



**e8-GEF-UNDESA
Financing Sustainable Electrification**

**Africa Dialogues
Nairobi, Kenya, April 13-15, 2010**

Country Action Plan-Proposed Outline

BOTSWANA

Issues Raised/Expected Outcome

Discussion topics of the workshop included:

- Current policy, institutional and financial obstacles to local and foreign investment in electrification projects ;
- Business opportunities and key policy strategies to attract power project investment.

Specific discussions included:

- Legal and regulatory frameworks;
- Financial and energy policy environment;
- Tariffs, subsidies and cost reduction incentives;
- Risk and liability mitigation;
- Financial model options (Joint Ventures; CDM; PPPs; DI etc.);
- Low and zero CO2 emitting technology options and associated costs;
- Regional cooperation

Expected outcome: Country Action Plan

- Development and implementation of an action plan including strategies and specific policy options relative to the issues addressed, with the overall objective to:

Enhance the country's capacity to attract capital for the development and deployment of low-emitting power generation and transmission technologies and projects, through the establishment of appropriate regulatory frameworks and policies.

ACTION PLAN OUTLINE

Current Obstacles and Challenges

- Currently no independent regulator in place
- Single buyer, single seller model; BPC Act restricts sale of electricity to BPC only. All independent power producers sell to BPC
- No clearly defined off grid rural electrification policy
- No renewable energy master plan (emphasis has been on PV)
- Limited funds in the Rural Electrification Fund
- Limited alternative energy sources for small scale off grid solutions, e.g. Mini hydros, geothermal

Current Obstacles and Challenges

- No tax incentives, duty and VAT exemptions on imported rural electrification equipment and materials
- Regulated non cost reflective tariffs
- Lack of power sector reforms necessary for efficient operations
- Currently a net importer
- Defaults on repayment of connection and monthly fees
- High investment costs on low and zero CO2 emitting technology options
- Capacity to access carbon markets limited

Opportunities

- Solar potential is very high – mini grids and stand alone systems for isolated places
- Extensive grid coverage enables interconnectivity to independent producers
- Political will and stability
- Liberalised economy conducive to investment
- Extensive coal reserves

Country Action Plan Summary

	Key Actions Required	Key Actors to be Involved	Timeline
1	Establish independent energy regulator	Government	12/2010
2	Remove BPC single buyer monopoly for internal customers	Government	12/2011
3	Ensure tariffs are cost effective and reflective	Regulator	12/2010
4	Ensure affordable tariffs (e.g. subsidies)	Government	12/2010
5	Review current master plan to include off grid and renewable energy options	Government	06/2011

Country Action Plan Summary

	Key Actions Required	Key Actors to be Involved	Timeline
6	Lobby Government to provide annual injection from the development budget to the Rural Electrification Fund	BPC	09/2010
7	Lobby funding from development financing institutions	BPC, BPC Lesedi	12/2010
8	Lobby Government for Duty and VAT exemptions on rural electrification equipment and materials	BPC, BPC Lesedi	06/2011
9	Increase current generation capacity	BPC	2010-12
10	Implement an effective debt policy	BPC, BPC Lesedi	09/2010
11	Capacity building for access to carbon markets	BPC, BPC Lesedi	06/2011

Areas where Assistance Needed

- Capacity building to access carbon markets
- Finance for rural electrification
- Capacity building to review the energy sector policies

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**Africa Dialogues
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Country Action Plan-Proposed Outline

[ETHIOPIA]

ACTION PLAN OUTLINE

- Overview of power sector in Ethiopia
- Obstacles and challenges
- Opportunities
- Key actions required
- Key actors
- Timeline
- Areas where assistance is required

Overview of power sector in Ethiopia

- Ethiopia is endowed with huge renewable energy resources:-
 - hydro: 45GW
 - wind: 10GW
 - Gethermal:5GW etc
- Currently only about 1.4% of this potential is tapped

Overview cont'd

- The current installed capacity of the country is about 1503MW
- 2550MW is under construction(to be commissioned with in 1-3 yrs
- Current electricity access is about 41%
- One national, public utility – EEPCo
- The country has launched universal electricity program since 2005 and moving at an impressive pace.
- The program is mainly financed by Govn't, WB,ADB, BADEA, bilateral institutions etc

Current Obstacles and Challenges

- feed-in tariff law not yet finalized
- Low electricity access rate 40%
- Lack of national standard and testing facilities for solar
- Low tariff (not cost reflective) for utility
- Insufficient rural electrification Fund
- long procedure and inaccessible of CDM finance
- Lack of local capacity and experience on renewable energy technologies

Opportunities

- Government commitment to rural electrification
- Enabling environment for investment
- Enormous potential of green energy resources (HP, geothermal, WE, SE etc)
- Availability of local and regional energy market
- Global initiatives for energy dev't

Key Actions Required

- Finalization of feed-in tariff law,
- Setting national standard and test facilities for RET
- Existing tariff revision
- Access to CDM fund for green energy dev't and replacement of unsustainable biomass fuel consumption
- National capacity(CDM procedure/project dev't, RET(manufacturing,O&M etc)

Key Actors to be Involved

- Government
- Rural Energy Agency (off-grid)
- Public Utility (on-grid)
- Development Partners
- Private investors
- NGO's , etc

Timeline

- feed-in tariff end of 2010
- Setup of national standard and test facility end of 2011
- Existing tariff revision end of 2010
- Secure additional finance for REF 2010-2015)
- Capacity building (manufacturing and O&M) and benefit from CDM finance(2011-2015)

Areas where Assistance Needed

- Finance for REF Program
- Technical assistance for setting national standard and testing facilities
- Capacity building (technical on CDM and RET and financial assistance)

Contact

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End

Thank You



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Country Action Plan-Proposed Outline

[Kenya]

OVERVIEW

- Liberalization of the energy sector in 1996
- Sessional paper on Energy no. 4 of 2004
- Energy Act 2006
- Vision 2030
- Installed Capacity 1500MW
- Hydro constitutes about 60%, Thermal 27%, Geothermal 10%, Others 3%
- Renewable energy- Wind, biogas, biomass, geothermal, solar
- Institutions- MoE, KENGEN, IPPs, KPLC, KETRACO, GDC, ERC

Current Obstacles and Challenges

- Capital for Investment-Drilling wells
- Legal framework – Appropriate review
- Accessibility /Connection to the Grid
- Limited Use of Renewable Energy
- Project finance models-Bankable PPAs
- Capacity and awareness
- Technology transfer

Opportunities

- Geothermal resources – Potential 7000 MW
- Wind with good speeds and Load Factors of about 45%
- Cogeneration- bagasse
- Competitive Market
- Political will
- Hydro in Ethiopia
- Tax Incentives

Areas where assistance is required

- Capacity building & Inst Strengthening
- Appropriate technology transfer
- Adequate funding for Rural Electrification-
Loans, Grants and Donations
- Technical assistance (CDM, Project finance,
feasibility studies etc)

Country Action Plan Summary

Current obstacles and challenges	Opportunities	Key Actions Required/Objectives	Key Actors to be Involved	Timeline	Areas of Assistance
1.Lack of appropriate regulations to support the legal framework relating to rural electrification	<ul style="list-style-type: none"> •Room to review the legal and institutional framework •Political will •REA in place 	<ul style="list-style-type: none"> •Identify duplicating and overlapping roles and define the roles of the key players (KPLC;KenGe;KETRACO;GDC ; REA;ERC &MoE) •Develop Service Legal Agreement between the parties ((KPLC;KenGe;KETRACO;GDC ; REA;ERC &MoE) •Implement instruments to define and strengthen governance structure •Develop framework for collaboration with the private sector,communities,institutions etc 	<ul style="list-style-type: none"> •(KPLC;KenGe;KETRACO;GDC ; REA;ERC &MoE) 	2010-2012	Institutional strengthening for the key actors
			”	2010-2011	Benchmarking with best practices
			MoE	2010	Enforcement supervision
			MoE,IPC,,REA ,MoF	2010	Finance

Country Action Plan Summary

Current obstacles and challenges	Opportunities	Key Actions Required/Objectives	Key Actors to be Involved	Timeline	Areas of Assistance
2. Low accessibility and connectivity in the rural areas	<ul style="list-style-type: none"> • Easy in Kenya to mobilize the rural communities • Demnad exist • Increase access in the rural currently from 63% to 100% • Increase connectivity from 10% currently to 22% 	<ul style="list-style-type: none"> • Define asset ownership and mgt of rural electrification infrastructure • Connect all public facilities • Install additional transformers • Adopt new conductor sizes or any other measure to enhance customer reach beyond 600metres • Timely procurement of materials • Encourage local manufacture of powerline material 	<p>KPLC, REA, MoE, MoF</p> <p>2012</p> <p>2010</p> <p>2012</p> <p>2010-2013</p> <p>2010</p>	2010-2013	Technical assistance

Country Action Plan Summary

Current obstacles and challenges	Opportunities	Key Actions Required/Objectives	Key Actors to be Involved	Timeline	Areas of Assistance
3. Limited use of renewable energy	<ul style="list-style-type: none"> •Political will exist to promote the development and use of renewable energy •Task force on Green Energy development in place •Geothermal resource – 7000MW 	<ul style="list-style-type: none"> •Develop and implement a marketing strategy •Finalize the rural electrification master plan •Adopt energy mix policy in rural electrification •Dissemination of information on rural electrification <p>Review of building regulations to incorporate installation of solar PVs in buildings</p>	<p>MoE,MoF,KPLC,REA,KenGen , key private sector players and development partners</p> <p>MoE,MoF, the private sector</p>	<p>2010-2013</p> <p>2010</p>	<p>Technical assistance</p>

