commercial banks on physical collateral (usually land and representing over 100 percent of the value of the loan), high interest rates (usually over 35 percent), underdeveloped procedures related to credit risk quantification and asset-liability management, nascent credit information systems, and the dominance of short-term capital. In addition to commercial financing, privately developed mini-grids require public co-funding to cover the viability gap (the difference between cost of providing connection and what consumer are willing/able to pay for it). In addition to the access to finance constraint, there is not an attractive enabling regulatory environment (including unclear licensing regime, inconsistent application of the VAT exemption of solar equipment, cumbersome tariff setting process¹⁰). Crowding in both domestic and international private sector to expand access will require GRZ to improve the enabling environment, including increasing access to commercial and concessional finance, developing financial mechanisms to provide public co-funding, resolving various regulatory hurdles, and building up the existing capacity of sector institutions.

⁸ The solar market assessment performed for the WB by Open Capital Advisors confirmed that lack of finance is a key barrier to growth of the solar market in Zambia, which was further confirmed by local solar energy companies during project preparation. Additional factors constraining the off-grid solar sector include: (i) high import and in-country distribution costs due to being a land-locked country, lengthy customs clearance processes, low population density, and limited road infrastructure; (ii) lack of enabling regulatory framework (including unclear licensing regime and inconsistent application of the VAT exemption of solar equipment); (iii) low purchasing power and limited access to consumer financing; (iv) low mobile money penetration, which limits the use of the mobile payments that has an adverse impact on PayGo business model for SHS used successfully in East Africa; and (v) negative consumer perception of solar systems due to the inflow of low quality products.

⁹ The Global Competitiveness Report 2015–2016, World Economic Forum.

¹⁰ Off grid mini grid tariffs are set by ERB and can vary from the grid tariffs, based on the cost of supply for each particular project.



16. **GRZ recognizes that the existing model for increasing access, especially in rural areas, is not achieving the intended results and that access targets are at risk.** GRZ recognizes a need for alteration of the rural electrification effort. GRZ intends to continue applying the successful OBA approach, tested in urban areas, for the rural on-grid electrification as well. However, from the shortcomings of the REMP that have been outlined, it is clear that REA should be repositioned to be less engaged in the actual implementation of projects and more focused on playing a facilitating role and providing incentives to ZESCO and private developers for on-grid and off-grid rural electrification. The MoE has called for a review of REA's role and mandate and the Agency has been in dialogue with the Cooperating Partners (CP) community to explore areas in which its operational model could be enhanced and measures taken to enable private sector participation. Such a shift in REA's operational model, from a developing to a facilitating role, is further supported by the analysis currently being carried out under the "Sustainable Energy for All" Initiative (SE4ALL)¹¹ that also calls for clarifying roles and responsibilities between REA and ZESCO, greater engagement of private sector, and enhancing the REF financing model to be administered and managed by REA.
17. **Scaling-up access requires a comprehensive National Electrification Strategy (NES) that would provide a planning framework, remove regulatory impediments, provide policy framework for sustainable financial support, and improve institutional coordination.** To achieve this, a NES would need to be developed and adopted, covering electrification of both urban and rural areas, and in rural areas covering the electrification of the households in both RGC and non-RGC areas, thus providing comprehensive and inclusive national electrification coverage. The NES should be informed by geospatial planning that is updated regularly to take into account the expansion of the grid, incorporate delivery of off-grid solutions and changes in demographic and other characteristics, such as infrastructure, technology, etc. The ongoing MTF survey¹² and its expected incorporation into the national household surveys, conducted every two years, will provide an important complement to the planning process. The NES should also identify incentives for private electricity service providers and remove bottlenecks for private sector participation. The NES will clearly define roles and responsibilities for REA, ZESCO, and the private sector, aiming at achieving optimized implementation of access programs and plans and improved coordination for increasing electricity access throughout the country. The NES will be developed through extensive consultation with all relevant stakeholders, including local government, communities and private sector.
18. **Placing the sector on a path that enables access scale-up will provide the platform for large-scale future intervention that can be supported by the World Bank, other CPs, and private sector.** The absence of a demonstrated scale-up model is a key constraint to attracting cooperating partner and private sector financing for access. A modestly-sized operation, which establishes workable models, would be key to demonstrating that a conducive environment, capable institutions and efficient and well-targeted government financial support can successfully mobilize the private sector. Such a demonstration would help attract the needed development partner funding and private sector interest to reach Zambia's 2030 access goals. Once models are established, future support could come in the form of sector-wide approaches that utilize country-based systems, where the World Bank and other CPs could ultimately apply instruments, such as the Program-for-Results (P4R), to provide scaled-up support. In light of the above, the proposed Project aims to help establish enabling environment and

¹¹ ES-0059: European Union-Technical Assistance Facility Mission: Policy Support to Improve the Enabling Environment of the Zambian Energy Sector, Draft Final Report – Part 2: Rural Electrification, February 2017.

¹² Supported with funding from the World Bank's Energy Sector Management Assistance Program (ESMAP)



build capacity in the key sector institutions and, further, test and learn from new access expansion solutions so as to inform the design and implementation of future access interventions by the World Bank and other CPs. In support of the effort to create a platform that enables scaled-up electrification and based on the success of the ongoing OBA project, SIDA has indicated a willingness co-finance the Project with the World Bank.

C. Proposed Development Objective(s)

Note to Task Teams: The PDO has been pre-populated from the datasheet for the first time for your convenience. Please keep it up to date whenever it is changed in the datasheet.

Development Objective(s) (From PAD)

The project development objective is to increase electricity access in targeted rural areas of Zambia.

