CONFEDERATION OF TANZANIA INDUSTRIES

CTI

Challenges of Unreliable Electricity Supply to Manufacturers in Tanzania

A Policy Research Paper Submitted to Energy Sector Stakeholders in Advocacy for Ensured Reliable Electricity Supply to Tanzanian Manufacturers

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Contents

Annex 1: Completed Government Funded Major Projects

S/No	Project Name	Financier	Covered Areas/Component	Expected Outcome	Finish Date
1	**Ubungo Gas Plant – 102.5 MW**	Government of United Republic of Tanzania	Ubungo, Ilala district - Dar es Salaam	To generate power using natural gas to meet the growing power demands in Tanzania, Connected to the National Grid through Grid Control Centre (GCC) Contributing to the National Grid System, injecting 102.5 MW	2007
2	**Tegeta 45MW Gas Based Power Plant**	Government of United Republic of Tanzania (GoT) (50%) and The Government of the Kingdom of the Netherlands under ORET/MILIEV program (50%)	Tegeta, Kinondoni District, Dar es Salaam	To generate power using natural gas to meet the growing power demands in Tanzania Connected to the National Grid through Kunduchi substation, Contributing 42 MW of firm capacity.	2009
3	**Musoma - Nyamongo 132 kV Transmission line**	Tanzania Electric Supply Company Limited & PANGEA	Musoma (Rural & Urban) Rorya and Tarime Districts	Project involves construction of 132 kV line from Musoma, electrification to Rural & Urban) Rorya and Tarime Districts and supply power to North Mara Gold Mine.	2009
4	**Shinyanga - Buzwagi Gold Mine 220 kV Transmission Line**	Tanzania Electric Supply Company Limited & PANGEA	Shinyanga and Kahama (Buzwagi) Districts	Project involves construction of 220 kV line from Shinyanga to Kahama and power supply to Buzwagi Gold Mine.	2009

Ongoing Government Funded Projects

Ongoing projects starting from financial year 2008/09 for Government and REA funds are:

S/NO	PROJECT NAME	SCOPE OF WORKS	FINANCIER
1	Electrification of Malya towns in Kwimba District	Involves construction of 30km of 33kV from Ngudu to Malya in Mwanza Region. Installation of distribution substations Construction of LV lines Construction of service lines	Government of Tanzania (GoT) through MEM
2	Electrification of Kilindi District in Tanga region	Power supply to Kilindi district Headquarters and surrounding villages Scope of works includes construction of	GoT in the 2007/2008 budget through REA/REF

		54km of 33kV lines, LV lines, erection of distribution substations and connections of customers.	
3	Electrification of Bahi District in Dodoma region	Power supply to Bahi district Headquarters and surrounding villages. Scope of works includes construction of 60km of 33kV lines, LV lines, erection of distribution substations and connections of customers.	GoT in the 2007/2008 budget through REA/REF
4	Electrification of Uyui District in Tabora region	Power supply to Uyui District Headquarters and surrounding villages. Scope of works includes construction of 44km of 33kV lines, LV lines, erection of distribution substations and connections of customers.	GoT in the 2007/2008 budget through REA/REF
5	Electrification of Matema Beach in Kyela District	Power supply to Matema Beach Scope of works includes construction of 25km of 33kV lines, LV lines, erection of distribution substations and connections of customers.	GoT in the 2007/2008 budget through REA/REF
6	Electrification of Mto wa Mbu villages in Monduli district Arusha	Power supply to various trading centres and villages in Mto wa Mbu Scope of works includes construction of 8km 33kV lines, LV lines, erections of distribution substations and connections of customers.	GoT in the 2007/2008 budget through REA/REF
7	Electrification of Magindu villages in Coast Region	Power supply to Magindu village Scope of works includes construction of 23km of 33kV lines, LV lines, erection of distribution substations and connections of customers.	Government of Tanzania (GoT) through MEM
8	Electrification of Itiryo in Tarime District	Power supply to Itiryo Scope of works includes construction of 37km 33kV lines, LV lines,	Government of Tanzania (GoT) through MEM