Country Action Plan Summary

Current obstacles and challenges	Opportunities	Key Actions Required/Objectives	Key Actors to be Involved	Timeline	Areas of Assistance
	<ul style="list-style-type: none"> • Wind – good speeds with a load factor of 45%, a 300MW project negotiated already •Sun –over 300 days per year •Attractive Tax incentives •Green Energy Facility being developed 				<p>Funding especially for geothermal drilling</p>

Country Action Plan Summary

Current obstacles and challenges	Opportunities	Key Actions Required/Objectives	Key Actors to be Involved	Timeline	Areas of Assistance
		<ul style="list-style-type: none"> •Sensitization of potential investors on renewable energy •Continuous review of tariffs to ensure cost effectiveness •Provide incentives(tax holiday; tax exemption; provision of capital subsidies through grants) •Institutionalize carbon trading 	(KPLC;KenGe; KETRACO;GD C ; REA;ERC &MoE)	2010-2013	

Country Action Plan Summary

Current obstacles and challenges	Opportunities	Key Actions Required/Objectives	Key Actors to be Involved	Timeline	Areas of Assistance
4. Adequate understanding of project finance models	<ul style="list-style-type: none"> • Create partnership with the private sector • Build capacity on project finance 	<ul style="list-style-type: none"> • Operationalize the PPP Act of 2009 • Create awareness on PPP arrangement 	MoE, MoF, Private Institutions	2010-12	Capacity Building on Project Finance
5. Financial sustainability	<ul style="list-style-type: none"> • Good macroeconomic framework • Mobilize resources locally and globally 	<ul style="list-style-type: none"> • Increase customer connectivity with a view to maximize revenue collection • Increase capacity to fund raise and increase revenue inflows 	REA, MOE, KPLC	2012-2013	More resource allocation from GOK

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Africa Dialogues, April 13-15, 2010, Nairobi, Kenya**



**e8-GEF-UNDESA
Financing Sustainable Electrification**

**Africa Dialogues
Nairobi, Kenya, April 13-15, 2010**

Country Action Plan-Proposed Outline

[Lesotho]

Background

- Energy sector is currently dominated by traditional energy resources.
- Several reforms have been implemented to redress the situation:
 - Energy Policy Framework for Lesotho, 2003 – 2003.
 - Enactment of Lesotho Electricity Authority Act, 2002.
 - National electrification Master Plan.
 - Establishment of Rural Electrification Agency, 2010

Background (contd)

- Generation Master Plan March 2010 to January 2011.

Current Obstacles and Challenges

- Lack of infrastructure services in the rural areas.
- Dependency of Rural communities on subsistence farming: little consumption to recover investment costs.
- Lack of capacity and awareness
 - Human resources - skills
 - Financing
 - Technology
 - Education
- Community acceptance of electrification projects.
- Lack of comprehensive analysis of community's needs.
- Lack of community's empowerment.
- Sparsely populated rural areas.

Opportunities

- Abundance of natural resources
 - Wind, solar, hydro, biomass
- Cheap labour
- Stable political environment
- Conducive legal environment

Key Actions Required

- Undertake resource and needs assessment (based on field studies).
- Identify income generating activities.
- Identify suitable technologies.
- Identify electrification packages.
- Determine investment cost to match the needs.
- Review from donor community and investors.
- Identify potential partners/private sector
- Identify financing opportunities.

Key Actions Required (Ctd)

- Build capacity for local companies.
- Develop infrastructure services:
 - Isolated mini grids
 - Individual home systems (solar, wind)
 - Grid extension

Key Actors to be Involved

- Ministries: Energy, Finance, Trade, Works, Agriculture (multi sectoral committees).
- Lesotho electricity Co.
- Business Community (all local private sectors, especially unelectrified), including international.
- Donor community and NGOs.
- Local authorities.
- Financial institutions.
- End users

Timeline

- Resource assessment (Generation Master Plan): March 2010 to January 2011
- Identify suitable technologies: Feb 2011 to July 2011.
- Determine investment costs: August 2011 to January 2012.
- Circulation of proposals by ICPs for review and comments: Feb 2012 to July 2012.

Timeline

- Build capacity of local companies: Feb 2012 to July 2013.
- Develop infrastructure services: August 2013 to July 2023.

Areas where Assistance Needed

- Financing capital cost of infrastructure
- Establishment of a dedicated fund for development of infrastructure.
- Training of rural communities on establishment of income generating entities.
- Awareness creation
- Operation and maintenance of rural electrification projects.

Areas where Assistance Needed

- Develop capacity of local financial institutions to participate in rural electrification projects.

Country Action Plan Summary

Current obstacles and challenges	Opportunities	Key Actions Required/Objectives	Key Actors to be Involved	Timeline	Areas of Assistance
<ul style="list-style-type: none"> •Lack of infrastructure in rural areas. •Rural communities mainly depend on subsistence farming for income source. : little consumption to recover investment costs. •Low capacity within local companies 		<ul style="list-style-type: none"> •Improve infrastrural services in rural areas. •Establish income generating facilities in rural areas . •Build capacity of local companies on proper business management. 	<ul style="list-style-type: none"> •Ministries of Finance, Works, Energy and private companies. •Ministries of Trade & Industry, Agric, Fianacial Inst. •Training inst. ,Trade ,Education 	<ul style="list-style-type: none"> •2years •3-5yrs •3-5yrs 	<ul style="list-style-type: none"> •Financing capital cost of infrastructure. •Mentoring of private entrepreneurs. •Financing of training. <ul style="list-style-type: none"> ▪Trainin g needs assess ment.

Country Action Plan Summary

Current obstacles and challenges	Opportunities	Key Actions Required/Objectives	Key Actors to be Involved	Timeline	Areas of Assistance
<ul style="list-style-type: none"> •Lack of capacity and awareness •Community acceptance of electrification projects. • Lack of comprehensive analysis of community's needs. • Lack of community's empowerment. • Sparsely 		<ul style="list-style-type: none"> •Improve infrastrural services in rural areas. •Establish income generating facilities in rural areas . •Build capacity of local companies on proper business management. 	<ul style="list-style-type: none"> •Ministries of Finance, Works, Energy and private companies. •Ministries of Trade & Industry, Agric, Fianacial Inst. •Training inst. ,Trade ,Education 	<ul style="list-style-type: none"> •2years •3-5yrs •3-5yrs 	<ul style="list-style-type: none"> •Financing capital cost of infrastructure. •Mentoring of private entrepreneurs. •Financing of training. <ul style="list-style-type: none"> ▪Trainin g needs assess ment.

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Country Presentation

MALAWI

Action Plan Outline

- **Vision**
- **MGDS**
- **Energy Sector Reforms**
 - **Policy framework**
 - **Legal framework**
 - **Regulatory framework**
 - **Financing framework**
- **Action plan summary**

Policy Legal and Regulatory Framework

- **National Vision and Energy Policy**
- MALAWI Growth and Development Strategy (MGDS) is overarching operational medium-term strategy for Malawi to attain the nation's Vision 2020.
- The strategic goal specified by the MGDS is to reduce poverty through sustained economic growth and infrastructure development.
- MGDS identifies Six key priority areas one of which is **Energy generation and supply.**

ENERGY REFORM PROGRAMME

- PILLAR 1: POLICY FRAMEWORK
 - National Energy Policy approved in 2003
 - Strategies for Energy Supply Industries developed

- PILLAR 2: LEGAL FRAMEWORK
 - Energy Laws Came into Effect 28 Dec. '07
 - Energy Regulation Act, No. 20 of 2004
 - Rural Electrification Act, No. 21 of 2004
 - Electricity Act, No. 22 of 2004
 - Liquid Fuels and Gas [Production and Supply] Act, No. 23 of 2004

- PILLAR 3: REGULATORY FRAMEWORK
 - Independent Energy Regulator [MERA, Jan. 08]
 - Energy Regulations, [Gazetted February, '09] including:
 - Energy Regulation By-laws 2008;
 - Rural Electrification Regulations 2008;
 - Electricity By-laws 2008; and
 - Liquid Fuels and Gas (Production and Supply) Regulations 2008

Current Obstacles and Challenges

Policy and legal Challenges

- Partial implementation of the energy policy provisions and legal framework
 - Structural Reforms for the electricity sector
 - Third party access and PSP
 - National pricing policy and IPP promotion
 - Feasibility studies and competitive tendering
- Need for appropriate strategy on PSP involvement eg **PPP**