Key Results

People provided with new or improved electricity service (number) (Corporate Results Indicator)

D. Project Description

19. GRZ requested World Bank support in implementing its renewed effort in accelerating access to electricity services, particularly in rural areas. The World Bank Group intends to provide its support in scaling up the rural electrification program in two stages. The first stage would be provided through the proposed Project, which is designed to increase access to electricity in rural areas served by the grid, and to set the stage for scaling up rural access in areas that will not be served by the grid. It is envisaged that the building blocks put in place under this project would be the basis for a second stage of scaling up rural electricity access, that would be a larger program to be launched by GRZ and potentially supported by the World Bank Group and other CPs, as well as the private sector.
20. The proposed Project will help this effort by: (i) applying the OBA subsidy approach for consumer connection, which has been successfully tested in urban areas, to rural on-grid electrification, along with required network reinforcements and extensions, using low cost grid electrification techniques; (ii) supporting the necessary diagnostics, analytical, policy, regulatory, planning activities required to create the enabling environment for private sector-led off-grid electrification. This will include design of a credit facility and a grant mechanism to address specific constraints identified with respect to private sector participation. Subject to completion of the preparation work for these two financing mechanisms during early project implementation, the project will also support piloting of these two mechanisms; and (iii) undertake diagnostic and analytical activities that shall lead to the development of a National Electrification Strategy (NES) for Zambia. The NES is expected to provide a planning framework, remove regulatory impediments, and aid policy formulation for the sustainable scale-up of access.
21. The proposed Project comprises three components: (i) Component A will provide OBA subsidies for consumer connections and finance network reinforcements and extensions for *on-grid electrification*; (ii) Component B will address existing regulatory impediments for private sector participation in off-grid



electrification, build the needed capacity at key institutions and design, and potentially pilot¹³, financial mechanisms supporting private sector-led electrification through renewable energy mini-grids and stand-alone solar systems; and (iii) Component C will help fund the development of a comprehensive National Electrification Strategy as well as timely and efficient Project implementation.

22. **Component A - On-grid Electricity Access Expansion (US\$23.7 million, of which IDA US\$15.9 million equivalent).** This component will provide financing for on-grid connections in rural areas utilizing the approaches under the OBA/Connection Fee Subsidy Program.¹⁴ To support the “last mile” connections, the Project will also finance critical distribution network reinforcements and extensions through applying low cost technologies where appropriate that will enable ZESCO to add new connections to the grid, complementing ongoing access expansion efforts by CPs in other parts of the country. The component will be implemented through two sub-components:
23. **Sub-Component A.1. – Expanding New Electricity Connections for Low-income Households through OBA-type Financing (US\$6.6 million, of which IDA US\$1.5 million equivalent).** This sub-component will support last mile connections to about 22,000 low-income households¹⁵ and 1,000 MSEs (about 115,000 beneficiaries) in rural areas outside the 18 designated city and municipal councils.¹⁶ It will use the ongoing OBA approach, with results based financing partially subsidizing the cost of new connections for low-income households and MSEs. Payments will be linked to attainment of results based on pre-agreed targets, which will be verified by an Independent Verification Agent (IVA). The progress of this sub-component will be subject to the grid being able to handle new connections further to the investments being made under sub-component A.2. Areas that do not require network reinforcements or MV grid extension will be prioritized for early connections during project implementation.
24. In order to enable ZESCO to connect rural households and MSEs to the network, the Project will reimburse ZESCO for the cost of connections less the subsidized connection fee to be paid by consumers. A flat contribution of ZMW 250 is proposed to be paid by household consumers. The proposed contribution for MSEs is ZMW 769 per connection. Under the previous OBA based projects, the consumer contribution for households was set at ZMW 150 per standard and ZMW 250 per enhanced connection, and ZMW 769 per MSE connection. The proposed consumer connection fee reflects the depreciation of the Kwacha, inflation, feedback from residents in the targeted areas, and the fact that consumers willing to pay ZMW 250 are more likely to consume greater volumes of energy, which will increase the overall project viability¹⁷. Options may be provided for consumers to save towards the connection fee using a combination of mobile money and/or a deferred payment

¹³ Implementation of piloting would be contingent on meeting disbursement conditions relating to satisfactory design and establishment of the financing mechanisms.

¹⁴ The World Bank has been supporting improved electricity access in low-income areas using results-based approaches through the Increased Access to Electricity Services Project and the grant from the Global Partnership on OBA (GPOBA). The GPOBA grant to ZESCO is financed with funding from the Government of Sweden [through Swedish International Development Cooperation Agency](#) (SIDA). The projects have enabled ZESCO to connect over 120,000 households over the last eight years.

¹⁵ As rural areas in Zambia are by and large poor, the Project makes the implicit assumption that households reached are low income; however, this assumption will be aligned with and confirmed by poverty mapping work.

¹⁶ Areas excluded under the project are: the city councils of Lusaka Urban, Ndola Urban, Kitwe and Livingstone, and the municipal councils of Chingola, Mufulira Mufulira, Luanshya, Kalulushi, Kabwe, Chililabombwe, Kasama, Chipata, Mongu, Solwezi, Mansa, Choma, Mazabuka, and Mbala. Any sub-areas within these excluded councils that are determined as rural by REA and ZESCO may be eligible for funding subject to endorsement of the Steering Committee.

¹⁷ Consumer that are not able to afford the 250 Kwacha co-financing are expected to be served through high quality pico-PV systems (e.g. solar lanterns), supported under component 2 and 3 (loan facility, enhanced regulatory framework/ quality assurance and consumer education).



mechanism to be set up by ZESCO. The connection costs were assessed using market rates at the time of appraisal in consultation with REA and ZESCO and reflected in Annex 1.