		erections of distribution substations and connections of customers.	
9	Electrification of Ihanja township in Singida	Project aims at supplying power to Ihanja township Scope of works includes construction of 13km of 33kV lines, LV lines, erections of distribution substations and connections of customers.	Government of Tanzania (GoT) through MEM
10	Electrification of Berega in Mvomero district, Morogoro	Project aims at supplying power to Berega Scope of works includes construction of 42km of 33kV lines, LV lines, erections of distribution substations and connections of customers.	Government of Tanzania (GoT) through MEM
11	Electrification of Bukene in Nzega, Tabora	Project aims at supplying power to Bukene constituency Scope of works includes construction of 60km of 33kV lines, LV lines, erections of distribution substations and connections of customers.	Government of Tanzania (GoT) through MEM
12	Electrification of Mvumi – Mlowa in Dodoma	Power supply to Mvumi/Mlowa Scope of works includes construction of 21km of 33kV lines, LV lines, and erection of distribution substations and connections of customers.	Government of Tanzania (GoT) through MEM
13	Electrification of Mchinga A&B villages in Lindi	Power supply to Mchinga A&B Scope of works includes construction of 25km of 33kV lines, LV lines, erections of distribution substations and connections of customers.	Government of Tanzania (GoT) through MEM
14	Electrification of Mgwashi in Lushoto district Tanga region	Project aims at supplying power to Mgwashi village Scope of works includes construction of 21km of 33kV lines, LV lines, erection of distribution substations and connections of customers.	Government of Tanzania (GoT) through MEM

Other Ongoing Projects

1	**Grid Control Centre (GCC) Project – Ongoing.**	Government of United Republic of Tanzania (GoT)	Replacement of old SCADA System and Installation of new SCADA/EMS System .The project involves supply, installation and commissioning of National Grid Control Centre (GCC) – Ubungo, Dar es Salaam and all related control systems countrywide.	Improve, Modernize National Grid Control Centre and its associated region/grid control centres.	2010
2	**New 100 MW Gas Based Power Plant at Ubungo, Dar es Salaam – New**	Government of United Republic of Tanzania (GoT)	Ubungo, Ilala District - Dar es Salaam	To generate power using natural gas to increase generation capacity in the grid network, will be connected to the National Grid Control Centre (GCC) at Ubungo, Dar es Salaam.	2011
3	**New 60 MW Heavy Fuel Oil Based (HFO) Power Plant at Nyakato, Mwanza – New**	Government of United Republic of Tanzania (GoT)	Nyakato, Mwanza Region	To generate 60 MW power using Heavy Fuel Oil (HFO) to increase generation capacity for in the grid network. This will also serve as base load in northern Regions for load supply in the mining areas, will be connected to the	2011

				National Grid Control at Nyakato substation, Mwanza.	

Donor Funded - Ongoing Projects

	New and Ongoing Projects Financed Word Bank and others				
1	**Tanzania Energy Development and Access Expansion Project (TEDAP) – Ongoing.**	Word Bank International Development Agency (IDA) Funds	Dar es Salaam, Arusha and Kilimanjaro 132 kV Transmission Network Reinforcement - Lot 1 – Substations in Dar es Salaam - Lot 2 – 132 kV Transmission Lines in Dar es Salaam - (IDA funds) Lot 3 (b) – Substations in Kilimanjaro - (KIA	TEDAP project aims at improving the availability and reliability of the system components of the selected 132/33 kV grid network and substations as well as reduction of technical and non-technical losses in the distribution networks of Dar es Salaam, Arusha and Kilimanjaro Regions.	2011
2	**TEDAP component -Reinforcement of transmission and distribution facilities in Kilimanjaro – Ongoing.**	African Development Bank (AfDB) funds	The components for the rehabilitation of Njiro Substation i.e. -Lot 3 (a) - Substation Njiro	Transmission and Distribution system Upgrade for Dar es Salaam, Moshi and Arusha in order to improve the electricity transmission and distribution network performance.	2011
3	**TEDAP component -Reinforcement of transmission and**	The Korean Export-	Arusha/Kilimanjaro - The components for the rehabilitation of Kiyungi Substation	Improvement the electricity transmission and distribution network performance.	2011

	distribution facilities in Arusha and Kilimanjaro – Ongoing.	Import Bank (EDCF) funds.	and the construction of a new 132 kV Transmission Line from Kiyungi to Njiro i.e. Lot 3 (c) - Substation Kiyungi and Lot 4: 132 kV Transmission Line Kiyungi – Njiro		
4	**TEDAP component -Reinforcement of transmission and distribution facilities in Oyster-Bay substation – Ongoing.**	Japanese International Cooperation Agency (JICA) funds	Kinondoni District - Dar es Salaam The components for the rehabilitation of 132 kV Ubungo - Oysterbay Transmission Line and new Oysterbay substation	Improvement the electricity transmission and distribution network performance.	2011
5	**Proposed New 400 kV Iringa – Dodoma – Singida – Shinyanga (Backbone) Transmission Line (655 km) (Feasibility Study Completed)**	Word Bank International Development Agency (IDA) Funds, Japanese International Cooperation Agency (JICA) funds, African Development Bank (AfDB) funds	Iringa, Dodoma, Singida and Shinyanga Regions and all districts in their way leave.	Construction of New 400kV Iringa – Dodoma -Singida - Shinyanga to increase Transmission line capacity, strengthen, reinforce and enhance security of power supply in North-Western grid of Tanzania, also allow future neighbour interconnectivity of Tanzania with Zambia in Southern Africa Power Pool (SAPP) and Kenya in Eastern Africa Power Pool (EAPP).	2013

