

AFRICAN DEVELOPMENT FUND



PROJECT: URBAN DISTRIBUTION REHABILITATION AND TRANSMISSION EXPANSION PROJECT

COUNTRY: LESOTHO

PROJECT APPRAISAL REPORT

ONEC DEPARTMENT

November 2016

TABLE OF CONTENTS

1.	STRATEGIC THRUST & RATIONALE	1
1.1	Project linkages with country strategy and objectives	1
1.2	Rationale for Bank's involvement.....	3
1.3	Donors coordination	3
2.	PROJECT DESCRIPTION.....	4
2.1	Project components	4
2.2	Technical solution retained and other alternatives explored.....	5
2.3	Project type.....	6
2.4	Project cost and financing arrangements.....	7
2.5	Project's target area and population.....	8
2.6	Participatory process for project identification, design and implementation.....	9
2.7	Bank Group experience, lessons reflected in project design.....	9
2.8	Key performance indicators	10
3.	PROJECT FEASIBILITY	11
3.1	Financial and Economic performance.....	10
3.2	Environmental and Social impacts.....	12
4.	IMPLEMENTATION	14
4.1	Implementation arrangements	14
4.2	Monitoring.....	16
4.3	Governance.....	17
4.4	Sustainability.....	17
4.5	Risk management	17
4.6	Knowledge Building	18
5.	LEGAL INSTRUMENTS AND AUTHORITY	19
5.1	Legal instrument.....	19
5.2	Conditions associated with Bank's intervention	19
5.3	Compliance with Bank Policies	19
6.	RECOMMENDATION	19
	Annex 1: Country's comparative socio-economic indicators.....	I
	Annex 2 :AfDB's portfolio in the country.....	II
	Annex 3: Map of Kingdom of Lesotho.....	III
	Annex 4: Project Financing Plan.....	IV

Currency Equivalents (August 2016)

1 UA	=	1.39338 US Dollar
1 UA	=	19.7175 Lesotho Maloti
1 US Dollar	=	14.1508 Lesotho Maloti

Fiscal Year

1 April – 31 March

Weights and Measures

• 1 metric tonne	=	2204 pounds (lbs)	
• 1 kilogramme (kg)	=	2.200 lbs	
• 1 metre (m)	=	3.28 feet (ft)	
• 1 millimetre (mm)	=	0.03937 inch (")	
• 1 kilometre (km)	=	0.62 mile	
• 1 hectare (ha)	=	2.471 acres	
• 1 kV	=	kilovolt	= 10 ³ volts (V)
• 1 kVA	=	kilovolt ampere	= 10 ³ volt amperes (VA)
• 1 MVA	=	Megavolt ampere	= 10 ³ kilovolt amperes (kVA)
• 1 MVA _r	=	Megavolt ampere reactive	
• 1 kW	=	kilowatt	= 10 ³ watts (W)
• 1 MW	=	Megawatt	= 10 ³ kilowatts (kW)
• 1 kWh	=	kilowatt hour	= 10 ³ watt hours
• 1 MWh	=	Megawatt hour	= 10 ³ kilowatt hours (kWh)
• 1 GWh	=	Gigawatt hour	= 10 ⁶ kilowatt hours
• 1 barrel	=	0.159 m ³	= 158.987 litres
• 1 km	=	kilometre	= 10 ³ meters (m)
• 1 cm	=	centimetre	= 10 ⁻² meters (m)
• 1 ha	=	hectare	= 104 m ²
• 1 ton	=	Metric ton	= 1000 kg
• 1 TOE	=	tons of oil equivalent	= 11630 kWh

Acronyms and Abbreviations

ADB	African Development Bank
ADF	African Development Fund
AfDB	African Development Bank
CSP	Country Strategy Paper
DoE	Department of Energy
DPCF	Development Partners Consultative Forum
EA	Executing Agency
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
GEF	Global Environment Fund
GoL	Government of Lesotho
LEC	Lesotho Electricity Company
LESP	Lesotho Electricity Supply Project
MEM	Ministry of Energy and Meteorology
MoDP	Ministry of Development Planning
NCB	National Competitive Bidding
NSDP	National Strategic Development Plan
ONEC	Energy, Environment and Climate Change Department
PCN	Project Concept Note
PIT	Project Implementation Team
RAP	Resettlement Action Plan
RISP	Regional Integration Strategy Paper
SC	Steering Committee
UA	Units of Account
UNDP	United Nations Development Programme
USD	United States Dollars

Loan Information

Client's information	
Country	Lesotho
Borrower	Government of the Kingdom of Lesotho (GoL)
Guarantor	Government of the Kingdom of Lesotho (GoL)
Executing Agency	The Lesotho Electricity Company (LEC)

Financing Plan		
Source	Amount (UA)	Instrument
African Development Fund	7,780,000	Loan
GoL / LEC	1,754,754	Equity
TOTAL COST	9,534,754	

ADB's key financing information	
Loan Currency	UA
Maturity	30 years
Grace Period	5 years
Interest Rate	1%
Service Charge	0.75%
Commitment Fees	0.50%
FIRR, FNPV; (9.7% WACC)	15.59%, USD 7.87 million
EIRR, ENPV(12% discount rate)	44.1%, USD 58.15 million

Milestone	Timeframe
Concept Note approval	March 2015
Project approval	December 2016
Effectiveness	March 2017
Completion	December 2019
Last disbursement	June 2020
Last repayment	2068

Project Summary

Project Overview: The Urban Distribution Rehabilitation and Transmission Expansion Project, comprising refurbishment of switching stations and transmission lines; the construction of an 8 km, 132kV transmission line and expansion of the Khukhune substation, aims at improving the reliability and quality of electricity supply to existing customers in Lesotho. The upgraded and reinforced electric power distribution system will result in reduction of losses and outages of 2% and 25% respectively, and an increase of 5% in the system availability. The rehabilitation of the switching stations in the main load centre, Maseru, will reduce interruptions in supply and have positive impacts on the entire countywide distribution network which would enable expansion of access to various parts of the country in the near term. Possible future intervention by the Bank or other stakeholders will focus on expansion of access taking advantage of the outcome of this project. The project is part of the medium term (2016-2020) power sector investment program approved by the Government for the rehabilitation and improvement of the power system, which has a total financing requirement of UA 19.1 million.

Needs Assessment: Lesotho is a small, landlocked, mountainous country that remains one of the poor countries in the Southern Africa region. About 83% of the households in Lesotho live in rural areas with some 70% of them relying on agriculture for their livelihoods. Commercial activity and economic growth are hampered by numerous constraints including the lack of suitable infrastructure. The electricity sector in Lesotho is characterized by inadequate electricity production, transmission and distribution capacity and a low access rate. In July 2015, the national access rate was 38%, with the households mostly located in urban areas and only 6% of rural households with access. The country has set electricity access targets to reach 50% by 2020. Lesotho faces considerable challenges in the electricity sector. The country relies heavily on imports, to satisfy the peak demand, from South Africa which until recently had reduced its exports due to power shortages. The country will therefore face supply challenges unless adequate investment is made in the sector, especially in the generation segment. The energy mix is 100% hydro with 74 MW installed capacity, which represents only 50% of the current demand. The peak demand was 94 MW in 2004 and 156 MW in 2015 and it is anticipated that it will reach 288 MW by 2020 based on the envisaged grid extension and connections program as described in the National Electrification Master Plan (Lesotho Electricity Company).

Bank Added Value: The Bank involvement will leverage additional funding to the sector which has been a major constraint to sector development. In addition, the Cost of Service Study that the project is introducing will provide a basis for moving to economic reflective tariffs to promote efficiency and sustain viability of the sector which will promote private sector participation in the sector. Through investments in energy infrastructure in Lesotho, the Bank contributes to improving the competitiveness of the economy, spurring economic growth and helping Lesotho achieve the Sustainable Development Goals through 'ensuring access to affordable, sustainable, and reliable modern energy for all'.¹

Knowledge Management: The cost of service study component in the project will enable transfer of know how in tariff design and electricity pricing. The project management and supervision consultant component will result in the improvement of project management skills in Lesotho Electricity Company and facilitate the preparation of future projects for implementation. Additionally the Bank will also provide training for LEC at project launch on Bank financial management requirements and procurement and rules and procedures.