25. **Sub-Component A.2. - Extension and Strengthening of the Grid Network for New Connections (US\$17.1 million, of which IDA US\$14.4 million equivalent).** This sub-component will include construction of 33/11 kV distribution lines, installation of distribution transformers, and construction of MV/LV distribution lines (400/230V) and testing low cost technologies. REA and ZESCO will jointly agree on target areas where investments are to be made, including rural areas with higher population density and projects with positive economic rate of return. About 36 potential rural areas have been identified in a broad geographical scope covering most of the country's provinces (Northern, North Western, Luapula, Muchinga, Copperbelt (Ndola), Eastern, Western, Southern and Central)¹⁸. In several of these areas, REA has already extended the network to serve public facilities. Implementation will start with these areas, for which minimal extension works are required, and progressively move to those areas that will require more works. Detailed technical assessments, feasibility studies and scoping, as well as economic and financial analyses, will be carried out as needed, especially for those areas requiring more investment in extension and grid strengthening. The electrification of rural areas currently supported by other CPs (e.g., Lusaka division supported by the European Union (EU)-funded project and parts of Southern division supported by the KfW-funded project) will be excluded from this Project.
26. **Component B - Off-grid Electricity Access Expansion (IDA US\$5.9 million equivalent).** This component will initially fund required upstream activities to enable the private sector participation in rural off-grid electrification, including identifying and scoping off-grid sites, helping GRZ address the existing regulatory impediments, building the needed capacity at key institutions, and designing financial mechanisms. Subject to successful completion of the upstream activities, the Component will fund the piloting of two financial mechanisms¹⁹: (i) a Smart Grant Subsidy Facility and (ii) a Loan Facility, to support private sector-led electrification of rural communities through renewable energy mini-grids and stand-alone solar systems and structured to leverage financing and participation from the private sector. The design of the financial mechanisms and upstream activities is based on lessons from earlier off-grid efforts in Zambia²⁰ and in line with the recommendations of the World Bank's Africa Off-Grid Solar Strategic Directions paper based on regional experience in supporting the off-grid solar sector.
27. **Sub-component B.1. - Off-Grid Electrification Smart Subsidy Program (IDA US\$3.4 million equivalent).** This sub-component will fund upstream work to create an enabling environment to support private sector-led off-grid electrification and activities aimed at designing, establishing, and piloting an Off-Grid Electrification Smart Subsidy Program (OGESSP). The OGESSP is expected to provide partial grant subsidies to support the development of private sector led mini-grids that may be complemented with stand-alone solar systems²¹. Locations will be selected in accordance with the geospatial plans to be developed under the NES.

18 For these 163 target areas, initial estimates show that 410 km of lines (400V-33kV) and 234 distribution transformers are required. Investment cost estimates is shown in Table A1.6 and Table A1.7

19 Several financing mechanism options were considered during the design stage including loan facility, equity fund, guarantee mechanism and different type of grants. The description and assessment of the financing mechanism option is in Annex 6.

²⁰ Description of off-grid approaches tried in Zambia and the region including lessons learnt can be found in Annex 6

²¹ The final the decision on types of off-grid solutions (mini-grid and/or stand-alone system) to be supported will be based on outcome of the geospatial least cost electrification plan, further consultations with private and public actors (e.g. ERB) and the development of the NES.



28. This sub-component will be implemented in two phases. The first phase will include : (i) identifying potential sites through the use of the geospatial planning platform;²² (ii) preparing market assessments²³ for the potential sites; (iii) reviewing the regulatory framework and supporting relevant institutions in streamlining requirements in support of private sector-led, off-grid electrification; (iv) design the OGESSP including types and levels of subsidy to be provided and developing operational procedures for the OGESSP; and (v) developing standard legal documents including drafts of tendering documents and agreements. These activities have been identified through consultations with private sector and is based on the experience so far in Zambia, including the initial stage of implementation of the SIDA-supported Power Africa: Beyond the Grid Fund for Zambia (BGFZ)²⁴ confirming the private sector's interest in off-grid energy electrification. REA will undertake this upstream work²⁵ in close consultation and collaboration with both public sector agencies, such as ERB, and private sector developers.
29. In the second phase, REA will pilot the OGESSP, competitively selecting private operators to provide energy services to households, public facilities, and MSEs in the selected rural localities. While OGESSP will not specify technology, it is expected that mini-grids will be primarily solar PV based, providing an agreed level of electricity service (expected to be Tier 3-4).²⁶ In some instances, market characteristics may require mini-grids complemented with stand-alone systems.²⁷ It is expected that the subsidy will cover the viability gap (the difference between cost of providing connection and what consumer are willing/able to pay for it).
30. **Sub-Component B.2. - Off-Grid Loan Facility (IDA US\$2.5 million equivalent).** The sub-component will fund upstream capacity building work and further aims at setting up and piloting a loan/credit line facility for eligible borrowers, including companies importing and selling solar equipment, developers of mini grids, and end-user of solar equipment such as agribusinesses. It will aim to address the existing constraint of lack of access to finance, which is a key barrier to growth of the solar energy market. It is expected that DBZ²⁸ will act as a financial intermediary for the credit line and would either lend directly to eligible borrowers or act as wholesale lender to one or more commercial banks who would then lend to eligible borrowers.

22 The geospatial-based electrification planning platform developed by IFC and the World Bank available through the World Bank's <http://electrification.energydata.info/> project will be further refined, detailed and utilized

23 Including demand estimates, willingness to pay / ability to pay assessments, customer segmentation, etc.

²⁴ BGFZ focuses on lower Tiers (Tier 1-2). OGESSP will complement BGFZ and initially focus on rural locations requiring higher tiers 3-4. Further, OGESSP focuses on developing local institutional arrangements and capacity to implement the program.

²⁵ With potential support from IFC, subject to mobilization of funding from other sources.

²⁶ Defined in the MTF.