6	**Makambako-Songea 132kV Transmission Line and Electrification of Songea and Districts in Ruvuma and Iringa – Ongoing.**	Government of United Republic of Tanzania (GoT) and Sweden (SIDA)	The project involves construction of proposed Makambako – Songea 132 kV line and 132/33 kV substations at Madaba and Songea, expand distribution networks of Makambako, Njombe and Songea as well as connect by 33 kV networks towns of Mbinga, Mbamba Bay, Namtumbo and Ludewa and villages along the proposed 33 kV lines.	Power Supply – Electrification of Songea and Districts in Ruvuma Region and Iringa, Districts and related villages for the non - electrified areas to improve life and development to communities.	2012
7	**Kiwira Coal to Electricity Project – Phase I-200MW, Phase II-200MW; Fuel from the Kabulo ridge Coal Reserves - New**	Government of China Financing Committed for Phase I of 200MW	Kyela, Rungwe and Mbeya Districts The Mtwara – Mbamba Bay – Lake Tanganyika Development Corridor.	Kiwira Coal – to - Electricity power project involves expansion of the existing power facility, in Phase I & II up to 400MW, Construction of transmission line and the colliery redevelopment respectively, to meet the growing power demands in Tanzania, will contribute to the National Grid System, injecting 400 MW.	Phase I - 2011 Phase II - 2014
8	**Bulyanhulu - Geita 220 kV Transmission**	TANESCO & Geita Goldmine	Bulyanhulu, Geita District – Mwanza Region	Project involves construction of 220 kV line from Bulyanhulu	2011

	Line	Funding		to supply power supply to Geita Gold Mine and Geita Township.	
9	**100MW Independent Power Tanzania Limited (IPTL) Power Plant - Conversion**	World Bank - IDA	Tegeta, Kinondoni District, Dar es Salaam	To convert 100 MW IPTL plant from using expensive Heavy Fuel Oil (HFO) to using cheap natural gas.	2011
10	**Kinyerezi 240MW Gas Based Power Plant – New**	African Development Bank (AfDB), Tanzania Electric Supply Company Limited	Kinyerezi, Temeke District - Dar es Salaam	To generate power using natural gas to meet the growing power demands in Tanzania, will contribute to the National Grid System, injecting 240 MW.	2013
11	**Rumakali hydropower Plant - 222 MW (Expression of Interest - EoI)/ RFP**	Word Bank International Development Agency (IDA) Funds	Makete District, Iringa Region	To generate power using Water (Hydro) to meet the growing power demands in Tanzania, will contribute to the National Grid System, injecting 222 MW.	2018

Source: TANESCO 2010

Annex 2: Data Collection Instrument

THE CONFEDERATION OF TANZANIA INDUSTRIES (CTI)

QUESTIONNAIRE

CTI Advocating for Assured Electric Power Supply (Phase 1)

Name of the Company: …….……

Physical location of the Company: ……..

Regional: …… District: …… Plot number: ……

Name of Respondent: ……..

Designation: …….

Telephone: ……..…… Mobile: ……..……..

Email: ……..……..

Interviewer: ……..……Telephone: …….

Date of Interview:…….

(A) Introduction

Power supply is a perennial problem in Tanzania, both in terms of availability and quality. Losses are measured in production hours, raw material losses, and quality. Even in times of relative lack of interruption of supply, unevenness of current causes disruption in production scheduling and quality. Because of inability to produce in predictable, cost-effective cycles, the Tanzanian manufacturers are at a big disadvantage in competitive terms, both in their own markets and in regional/international ones. CTI is of the opinion that a fresh baseline needs to be traced, a fresh global problem assessment made, so as to have a thoroughly-grounded rationale to advocate soundly on this problem, one which would otherwise leaves Tanzania poorly competitive on national and international markets. The objectives of this advocacy project are:

Phase I Objective	To have a clear Energy Policy Change Proposal for advocacy of assured availability and quality of electric power supply, which, when adopted, will make Tanzanian manufacturers competitive particularly in international markets.
Ultimate Objective	To have "The Tanzania Energy Policy" changed/amended and enforced to assure reliable electric power supply to manufacturers.

(B) Appeal to Respondents and Confidentiality

Respondents are requested to cooperate with the consultants and respond objectively to the issues raised in this questionnaire to facilitate effective execution of the study. Respondents are assured that specific information/data provided will be treated in strict confidence. The data will be used at the aggregate level for analysis, and no Ministry/Authority/Organization/Personal level information will be revealed in the

subsequent reports. The information that will be analyzed group-wise cannot be traced back to individual members.