¹ As reiterated by H.E. Mr. Kelebhone A. Maope, on behalf of the African group at the 11th session of the open working group on SDGs. STATEMENT BY THE PERMANENT REPRESENTATIVE OF LESOTHO

Results-based Logical Framework

Country and project name: Lesotho - Urban Distribution Rehabilitation and Transmission Expansion Project						
Purpose of the project: Improve reliability and availability of electrical supply to existing customers.						
RESULTS CHAIN	PERFORMANCE INDICATORS			MEANS OF VERIFICATION	RISKS/MITIGATION MEASURES	
	Indicator (including Core Sector Indicator)	Baseline 2016	Target 2020			
IMPACT	Contribution to socio-economic development through improved access to electricity	National electricity access rate in % (CSI)	38% (2015)	50% (2020)	- National economic statistics Reports	
	Increased availability and reliability of electricity supply	Distribution network availability	90%	95%	- Project post-evaluation report - LEC quarterly and annual reports	Risk: Availability of counterparty contribution Mitigation: The government has shown commitment to the project by making it a priority for implementation and the availability of counterparty funding through the Lesotho Electricity Company (LEC).
OUTCOMES	Improved efficiency of the electricity system	Level of technical losses at switching stations	9.8%	8%	- Contractors/Consultant's Progress Reports	Risk: Inadequate operation and maintenance Mitigation: The electricity industry regulator will ensure that the awarded tariff adequately covers the costs related to system operation and maintenance. LEC will ensure that adequate training is provided to technical staff in the operation and maintenance of the network.
		Available energy for consumption	0	11,697MWh	- ESIA report - Baseline Survey	
	Switching stations rehabilitated	Number of switching gears	Nil	13	- Progress reports from the implementing agency	Risk: Project cost overrun Mitigation: Project has included a 10% contingency commensurate with price volatility in the country and region and in line with the experience of the recently completed Lesotho Electricity Supply Project.
OUTPUTS	Distribution line rehabilitated.	kms of 33kV line	Nil	188	- Supervision mission reports from AfDB	Risk: Implementation delays Mitigation: Advance contracting has been provided on two of the project components and the procurement plan has been carefully vetted. At project launch, adequate training on Bank rules and procedures will be provided to the implementation teams to be followed up by regular meetings/missions on a quarterly basis. A project management and supervision consultant will also be retained under the project.
	Substation upgraded	Number of substations	Nil	1	- Project completion report	
	New transmission line constructed	kms of 132kV line	Nil	8		
	Studies completed - Electricity Cost-of-Service Study - Energy Resources Map	Number of studies	Nil	2		

	Employment created	Number of direct jobs on the project (% women)	Nil	140 (10% women)	
KEY ACTIVITIES	COMPONENTS			INPUTS	
	A. Transmission Upgrade and Distribution System Rehabilitation			UA 7,632 million	
B. Civil Works			UA 0,512 million		
C. Technical Assistance			UA 0,414 million		
D. Supervision and Project Management (including supervision and the implementation of the ESMP)			UA 0.976 million		

Project Timeframe

Description	2016				2017				2018				2019				2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Appraisal																				
Project Approval																				
Effectiveness																				
Selection of consultant																				
Bid preparation																				
Bidding period																				
Evaluation of contract Award and Mobilization																				
Execution																				
Commissioning																				
Operational Acceptance																				
Last disbursement																				

REPORT AND RECOMMENDATION OF THE MANAGEMENT OF THE BOARD OF DIRECTORS ON A PROPOSED LOAN TO LESOTHO FOR THE LESOTHO URBAN POWER DISTRIBUTION REHABILITATION PROJECT

Management submits the following Report and Recommendation on a proposed ADF loan of UA 7,780,000 to finance the Urban Power Distribution Rehabilitation Project in Lesotho.

1. STRATEGIC THRUST & RATIONALE

1.1 Project linkages with country strategy and objectives

1.1.1 Approximately 83% of the households in Lesotho live in rural areas with some 70% relying on agriculture for their livelihoods. The Lesotho's Human Development Index (HDI) value is 0.450 positioning the country at the 160th place out of 187 countries in 2013. A major impediment to human development in Lesotho is poverty; resulting from limited resources, low productivity, geographical constraints, etc. It is estimated that in year 2000, only 5% of the population had access to electricity but through concerted efforts the number of households with electricity access had risen to 38% by July 2015, comprising 65% of the urban households and only 6% rural households. The annual per capita electricity consumption is 253 kWh, significantly below the African average of 579 kWh and the world average of 2,777 kWh.

1.1.2 The total installed power generation capacity is 74 MW made up by 72 MW at the Muela hydropower plant and a 2 MW run-of-the-river plant at Mantsonyane. In 2004 the system peak demand was 94 MW and had increased to 156 MW in 2015. The electricity supply gap is being bridged through imports from Eskom of South Africa and Electricidade de Mozambique. The increase in electricity demand is expected to stay strong for the next 15 years because of the Government's policy of even higher rates of electrification, and the growth expectations for the economy. The peak capacity requirement is expected to be 288 MW by 2030, and it is projected that it will have grown to about 350 MW by 2033.

1.1.3 In year 2000 the Government of Lesotho (GoL) embarked on a drive to privatize Lesotho Electric Company (LEC) due to the inefficiencies in the company's operations. To this end the GoL engaged a private consultancy on a management contract to oversee the operations of LEC and prepare it for privatization, which was never realized and later abandoned in 2006. As a result, during the 2000-2006 period, the focus of LEC was to connect new customers and improve sales; while maintenance of the network was not regarded as a priority. This approach resulted in further deterioration of the network with increasing faults. The situation is exacerbated by the regulatory regime introduced in 2006, which does not allow LEC to raise capital through the tariff for the delayed maintenance (operating costs). Consequently this has negatively impacted the electricity network which is now characterized by obsolete and dilapidated equipment. This has resulted in frequent unplanned outages, affecting reliability and availability of power supply to existing customers. Furthermore it has become risky to keep connecting new customers to the network already identified for refurbishment and strengthening.

1.1.4 In an attempt to address these issues, the Government approved the medium term (2016-2020) power sector investment program for the rehabilitation and improvement of the power system, which has a total funding requirement of UA 19.1 million. The priority was to start with

the most critical areas that affect the majority of electricity users like Mabote substation, Maputsoe substation and other substations that supply commercial, industrial and government offices. Despite the urgency of the rehabilitation works, the implementation of the programme was delayed due to the unavailability of adequate funding. The proposed Bank intervention will therefore enable the resumption of the programme. The European Commission has also expressed interest in financing subsequent phases of the Power Sector Investment Program starting in 2017.

1.1.5 Lesotho has an Energy Policy (2015) Energy Access Strategy (2008), National Electrification Master Plan and draft Renewable Energy Policy which guide the sector. The policy vision is to make energy universally accessible and affordable with minimal impact on the environment. One of its goals is to ensure security of energy supplies to meet the national requirements and support economic growth through the creation of income generating opportunities resulting in poverty alleviation in the country. Renewable energy sources have the potential to play an increased role in the country's energy mix, through increasing the energy access rate and displacing imported fuels². A National Renewable Energy Strategy is under preparation with a view to meet the needs of rural communities (including lighting, cooking, heating and community needs). The strategy will aim to improve access to sustainable sources of clean, reliable and affordable energy. It is geared to biomass use wind, solar and hydro energy.

1.1.6 Lesotho has a National Strategic Development Plan (NSDP, 2012/2013-2016/2017) as the implementation strategy of its Vision 2020. The NSDP targets the creation of 50,000 jobs and long term growth of 5% per annum, which will double the size of the economy every 16 years. The development of key infrastructure is one of the key building blocks necessary for the high and shared growth to which the proposed project will contribute. Infrastructure is also seen as a key constraint for social development and economic growth. The NSDP calls for the revamping of the electricity distribution networks to improve safety and reliability and to expand connections to households and potential growth areas, including institutions such as mines that are currently off-grid. The plan also identified hydro power development as a key focus area for electricity generation for both local consumption and exports.

1.1.7 The proposed project is aligned to the vision and goals of the sector as its main objective is to ensure a reliable supply of electricity which in turn will contribute towards poverty alleviation through economic development. The Bank intervention will also assist the Government in preparing an Energy Resources Map based on the review and consolidation of existing information on renewable energy resources covering solar, wind, and hydropower resources. This will facilitate increased private sector involvement in the sector.

1.2 Rationale for Bank's involvement

1.2.1 The Bank's Country Strategy Paper (2013-2017) is focused on two pillars. Pillar I is infrastructure development aimed at creating conditions for private sector development and pillar II is institutional capacity building aimed at improving governance and accountability. The proposed intervention is consistent with the first pillar, infrastructure development, and supports the national objectives of increased access to reliable electricity to support economic growth for

² Lesotho has good renewable energy resources. The hydro power potential in the country is estimated at 14,000 MW (ranging from 150kW to 1,800MW) spread over 22 sites. Lesotho has solar energy resources with over 300 sunny days in a year with annual average insolation levels of 5.25–5.53 kWh/m²/year. The country also has wind energy resources with measured annual average wind speeds of 3.7 to 4.7m/s at 10m heights.

poverty reduction. The proposed project was identified during the preparation of the Country Strategy Paper as one of the Bank's lending interventions. The Bank received the formal request for financial assistance from the GoL through a letter dated 26th January 2015.