²⁷ Private operator can serve households with SHS (expected to be Tier 2) where distances require lower service levels. This model, were mini-grid operators also serve some of their consumers with PayGo SHS is currently being tested by the two private mini-grid operators in Zambia (Muhanya Solar Ltd and Zengamina Power Trust) given that rural growth centers are surrounded by much lower density areas with scattered households.

²⁸ Annexes 1 and 5 reflect detailed rationale for the selection of DBZ as a financial intermediary. The Project is structured on the assumption that DBZ will lend directly to solar companies (retail option). However, the wholesale option or selecting an alternative principal FI is preserved and a final decision will be taken based on the results of the IDP at the end of phase one DBZ has previously provided loans to two mini-grids under the UNDP/Global Environment Facility-funded Renewable Energy Based Isolated Mini-Grids in Zambia Project (see Annex 6 for details).



31. This sub-component will also be implemented in two phases. The first, upstream phase will include: (i) developing and implementing an Institutional Development Plan (IDP)²⁹ for DBZ to raise its capability and skillset in key areas, (ii) designing the Loan Facility structure and loan terms³⁰, (iii) developing the Operational Manual, (iv) developing standards legal agreements and operating policies/ procedures for the Loan Facility, including criteria for selecting eligible borrowers, exposure limits, permitted loan products, currencies, tenors, amortization and interest rate terms, and standard loan covenants. Completion of this phase will be signaled by IDA's appraisal and no-objection on all necessary arrangements including Operational Manual, standard legal agreement, and meeting the criteria set out in World Bank's Operational Policy 10.00 in regard to Financial Intermediary Lending. This is expected to be completed by Project early mid-term or earlier³¹, at which point the second phase (operational phase) will commence.
32. The second phase will pilot the Loan Facility and operationalize the credit line. DBZ may offer short, medium, and long-term loans in US\$ and ZMW³² either directly to eligible borrowers or through participating financial intermediaries, depending on the role selected for DBZ in phase one. Under the Project, two main types of credit may be offered to eligible borrowers: (i) short and medium term loans in US\$ and ZMW to provide working capital to eligible borrowers, including locally registered solar system importers, wholesalers, distributors, and retailers with ongoing liquidity access to finance inventories³³ and medium and long-term loans in ZMW to finance eligible borrowers, including solar PayGo companies and mini-grid developers.

Component C – Development of NES, Capacity Building and Project Implementation Support (US\$7.2 million, of which IDA US\$4.7 million equivalent). This component will finance technical assistance to GRZ to: (i) ensure the Project reaches its objective of enhancing and improving the enabling environment needed for a substantially scaled up electrification effort; and (ii) to support effective project implementation. Technical assistance will include support for: (i) diagnostic and analytical activities that shall lead to the development of the NES³⁴ and the geospatial planning tool. The NES will be developed through extensive consultation with all relevant stakeholders, including local government, communities and private sector; (ii) outreach and consumer education activities aimed at informing and

29 The IDP will cover credit risk assessment, risk-based loan pricing, foreign exchange risk management, environmental and social due diligence and improved governance(see Annex 5).. As part of the IDP, the governance and ownership structure will be reviewed and appropriate measures (to be jointly developed and aligned with the AfDB supported project) will be recommended. Resolution of this issue will become a part of the disbursement condition to move to the second phase. In addition, the credit line terms will require DBZ to perform Know Your Customer due diligence and disclose borrower ownership. The Project will also require a “ no objection” right to review the first few transactions. AfDB takes the same approach with its credit line.

³⁰ The design of the loan facility and loan terms will be developed in in close consultation with both public and private sector

³¹ If loan facilities take longer than expected to finalize or other condition are not met fund from sum-Component B2 phase two will be reallocated to the on-grid component

³² The final decision will on loan terms and currencies to be provided will be taken in phase one

³³ All supported systems will be required to meet the Lighting Global Quality Standards.

³⁴ The NES is expected to be based on a geospatial electrification planning platform, building on the existing Off-grid Energy Market Opportunities tool (<http://offgrid.energydata.info>). NES would include an updated Master Plan and Investments Prospectus to support a systematically staged and coordinated electrification rollout program. Development of the NES would require a comprehensive assessment of the existing REF and preparation, discussion and adoption of recommendations aiming to increase sustainability of financial mechanism for rural electrification, including for on and off-grid subsidies. It will also require development of feasibility studies for grid extension and network reinforcement and recommendations for a Code of Practice for low cost electrification schemes. Preparation of TORs for different activities are ongoing.



assisting consumers (focusing on women and vulnerable groups) in regard to the connection fee subsidy application process, informing of the benefits of solar lighting products, and educating on the characteristics of good quality products; (iii) services of a Project Management Consultant (PMC) and IVA; and (iv) capacity building to key government institutions (e.g. MoE's DoE, ZESCO, REA), solar companies, mini-grid developers and participating financing intermediaries to assist them to fulfill efficiently their functions under the Project.