(C) Response to Issues Raised

You are requested to respond by providing answers by filling-in, circling or *ticking (√) <u>applicable box/choice in the next sections</u>:*

1.0 General Information about the Company

1.1 What is the main activity of your Company?

- □ Food Products and Beverage
- □ Tobacco Products
- □ Textiles
- □ Wearing Apparel; Dressing and Dyeing of Fur
- □ Publishing, Printing Recorded Media
- □ Wood and Products of Wood and Cork except Furniture; Manufacture of Articles of Straw and Plaiting Materials
- □ Furniture; Manufacturing
- □ Recycling
- □ Paper and Paper Products
- □ Chemicals and Chemical Products
- □ Rubber and Plastic Products
- □ Fabricated Metal Products, Except Machineries & Equipment
- □ Other Non-Metallic Mineral Products
- □ Tanning and Dressing of Leather; Luggage, Handbags, Saddlery; Harness and Footwear
- □ Machinery and Equipment
- □ other (specify)……

1.2 What is/are the main product(s) of your Company?

……..……..……..……

1.3 What is the Normal Production Hours of your Company per week (manufacturing)?

- □ < 60 hours
- □ 60 < 90 hours
- □ 90 < 120
- □ ≥ 120 hours

1.4 What is the total Number of Employees of the Company?

- □ 0 < 50
- □ 50 < 100
- □ ≥100

1.5 What is/are the Market(s) and what is/are the Market Share(s)? (both answers are possible)

- □ Domestic — Approximately …….. %
- □ Export — Approximately …….. %

2.0 General Information on Electricity Supply

2.1 What is the average Monthly Electricity Consumption?

…… Kilowatts
…… Kilowatts
…… Kilowatts

Based on:
- ☐ Real figures year 2008
- ☐ Real figures year 2009
- ☐ Estimation year 2010

2.2 What are the Monthly Electricity Costs?

TZS ……
TZS ……..
TZS ……

Based on:
- ☐ Real figures year 2008 (see annual report 2008)
- ☐ Real figures year 2009
- ☐ Estimation year 2010

2.3 What Percentage are the Electricity Costs of the Total Production Costs?

…… %
…… %
…… %

Based on:
- ☐ Real figures year 2008 (see annual report 2008)
- ☐ Real figures year 2009
- ☐ Estimation year 2010

2.4 What are the General Problems with the Electricity Supply? (more answers are possible)

- ☐ Inadequate power voltage
- ☐ Power supply interruptions (cuts/outages)
- ☐ Inadequate communication about planned interruptions
- ☐ Other, namely ……

2.5 What is the Average Number and Average Duration (in hours) of the Inadequate Power Voltage?

……. number per month
……. duration (in hours) per month

……. number per month
……. duration (in hours) per month
…….....

Based on:
- ☐ Ask for the year 2008
- ☐ Ask for the year 2009
- ☐ Estimation for the years 2010

2.6 What is the Average Number and Average Duration (in hours) of the Power Supply Interruptions (cuts/outages)?

……. number per month
……. duration per month

……. number per month
……. duration per month
……

Based on:
- ☐ Ask for the year 2008
- ☐ Ask for the year 2009
- ☐ Estimation for the years 2010

3.0 Specific Information on Electricity Supply

3.1 What are the specific problems of electricity to your company Supply? (more answers are possible)

- Machine and equipment damage
- Production losses (such as waste of materials, ongoing costs for labor)
- Cleaning costs (machines and equipment)
- Fluctuations in output
- Others, name ……

3.2 How does your company cope with the increased production costs due to the problems of electricity supply? (only one answer is possible)

- Prices of the products sold are increased
  (therefore being less competitive and less profitable)
- Prices of the products sold are not increased
  (therefore accepting lower margins and being less profitable)
- A combination of increased prices and lower margins
  (therefore also being less profitable)
- Other, namely ……

3.3 What effects do Power Supply have on the annual financial results before Tax?

- Loss TZS……. Million **Based on:**
  - Ask for the year 2008
  - Ask for the year 2009
  - Estimation for the years 2010

3.4 Has your company invested in own Power Generation?

- No – Because – Not aware of such generation schemes
  - Not capable
  - It is costly
- Yes, Specify: In the year..……..… TZS million was invested
  and the yearly costs of this own power generation is approximately
  TZS …….....… per year (fuel, maintenance, depreciation, etc.)

3.5 What other alternative sources of power do you recommend to be developed for manufacturers?

……..

……..

……..

3.6 Have you even taken other corrective measures to deal with the problems of the Power Supply?

- No
- Yes, namely ……..

3.7 If Power Supply problem is resolved, how much output would your company increase (in %)?

…….%

3.8 What do you recommend for a solution to the Power Supply problem?

…….

……..

……..

THANK YOU FOR YOUR COOPERATION