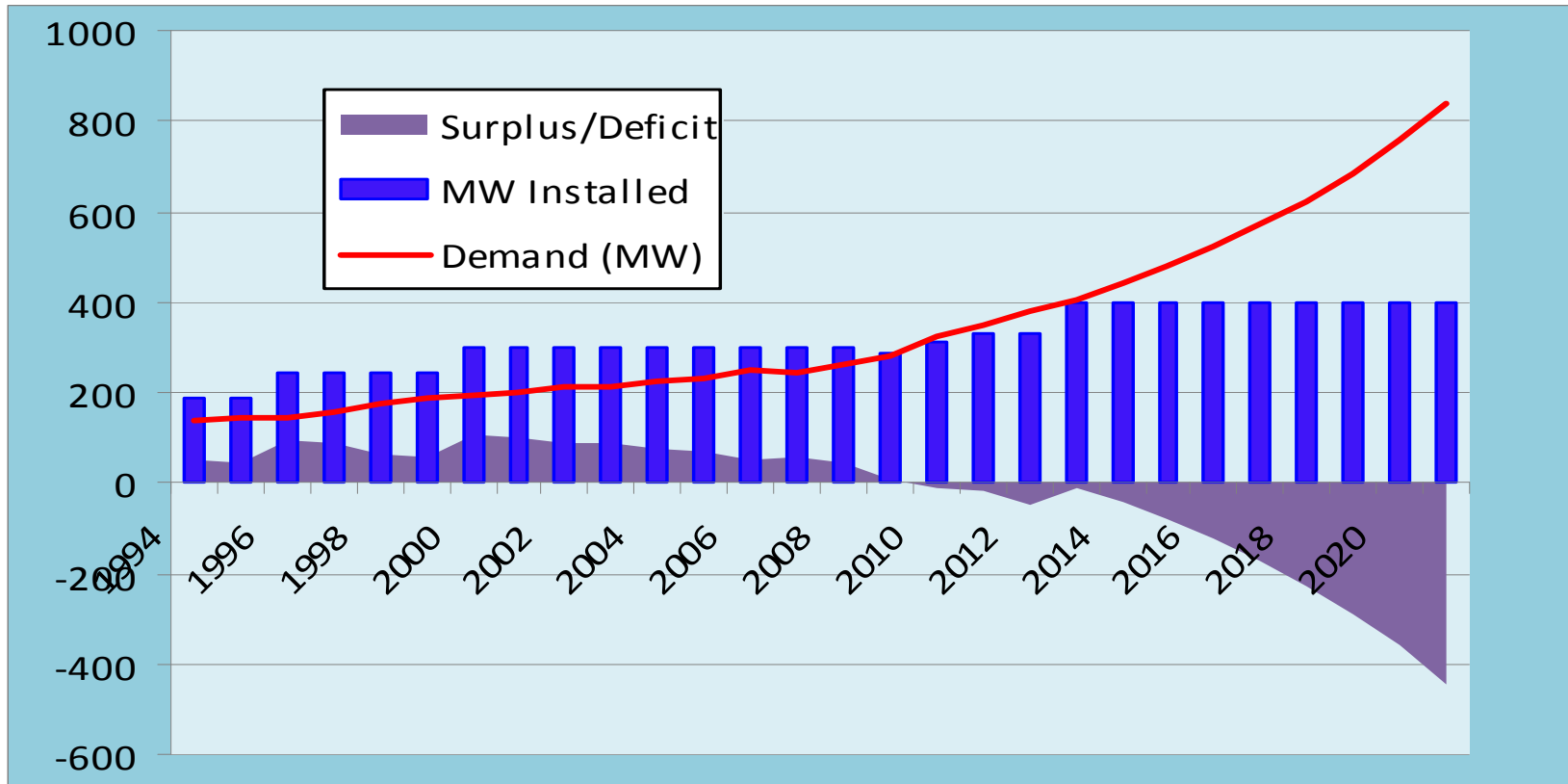
Regulatory Challenges

- Under recoveries v's cost recover and affordability concerns
- Efficiency improvements and investment requirements
- Overlap of responsibility with government ministries and departments
 - Regulating private power and role of regulator in PPA and PSA
 - Capacity planning and tendering for new projects .
- Standardised PPA contracts and feed in tariffs
- The need to increase access v's capacity shortages
- Limited financing for generation projects

Opportunities

- **Investment Climate – Malawi**
 - Malawi qualified for the \$300million MCC grant
 - 2007 and 2008 GDP growth at 7.9% and 9.7%
 - 2009 inflation rate was at 7.2%
- **Huge market**
 - 12 million people unserved out of a population 13.1 million
 - 87% of energy is from firewood and charcoal
(serious deforestation and environmental degradation)
creating an opportunity for provision for clean energy
CDM
- **Mining potential** proving major loads as off taker with surplus for RE
- Availability of pool of qualified engineers and technicians to implement power projects.

Constrained Generation Capacity



Opportunities Continued

- Duty free status on renewable energy equipment
- Dedicated financing on subsidies for REP
- Power generation potential

Hydropower generation

- a) Potential : **1,000 MW**
- b) Developed: **285 MW [28.5%]**

Thermal Power Generation

- Potential : Coal reserves **22billion tonnes**
 - : Biomass[Bagasse, wood] **100MW**
- Developed : Coal **Nil**
 - : Bagasse **100MW**

Other Renewables

- Potential : Solar **21.1MJ/sq.m/day irradiation**
 - Wind **2- 10m/s**
- Developed **5MW**

Key Actions Required

- Clarify policy and Legal framework
- Packaging, profiling and marketing of the opportunities available in the energy sector.
- Prepare standard PPA and develop framework for feed-in tariff
- Develop framework for concessioning RE projects as provided for in the RE Act.

Key Actors to be Involved

- Ministry of Natural Resources Energy and Environment
- Ministry of Finance
- Office of President and Cabinet
- Malawi Energy Regulatory Authority
- ESCOM
- CAMA
- Financing institutions
- Cooperating partners

Areas where Assistance Needed

- Feasibility studies on identified priority sites
- Review of the Energy policy and the legal frame work
- Develop PSP policy and strategy
- Develop data base on solar and wind potential
- Develop framework for determining feed- in tariff
- Develop standard PPA
- Develop framework for concession/franchise and technology choices for REP

Country Action Plan Summary

Current obstacles and challenges	Opportunities	Key Actions Required/Objectives	Key Actors to be Involved	Timeline	Areas of Assistance
<ul style="list-style-type: none"> -Partial implementation of the policy and legal Framework - Overlap of responsibility -Absence of standard PPA and feed-in tariffs -Lack of bankable project documents - Lack of adequate generation capacity - Low access to service - Lack of adequate Financing for generation proj. -Lack of PSP policy and strategy Cost under recoveries by public\national utilities Lack of data base on the solar and wind potential 	<ul style="list-style-type: none"> -Economic growth of >8% - Unsaved market of 12 million people -Potential for CDM from replacement of Biomass -Duty Waiver on RE imports - Dedicated financing for subsidies on RE -Potential generation for > 1500MW 	<ul style="list-style-type: none"> - Clarify policy and Legal framework - Packaging, profiling and marketing of the opportunities available in the energy sector. - Prepare standard PPA and develop framework for feed-in tariff -Develop framework for concessioning RE projects as provided for in the RE Act -Develop data base for wind and solar potent 	<ul style="list-style-type: none"> - Ministry of Natural Resources Energy and Environment - Ministry of Finance - Office of President and Cabinet - Malawi Energy Regulatory Authority - ESCOM - CAMA -Financing institutions - Cooperating partners 	December 2010	<ul style="list-style-type: none"> Financial and technical Financial and technical Financial and technical Financial and technical

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**Africa Dialogues
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Country Action Plan-Proposed Outline

[Mozambique]

Issues Raised/Expected Outcome

Discussion topics of the workshop included:

- Current policy, institutional and financial obstacles to local and foreign investment in electrification projects ;
- Business opportunities and key policy strategies to attract power project investment.

Specific discussions included:

- Legal and regulatory frameworks;
- Financial and energy policy environment;
- Tariffs, subsidies and cost reduction incentives;
- Risk and liability mitigation;
- Financial model options (Joint Ventures; CDM; PPPs; DI etc.);
- Low and zero CO2 emitting technology options and associated costs;
- Regional cooperation

Expected outcome: Country Action Plan

- Development and implementation of an action plan including strategies and specific policy options relative to the issues addressed, with the overall objective to:

Enhance the country's capacity to attract capital for the development and deployment of low-emitting power generation and transmission technologies and projects, through the establishment of appropriate regulatory frameworks and policies.

ACTION PLAN OUTLINE

Current Obstacles and Challenges

- Inability to pay by end-users;
- Difficult access to sites increases costs;
- Low access to finance services for energy projects;
- The population in rural areas is dispersed;
- Lack of specific tariff policy for renewable energy supply;
- Local Private Sector do not yet see this sector as a business opportunity;
- Commercial losses due to non-payment and fraud by end-users in peri-urban areas;
- Lack of specific rules for renewable energy;
- Insufficient state budget for electrification;
- Infra-structure vandalism.

Opportunities

- Large potential range of energy sources;
- Unmet demand;
- Current energy crisis in the region;
- Political stability;
- Approved Energy Strategy and Plan (2010-2014);
- Open environment for the Private investment in the sector (investment law).

Key Actions Required

- Review and develop legal framework;
- Reduce maximum forms of risks;
- Develop a strategy to promote investment projects in the energy sector;
- Promote the use of energy to boost demand and supply (residential and productive use);
- Institutional Capacity Building;
- Adapt the standards and specification for low cost electrification packages (e.g. Efficient lights);
- Find solutions to collect energy payments in rural areas;
- Regional harmonization of legislation, standards, practices and market instruments.