E. Implementation

33. The Project will be implemented over five years. The roles and responsibilities of the various institutions in Project implementation have been defined. Given the country's slower pace of increasing access in rural areas to date, GRZ requested to focus the Project investment components on rural areas. Therefore, given the institutional mandate of REA, the overall fiduciary responsibility for the Project will be vested in REA. The overall policy guidance and regular oversight and coordination over Project implementation will be carried out by the Project Steering Committee chaired by MoE and comprising representatives of REA, ZESCO, DBZ, and other relevant ministries and government institutions, such as the Ministries of Finance, National Planning, and Local Government and the ERB, as deemed appropriate by GRZ. DoE within MoE will serve as the Secretariat of the Steering Committee and will be staffed with an Electrification Coordinator reporting to the Director of DoE and funded from the Project.
34. The IDA credit will be to GRZ, through the Ministry of Finance, which will, through a subsidiary grant agreement, on-grant the funds to REA. REA, as the Project Implementation Agency (PIA), will manage the Project on behalf of GRZ and, in this regard, and will be responsible for Project fiduciary responsibilities. It will account for the deposits and withdrawals and perform the audits and provide financial reports in accordance with the World Bank rules and guidelines. REA will monitor the utilization of the Project resources by each beneficiary, including itself, and provide expenditure projections. It will be responsible for tracking the Project results framework, providing regular progress reports, as well as the Mid-Term Review Report and the Implementation Completion and Results Report. It will coordinate overall procurement under the Project, and prepare and revise Procurement Plans as needed. Implementation of specific activities under the Project components will need close involvement of ZESCO and DBZ and, therefore, these institutions will be co-executing entities for specific component activities and correspondingly assign dedicated Project Coordinators and Project implementation units (PIUs) to implement respective on-grid and off-grid component activities. REA will liaise closely with the two co-executing agencies to provide procurement guidance where necessary and to ensure adherence to the procurement guidelines. A Project Agreement between REA and IDA will capture these obligations and responsibilities. The role of each agency is described below. Further detail, including funds flow arrangements, is provided in Annex 2.
35. **REA.** REA was established per the Rural Electrification Act No. 20 of 2003 enacted by the Parliament of the Republic of Zambia. The Act mandated REA, among others, to administer and manage the REF, develop plans for grid and off-grid rural electrification, and monitor their implementation; mobilize funds to support rural electrification, encourage private sector participation in rural electrification through provision of subsidies, competitive bidding, and community mobilization; finance project preparation studies for rural electrification; and recommend to GRZ suitable policies. REA has



experience managing World Bank-funded projects, having previously managed the IDA credit for the Increased Access to Electricity Services Project. The recent assessment concluded that the financial management (FM) arrangements are in place to meet the World Bank's minimum requirements under OP/BP 10.00, Investment Project Financing, and are adequate to provide, with reasonable assurance, accurate and timely information on the status of the Project. However, the overall FM risk rating is Substantial and requires addressing deficiencies related to REA's internal controls. Correspondingly, an FM Action Plan will be developed and adopted by REA as a condition to the Project's effectiveness. To further mitigate fiduciary risks, REA will engage a consulting firm in a role of PMC to support it in project management, including carrying out supervision of contracts due to REA's capacity constraints. Over the longer run, this capacity will be gradually transferred to REA.

36. REA will establish a PIU, headed by REA Technical Director and supported by a Project Manager, and comprising Rural Electrification Engineer, Electrification PPP Specialist, Safeguards Specialist, Accountant, and Procurement Specialist. The Project Manager, Accountant, and Procurement Specialist will be funded by the Project while the Rural Electrification Engineer, Electrification PPP Specialist, Safeguards Specialist will be selected from the pool of existing REA staff and assigned to be working solely on the Project activities. As mentioned above, REA's PIU will be responsible for overseeing the overall Project implementation, including the on-grid, off-grid, and technical assistance components.
37. **MoE/DoE.** DoE, as a Secretariat of the Project Steering Committee (PSC) and through its Electrification Coordinator, funded by the Project, will be responsible for coordination of Project implementation; liaising with other government institutions; monitoring of the performance of all actors; and enforcing adherence to the Project implementation schedule. PSC will need to be established prior to the start of Project implementation. DoE will also provide quality assurance on the technical assistance activities related to upstream policy (e.g., NES) and regulatory work and outputs under Components B and C, while REA will carry out fiduciary functions, such as procurement and financial management, as well as oversee implementation and monitoring of environmental and social safeguards. DoE will form a joint Project coordination team with regularly scheduled meetings to ensure smooth and timely implementation progress and to address any issues that may cause delays in Project implementation or disbursements.
38. **ZESCO.** ZESCO will be a co-executing entity of activities under Component A and will lead Component A activities through a dedicated PIU. REA will enter into a Co-Execution Agreement with ZESCO, which will specify respective commitments, roles, and responsibilities of REA and ZESCO. Component sub-projects will be identified jointly by REA and ZESCO, with REA providing grant financing for ZESCO to implement the identified projects. The activities under sub-component A.1. will be implemented using a results based approach, with payments linked to attainment of results based on pre-agreed targets and indicators (e.g., number of connections), which will be verified by an IVA. It is expected that some input activities, such as electrification goods and equipment and minor works, will be procured. The procurement from the proceeds of funds earned by GRZ from attainment of results will be based on use of open national bidding and/or open international bidding procurement of GRZ as provided in the Public Procurement Act, 2008, Act. No.12 of 2008, as amended by the Public Procurement (Amendment) Act, 2011, Act No. 15 of 2011 (the "PPA"), and the Public Procurement Regulations, 2011, Statutory Instrument No. 63 of 2011 (the "Regulations"); provided, however, that such procedures may be modified to make them acceptable to the World Bank. The procurement will be further modified to include provisions for the World Bank's fraud and anti-corruptions policies and the right of the World Bank to audit and inspection. ZESCO will follow the approved procurement procedures and report back



to REA. REA will be responsible for verifying the works carried out by ZESCO (through PCM for on-grid works and IVA for off-grid results) and will provide funding to ZESCO per the terms of the Co-Execution Agreement, including advances to commence works and subsequent payments against verification by REA that the works have been carried out to the required standards. REA's funding will be deposited to ZESCO's operating account and will be replenished monthly based on the budget estimates and documentation submitted by ZESCO.