1.2.2 The intervention is well aligned with the current Bank's Energy Sector Policy whose objectives are to: (i) support Regional Member Countries (RMCs) in their efforts to provide their populations and productive sectors with access to modern, affordable and reliable energy services³; and (ii) assist RMCs in developing their energy sector in a socially, economically and environmentally sustainable manner. It is also closely aligned to the ADF 13 (2014-2016) priorities and Bank's Ten Year Strategy (2013-2022) objective that focuses on inclusive and green growth. The project is also consistent with the "High-5s" as it contributes to the achievement of three of the five "High-5s" objectives; light up and power Africa; industrialize Africa (making electrical power available for the creation of small and medium-sized industries); and improve the quality of life of Africans. The project will result in an increase in energy available for consumption from the reduction in technical losses associated with the rehabilitation of 13 switching stations, 188 km of 33 kV lines. This will facilitate the connection of new customers in future which are not covered within the scope of this project. The Khukune substation will be upgraded through the addition of 2x30 MVA transformers and 8 km of 132KV transmission line linking the substation to the Muela power plant. This will provide reliable power to Letseng mine, Mokhotlong town and the Lemphane mine in the near future. Through ensuring a reliable energy supply, the project will provide a platform for increased economic activities thereby creating more employment opportunities for inclusive growth. Additionally, ensuring the supply to the diamond mine and thereby reducing the need to run the backup of diesel powered generation curtails greenhouse gas emissions. The project also includes a program on youth apprenticeship in line the Bank's strategy on creating jobs for Youth and Equipping Youth in Africa.

1.2.3 The intervention is also complimentary to the recently completed Lesotho Electricity Supply Project which sought to support investment in the electricity supply infrastructure to enhance electricity access rate; ensure improved efficiency to reduce peaking shortages and therefore assist the country to reduce poverty and achieve the Millennium Development Goals. In addition, the intervention on preparation of the Energy Resource Map complements the Bank assistance, to the Lesotho Electricity and Water Authority, which developed a regulatory framework to facilitate private development of renewable energy generation.

1.3 Donors coordination

1.3.1 The Ministry of Development Planning (MoDP) coordinates the development partners' activities in the country. Fifteen development partner agencies are active in Lesotho. Aid coordination, alignment and harmonization have improved since the formation of Development Partners Consultative Forum (DPCF) in 2005. The United Nations Development Program (UNDP) coordinates the DPCF and it comprises all the donors including UN agencies. The forum seeks to improve aid coordination, promote harmonization and support the Government in ownership of development processes as envisaged in the Paris Declaration and Accra Agenda for Action. During the preparation mission, consultative meetings were held with the active donors

³ The objective coincides with the Sustainable Development Goals for ensuring affordable, sustainable and reliable energy for all.

in the energy sector to discuss all aspects of the project with a view to ensuring a harmonized approach in its formulation.

1.3.2 Other key players in the sector include the Millennium Challenge Corporation (MCC), which has supported the use of photovoltaic and solar water heating systems in clinics located in remote and rural areas. UNDP with funding from the Global Environment Facility (GEF) provided a total of 1,537 rural households with solar home systems during the period 2007-2012. The Africa Adaptation Programme with funding from Government of Japan has also supported the use of renewable energy for income generating activities in rural un-electrified areas as well as the development of a renewable energy policy framework. United Nations Industrial Development Organisation is planning to support the establishment of a manufacturing facility for efficient cook-stoves with GEF support. The proposed facility being established in Maseru by Africa Clean Energy will have a capacity to produce 100,000 cook stoves per year and will employ 250 people. The Energy and Environmental Programme Africa led by the Government of Finland and funded by the Department for International Development, United Kingdom, is also planning to support renewable energy pre-commercialisation projects in Lesotho and is currently extending support to two projects led by Non-Government Organisations (NGO). Under the proposed project, the production of the energy resource map will facilitate more informed development of the renewable energy sector which is supported by other donors.

2. PROJECT DESCRIPTION

2.1 Project Objective

2.1.1 The purpose of the project is to improve the reliability and availability of the power distribution network to enhance quality of supply to existing consumers, including, specifically, the Letseng diamond mine, and to provide a basis for gradual transition of existing electricity tariffs to economic cost of service reflective levels in Lesotho. The improvement in the reliability and availability of the distribution network is to be achieved through rehabilitation of existing electricity supply switching stations, primarily in the municipality of Maseru, rehabilitation of some 33 kV lines, substation upgrade and construction of a 132 kV line to augment supply. The project will also conduct an electricity cost-of-service study and preparation of an energy resources map.

2.2 Project components

2.2.1 The project will comprise the following components. A detailed description of project component is in annex C1.

Table 2.1: Project Components

	Component	Est. cost (UA)	Component description
A	Transmission Upgrade and Distribution System Rehabilitation	7,632,357	<ul style="list-style-type: none"> ▪ Refurbish 39km of 33kV line from M/Hoek to Quthing and 149km of 33kV line from Mazenod to Thaba Tseka through installation of spherical dampers to minimise line swings and instability of the transmission towers and relocation of parts of the line. ▪ Rehabilitation of 13 switching stations in the municipality of Maseru, one in St Agnes Teya-teyaneng and one in Muela. ▪ Upgrade of the Khukhune 88/33 kV substation by adding 2x30 MVA transformers, construction of 8km of 132 kV transmission line from the Muela Hydropower Station to link the 88 kV transmission line from South Africa at the substation.
B	Civil works	511,855	<ul style="list-style-type: none"> ▪ Civil works to refurbish buildings housing the switching stations.
C	Technical Assistance	414,460	<ul style="list-style-type: none"> ▪ Electricity Cost-of-Service Study to provide a basis of gradual transition of existing electricity tariffs to economic cost reflective tariffs to promote economic efficiency and viability of the Lesotho power sector. ▪ Preparation of an Energy Resources Map based on the review and consolidation of existing information on renewable energy resources. The review and consolidation should cover solar, wind, and hydropower resources.
D	Project Management and Supervision	976,083	<ul style="list-style-type: none"> ▪ Project management and supervision ▪ Financial audit ▪ Implementation of environmental management plan ▪ Project management and supervision consultant ▪ Youth apprenticeship programme

2.3 Technical solution retained and other alternatives explored

2.3.1 The solutions retained, i.e. the refurbishment of switching stations, the rehabilitation of the existing lines and the expansion of Khukhune Substation to transfer power, were based on detailed technical assessment undertaken by LEC of the operating conditions of the switching stations, as well as the operating and power transfer capability of 33 kV lines, which the Bank reviewed and found satisfactory.

2.3.2 The alternative to the rehabilitation of the switching stations would be to build brand new switching stations to achieve the same result as the proposed project component at a much higher cost. The cost of installing 13 new stations is estimated at UA 2.4 million, compared to the project estimate of UA 2.2 million for the rehabilitation of the switching stations. The refurbishment work on the 33 kV lines involves the installation of dampers to reduce the swing span of the lines due to excessive span sagging. This will enhance the stability of the lines and reduce the potential of line and tower collapse which would result in loss of power supply for a prolonged period. The alternative is to build a completely new line over a longer distance and

more gentle terrain at an estimated cost of UA 6.2 million compared to the cost of installation of the spherical dampers under the project for UA 4.7 million.

2.3.3 The objective of the 8 km, 132-kV line from the Muela hydropower station to the substation at Letseng is to provide replacement power that is lost to the Letseng mine when the supply from Eskom to the mine is curtailed during load shedding by Eskom. The power supply to the mine is 15MW and its utilization factor is at about 70%. In addition the line will deliver power to a new mine (Mothae Diamond Mine) expected to be in service about 2018/19 when construction of the line is fully completed. The consumption of the new mine is expected to increase from 5 MW initially from 2018/19 to 10 MW in 2021, and to 15 MW full power requirement by 2024. The alternative to the 132-kV line to serve the same functions is to construct a new 101 km of 123-kV line from the nearest connection point to the Eskom grid and the installation of a 132/33-kV transformer bay at the Letseng substation. The combined cost of the alternative composite option is much higher than that of the selected scheme under the project.

Table 2.2: Project alternatives considered and reasons for rejection

Alternative name	Brief description	Reasons for rejection
Construction of new 33KV line	33kV Mohale's hoek – Quthing (39km) and Mazenod Thabata-seka line (149 km). Total length 188 km.	The unit price for the 33kV line is UA 33,057 per km and the total price of alternative is UA 6,214,881 instead of UA 4,680,334. The cost of the alternative projects is 33% higher than the retained solution.
Construct a new line and build new 132/33-kV transformer- substation; and the construction of a new high voltage transmission line from the wind farm to the nearest connection point on the LEC transmission grid.	Construct a new 101 km,132kV line and build new 132/33kV substation at Letseng	Unit price for the 132kV line is UA 132,230 per km and the substation is UA 778,142. The total price of the alternative is UA 14,677,698 compared with UA 2,380,166 for the retained solution. This represents a difference of UA12,297,531.

2.4 Project type

2.4.1 The proposed project is a stand-alone investment project.

2.5 Project cost and financing arrangements

2.5.1 The project cost is estimated at UA 9.535 million (Maloti 188.002 million) in year 2015 price level including 10% physical and price contingency. These costs were derived from a study done by the Government and the electricity company (LEC). The project cost comprises UA

7.752 million (Maloti 152.841 million) as foreign currency and UA 1.783 million (Maloti 35.161 million) as local costs.