Key Actors to be Involved

- Government
- Regulator
- Regional Organizations
- Donors
- Utilities
- Private Sector
- NGO's
- Multilateral Financing Institutions
- Local Financing agencies

Timeline

Activity	Timing
Review and develop legal framework	2012
Reduce maximum forms of risks	2011
Develop a strategy to promote investment projects in the energy sector	2010
Promote the use of energy to boost demand and supply	2010
Institutional Capacity Building	10/14
Adapt the standards and specification for low cost electrification packages (e.g. Efficient lights)	2010
Find solutions to collect energy payments in rural areas	2010
Regional harmonization of legislation, standards, practices and market instruments	2013

Areas where Assistance Needed

- Private Sector involvement strategy;
- Regulatory framework and rules;
- Capacity building for the institutions in the sector;
- Capacity building on carbon credits programs;
- Strategy to identify and mitigate financial and environmental risks;

Country Action Plan Summary

Current obstacles and challenges	Opportunities	Key Actions Required/Objectives	Key Actors to be Involved	Timeline	Areas of Assistance
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We hope to find in this WORKSHOP, the best ways of forging further partnership,

THANK YOU FOR YOUR ATTENTION

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Nairobi, 13-15 April 2010



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Country Action Plan-Proposed Outline

[Namibia]

Policy and Legal Frameworks

- Energy White Paper Policy (2000)
- Rural Electrification Masterplan
- Off-Grid Energy Masterplan
- Electricity Act

ACTION PLAN OUTLINE

National Goal:

Increase national power production (Grid & off grid connections) and thereby increase the number of new connections in rural areas

Current Obstacles and Challenges

GRID:

- No national targets has been set
- To achieve the goal of making energy accessible to the whole population in line with vision 2030
- No annual targets set for energy production
- Lack of adequate funding
- Lack of incentives to attract investors
- Lack of technical capacity

Current Obstacles and Challenges CONTINUES.....

OFF-GRID:

- High cost implications of extending the grid
- Inadequate funding (State)
- Lack of national targets
- Lack of rural electrification/renewable fund
- Lack of legal framework
- Lack of micro financing
- No incentives to attract investors
- Lack of off-grid technologies production
- Low consumption to stimulate enough revenue
- Lack of technical know-how
- Lack of expertise in RETs

Opportunities

Political stability to do business in the
country

GRID:

- Employment creation
- Capacity building
- Economic growth

Opportunities continues.....

OFF-GRID:

- Abundance of sunshine
- Accessibility to more people
- Improved living standards
- Adding value to local manufacturers by producing locally

Key Actions Required

GRID & OFF-GRID:

- Legal & regulatory framework should be in place
- Finalization of the national energy strategy
- Build capacity
- Attract investors (IPP's)
- Increase local funding (own resources) & source from prospective donors

Key Actors to be Involved

GRID & OFF-GRID

- MME, ECB, NP, RED's, Regional Authorities (Legal & regulatory framework)
- MME in consultation with ECB, NP, RED's (National Energy Strategy)
- Capacity building in project development and RETs (source expertise)

Timeline

- National Energy strategy: (June 2010)
- Legal & regulatory framework: (June 2010)
- Capacity building: (ongoing)
- Source and increase funding: (ongoing)

Areas where Assistance Needed

- Financial Assistance: (seek funds)
- Technical skills: (Financial Modelling, projects development and RET's)
- Academic and in-service training

Country Action Plan Summary

Current obstacles and challenges	Opportunities	Key Actions Required/Objectives	Key Actors to be Involved	Timeline	Areas of Assistance
<p>GRID:</p> <ul style="list-style-type: none"> •No national targets has been set •To achieve the goal of making energy accessible to the whole population in line with vision 2030 •Annual targets for energy production •Lack of adequate funding •Lack of incentives to attract investors •Lack of technical capacity 	<p>OFF-GRID:</p> <ul style="list-style-type: none"> •Abundance of sunshine •Accessibility to more people •Improved living standards •Adding value to local manufacturing industry 	<p>GRID & OFF-GRID:</p> <ul style="list-style-type: none"> •Legal & regulatory framework should be in place •Finalization of the national energy strategy •Build capacity •Attract investors (IPP's) •Increase local funding (own resources) & source from prospective donors 	<p>GRID & OFF-GRID</p> <ul style="list-style-type: none"> •MME, ECB, NP, RED's, Regional Authorities (Legal & regulatory framework) •MME in consultation with ECB, NP, RED's (National Energy Strategy) •Capacity building in project development and RETs (source expertise) 	<ul style="list-style-type: none"> •National Energy strategy: (June 2010) •Legal & regulatory framework: (2010-2011) •Capacity building: (ongoing) •Source and increase funding: (ongoing) 	<ul style="list-style-type: none"> •Financial Assistance: (seek funds) •Technical skills: (Financial Modelling, projects development and RET's) •Academic and in-service training

Country Action Plan Summary continues....

Current obstacles and challenges	Opportunities	Key Actions Required/Objectives	Key Actors to be Involved	Timeline	Areas of Assistance
<p>OFF-GRID:</p> <ul style="list-style-type: none"> •High cost implications of extending the grid •Inadequate funding (state) •Lack of national targets •Lack of rural electrification/renewable fund •Lack of legal framework •Lack of micro financing •No incentives to attract investors •Lack of off-grid technologies production •Lack of technical know-how •Lack of expertise in RETs 	<p>Political stability to do business in the country</p> <p>GRID:</p> <ul style="list-style-type: none"> •Employment creation •Capacity building •Economic growth 				

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**e8-GEF-UNDESA
Financing Sustainable Electrification**

**Africa Dialogues
Nairobi, Kenya, April 13-15, 2010**

Country Action Plan-Proposed Outline

[Rwanda]

Brief description of the EARP programme

The Government of Rwanda is leading a nationwide initiative to extend access to electricity (Electricity Access Roll-out Programme “EARP”).

This Rwanda’s electricity access programme will begin with a five-year investment plan designed to achieve the Government’s stated targets set out in the Economic Development and Poverty Reduction Strategy (EDPRS). These targets call for the total number of electricity connections to increase from 100,000 in 2008 to 350,000 by 2012, with a special emphasis on connecting social infrastructure—health facilities, schools and administrative offices.

The Government acknowledges that the targets set for electricity access are ambitious. However, the planning shows that the targets are achievable:

The total cost of required sector investments can realistically be met through affordable **customer charges, Government funding and support from development partners**

The national electricity utility and domestic and international contractors will have sufficient capabilities to meet the technical challenges of the programme.

ACTION PLAN OUTLINE

Current Obstacles and Challenges

- Low rural electrification access rate (98% of rural population have no access to electricity) out of 9.5% total electricity access rate,
- The issue of financing of the energy projects, banking sector in Rwanda are reluctant to finance. Most of the time energy projects are rejected, requiring business plans and not willing to take risks
- Huge investment and long return on investment
- Affordability (low earners)
- Technology and Environmental challenges to maximize methane gas
- No standard PPAs and concession agreements for renewable technologies (e.g Solar)