39. **DBZ.** REA will have overall responsibility for the implementation of Component B activities; however, sub-component B.2. *Loan Facility* phase 2 activities (i.e., managing an operationalized credit line) will be delegated to DBZ, once the conditions for implementation of the second phase are met. To enable it, REA will enter into a Co-Execution Agreement with DBZ for implementing the sub-component activities. As a potential Financial Intermediary for phase 2 off-grid activities, DBZ will also have safeguard oversight responsibilities, for which it will receive appropriate capacity building under the technical assistance activities planned for phase 1. However DBZ phase two participation can only be initiated after a proper safeguard assessment is carried out which ensures that the arrangement and capacity meet the World Bank's minimum requirements per OP/BP10.00 and OP/BP4.01. Similarly to the on-grid implementation arrangements, the implementation of the off-grid component will support the evolution of REA's role towards becoming a facilitator for electrification efforts in rural areas.

Figure 3: Project Implementation Agreements Structure: Component A - On Grid

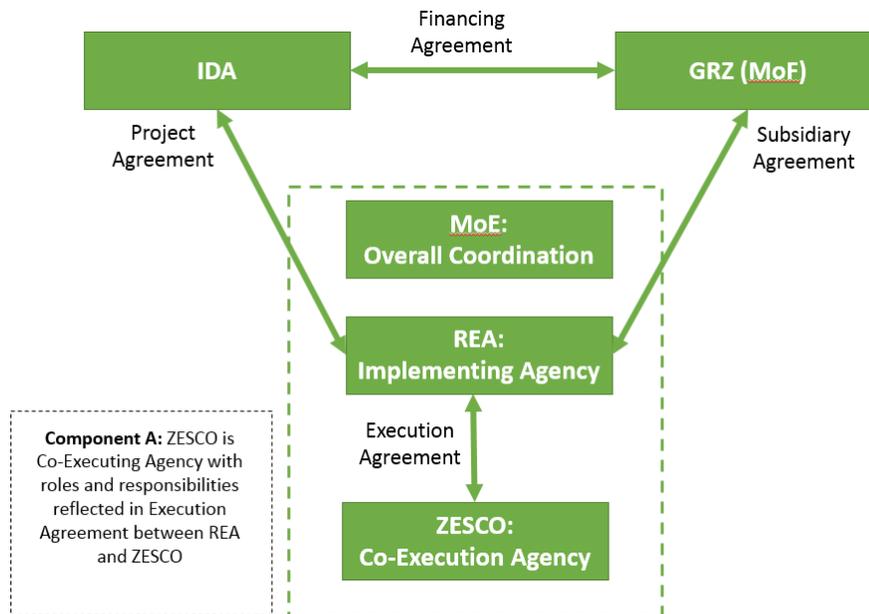
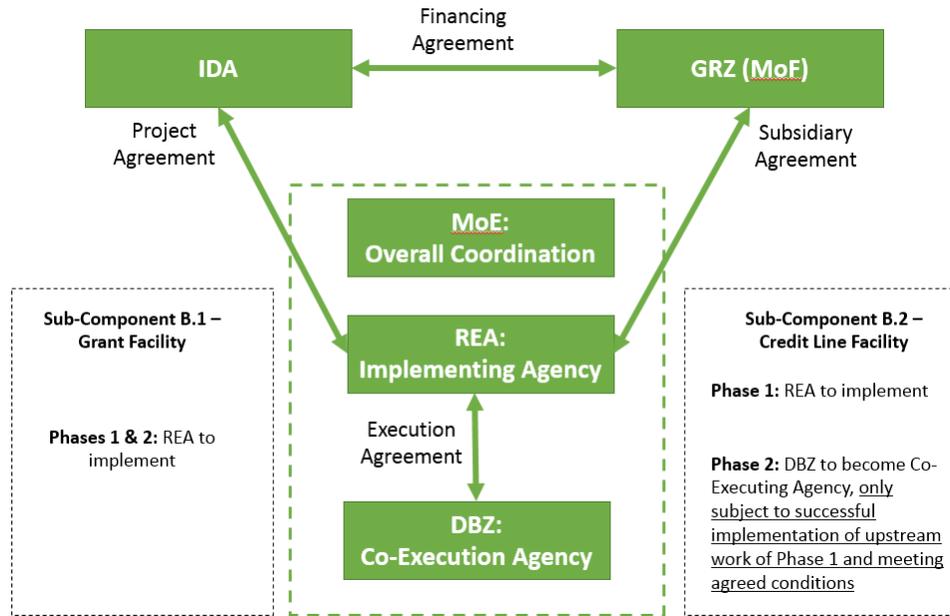




Figure 3: Project Implementation Agreements Structure: Component B - Off Grid



Safeguard Screening and Instrument responsibility

This initial screening will be carried out through the use of the Environmental and Social Screening Form. For Component A, the screening will be carried out by the PIU’s safeguard staff at ZESCO. For sub-Component B1, the screening will be carried out by the PIU’s safeguard staff at REA. For sub-Component B2, the screening will be carried out by the safeguard staff at DBZ. For Component A and B2 REA through its Safeguards Team in the PIU will confirm ZESCO’s and DBZ’s screening. Completion of this screening form will facilitate the identification of potential environmental and social impacts, determination of their significance, assignment of the appropriate environmental category, proposal of appropriate mitigation measures, and conduct any further work, if necessary.

For Component A, ZESCO, as the subproject proponent, will prepare and implement safeguard instruments. ZESCO will thereafter submit the instrument to REA that through its Safeguards Team in the PIU will confirm ZESCO’s screening and submit to the Bank for review and clearance of the ESIA or a limited ESIA for category B subprojects.

For Component B1, the Subproject proponents will prepare and implement safeguard instruments. REA will screen subprojects and review and clear instruments and submit to the Bank for review and clearance of the ESIA or a limited ESIA for category B subprojects.