Table 2.3: Project cost estimates by component [amounts in UA equivalents]

Components	Foreign currency costs	Local currency costs	Total Costs	% foreign
Transmission Upgrade and Distribution System Rehabilitation	6,244,656	693,851	6,938,506	90%
Civil Works	0	465,323	465,323	0%
Technical assistance	367,811	8,971	376,782	98%
Supervision and project management	434,389	452,959	887,348	49%
Total base cost	7,046,855	1,621,104	8,667,959	81%
Physical contingency (10%)	704,686	162,110	866,796	81%
Total project cost	7,751,541	1,783,214	9,534,754	81%

Table 2.4: Sources of financing [amounts in UA equivalents]

Sources of financing	Foreign currency costs	Local currency costs	Total Costs	% total
ADF Loan	7,037,884	742,116	7,780,000	82%
GOL	713,656	1,041,098	1,754,754	18%
Total	7,751,541	1,783,214	9,534,754	100%

2.5.2 The Bank will fund 82% of the project costs supported by a counterparty contribution from the Government of Lesotho through Lesotho Electricity Company of 18%. The ADF loan will be used to fund the foreign and local costs of the Transmission upgrade and distribution system rehabilitation component, Cost of service study and the Project supervision and management consultant. Government/LEC resources will finance the balance of project components. This includes under project management cost, a youth apprenticeship programme under which LEC will allocate five (5) apprenticeship/intern positions. The interns will be associated with the project for a minimum of six (6) months and during this time gain meaningful experience and job exposure. At least 50% of the apprenticeships opportunities will be allocated to qualified women. The full financing plan is presented in Annex 4.

Table 2.5: Financing plan by category of expenditure [amounts in UA equivalents]

Categories of expenditure	AfDB	GoL	Total Costs	% of total cost
Goods	6,938,506	0	6,938,506	72%
Works	0	465,323	465,323	5%
Services	841,494	17,942	859,436	9%
Project Supervision & Management	0	404,694	404,694	4%
Total base cost	7,780,000	887,958	8,667,959	90%
Contingency	0	866,796	866,796	9%
Total Base Cost	7,780,000	1,754,754	9,534,754	100%

Table 2.6: Project cost by category of expenditure [amounts in UA equivalents]

Categories of expenditure	Foreign currency costs	Local currency costs	Total Costs	% foreign
Goods	6,244,656	693,851	6,938,506	90%
Works	0	465,323	465,323	0%
Services	802,199	57,236	859,436	90%
Project Supervision & Management	0	404,694	404,694	0%
Total Base Cost	7,046,855	1,621,104	8,667,959	81%
Price Contingency	704,686	162,110	866,796	81%
Total Project Cost	7,751,541	1,783,214	9,534,754	81%

Table 2.7: Expenditure schedule by component [amounts in UA equivalents]

Components	2017	2018	2019	Total
Transmission Upgrade and Distribution System Rehabilitation	763,236	5,342,650	1,526,471	7,632,357
Civil Works	511,855	0	0	511,855
Technical assistance	41,446	331,568	41,446	414,460
Supervision and project management	195,217	488,041	292,825	976,083
Total Project Cost	1,511,753	6,162,259	1,860,742	9,534,754

2.6 Project's target area and population

2.6.1 The refurbishment project is located in Maseru, Botha-Bothe, Mohale's Hoek, Thaba-Tseka and Quthing districts. The total population of Maseru is 431,998 (2006 census) which is approximately 24% of the total population of Lesotho of which 52.34% are women. The project area is mainly located in the central business district where there is high employment through the

factories. However, the project will not interfere with the daily activities of the factories and its workers because the project is repairing property already owned LEC.

2.6.2 Botha-Bothe on the other hand has a total population of 109,529 making approximately 6% of the total population of Lesotho. The project area is located in the rural part of Botha-Bothe in the Likila constituency where the most common activity is agriculture. The project may affect people's fields and as such compensation may need to be paid accordingly. Mohale's Hoek has a total population of 174,924 where people survive on agriculture and working in the factories in Mafeteng amongst other means of living. However, in Mohale's Hoek the project is located outside the town and may only affect the fields. Thaba-Tseka district is one of the highlands of Lesotho with a total population of approximately 7% of the total population of Lesotho. It has only one electricity line that supplies it with electricity. This line urgently needs refurbishment which will stabilize the electricity supply and in parallel contribute to the economic development of the district. Quthing has a population of 120,502 people. The project will be mainly located in the rural parts of the districts which means that fields may be affected resulting in the need for compensation. The people from Quthing mainly survive on agriculture even though there is challenge due to the varied and changed precipitation and temperature (climate change).

2.7 Participatory process for project identification, design and implementation

2.7.1 During the identification and preparation phases the AfDB team actively participated in discussions with all stakeholders (including donors) to identify and design the most appropriate and priority project to assist Lesotho's energy sector. Key stakeholders participated in identifying challenges in the energy sector particularly in the distribution segment (obsolete equipment, limited connection, and frequent power outages, power availability and quality) as being among their development priorities and recommending specific project interventions. Subsequent to the preliminary assessment phase, the Bank's preparation and appraisal missions visited Lesotho and met with officials of the Ministry of Development Planning, Ministry of Energy and Meteorology (MEM), Lesotho Electricity and Water Authority (LEWA), Lesotho Highlands Development Authority (LHDA), Lesotho Electricity Company (Pty) Ltd and development partners through the DPCF etc. The consultations confirmed that the proposed project is part of the medium term (2016-2020) power sector investment program approved by the Government for the rehabilitation and improvement of the power system. The proposed project will be the first to be undertaken under the program and will cover the most critical requirements scheduled for the first year of the programme.

2.7.2 Extensive consultation was undertaken by LEC for this project. The following consultation methods were used: public gatherings in villages which have potential of being affected, interviews and the provision of project information/concerns gathering paper. The issues raised included: electrification of the villages where the lines already pass because the respective villages are already policing the lines; an assurance that every Mosotho will have access to electricity; need to inform relevant stakeholders such as schools and the police prior to contractor arriving for the purposes of security and safety; demarcation of the areas where work is in progress and inaccessible to the public for safety; and the need to take care of traffic obstruction. Any project related complaints and or compliments shall be handled through the LEC call centre which is already widely used for electricity related issues.

2.8 Bank Group experience, lessons reflected in project design

2.8.1 The Bank's current portfolio in Lesotho is composed of African Development Fund (ADF) grants, ADF loans and Rural Water Supply and Sanitation Initiative Trust Fund grant. The portfolio has 4 ongoing operations amounting to UA 27.8 million with cumulative disbursement rate of 25%. The average age of the portfolio is 3.7 years. Currently the portfolio is rated as satisfactory. In the energy sector, the Bank has just closed two projects, the Lesotho Electricity Supply Project (LESP) and a technical assistance intervention which assisted the Lesotho Electricity and Water Authority (LEWA) with the Design of a Regulatory Framework for the Development of Renewable Energy Sources. Lessons learned from the two projects and other operations financed by the Bank in the country have been taken into account in designing this project. The Bank has faced challenges in implementing projects in Lesotho related to inadequate quality at entry, limited ownership, oversight and implementation capacity and fielding Bank teams with appropriate skills mix for effective oversight. Despite some success with previous energy sector projects, the design of this project has been informed by the lessons learnt, being:

- (a) Inadequate quality at entry: In the LESP case, the majority of the components were not fully designed and TORs were not available. The project implementation team had to do the extra work, which resulted in delays in the procurement of contractors/consultants as well as several change orders that escalated prices. For the proposed project, the TORs have been drafted and the Bank team will continue to provide the requisite support.
- (b) Limited ownership, oversight and implementation capacity:
 - The Government approved the project through the Public Sector Investment Committee to facilitate the provision of the counterparty funds through the national budget process;
 - Consultations were undertaken with various stakeholders/national agencies by both LEC and the Bank during the project preparation and appraisal process which confirmed the need and acceptance of the project. This will contribute to improved project implementation;
 - The Bank has insisted on the retention of a project management and supervision consultant to assist LEC in project implementation;
 - Based on these lessons learnt, on the LESP project the overall project FM will be handled within the existing structures of LEC's Finance Departments, with General Manager Finance exercising overall responsibility for project FM. Consultations were held with the Auditor General to ensure that the project is included in the audit programme. Bank financial management arrangements including reporting and auditing requirements were clarified as part of project appraisal; and
 - The performance contracts of staff assigned to the project implementation team will be adjusted to include their work in the PIT as a deliverable.
- (c) Fielding Bank teams with appropriate skills mix for effective oversight - A team with the requisite skills mix was fielded during the project appraisal process and this will continue through supervision to ensure adequate oversight and compliance to Bank policies and procedures. Supervisions and regular meetings will be held with the PITs to provide timely support to project implementation.