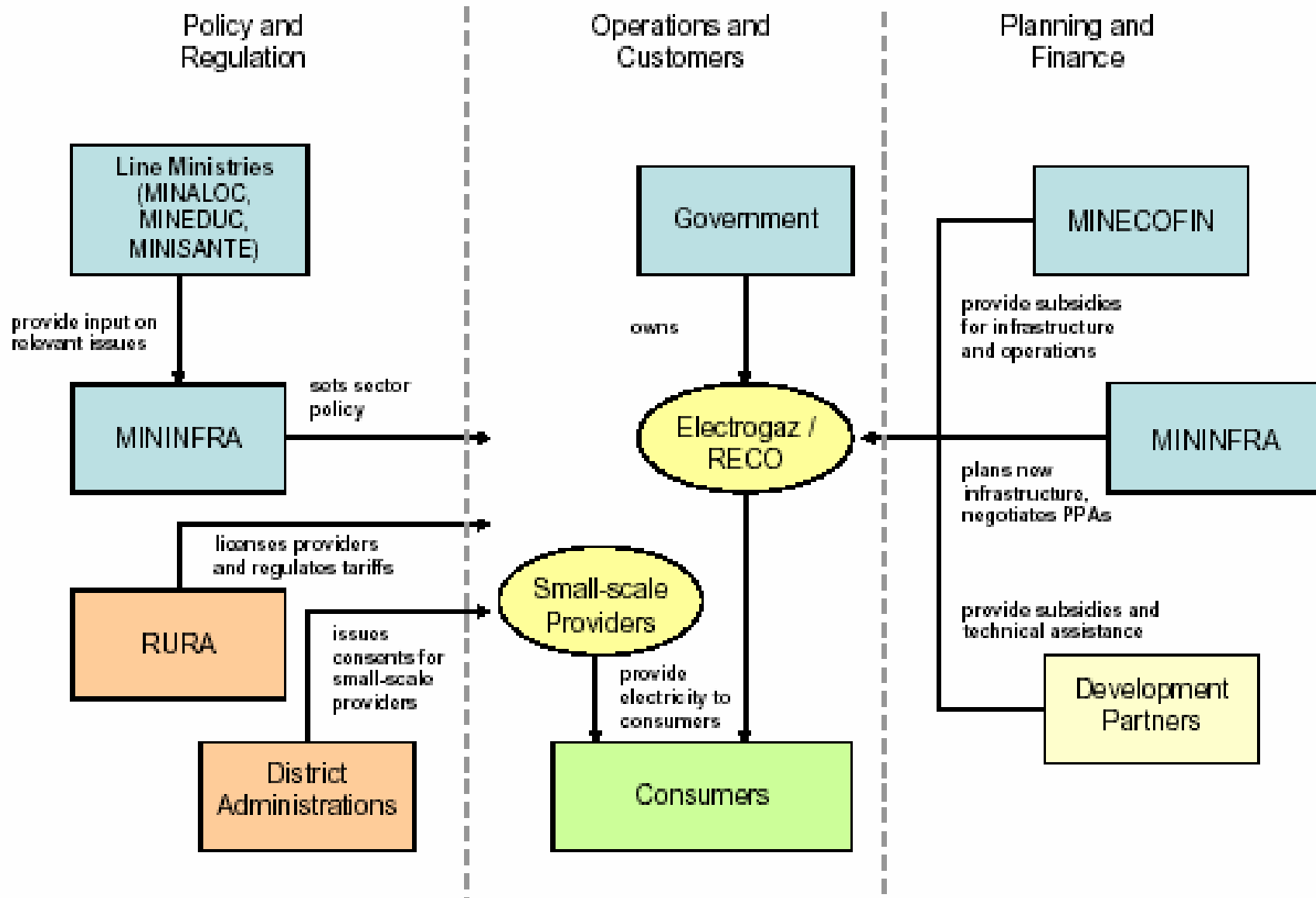
Opportunities

- Geothermal potential (200MW)
- Solar Potential, no clear investments made yet
- Attractive flat tariff (20USD cents/kwh); can encourage net metering
- Resettlement policy, where Ministry of local government identified certain areas where those settlements will be located,
- Electricity Master Plan in place up to 2025,
- Size of the country where 65% of the population live within 5km of distribution grid,
- Easy registration of businesses/enterprises; e.g. one stop centre,
- Potential for Carbon credit
- Political stability and willingness (EDPRS and Vision 2020)
- Development partners in the energy sector are willing to facilitate energy developments projects e.g GTZ and BTC, etc

Key Actions Required

Refer to the summary

Key Actors to be Involved



Timeline

Refer to the below summary

Areas where Assistance Needed

1. Financing feasibility studies, design and implementation
2. Technical assistance, to equip private sector with required skills to implement electrification projects (Capacity building)

Country Action Plan Summary

Current obstacles and challenges	Opportunities	Key Actions Required/Objectives	Key Actors to be Involved	Timeline	Areas of Assistance
Low rural electrification access rate	Electricity master plan and political willingness to increase access rates	Speeding up Feed in tariff Policy, subsidy mechanism	MININFRA , MINICIFIN & RURA	2011	Expert to conduct these studies
Banking sector reluctant to finance energy projects		Establishment of PPP or and establish a clear financing mechanism agreed by bankers	MINICOFIN , PSF & MININFRA	2012	
Profitability	Political & Stakeholders willingness	Selection of most profitable options			
Technology and Environmental challenges	Sufficient potential of methane gas				



**e8-GEF-UNDESA
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Country Action Plan-Proposed Outline

[TANZANIA]

ACTION PLAN OUTLINE

- **Current Obstacles and Challenges**
- **Opportunities**
- **Key Actions Required**
- **Key Actors to be involved**
- **Timeline**
- **Areas where Assistance Needed**
- **Action Plan Summary**

Current Obstacles and Challenges

- No enough appraised projects
- Inadequate funding
- Un predictable incentive regime
- Improvement in institutional arrangements and completion of regulatory tools e.g. Rules and Guidelines for Small Power Projects.(0.5kVA-1MW)
- Technological issues - (Renewable Energy)

Obstacles and Challenges Cont...

- Inadequate participation of private sector in rural energy development
- High investment costs Vs Low purchasing power of rural population-
Tariff are likely to be high and unaffordable if not subsidized.
- Lack of infrastructure for power transmission and distribution in rural areas

Opportunities

- **Enabling environment**
 - Policy statement separating Commercial from Social electrification
 - Promoting Private Sector Participation- (REA, Electricity Act, EWURA)
 - Supporting Independent Regulation (EWURA)
 - Supporting Rural Electrification – (REA/REF)

Opportunities Cont....

- Political Stability
- Technological innovations
 - High Quality products
 - Wider Products range and
 - Lower cost products
- Financing reforms - (Banks and Financial Institutions)
- Appropriate incentive schemes (VAT and Import duty exemptions)
- Development partners support of renewable Energy projects
- The International focus on renewable energy and climate change

Opportunities Cont...

- Existence of NGOs (e.g TaTEDO,REF) promoting rural electrification
- Existence of an Association (TASEA) which give consultation, capacity building and promotes public awareness
- Existence of feed in tariff and long - term PPA.

Key Actions Required

- Widen funding sources-
involve the private sector, seek external financing (loans and grants), increase domestic revenues
- Carry out feasibility studies and prepare business plans - create a data bank for available projects
- Prepare the RFP guidelines
- Finalize the Rural Energy Policy
- Improve regulatory frameworks(SPPA)

Key Actions Required Cont.

- Facilitate PPP initiatives in rural for renewable energy
- Adopt low cost and efficient rural electrification technologies
- Cost reflective tariff to investors yet subsidized to consumers
- Provision of technical support to district level
- Provision of micro credits and flexible repayment scheme(e.g. by installment)

Key Actors to be Involved

- Government through Ministry of Energy and Minerals, Ministry of Finance and Economic Affairs and the Cabinet
- Rural Energy Agency and Fund
- Development Partners
- Financial Institutions
- Tanzania Investment Centre
- Project developers/ private sector

Actors to be Involved Cont.

- Energy and Water Utilities Regulatory Authority
- Community based organisations
- Non-governmental organisations
- Electric cooperatives

Timeline

- Short, Medium to Long term, (1 to 5), (5-10) and 2020-2030 respectively
 - Short term 2011-2015
 - Medium term 2015-2020
 - Long term 2020-2030

Areas where Assistance Needed

- Expertise
- Concessionary funding for Project feasibility studies and assembly of the data bank
- Grants
- Funding for Project implementation

Country Action Plan Summary

Current obstacles and challenges	Opportunities	Key Actions Required/Objectives	Key Actors to be Involved	Timeline	Areas of Assistance
-Availability of a list of bankable projects	Potential project are available	Carry out feasibility studies, prepare project bussiness plan and database	<ul style="list-style-type: none"> - Private Developers -Local Government - Rural Energy Agency -TANESCO -Development Partners 	Short to Long term	Expertise, Funding.
Limited funding sources	Potential funding sources available	Proposal to widen Government funding sources (In addition to levy)	<ul style="list-style-type: none"> - Ministry of Energy and Minerals - Ministry of Finance and Economic Affairs 	Short, Medium and Long term	Funding
High investment costs Vs Low purchasing power of rural population- Tariff are likely to be high and unaffordable if not subsidized	- Enabling environment in place	<ul style="list-style-type: none"> - Government to absorb the cost of infrastructure so that the cost is not reflected in tarriff. - Allocate available opportunities through competition with preferences to developers who require the lowest level of subsidize. 	<ul style="list-style-type: none"> - Government - Project Developers - Rural Energy Agency - Energy and Water Regulatory Authority. 	Short, Medium to Long term	Funds for subsize

Action Plan Summary Cont...

Current obstacles and challenges	Opportunities	Key Actions Required/Objectives	Key Actors to be Involved	Timeline	Areas of Assistance
Lack of technology on renewable energy sources	Availability of Companies dealing with renewables	-Adoption of low cost and efficient rural electrification technology, therefore need:- •Technology disseminations to rural population •Training local technicians	-Rural population -Investors -Government (MEM and MOFEA)	Both short and Medium term	-Import technologies -Expertise -Funding
Appropriate incentives	Institutional arrangements available.	Introduce and mandate the initiatives to promote predictability	- Tanzania Investment Centre, - Ministry of Finance and Economic Affairs, - Parliament - Ministry of Energy and Minerals	Short and Medium term	- Funding
Enabling regulatory frameworks	Institutional to handle it available (EWURA)	Complete preparation of remaining regulatory tools (rules and guidelines)	- Ministry of Energy and Minerals - Parliament, EWURA -Ministry of Constitutional Affairs -Experts from private institutions	Short , Medium and Long term	-Expertise -Government Funding

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**e8-GEF-UNDESA
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Country Action Plan-Proposed Outline

Uganda

Issues Raised/Expected Outcome

Discussion topics of the workshop included:

- Current policy, institutional and financial obstacles to local and foreign investment in electrification projects ;
- Business opportunities and key policy strategies to attract power project investment.

Specific discussions included:

- Legal and regulatory frameworks;
- Financial and energy policy environment;
- Tariffs, subsidies and cost reduction incentives;
- Risk and liability mitigation;
- Financial model options (Joint Ventures; CDM; PPPs; DI etc.);
- Low and zero CO2 emitting technology options and associated costs;
- Regional cooperation

Expected outcome: Country Action Plan

- Development and implementation of an action plan including strategies and specific policy options relative to the issues addressed, with the overall objective to:

Enhance the country's capacity to attract capital for the development and deployment of low-emitting power generation and transmission technologies and projects, through the establishment of appropriate regulatory frameworks and policies.