For Component B2, the Subproject proponents will prepare and implement safeguard instruments. DBZ will screen subprojects and review and clear instruments and submit to the REA. REA through its Safeguards Team in the PIU will confirm DBZ’s screening and submit to the Bank for review and clearance of the ESIA or a limited ESIA for category B subprojects.



B. Results Monitoring and Evaluation

40. REA's PIU will be responsible for monitoring the Project's implementation progress and the status of the results monitoring indicators. The results monitoring data related to the grid-extension activities will be collected by ZESCO's PIU and shared with REA on a monthly basis. The off-grid related monitoring data and the customer connection data will be provided to REA by private off-grid service providers, DBZ, and/or other implementation partners and consultants as appropriate, and will be incorporated by REA in its quarterly update reports once the data has been verified for accuracy. Other relevant information and demographic data will be collected by REA's Monitoring and Evaluation (M&E) team based on national administrative data sources and other Project-specific data collected by REA and ZESCO staff as needed. The outputs of the technical assistance activities will also be collected and documented by REA's PIU, based on the list of output indicators specified in the Project's results framework. A quarterly implementation status report will be prepared by REA and shared with the GRZ, Project partners, and the World Bank. The implementation progress and results monitoring data collected by REA's PIU will inform the joint evaluation of Project performance by the GRZ, the implementing agencies, and the World Bank during regular supervision missions.

Note to Task Teams: The following sections are system generated and can only be edited online in the Portal.

F. Project location and Salient physical characteristics relevant to the safeguard analysis (if known)

The project will be national in scope, primarily focusing on rural areas. The project will carry out network reinforcement, intensification and connection of low-income households and Micro- and Small Enterprises (MSEs) in targeted areas to be jointly identified by Rural Electrification Authority (REA) and ZESCO. Specific areas for intervention will be identified during project preparation based on last mile investment plans, demand assessments, and investment requirements. Subsidies to connect to the national grid will be offered to all residents of the targeted areas that meet the agreed criteria, which, among others, will prioritize areas with low-income and higher density population, as well as existing local distribution infrastructure and network capacity. This approach offers clear benefits in reducing political and intra-community tensions. For the most remote areas where there are no near-term plans and/or economic rationale for extending the national grid, the project will offer a pilot program of developing solar PV mini-grids and/or solar home systems.



G. Environmental and Social Safeguards Specialists on the Team

Knut Opsal, M. Yaa Pokua Afriyie Oppong, Richard Everett, Mwansa Lukwesa

SAFEGUARD POLICIES THAT MIGHT APPLY

Safeguard Policies	Triggered?	Explanation (Optional)
Environmental Assessment OP/BP 4.01	Yes	<p>The Policy on Environmental Assessment has been triggered as component A and B of the project will involve infrastructure and construction related activities for both on-grid and off-grid power connectivity. The project will broadly involve, grid extension and intensification, subsidized connections to low-income rural and peri-urban customers under a similar results-based approach as used under the IAES and GPOBA funded projects . The project will further support a loan facility to support electrification of rural communities through private sector lead mini-grid developments and commercial sale of stand-alone systems. Since specific sites and beneficiary communities have not been defined, The Ministry of Energy, Rural Electrification Authority (REA) and Zambia Electricity Supply Corporation (ZESCO) have developed an ESMF and RPF that addresses the environmental and social risks associated with the implementation of the electricity service access project. Once the specific sites and the beneficiary communities have been defined, all projects subprojects and activities will be screened the appropriate EISA's, EMSP's and RAP will be developed were applicable with the provisions of the ZEMA EIA regulations and Bank safeguards policies.</p>
Natural Habitats OP/BP 4.04	Yes	<p>The policy on natural habitats has been triggered as the project will involve linear activities such grid extension and intensification that are likely transverse ecologically sensitive areas and natural habitats.</p>



Forests OP/BP 4.36	Yes	The policy has been triggered as linear activities such as grid extension and reinforcement, construction of off grid facilities and installation may require vegetation clearance. The extent of vegetation loss is however minimal as construction activities will be restricted to the way leave and project footprint.
Pest Management OP 4.09	No	The policy on pest management has not been triggered as it will not involve the use or support activities that require the application of pesticides.
Physical Cultural Resources OP/BP 4.11	No	The policy on physical cultural resources has not been triggered as the project will not involve works in cultural sensitive areas. During construction works, the ESMP and the ESIA will incorporate a chance find procedure should artefacts of heritage or historical significance be unearthed.
Indigenous Peoples OP/BP 4.10	No	The policy is not been triggered since the project areas do not have indigenous people as defined by Bank Policy
Involuntary Resettlement OP/BP 4.12	Yes	No physical displacement is anticipated due to the nature of the project. However, the project through Component B Network Reinforcement may require some land for the stations/poles and/or low voltage distribution line and may involve small land acquisition, and limited change in land use (permanent or temporary). OP/BP 4.12 is therefore triggered to address the adverse impacts of the potential land acquisition and limited changes in land use, which may cause losses of assets. As the specific subprojects are not yet clearly defined and the exact sites of the proposed investments are not yet known. An has been developed and submitted to the Bank for clearance by the Ministry of Energy to address issues relating to relocation, encroachments and compensation.
Safety of Dams OP/BP 4.37	No	The policy is not triggered as it will not involve the construction or maintenance of dams as defined by the Bank policy.
Projects on International Waterways OP/BP 7.50	No	The policy is not triggered as it will not affect international waterways.
Projects in Disputed Areas OP/BP 7.60	No	The policy is not triggered as no disputed areas have been identified.