2.9 Key performance indicators

2.9.1 The project will result in (i) increased power availability and quality thus resulting in an increase in economic activities which are currently impaired by the lack of reliable electricity

supply; (ii) increased power distribution system availability, and (iii) reduced losses and power outages. The project also includes a technical assistance to carry out an electricity cost of service study and prepare an energy resources map. The Result Based Logframe of the project reflects the performance indicators for the project at input, output and outcome levels. Key among them are: (i) for the outputs: number of switching gears rehabilitated; kms of 132kV constructed and 33kV line rehabilitated; number of substations upgraded and number of studies produced ; (ii) for the outcomes: increased distribution network availability; reduction of technical losses at switching stations; and increased available energy for consumption. During appraisal and post appraisal the sources of data for these indicators were confirmed to be the LEC Quarterly and Annual Reports, the quarterly progress reports from the implementing agencies.

2.9.2 The progress during implementation will be monitored by the timely commencement of the works, regular disbursements, and consultations with the PIT, timely submission of quarterly progress and environmental and social management plan reports as well as annual audit reports. Similarly, the project implementation schedule and procurement plan provide key indicators for monitoring implementation progress. These will be updated with actual status for evaluation with planned targets. The detailed project monitoring plan is attached in Annex C2 which provides the timelines, reporting, and responsibility among the different project stakeholders.

3. PROJECT FEASIBILITY

3.1 Financial and Economic performance

3.1.1 Analyses were carried out to determine the financial and economic profitability of the project as measured by the financial and economic rates of return based on the comparison of costs and benefits. Costs comprise capital, fixed and variable operation and maintenance costs. The variable operating costs consist of the cost of power from the Muela hydropower station expressed in respective financial and economic terms. The quantifiable benefits comprise, savings in electricity distribution level technical losses and reductions in supply outages, both of which have constrained demand from being served adequately; the replacement power when supply to the Letseng mine is curtailed by Eskom and the additional energy delivered to the new Monthae diamond mine, also in Letseng. Furthermore, the improved performance of the distribution network in Maseru, as the main load centre in the country, will extend over the entire country-wide interconnected system. Furthermore, other unquantifiable benefits would arise from the technical assistance components: (i) by providing the basis of setting consumer electricity tariffs to promote economic efficiency and financial viability of the power sector. This will enable the identification of specific projects to promote for development by the private sector based on consolidated information on the potential of renewable energy resources in the country.

3.1.2 The financial analysis was carried out from the view point of LEC as the project implementing entity and the project beneficiary, considering the financial costs and benefits of the project. The quantifiable benefits were valued at the weighted average of current consumer tariffs of M1.01/kWh (USc7.77/kWh). The stream of costs and benefits were discounted at the weighted average cost of capital to LEC of 9.7% over the assumed 30 year-life of the project assets. The financial internal rate of return (FIRR) was estimated at 15.59%, which is higher than the LEC weighted average cost of capital, and a net present value (NPV) of USD 7.87 million.

3.1.3 The economic analysis considered the view point of the country, Lesotho. All costs and benefits were expressed in economic terms and in base-year prices of 2015. The incremental energy consumption as the quantifiable benefit of the project were valued at US\$ 0.25/kWh as the weighted average of the willingness-to-pay on the part of the industrial, commercial and household and the other consumers. For the industrial and large commercial consumers, the willingness to-pay is based on the cost of diesel plant generation as the next best alternative source of supply that would be used to meet their power needs. For households, the estimate of the willingness-to-pay is based on the costs of the alternative fuels available to them, such as kerosene for lighting, cooking, and other uses. The economic internal rate of return (EIRR) was estimated at 44.1% compared to the opportunity cost of capital of 12% to Lesotho, and a NPV of USD 58.15 million.

3.1.4 Sensitivity analysis was performed against the key risk variables to test the robustness of the financial and economic profitability of the project. The identified key risks include (i) a 10% capital cost increase; (ii) a 10% less than expected available energy for consumption, (iii) a 15% lower than the assumed level of the willingness-to-pay; and (iv) a simultaneous occurrence of the above events. The results show that project is both financially and economically viable with the rates of return in excess of both the weighted average cost of capital to LEC and the opportunity cost of capital to Lesotho, and thus confirming the robustness of the profitability of the project. Details of assumptions, analyses, and results are discussed in Annex B.7.

3.2 Environmental and Social impacts

3.2.1 **Environment:** The project was validated as category 2 on 2 April 2015 due to the temporal and localized impacts that will result from both construction and operation of the project. The ESMP for the project was finalized in August 2015 in line with the AfDB's requirements since the Lesotho Department of Environment did not require any authorization of the project due to the negligible environmental and social impacts. The ESMP summary was disclosed on the AfDB's website on 9 October 2015. Negative impacts of the project pertain to the removal of asbestos roof sheeting and the disposal thereof. Dust, noise and traffic disruptions will be minimal. Where transmission line poles are moved due to the soil erosion and gullies formed as a result of increased flooding, there may be crops affected.

3.2.2 Mitigation proposed for asbestos is to compile an asbestos handling procedure which will be approved by the AfDB, provide full personal protective equipment (PPE) and ensure that the workers don't take their PPE home to their families, and the disposal of asbestos in double bagged polythene bags at a designated area on the main landfill site in Maseru where it cannot be dug again. Any affected crops during transmission line repositioning shall be compensated in line with the national prices and the AfDB procedures. By and large the main benefit of the project is that, the project is refurbishing transmission infrastructure delivering power from of hydro power sources. It therefore does not add to the climate stresses already suffered in Lesotho. Women, who constitute 52.34% of the total district population are the majority in the areas affected by the project.

Climate change

3.2.3 From an environmental perspective, while Lesotho enjoys a low carbon footprint and has successfully piloted renewable energy solutions, its topography makes it vulnerable to natural

disasters (floods and droughts)⁴. The unsustainable reliance on biomass as the most used form of energy in Lesotho contributes to loss of biodiversity and soil erosion. It propagates effects of climate change from greenhouse gas emissions, whose effects apply on all men, women and children. Land use, land use change and forestry are responsible for the largest source of emissions, totalling net emissions of 1,260.57 Gg of CO₂ equivalents. The second source is agriculture, emitting about 1,074.05 Gg or 33.06%. Energy takes third place, emitting about 854.99 Gg or 26.31% (UNEP, 2000: 12). The enhanced availability of electricity, which will be made possible by the rehabilitation of the distribution network will help to reduce the use of fuel wood and imported fossil-fuel for electricity generation, thereby saving the environment and limiting the country's carbon footprint. As the project will primarily finance the rehabilitation of existing distribution network, it is anticipated that the rehabilitated facilities will better withstand the extreme weather conditions that may be caused by climate change.

Gender

3.2.4 Lesotho has a reverse gender gap in education with women being more literate compared to men and enjoying higher net primary, secondary and tertiary enrolment rates. Consequently women make up more than 50% of the civil service. While 33% of all households are female headed and these households are not significantly poorer than their male headed counterparts, women remain disadvantaged with regard to access to land and other productive resources despite the Legal Capacity of Married Persons Act (2006). The majority of women have tasks connected to household management. Collection of biomass for household cooking and thermal needs from animal kraals, open field, wood lots, forests and merchants is done 85% of the time by women, who make an average of 3 trips per week, investing an average of 2 hours per trip (DOE, 2007). Collection of biomass for cooking in schools is done by pupils who are engaged in an average 2 trips of 3 hours per trip per week (DOE, 2007). This results in an economic loss of productive time for women and loss of otherwise educative time for pupils. Education for students is further affected lack of modern technologies and teaching aids: resources such as computers and internet cannot be used (UNECA 2012).

3.2.5 An efficient electricity supply will help ease the workload of women. The project recognizes the work by other Development Partners in providing alternative energy for cooking and heating, which has, enormous socio-economic and health hazards on women and children. These include gender-crosscutting issues such as diseases (cancer, respiratory infections, and lung diseases) and accidents. (Please refer to the section under the Donor coordination). The expected outcome of the project is to provide affordable and reliable electricity.

Social

3.2.6 National poverty figures (2013) indicate of that 57.1% of the population lives below the national poverty line. About 75% of the population of 1.8 million reside in the rural areas and do not earn regular income.⁵ The project will bring reliable electricity and subsequently potential for economic growth. Productivity is expected to increase by extending the working day with lighting and by mechanisation. However, Lesotho has an 87% adult literacy rate (BOS, 2009), yet 'energy literacy' is essential. Knowledge of alternative energy sources, energy efficiency and energy

⁴ 2012 Economic Commission for Africa (ECA) study (Tsehlo 2012)

⁵ BOS Household Budget Survey 2009

management techniques, energy technologies and basics for use of energy appliances remain a challenge in most areas in Lesotho. The substation expansion and construction of transmission line component will attract labour and given the high prevalence of HIV/AIDS (23.6% of the Lesotho adult population is living with HIV/AIDS and HIV/AIDS), it is imperative to have a robust awareness raising during the implementation of the project.