ACTION PLAN OUTLINE

Current Obstacles and Challenges

- There is a set of legal and policy instruments e.g Electricity Act, Energy Policy, RE policy but they require revision to re-align them with the new goals in the National Development Plan
- There is need for a policy framework for the PPP models
- The lack of a comprehensive institutional framework to address the rural energy requirements
- Low private sector participation in rural electrification

Challenges Cont'd

- High tariffs that impacting on affordability and service take-up
- Limited market scope due to high poverty levels thus undermining the competitiveness of the country as an investment destination
- Inadequate subsidies for RE projects to facilitate the increase of financially sustainable projects
- The tendency for the private sector actors to transfer ALL RISKS to the Government/Agencies
- Limited access to the CDM fund component due to the lengthy and costly procedures

Opportunities

- The electricity sector is already liberalized with a fully fledged legal and institutional framework ready to receive private capital
- Low levels of electrification signifying market potential
- Cost reflective tariff mechanism and a feed-in tariff regime and profoma PPAs models
- Hedged risks for financiers through the credit support facility
- Existence of tax incentives for electrification projects
- Rural Electrification master plan
- Improved credit worthiness of the country
- Existence of cheap generation sources 6,000MW

Key Actions Required

- Re-align the existing policy instruments to fit the current and future requirements
- Develop PPP policy guidelines
- Restructuring the REA to meet the Rural Energy requirements
- Develop cheaper energy sources and improve operational efficiencies
- Increased subsidy so as to meet the set targets
- Build capacity to do baseline studies, devise appropriate risk allocation mechanisms, and effective negotiation teams for electrification projects
- Support the credit risk hedging mechanism
- Establish an institutional arrangement for accelerating CDM candidate projects

Key Actors to be Involved

- The Ministry of Energy
- The Ministry of Finance
- Attorney Generals Chambers
- Rural Electrification Agency
- Electricity Regulatory Authority
- Utilities
- Private Investors
- Development Partners

Areas where Assistance Needed

- Capacity Building
- Subsidy Support – concessional /grant funding
- Fund for credit risk hedging
- CDM project applications
- Introduction and support to viable and cleaner technologies

Country Action Plan Summary

Current obstacles and challenges	Opportunities	Key Actions Required/Objectives	Key Actors to be Involved	Timeline	Areas of Assistance
Out of date policies, laws	Precedence	Re-align the existing policies to Dev Plan	Ministries	2011-2012	Credit risk hedging
Lack of policy framework for the PPP		Develop PPP policy guidelines	Ministry of Finance	2010-2011	
Lack of institution for rural energy	Existence of REA	Restructuring REA to handle Rural Energy	Ministries	2011-2012	
Low private sector participation	Cost reflective tariff & feed-in tariff Credit support facility	Increased subsidy so as to meet the set targets Support the credit risk hedging mechanism	Ministries, donors		

Country Action Plan Summary

Current obstacles and challenges	Opportunities	Key Actions Required/Objectives	Key Actors to be Involved	Timeline	Areas of Assistance
High tariffs	Existence of cheaper generation sources	Develop cheaper energy sources and improve operational efficiencies	Gov't Private sector, Utilities, donor	2011-2012	Credit and grant CDM
Low levels of electrification	Inadequate subsidies	Increased funding	Gov't, Private sector, Donor		
Limited access to the CDM fund		Establish an institutional arrangement for CDM projects	Gov't		

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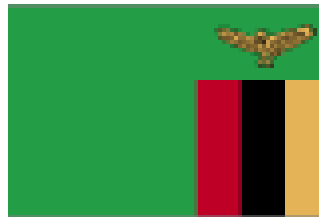
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Financing Sustainable Electrification

Africa Dialogues

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Country Action Plan

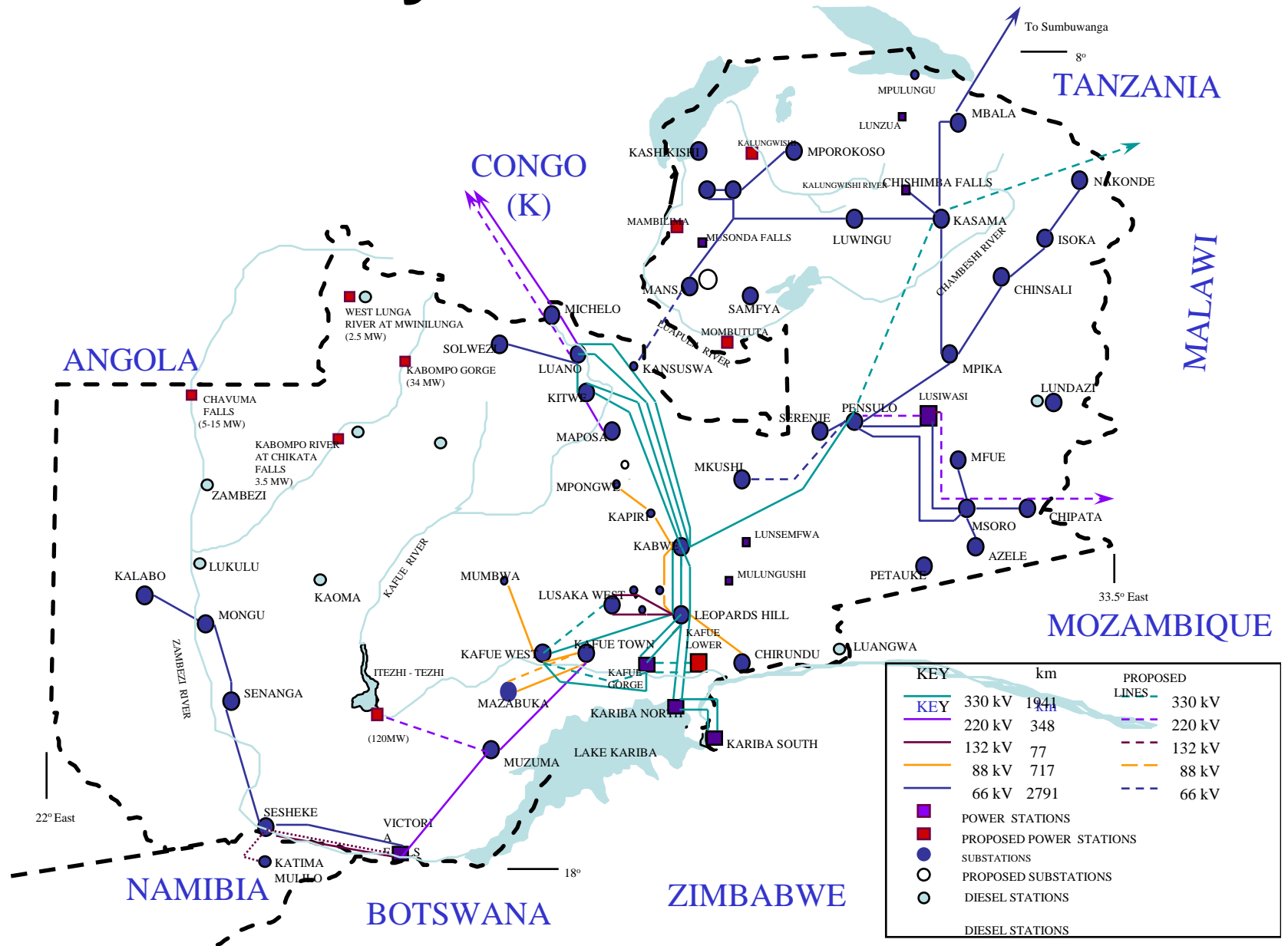


[ZAMBIA]

OUTLINE OF PRESENTATION

1. BRIEF FACTS ABOUT ZAMBIA
2. OBSTACLES AND CHALLENGES
3. OPPORTUNITIES
4. KEY ACTIONS REQUIRED
5. KEY ACTORS INVOLVED
6. TIME LINE
7. AREAS OF ASSISTANCE
8. COUNTRY ACTION PLAN SUMMARY
9. CONCLUSION

Power System in Zambia



FACTS ABOUT ZAMBIA

- Location: Central part of Africa.
- GDP growth rate is at 6.3% as of 2009 and GDP per capita is estimated at US\$900.00 per annum.
- Population is estimated at 12.5 million.
- Surface Area—752,000 km².
- Poverty levels estimated at 64%.
- National electricity access rate is 22%
- Urban and Rural access rate are 48% and 3% respectively.

ELECTRIFICATION STRATEGIC DIRECTION

Electrification plan for Zambia is guided by the following:

- Vision 2030 access rates: urban areas from 48% to 90% & rural areas from 3.1% to 50.9%.**
- National Energy Policy**
- Fifth & Sixth National Development Plans**

OBSTACLES & CHALLENGES

- 1. Low uniform national tariff which is below cost-recovery.**
- 2. Inadequate investment and financing for REP.**
- 3. High capital cost of renewable energy projects.**
- 4. Vastness of the land and scattered population (High cost of grid extension).**
- 5. Underdevelopment & high poverty levels in rural areas.**

OBSTACLES & CHALLENGES

- 6. High cost of connection to the national grid.**
- 7. Lack of financing to prepare projects to a bankable state.**
- 8. Inadequate regulatory framework for off-grid systems.**
- 9. Lack of appropriate industry structure.**
- 10. Regulation of cross-border power trading**

OPPORTUNITIES

1. Funding for rural electrification available through the electricity levy, appropriation by parliament & loans from CPs.
2. Vast and diverse clean energy resources namely; mini-hydro, solar, biomass, wind, geo-thermal & bio-fuels are available throughout the country.
3. Appropriate legal and regulatory framework namely; Electricity Act, Energy Regulation Act, Rural Electrification Act, PPP Act and ZDA Act.