KEY SAFEGUARD POLICY ISSUES AND THEIR MANAGEMENT

A. Summary of Key Safeguard Issues

1. Describe any safeguard issues and impacts associated with the proposed project. Identify and describe any potential large scale, significant and/or irreversible impacts:

The project has been given an EA risk categorisation B. Under both Project Components A and B, implementation of the Project and associated sub-projects during preparation, construction and operational activities are likely to result in loss of vegetation, generation of construction waste, increase in soil contamination and dust levels, increased safety and security risks for workers and communities including incidences of electrocution, visual intrusion and alteration in aesthetics and increased incidences of HIV/AIDS and Sexually Transmitted Infections (STIs). Further, under the Component B, the development of mini-grids will be technology-agnostic, although it is expected that most of them, if not all, will be solar PV based. In an unlikely case of developing mini-hydro grids, they may result in alteration of flow rates in local rivers and streams that would affect environmental and ecological flows. Installation of PV solar panels will require use of solar batteries for storage of power. Disposal of obsolete solar panels will be part of a de-commissioning plan but will require prior engagement of suppliers. Solar batteries will be sent to a ZEMA approved recycling center to reduce introducing heavy metal contained batteries into the waste stream. Overall Project impacts will be of low-to-moderate significance and reversible as they will be localised with a small footprint. These impacts can be mitigated by adhering to mitigation measures proposed in the ESMF/ESMP and incorporating findings from the EIA studies into the planning and design.

2. Describe any potential indirect and/or long term impacts due to anticipated future activities in the project area:

The Project activities are unlikely to have indirect to long term impacts. In case of developing mini-hydro grids, they may directly or indirectly alter flow rates of small rivers and streams in turn affecting the natural habitat.

3. Describe any project alternatives (if relevant) considered to help avoid or minimize adverse impacts.

Not relevant.

4. Describe measures taken by the borrower to address safeguard policy issues. Provide an assessment of borrower capacity to plan and implement the measures described.

MOE, ZESCO and REA have environmental and social safeguard units familiar with managing safeguard issues and that worked on a similar Bank-funded and recently closed project. ZESCO and REA both have established safeguards units that oversee various projects from development partners. DBZ will also have safeguard oversight responsibilities, for which it will receive appropriate capacity building under the TA activities planned for the phase 1. DBZ is in the process of forming a new four-person environmental and social assessment unit and has a policy manual on environmental, health and social safeguards for its project lending. However, DBZ participation in the Project can only commence under the phase 2, i.e. after a proper safeguard assessment is carried out, which would ensure that the arrangements and the existing capacity meet the World Bank's minimum requirements. Since the beneficiary households and communities have not yet been defined, MoE has submitted an ESMF and RPF to the Bank for review and clearance. Once beneficiary areas have been decided, appropriate ESIA, EPB, ESMP or RAP will be developed after screening of sub-projects where applicable.

5. Identify the key stakeholders and describe the mechanisms for consultation and disclosure on safeguard policies, with an emphasis on potentially affected people.

The key stakeholders on the Project will be beneficiary households and communities in rural areas, Micro- and Small



Enterprises, municipalities and chiefdoms, the Energy Regulation Board (ERB) and ZEMA. Consultations and disclosures will be done in line with the provisions of the ZEMA Act, EIA regulations, and the Bank’s safeguard policies. Consultations will be carried out through local media and community representatives. Furthermore, public hearings and disclosure meetings will form part of the process in engaging with the affected people and communities. Disclosure of safeguards instruments will be done on the Bank’s InfoShop and at national level on the respective PIUs websites, affected communities and local councils.

B. Disclosure Requirements

Environmental Assessment/Audit/Management Plan/Other

Date of receipt by the Bank	Date of submission to InfoShop	For category A projects, date of distributing the Executive Summary of the EA to the Executive Directors
20-Apr-2017	11-May-2017	

"In country" Disclosure

Zambia
11-May-2017

Comments

Resettlement Action Plan/Framework/Policy Process

Date of receipt by the Bank	Date of submission to InfoShop
20-Apr-2017	11-May-2017

"In country" Disclosure

Zambia
11-Apr-2017

Comments

C. Compliance Monitoring Indicators at the Corporate Level (to be filled in when the ISDS is finalized by the project decision meeting)

OP/BP/GP 4.01 - Environment Assessment

Does the project require a stand-alone EA (including EMP) report?

Yes

If yes, then did the Regional Environment Unit or Practice Manager (PM) review and approve the EA report?



Yes

Are the cost and the accountabilities for the EMP incorporated in the credit/loan?

Yes

OP/BP 4.04 - Natural Habitats

Would the project result in any significant conversion or degradation of critical natural habitats?

No

If the project would result in significant conversion or degradation of other (non-critical) natural habitats, does the project include mitigation measures acceptable to the Bank?

NA

OP/BP 4.12 - Involuntary Resettlement

Has a resettlement plan/abbreviated plan/policy framework/process framework (as appropriate) been prepared?

Yes

If yes, then did the Regional unit responsible for safeguards or Practice Manager review the plan?

Yes

OP/BP 4.36 - Forests

Has the sector-wide analysis of policy and institutional issues and constraints been carried out?

No

Does the project design include satisfactory measures to overcome these constraints?

Yes

Does the project finance commercial harvesting, and if so, does it include provisions for certification system?

No

The World Bank Policy on Disclosure of Information

Have relevant safeguard policies documents been sent to the World Bank's Infoshop?

Yes

Have relevant documents been disclosed in-country in a public place in a form and language that are understandable and accessible to project-affected groups and local NGOs?

Yes



All Safeguard Policies

Have satisfactory calendar, budget and clear institutional responsibilities been prepared for the implementation of measures related to safeguard policies?

Yes

Have costs related to safeguard policy measures been included in the project cost?

Yes

Does the Monitoring and Evaluation system of the project include the monitoring of safeguard impacts and measures related to safeguard policies?

Yes

Have satisfactory implementation arrangements been agreed with the borrower and the same been adequately reflected in the project legal documents?

Yes

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APPROVAL

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