Resettlement Issues

3.2.7 For the switching station rehabilitation, the project areas are existing switch houses located in the industrial part of the city of Maseru. The neighbours are other industries and there will be no disruptions in these areas as work will take place within existing fenced areas of the LEC. For the Kukhune substation in Butha-Buthe, it is already far away from communities due to the existing buffer. Communities will only be affected during the repositioning of the transmission line but this is currently designed to happen within the existing buffer. However, should there be changes during construction, the impacts will be temporary and as some of the areas are crop fields, there may be need to compensate for damage of crops but this will be avoided to the extent possible. There is no physical resettlement. The main benefit of the project will be reliable electricity supply which in turn boosts the socio-economic status of the country.

4. IMPLEMENTATION

4.1 Implementation arrangements

4.1.1 The Government of Lesotho will be the borrower of the Loan and is expected to on-lend the proceeds of the Loan to the Lesotho Electricity Company (LEC) on terms and conditions acceptable to the Fund. The LEC, which is a parastatal, will be the executing agency (EA). LEC will be responsible for the day-to-day implementation of the project except for the Cost of Service Study which will be implemented by the Lesotho Electricity and Water Authority (LEWA).

4.1.2 **Institutional Arrangements:** A Steering Committee (SC) will be established by the Government of Lesotho to provide oversight on project implementation through coordinated monitoring and evaluation of major milestones. Membership of the SC will comprise of the directors of Department of Energy (Chairman), Ministry of Development Planning, Ministry of Finance, LEWA and LEC. To ensure the full buy-in of the consumers to the Cost of Service Study recommendations, the representatives of Chamber of Commerce, Private Sector Foundation and Consumer's Association will be invited when the committee discusses business relating to the study. The SC will meet regularly to address bottlenecks and evaluate the progress of the project to track down the achievement of milestones in accordance with the Log Frame of the project.

4.1.3 LEC has established a Project Implementation Team (PIT) comprising of a Project Manager, General Manager Finance, an Environmental and Social Officer, Project Engineer, and Procurement Manager. The PIT experts have been designated from the existing staff of LEC. Some of the members have been retained from the Lesotho Electricity Supply Project PIT which satisfactorily supervised the project. The PIT will follow up on the daily implementation of project activities. A project management and supervision consultant will be engaged to (i) assist LEC in the preparation of bidding documents for the project; (ii) provide support in the project

supervision; and (iii) prepare detailed project specifications for the pipeline of projects identified under the network refurbishment programme.

4.1.4 The Cost of Study component will be implemented by LEWA. LEWA has established a dedicated study management team (SMT) responsible for the day-to-day supervision and management of the study, and will play the facilitating role in assisting the consultant undertaking the study in data and information gathering. It comprises managers of technical regulation - electricity, economic regulation (Coordinator), legal services and finance departments. A Technical Committee (TC) has been setup to provide technical oversight of the study through reviewing and providing comments on the various reports prepared by the Consultant. It comprises staff of LEWA and the key stakeholders – LEC, Department of Energy, Ministry of Finance, and Ministry of Development Planning, with professional disciplines commensurate with the assignment. The chairperson of the TC shall be a LEWA representative (Manager – Economic Regulation). A core team within the TC will work with the consultant for hands-on training to foster transfer of know-how in the various key aspects of the study. The TC through its Chairperson shall report to the SC. See Annex C1 for the detailed composition and terms of reference for the various committees.

4.1.5 **Implementation Schedule:** Overall, the project will be implemented over a period of 36 months. The project time frame is included and the implementation timelines are summarised in Annex B.9. The project supervision schedules and skill mix are also presented in Annex B.9.

4.1.6 **Procurement Arrangements:** Procurement of goods (including non-consultancy services), works and the acquisition of consulting services, financed by the Bank under the project, will be carried out in accordance with the “*Procurement Policy and Methodology for Bank Group Funded Operations*” (BPM), dated October 2015 and following the provisions stated in the Financing Agreement.

4.1.7 Specifically, procurement will be carried out as follows:

- Bank Standard Procurement Methods and Procedures (PMPs), using the relevant Bank Standard Solicitation Documents (SSDs), for Bank financed contracts where the Borrower Procurement System (BPS) shall not apply. Goods contracts to be procured under international competitive bidding (ICB) will include the supply of equipment for the refurbishment of switching stations and two transmission lines, and expansion of substations using the relevant Bank Standard Solicitation Documents for Plant Design, Supply and Installation. Consultancy services financed by the Bank, Project Management and Supervision Consultancy and Cost of Service Study will be acquired using the QCBS method using the Bank Standard Solicitation documents.
- Specific procurement methods and procedures under Borrower Procurement System comprising the National Procurement Procedures as used by the LEC. Contracts to be financed by the Government of Lesotho using the National Competitive Bidding procedures will involve extension works for the substation and switching station.

4.1.8 **Procurement Risks and Capacity Assessment (PRCA):** the assessment of procurement risks at the country, sector, and project levels and of procurement capacity at the executing agencies, were undertaken for the project and the output has informed the decisions on the procurement

regimes being used for specific transactions or groups of similar transactions under the project. The appropriate risks mitigation measures have been included in the procurement PRCA action plan proposed in *Annex B5*.

4.1.9 Financial Management and Audit: The overall conclusion of the FM capacity assessment (that included a review of the budgeting, accounting, internal controls, flow of funds, financial reporting and auditing arrangements) is that the Executive Agency's (LEC) FM arrangements meet the Bank's minimum requirements to ensure that funds made available for project financing are used economically and efficiently and for the purpose intended. The LEC which will be implementing major components of the proposed project has prior experience in implementing Bank financed operations including the recently closed Lesotho Electricity Supply Project. Lack of proper fiduciary oversight by the management of LEC and understanding of Bank reporting requirements resulted in weakness in financial management which negatively impacted on timely submission of audit reports to the Bank. Based on these lessons learnt, appropriate mitigation measures are being incorporated into the new FM design under the new project. In that regard, the overall project FM will be handled within the existing structures of LEC's Finance Departments for the main components, with General Manager Finance exercising overall responsibility for project FM in liaison with LEWA responsible only for the cost of service study. The assessment also highlighted a need to augment the finance staff to effectively manage the increased activities going forward that will form part of the finance team for the financial management of the project. The overall FM risk rating is Moderate. The detailed FM assessment is attached as Annex B4.

4.1.10 In accordance with the Bank's reporting requirements, Interim Quarterly Financial Progress Reports (IQFPR) shall be prepared and submitted by LEC to the Bank no later than 45 days after the end of each quarter. In addition, separate annual audited financial statements with the audit carried out by the Office of Auditor General (OAG) or a private sector audit firm appointed with OAG's involvement, shall be submitted to the Bank within six months of the end of each financial year. The audit will be done in accordance with a Bank approved audit terms of reference. LEC will be responsible for coordinating the audit and submit the final required audit reports to the Bank

4.1.11 Disbursements: Disbursement of the AfDB resources will be done in accordance with Bank's procedures as contained in the Bank's Disbursement Handbook. The Disbursement Letter will document the disbursement procedures and method to be applied for the Loan. Given the nature and size of the activities be financed under the project, payment for all expenditures (including works, goods and services) would be done using the Direct Payment method. Other disbursements methods are available for use by the project upon request and approval by the Bank. LEC shall be responsible for handling all disbursements under the project including preparation of direct disbursement requests to the Bank for payment.

4.2 Monitoring

4.2.1 The Project will be monitored by the Bank through supervision missions and follow-ups by the Southern Africa Resource Centre (SARC) at least twice a year. The Government will submit quarterly progress reports on the implementation of the project. The reports will review progress made against the targets in the Project's Results-Based Logical Framework. A Mid-Term Review will be undertaken at the mid cycle of the project whilst the Project Completion Report will be prepared after 85% disbursement is achieved to evaluate progress against outputs and outcomes and draw lessons for follow-up operations.

4.3 Governance

4.3.1 The Ministry of Energy and Meteorology is responsible for energy policy development and follow-up of the activities in the sector to ensure harmony with the National Development Plan. The Department of Energy provides the oversight over the energy sector. The Rural Electrification Unit under the Ministry is responsible for rural electrification in accordance with the National Electricity Master Plan. The Lesotho Electricity Company is a vertically national integrated utility responsible for production and procurement, transmission and distribution. The Lesotho Electricity and Water Authority is the independent regulator, which is also managing the Universal Access Fund for rural electrification. LEWA reviews and approves LEC applications for tariff adjustments following public consultations process, issues licenses to qualified operators for generation and distribution of electricity.

4.3.2 The project has been designed to involve the Government of Lesotho at all relevant levels. To ensure Government ownership, the project was approved by the Public Sector Investment Committee for implementation which guarantees that any Government (including LEC) contributions will be availed through the national budget. The Department of Energy, the Ministry of Finance and Development Planning and LEC will be represented on the Steering Committee with the intention of coordinating project implementation across departments and aligning strategy to ensure maximum cooperation and eventual benefit to the country. All the involved parties have been duly consulted during the project development phase and indicated their strong support for the project and willingness to participate in the Steering Committee.

