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

July 2011

Table of Contents

Executive Summary

The overall objective of this report is to present researched facts about intermittent power supply to manufacturers, particularly for facilitation of informed discussions and decisions that are aimed at improving the availability of reliable electricity supply to manufactures in Tanzania. The report is a product of policy research which examined the major reasons for unreliable electricity supply to manufacturers in the country and to draw strategies for overcoming the challenges. Its findings are based on various documents reviewed, the study of 60 manufacturing firms experiencing the challenge of unreliable electricity supply and views of other key stakeholders in the sector. The study shows that in the past few years the Government of Tanzania has attempted to list a number of projects to tackle the problem of power supply in the country. However, with growth of the country's economy it is estimated that the demand for electricity will triple from the current need by 14% of the population to 42% by 2020, of which the planned projects will not be able to meet the demand unless other strategies are used to increase the supply of power.

Regardless of the effort made by the Government, the manufacturing sector continues to experience the obstacle of unreliable, intermittent power supply, frequent rationing and outages. The unreliable power supply causes manufacturers to experience throughout the year poor service quality, power cuts without notice, unplanned power stoppages and interruptions, voltage fluctuations, phase failures and unbalanced voltages. These challenges are due to the worn out power infrastructure (both for production and distribution of electricity); shortages in electricity production, too much dependence on hydro-production - which is prone to the vagaries of the weather (notably drought) - and inadequate implementation of plans and strategies of the PSMP for projects to be accomplished during 2009 - 2013.

As a result of unreliable electricity, manufacturers face the following six major hurdles.

(i) *High income losses attributed to frequent interferences due to power supply interruptions.* Despite the use of own costly generation at times, income loss to

manufacturing firms owing to unreliable electricity supply alone is estimated to be TZS 31 billion per annum.

(ii) Machinery damage resulting from high fluctuations and instabilities of the supplied current.

(iii) *Loss of competitiveness in the markets following the sustained price adjustments upward in line with the rising production costs due inter alia to the energy component*. It should be noted that 24 hours of work are lost per month per firm (all industrial inputs/factors staying idle) and up to 7,341 workers lose their jobs annually owing to the electricity problem faced by manufacturing firms. These factors obviously reduce productivity and undermine competitiveness.

(iv) *Maintaining excess capacities in the factories for some days is a common strategy to compensate for power cuts, shortages, rationing or prolonged blackouts.* This raising of the overall input costs since productive factors remain generally idle for a while. .

(v) *Frustration of the prospects and plans for new investments and business expansions.* With the listed hindrances, investors cannot be optimistic and get discouraged from entering the country's industrial sector.

(vi) *Investors' demoralisation as well as a plunge in the industrial workers' morale.* As mentioned, 7,341 jobs are lost per annum due to the electricity supply problem faced by manufacturing firms.

An attempt to quantify the impact of unreliable electricity to manufacturers shows that on average, each manufacturing firm loses at least one day (of labour and all other employed factors of production per month owing solely to electricity supply interruptions) every month since all the industrial inputs/factors remain idle . It is estimated that factory employees work for up to 70 hours per week. It is further estimated that each one of those employees loses up to 34.3% of the total work hours per week. The Government tax loss resulting from the intermittent electricity supply is estimated to be TZS 9.5 billion per year. Around 18.9% of the total cost of production in the interviewed manufacturing firms in Tanzania is attributed to the energy cost. Whereas the intermittent electricity supply has kept total production falling and production costs rising, only 15% of manufacturing firms can afford to increase their product prices to cope with the challenges arising from the continued erratic power supply. Nationally, as we have seen, a total

of 7,341 jobs are lost per year in the formal manufacturing firms, those with an employment capacity of 10 workers and above, on account of unreliable power supply only.

The study shows that the major root causes of the challenge of electricity to manufacturers are as follows.

(i) Policy hindrances

- The country's Energy Policy does not explicitly provide enforceable provision for TANESCO (or other energy producers) to assure electricity supply (as an obligation) to manufacturers.
- Poorly coordinated policies that hinder private investors' effective participation in the energy sector to compete well with the overwhelming TANESCO monopoly

ii) Power generation, transmission and distribution problems facing TANESCO:

- The worn out infrastructure amid the unsolved fate of TANESCO privatisation
- Insufficient production as TANESCO generates electricity without any reserve margin for any emergency event
- Overdependence on hydro-power production which is susceptible to weather changes; the use of the natural gas alternative could be enhanced to produce electricity as drought leads to water shortages and thus low TANESCO generation capacity
- Significant technical and non-technical losses including: poor transmission infrastructure, too long transmission distances with a lot of drains; and vandalism on the power system infrastructure

iii) Operational problems causing big losses, dependency on Government capital injections; inefficiency in customer service, long lags in electricity billing and delays in tariffs reviews; most of these problems emanate from the monopoly nature of TANESCO

iv) Slow implementation of the Power Sector Reforms including restructuring of TANESCO and speeding up implementation of the Electricity Bill of 2008 and the projects developed from the Power Sector Master Plan.

The following recommendations for policy changes are made by the report.

i) The Government is advised to speed up implementation of the projects that are underway to quickly redress the problem of intermittent electricity supply generally and specifically to the country' manufacturing industry. Emphasis has to be placed first on the stability (steadiness) of voltage supplied to ensure quality of energy received by manufacturers and other power consumers. If the planned projects could be completed within the scheduled time-frame, the problem of low voltage and shortage could be reasonably reduced.

ii) TANESCO is better split up into two main companies:
   - a public power generation entity, which should exist alongside other private producers as it is currently set; and
   - transmission and distribution entity, which has to be done by TANESCO. This would deal with customer service in general, including connections, marketing and billing.

iii) In the short-run, we suggest the Government should facilitate TANESCO in capitalisation of the new power generation programme planned for the interim period of 2010-2013.

iv) Government needs to foster its commitment to speed up implementation of the Electricity Act 2008 in order to encourage private investments in mini power grid operations. Nonetheless, there will be need to review the Act as it mainly limits private sector investment to renewable energy while it restricts investors from other areas of power generation like the thermal energy production. In addition private investors are given a limit of production of only 10MW each. With the critical power problem, the question remains as to why only 10MW?

v) The government is advised to waive import taxes on equipment used in the generation, transmission and distribution of electricity in order to reduce the cost of electricity since most of the equipment used in the power sector is expensive and hence contributing to the high cost of electricity in Tanzania.

vi) Exploring and utilising other potential existing sources of electricity in Tanzania including coal, natural gas, solar, biomass, wind, geothermal and petroleum/oil is highly recommended.

vii) The Energy Policy can be reviewed to accommodate recent developments and to provide incentives for private investors who are interested in the energy sector so that they can participate effectively.

viii) Promotion of Public-Private Partnership (PPP) in the power sector is recommended to encourage the private sector to work closely with the Government in rectifying power problems.

ix) It is high time for TANESCO to improve its institutional capacity to deliver services to its customers satisfactorily. Some of the areas in which TANESCO needs to take immediate action include: communication with customers, marketing, and customer services overall.

x) It is suggested that TANESCO should undertake rehabilitation of its transmission infrastructure.