OPPORTUNITIES

- 4. Already developed REMP.**
- 5. Political stability.**
- 6. Conducive business environment available for P3 investment in small, medium and large-scale energy projects.**
- 7. Available domestic & foreign markets supported by the robust economic growth.**
- 8. Multi Facility Economic Zone (MFEZ) incentives.**

KEY ACTIONS REQUIRED

- 1. Implement cost-reflective tariffs to promote private sector participation in the REP**
- 2. Mobilize additional financial resources to implement the REP through PPP & CDM**
- 3. Mobilize financial resources to undertake feasibility studies & prepare bankable project proposals**

KEY ACTIONS REQUIRED

4. Effectively implement national development plans e.g. REMP, Power System Master Plan and MDGs
6. Prepare regulatory framework for off-grid systems.
7. Implementation of the Grid Code and Open Access Regime to foster increased investments in electricity generation
8. Conduct awareness campaigns to scale-up deployment & dissemination of renewable energy use.

KEY ACTORS INVOLVED

1. **Government of the Republic of Zambia**
 - **Ministry of Energy and Water Development (MEWD)**
 - **Ministry of Finance and National Planning (MoFNP)**
2. **Rural Electrification Authority (REA)**
3. **Energy Regulation Board (ERB)**
4. **Zambia Development Agency (ZDA)**
5. **Cooperating Partners**
6. **Local and international Investors.**
7. **Public**

TIMELINE

No	Activity/Objective	Time Frame
1	Implement cost-reflective tariffs to promote private sector participation in the REP.	2011-2012
2	Mobilize additional financial resources to implement the REP thru PPP & CDM (US\$50m p.a up to 2030).	2010 - 2030
3	Mobilize financial resources to undertake feasibility studies & prepare bankable project proposals.	2010-2015
4	Effectively implement national development plans e.g. SNDP, REMP, Power System Master Plan and MDGs.	2010 - 2030
5	Prepare regulatory framework for off-grid systems.	2010/11
6	Implementation of the Grid Code and Open Access Regime can foster increased investments in electricity generation.	2010 – 2011
7	Conduct awareness campaigns to scale-up deployment & dissemination of renewable energy use.	On-going

AREAS OF ASSISTANCE

- **Financing to implement sustainable renewable energy project.**
- **Provision of technical assistance to build local capacity to effectively implement rural electrification projects.**

Country Action Plan Summary

Current obstacles and challenges	Opportunities	Key Actions Required/Objectives	Key Actors to be Involved	Timeline	Areas of Assistance
<ol style="list-style-type: none"> 1. Low tariff below cost recovery 2. Inadequate investment & financing for REP 3. High capital cost for REPs 4. Scattered popn & underdevt. In rural areas 5. High connection fees 6. Lack of financing to prepare projects up to bankable stage 7. Lack of appropriate industry structure 8. Inadequate regulatory f/work for offgrid system 9. No feed in tariff f/work 	<ol style="list-style-type: none"> 1. Gvt commitment to cost reflective tariff 2. Available funding for subsidies 3. Vast and diverse sources of RETs country-wide 4. Appropriate legal & regulatory framework for electricity 5. Conducive business environment 6. Available domestic & foreign markets 	<ol style="list-style-type: none"> 1. Mobilise financial resources. 2. Implement cost reflective tariffs. 3. Obtain financing for preparing power projects in upto a bankable stage. 4. Prepare & implement appropriate regulatory framework for offgrid systems 5. Implement Grid code and Open access 6. Regulatory framework for off-grid systems 7. Conduct awareness campaigns. 	<ul style="list-style-type: none"> • GRZ • REA • ERB • ZDA • ZPPA • OPPPI • ECZ • CPs • Investors • General public 	<p>2011/12</p> <p>2010-30</p> <p>2010-30</p> <p>2010-11</p> <p>On-going</p>	<ol style="list-style-type: none"> 1. Financing to implement sustainable renewable energy technologies 2. Provision of technical assistane

CONCLUSION

The Government of Zambia has put in place a conducive environment to enhance sustainable financing of the rural electrification projects in Zambia.

What we need is Investors to come and exploit our clean energy potential!!!!



We invite You to Zambia



Major Tourist Attractions

- ❖ **Victoria Falls (one of the natural wonders of the world);**
- ❖ **Kariba Dam (one of the largest man-made lakes);**
- ❖ **19 National Parks and 34 game management areas as well as 23 million hectares devoted to the conservation of an amazing variety of wild animals and bird species.**
- ❖ **The country also hold a number of traditional ceremonies including the Kuomboka, Ncwala, Likumbi Lyamize, Shimunenga, Mutomboko**



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RURAL ELECTRIFICATION AGENCY



**RENEWABLE
ENERGY**
*Solar
Installation*



EEUID
Grinding-Mills



EEUID
Irrigation



EREP
*Grid
Extension*



HISTORICAL BACKGROUND

- ❑ REP - commenced in early 1980s through government initiative
- ❑ Implementation by Electricity Supply Authority (ESA)
/Zimbabwe Electricity Supply Authority
(ZESA) – (1980 – 97)
 - ✓ No dedicated funding for REP
 - ✓ No dedicated institutional / legal framework for REP
 - ❖ Slow rate of implementation - 72 growth points and rural service centers electrified by 1995



HISTORICAL BACKGROUND

□ WAPCOS STUDY 1995-1997 RECOMMENDED

- Master Plan Programme - 415 centres to be electrified between 1997 - 2007
- Rural Electrification Unit within ZESA
- Electrification levy

HISTORICAL BACKGROUND

REU WITHIN ZESA (1997-2001)

- Improve in electrification rate – 305 projects electrified by 2001
- Dedicated funding for REP – 1% levy (inadequate)
- No legal framework
- REP did not receive adequate attention

HISTORICAL BACKGROUND

❑ **RURAL ELECTRIFICATION FUND ACT (Chapter 13:20 of 2002)**

- ✓ Rural Electrification Fund
- ✓ Rural Electrification Board
- ✓ Rural Electrification Agency



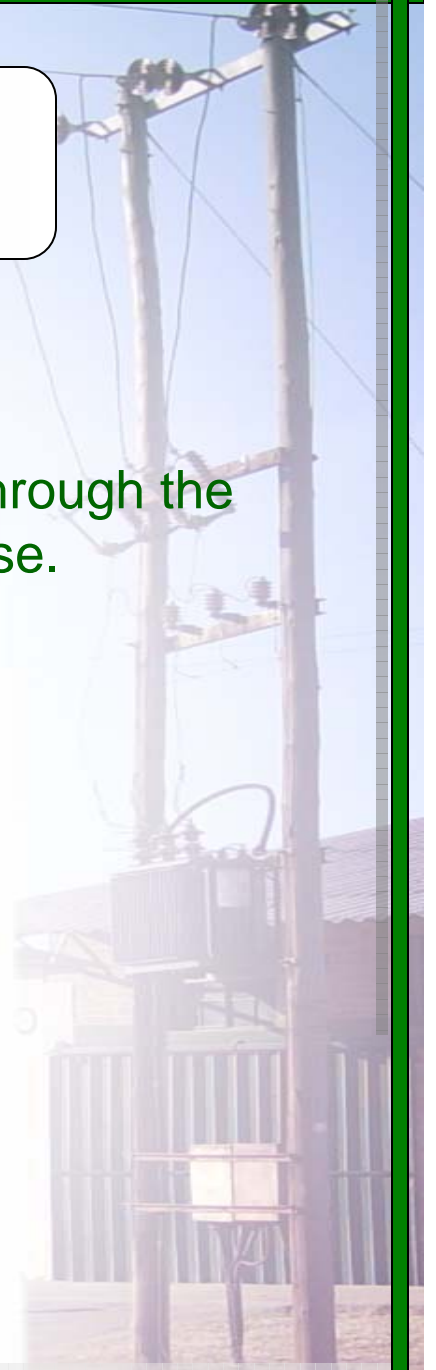
REF MANDATE

- ❑ To facilitate rapid and equitable electrification of the rural areas of Zimbabwe.



REF VISION

- ❑ The empowerment of rural communities of Zimbabwe through the provision of electricity and promotion of its productive use.



PROGRAMMES

GRID EXTENSION TO:-

- Rural Schools
- Rural Health Centres
- Government Extension Offices
- Business Centres
- Chiefs' Homesteads
- Villages
- Irrigation Schemes
- A1/A2 farms
- Other Rural Centres



PROGRAMMES

❑ **ELECTRICITY END USE INFRASTRUCTURE DEVELOPMENT (EEUID) PROGRAMME**

- **Provision of power supplies to irrigation schemes**
- **Establishment of agro processing industries in rural areas**
- **Establishment of cottage industries in rural areas**



RESEARCH AND DEVELOPMENT OF ALTERNATIVE ENERGY TECHNOLOGIES

☐ RENEWABLE ENERGY AND COST EFFECTIVE GRID TECHNOLOGIES

- Mini grid solar systems for rural institutions
- Single Wire Earth Return (SWER)



FUNDING

□ FUNDING

- 6% levy on all ZESA electricity sales
- Fiscus
- Customer Contributions
- Borrowings
- Income generating activities
- Donations and grants from governments, organisations, individuals