4.4 Sustainability

4.4.1 The project is technically, economically, financially, environmentally and socially sustainable. The technical sustainability is ensured by the use of standard state-of-the-art technology, which will replace obsolete equipment. The commitment and cooperation demonstrated by the Government during the preparation and appraisal of the project represents a key underlying factor for the sustainability of this project. The commitment of the Government is consistent with the high level of ownership through counterpart funding contribution to the project. In addition financial sustainability of the electricity sector will be addressed through the cost of service tariff study which will be completed during the implementation period of the project. LEC is unlikely to face any technical difficulty in maintaining and operating the facilities because it has experience in operating similar projects. The project will follow international standards compatible with the Lesotho network capable of delivering the expected project outputs over its expected economic life. The project implementation will also be supported by an experienced project management and supervision consultant.

4.4.2 The current tariff structure came into effect in June 2013. Contrary to many utilities in Africa, all LEC tariff categories have a flat energy charge and there is no cross subsidy from large to small consumers, and there is also no cross-subsidy from maximum demand customers (commercial and industrial). The cross subsidized tariff category is the street lighting. In the domestic tariff category, nearly all consumers are currently on pre-payment meters. The few that are still on credit meters have the same average tariff as those on pre-payment. LEC makes annual tariff application to LEWA. The application is based on revenue requirement, and the commensurate tariff adjustment needed to achieve it. In the latest application for 2015/16 LEC requested a required revenue of Maloti 819.54 million for an increase of 24.5% and 18.1% on energy and maximum demand charges respectively. The stated justification was to meet increased operating costs from power imports, reasonable return on assets, and increased labour costs. Following its reviews and public consultation LEWA approved a revenue of Maloti 755.32 million, which translated into a tariff increase of about 12.6%.

4.5 Risk management

A number of risks to the project have been identified and mitigation measures for these risks have been developed.

Risk	Description	Mitigation
Availability of counterparty funding	The risk of diminished political commitment to the project resulting in implementation delays.	The government has shown commitment to the project and will allocate funds to co-finance the Bank contribution.
Inadequate operation and maintenance (O&M)	Risks related to LEC's financial capacity to undertake the required periodic O&M negatively impacting the project sustainability.	Discussions were held with the Government and Lesotho Electricity and Water Authority during project appraisal to ensure that the tariff trajectory is towards cost recovery. A technical assistance for cost of service study is part of this project.
Project cost overrun	Common physical and price variations may occur and affect the project completion.	The project has included adequate price and physical contingencies (10%) commensurate with expected price volatility in the country and based on experience from the recently completed project (LESP). The Government is also committed to meeting any funding shortfalls under the project.
Time delays	Slow implementation progress due to long turnaround times.	At project launch, adequate training on Bank rules and procedures will be provided to the implementation teams to be followed up by regular meetings/missions on a quarterly basis. Furthermore a project management and supervision consultant will be contracted under the project to support implementation.

4.6 Knowledge Building

4.6.1 The implementation of the project components will generate vital knowledge that will be useful for continuous improvement of performance and execution of similar distribution system improvement and power services to other similar socio-economic population. The technical

assistance activities will fund (i) a study on electricity cost of service in Lesotho with a view to providing LEWA with technical and analytical inputs towards determining tariff that are not only cost effective but also sustainable and affordable for low income consumers; and (ii) a renewable energy road map study to help assess the great potential that Lesotho has. The technical assistance provided is to not only support short term solutions but also to develop an optimal medium and longer term strategy for electricity provision, affordability and costing by LEC. The project implementation review, quarterly progress reports, audit, sector M&E and completion reports will also provide information on various aspects of the project for further diagnosis. The knowledge obtained will be shared within the Bank and other development partners as well as with RMCs

5. LEGAL INSTRUMENTS AND AUTHORITY

5.1 Legal instrument

The legal instruments used for the project are a loan agreement to be entered into between the Kingdom of Lesotho and the Bank for ADF resources; and an on-lending agreement between GoL and LEC.

5.2 Conditions associated with Bank's intervention

(A) Conditions Precedent to Entry into Force of the Loan

The entry into force of the Loan Agreements shall be subject to the fulfilment by the Borrower of the provisions of Section 12.01 of the Bank's General Conditions Applicable to the African Development Fund Loan Agreements and Guarantee Agreements (Sovereign Entities).

(B) Conditions Precedent to First Disbursement of the Loan

The obligation of the Bank to make the first disbursement of the Loan shall be conditional upon the entry into force of the Loan Agreement, and the fulfilment, in form and substance satisfactory to the Bank, of the following conditions:

- i) Confirmation of the opening of a separate account to hold the counterparty contribution.

C. Undertakings

- (i) Carry out, and cause its contractors to carry out, the Project in accordance with: (a) Bank's rules and procedures; (b) national legislation; and (c) the recommendations, requirements and procedures set forth in the Environmental and Social Management Plan (ESMP) prepared for the Project; and
- (ii) Deliver to the Bank Project quarterly reports in form and substance acceptable to the Bank, describing the Borrower's implementation of the ESMP (including any implementation failures and related remedies, if any).
- (iii) Within two months of signature of this agreement, competitively recruit a financial accountant to support existing LEC finance staff.

5.3 Compliance with Bank Policies

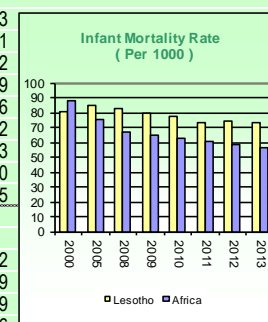
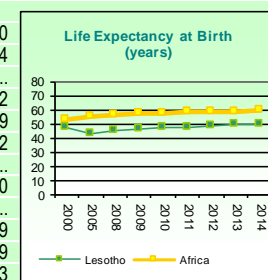
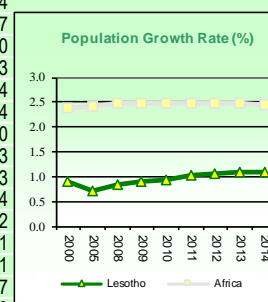
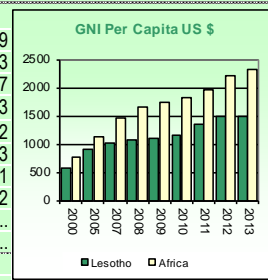
This project complies with all applicable Bank policies, particularly the Public Sector Lending Policies, Integrated Environmental and Social Assessment Guidelines, Bank's Policy on Resettlement and Involuntary Displacement, and Bank's crosscutting themes of Gender and Poverty.

6. RECOMMENDATION

Management recommends that the Board of Directors approve the proposed loan of UA 7.78 million to the Kingdom of Lesotho for the purposes and subject to the conditions stipulated in this report.