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graph BT; A[IMPLEMENTING STRUCTURE] --- B[MINISTRY OF ENERGY AND POWER DEVELOPMENT]; B --- C[RURAL ELECTRIFICATION FUND BOARD]; C --- D[RURAL ELECTRIFICATION AGENCY];
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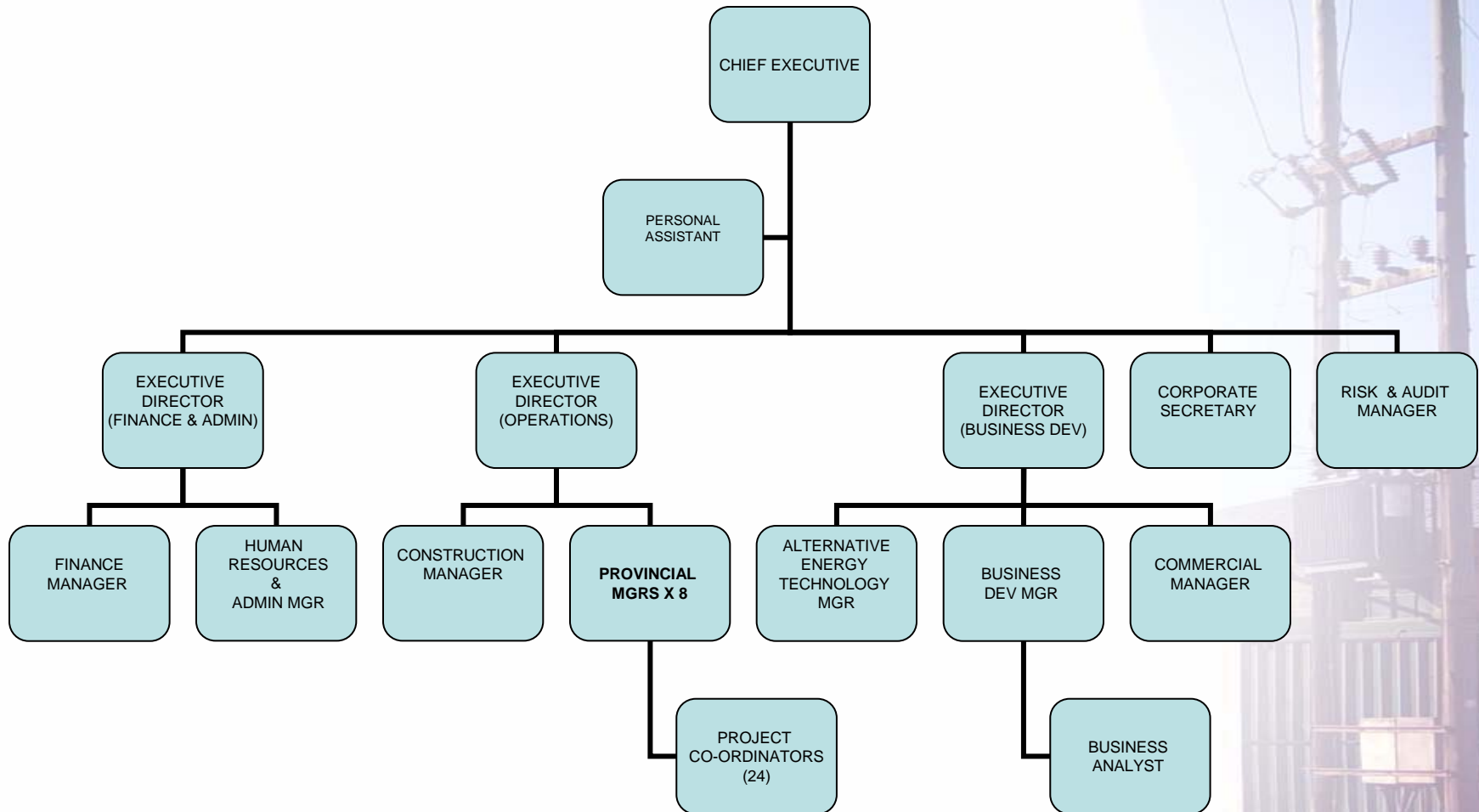
IMPLEMENTING STRUCTURE

MINISTRY OF ENERGY AND POWER DEVELOPMENT

RURAL ELECTRIFICATION FUND BOARD

RURAL ELECTRIFICATION AGENCY

REA COMPOSITION



ACHIEVEMENTS

□ GRID EXTENSION

National Statistics on the Status of the Rural Electrification Programme for Rural Institutions as at 31 March 2010

Province	Primary Schools	Sec. Schools	Rural Health Centres	Govt. Ext. Office	Chiefs		Business Centres	Small Scale Farms	Villages	Irrigation Schemes	Bore-hole/ Dam pts	others	total electrified to date
					Grid	Solar							
Manicaland	261	146	102	51	23	1	178	41	139	13	7	71	1026
Mash Central	184	106	82	39	21	2	119	112	33	11	17	82	791
Mash East	166	108	51	18	18	1	92	102	78	25	4	98	757
Mash West	285	102	42	30	16	2	61	138	46	9	7	37	768
Masvingo	175	133	82	37	22	1	146	38	65	14	7	36	749
Mat North	115	64	42	37	23	2	72	11	17	9	6	23	415
Mat South	135	70	46	19	19	0	90	17	67	9	4	22	494
Midlands	120	71	47	26	27	4	80	79	49	6	1	19	528
Total Electrified	1441	800	494	257	169	13	838	538	494	96	53	388	5528
W.I.P.	6	2	3	0	0	0	6	5	11	0	0	2	35
Balance O/S	2084	233	124	65	60		116	287	631	0	0	193	3794
Vacant Chieftainships					51		Overall % Electrification: 54% (based on public institutions)						
Total Number of Institutions	3531	1035	621	322	266								
% Completion	40.8%	77.3%	79.4%	79.8%	84.2%								

ACHIEVEMENTS

❑ MINI GRID SOLAR INSTALLATIONS

PROVINCE	IMPLEMENTATION STATUS		
	Schools	Clinics	Chiefs
Manicaland	3	6	1
Mash-Central	3	4	1
Mash-East	3	8	1
Mash-West	4	7	0
Masvingo	3	5	1
Mat-North	6	4	0
Mat-South	5	3	0
Midlands	3	8	1
Total Installed	30	45	5
W.I.P.	3	5	4
Balance Outstanding	192	175	41
Total No of Institutions	225	225	50
% Completion	13.3%	20%	10%

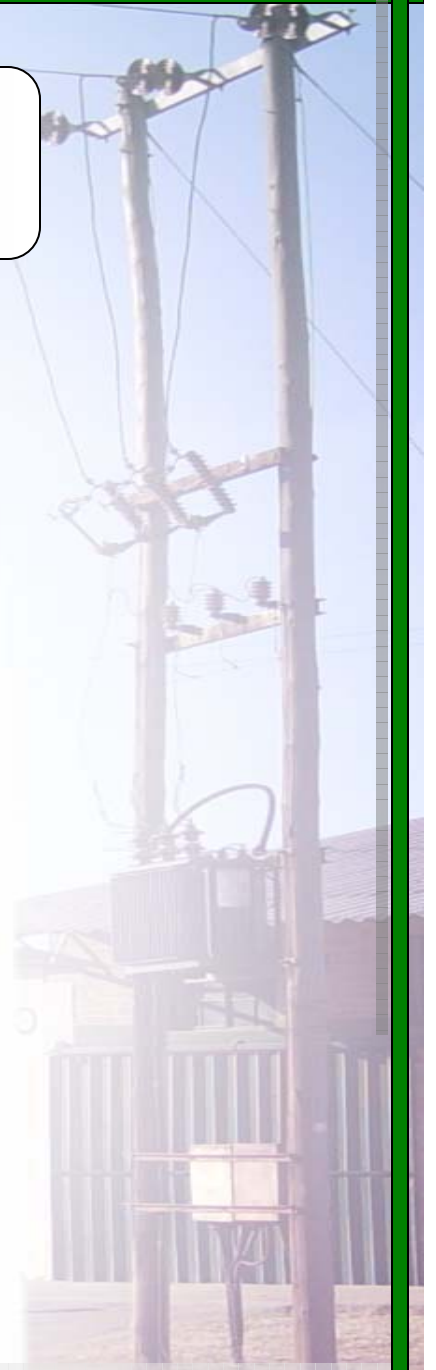
ACHIEVEMENTS

❑ SCHOOLS MILLING PROJECTS

PROVINCE	Grinding-mills	
	COMPLETED	
Manicaland	4	
Mash-Central	5	
Mash-East	4	
Mash-West	5	
Masvingo	5	
Mat-North	5	
Mat-South	4	
Midlands	4	
Total	35	

CHALLENGES & OBSTACLES

- **Inadequate Funding (about \$500m)**
 - **Levy**
 - **Fiscal Allocation**
 - **Complete absence of Grants**
 - **Long term borrowings**





OPPORTUNITIES

- Grid Extension (about 5000 institutions)**
- Generation Expansion through mini-hydro systems**
- Solar, wind etc**
- End-Use Infrastructure Development for viability, socio-economic empowerment (MDGs)**



KEY ACTORS/ACTIONS TO BE INVOLVED

- **GOVERNMENT (Fiscus, Securitisation, Incentives,)**
- **INVESTOR (Provision of financial resources and Technology transfer)**
- **REGULATOR (Adequate return, Licencing)**
- **DEVELOPMENT AGENCIES (Grants, Capacity Building)**
- **IMPLEMENTING AGENT – REA (Engaging stakeholders and Executing programme)**
- **SUPPLIERS OF TECHNOLOGY (Equipment, Backup and Training)**
- **UTILITY (Supply of power , O&M)**



BUDGET FOR OUTSTANDING PUBLIC & CUSTOMER INITIATED PROJECTS

- ❑ **Grid Extension** - **USD 371 million**
- ❑ **Renewable Energy Programme** - **USD 20 million**
- ❑ **EEUID** - **USD 97 million**
- ❑ **Operational Support** - **USD 12 million**
- **TOTAL** - **USD 500 million**



THE END