Annex 1: Country's Comparative Socio-economic Indicators

	Year	Lesotho	Africa	Developing Countries	Developed Countries
Basic Indicators					
Area ('000 Km ²)	2014	30	30,067	80,386	53,939
Total Population (millions)	2014	2.1	1,136.9	6.0	1.3
Urban Population (% of Total)	2014	29.8	39.9	47.6	78.7
Population Density (per Km ²)	2014	69.1	37.8	73.3	24.3
GNI per Capita (US \$)	2013	1 500	2 310	4 168	39 812
Labor Force Participation - Total (%)	2014	66.2	66.1	67.7	72.3
Labor Force Participation - Female (%)	2014	45.7	42.8	52.9	65.1
Gender -Related Development Index Value	2007-2013	0.973	0.801	0.506	0.792
Human Develop. Index (Rank among 187 countries)	2013	162
Popul. Living Below \$ 1.25 a Day (% of Population)	2008-2013	56.2	39.6	17.0	...
Demographic Indicators					
Population Growth Rate - Total (%)	2014	1.1	2.5	1.3	0.4
Population Growth Rate - Urban (%)	2014	3.6	3.4	2.5	0.7
Population < 15 years (%)	2014	36.0	40.8	28.2	17.0
Population >= 65 years (%)	2014	4.2	3.5	6.3	16.3
Dependency Ratio (%)	2014	67.0	62.4	54.3	50.4
Sex Ratio (per 100 female)	2014	97.7	100.4	107.7	105.4
Female Population 15-49 years (% of total population)	2014	26.0	24.0	26.0	23.0
Life Expectancy at Birth - Total (years)	2014	49.8	59.6	69.2	79.3
Life Expectancy at Birth - Female (years)	2014	49.8	60.7	71.2	82.3
Crude Birth Rate (per 1,000)	2014	27.3	34.4	20.9	11.4
Crude Death Rate (per 1,000)	2014	14.8	10.2	7.7	9.2
Infant Mortality Rate (per 1,000)	2013	73.0	56.7	36.8	5.1
Child Mortality Rate (per 1,000)	2013	98.0	84.0	50.2	6.1
Total Fertility Rate (per woman)	2014	3.0	4.6	2.6	1.7
Maternal Mortality Rate (per 100,000)	2013	490.0	411.5	230.0	17.0
Women Using Contraception (%)	2014	52.3	34.9	62.0	...
Health & Nutrition Indicators					
Physicians (per 100,000 people)	2004-2012	4.9	46.9	118.1	308.0
Nurses (per 100,000 people)*	2004-2012	62.3	133.4	202.9	857.4
Births attended by Trained Health Personnel (%)	2009-2012	61.5	50.6	67.7	...
Access to Safe Water (% of Population)	2012	81.3	67.2	87.2	99.2
Healthy life expectancy at birth (years)	2012	43.0	51.3	57	69
Access to Sanitation (% of Population)	2012	29.6	38.8	56.9	96.2
Percent. of Adults (aged 15-49) Living with HIV/AIDS	2013	22.9	3.7	1.2	...
Incidence of Tuberculosis (per 100,000)	2013	916.0	246.0	149.0	22.0
Child Immunization Against Tuberculosis (%)	2013	87.0	84.3	90.0	...
Child Immunization Against Measles (%)	2013	92.0	76.0	82.7	93.9
Underweight Children (% of children under 5 years)	2005-2013	13.5	20.9	17.0	0.9
Daily Calorie Supply per Capita	2011	2 595	2 618	2 335	3 503
Public Expenditure on Health (as % of GDP)	2013	9.1	2.7	3.1	7.3
Education Indicators					
Gross Enrolment Ratio (%)					
Primary School - Total	2011-2014	108.0	106.3	109.4	101.3
Primary School - Female	2011-2014	107.0	102.6	107.6	101.1
Secondary School - Total	2011-2014	53.3	54.3	69.0	100.2
Secondary School - Female	2011-2014	62.3	51.4	67.7	99.9
Primary School Female Teaching Staff (% of Total)	2012-2014	75.6	45.1	58.1	81.6
Adult literacy Rate - Total (%)	2006-2012	75.8	61.9	80.4	99.2
Adult literacy Rate - Male (%)	2006-2012	65.5	70.2	85.9	99.3
Adult literacy Rate - Female (%)	2006-2012	85.0	53.5	75.2	99.0
Percentage of GDP Spent on Education	2009-2012	13.0	5.3	4.3	5.5
Environmental Indicators					
Land Use (Arable Land as % of Total Land Area)	2012	9.3	8.8	11.8	9.2
Agricultural Land (as % of land area)	2012	0.8	43.4	43.4	28.9
Forest (As % of Land Area)	2012	1.5	22.1	28.3	34.9
Per Capita CO2 Emissions (metric tons)	2012	0.1	1.1	3.0	11.6



Sources : AfDB Statistics Department Databases; World Bank: World Development Indicators;

last update : October 2015

UNAIDS; UNSD; WHO, UNICEF, UNDP; Country Reports.

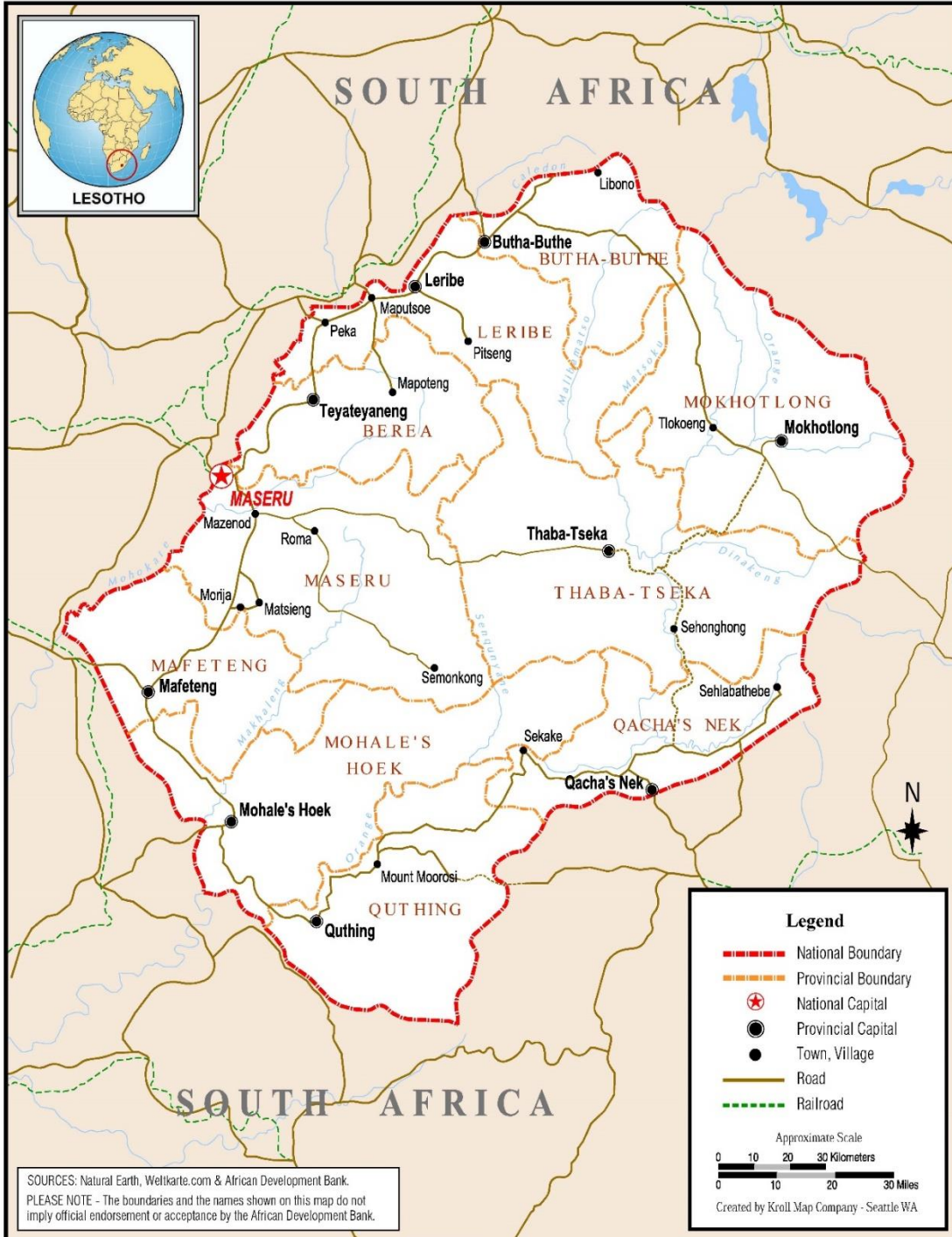
Note : n.a. : Not Applicable; ... : Data Not Available.

Annex 2: AfDB's Portfolio in the Country

	Sectors/Operations	Approval Date	Final Date of Disbursement	Funding Window	Amount App. In Million UA	Disbursement Rate	Age	Implementation Progress (IP)	Development Objective (DO)
COMMUNICATION SECTOR									
1	eGovernment Infrastructure				7.5	2.4%	2.0	Satisfactory	Satisfactory
	ADF Loan	10/21/2013	8/31/2018	Loan	2.7	0.0%			
	ADF Grant	10/21/2013	8/31/2018	Grant	4.8	3.7%			
MULTI-SECTOR									
2	Institutional Support Project				2.6	10.5%	2.1	Not Rated	Not Rated
	ADF Grant	10/14/2013	6/30/2017	Grant	2.6	10.5%			
SOCIAL SECTOR									
3	Educ. Qual. Enhancement Project (EDC III)				8.6	72.0%	8.6	2.2	2.0
	ADF Loan	4/4/2007	3/30/2016	Loan	1.6	62.0%			
	ADF Grant	4/4/2007	3/30/2016	Grant	7.0	74.3%			
WATER SUPPLY & SANITATION SECTOR									
4	Lesotho Low Lands Water and Sanitation Project				9.1	4.9%	2.1	Satisfactory	Unsatisfactory
	ADF Loan	10/3/2013	9/30/2018	Loan	6.5	0.0%			
	RWSSI	10/3/2013	9/30/2018	Grant	2.6	17.2%			
	TOTAL				27.8	25.5%	3.7	Satisfactory	Satisfactory
	Total Loan				10.8	9.0%			
	Total Grant				17.0	35.9%			

Annex 3: Map of Kingdom of Lesotho

GENERAL MAP OF LESOTHO



Annex 4: Project Financing Plan

	Sources of financing	Foreign currency costs	Local currency costs	Total Costs	% total
	ADF Loan	7,037,884	742,116	7,780,000	82%
	Transmission and Distribution System	6,244,656	693,851	6,938,506	
	Cost of Service Study	358,840	0	358,840	
	Supervision and management consultant	434,389	48,265	482,654	
	LEC	713,656	1,041,098	1,754,754	18%
	Energy Resource Mapping Study	8,971	8,971	17,942	
	Project Management costs	0	222,115	222,115	
	EMP Implementation	0	116,648	116,648	
	Civil Works	0	465,323	465,323	
	Project Audit	0	25,358	25,358	
	Apprenticeship program	-	40,573	40,573	
	Contingency	704,686	162,110	866,796	
	Total project cost	7,751,541	1,783,214	9,534,754	100%