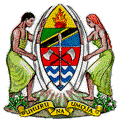
**UNITED REPUBLIC OF TANZANIA**

****

**MINISTRY OF ENERGY AND MINERALS**

**FINAL REPORT**

**ON**

**JOINT ENERGY SECTOR REVIEW FOR 2010/11**

**Dar es Salaam**

**September, 2011**

Preface / Acknowledgements

Oxford Policy Management, ECA and Mekonsult are pleased to have been contracted by MCA Tanzania to provide support the stakeholders in Tanzania’s energy sector in conducting this year’s Joint Energy Sector Review (JESR).

We would like to thank the many people consulted for their time and contributions to the report and for their comments and suggestions on the First and Revised Draft reports. Any errors or omissions are, of course, the responsibility of the authors.

Executive summary

Introduction

Purpose of Report

The purpose of this report is to provide the Joint Energy Sector Working Group (JESWG) with a review of the performance of the Energy Sector in the period 2010/11 as part of the Joint Energy Sector Review (JESR).

The output of the JESR will form the basis for planning, coordination and financing of the energy sector and establish a common platform for priority setting and for performance monitoring in the energy sector.

Structure of the Report

The report is structured in order to reflect the purpose and process of the JESR and particularly to reflect the cycle of public financial management that the JESR is reporting on.

The JESR 2010-2011 Process

The JESR is based on a review of the “performance” in the energy sector in a 12-month period in the context of the policies, strategies, plans and budgets for the sector. The recommendations in the first draft of the report (issued in August) were those of the consultants. Having gone through these with the JESWG in a meeting on 14 September and obtained agreement on their content and refined the target dates, these recommendations have been recast in this draft as action items.

2010/11 JESR Stakeholders’ Workshop

The Stakeholders’ Workshop took place on Thursday 22nd September. This year there was a separate discussion for JESWG stakeholders and representatives of TANESCO, REA, TPDC and EWURA focussing in the Sector Financing aspects of the JESR. This took place on Tuesday 20th September.

Final JESR Report

The JESR Final Report is a document produced by the Ministry.

***A1 Agreed JESWG Commitment:***Recommendations endorsed by MEM will be converted into Action Items for energy sector stakeholders. Progress against these action items will be reported to the JESWG during 2011/12. The Action items relating to MEM will be incorporated into departmental action plans by managers*.* ***Action:***October 2011. ***Responsibility****:* MEM Management.

Energy Sector Performance Update

Performance Overview

2010/11 has been an exceptionally difficult year for the energy sector. Failed rains, high world energy prices, legacy effects from earlier emergency responses to power supply problems, uncertainty over the electricity tariff regime and the financial position of TANESCO have presented difficulties for all stakeholders but particularly for MEM and its agencies.

There have also been some achievements, however. In the electricity sector, three District Headquarters were electrified, some small generators at Kibondo and Kasulu, Somanga Fungu and Kigoma were commissioned, various transmission lines were completed, smart meters were installed for large power users, reducing power losses from 26 per cent to 21 per cent and improved revenue collection. In renewables, biofuels guidelines have been launched and solar standards developed. Natural gas was discovered in two deep-sea blocks and there was increasing uptake of gas use in the industrial sector.

Electricity Sub-Sector Review

A recurrence of drought conditions in 2010/11 effectively removed around 420 MW from a system of around 900 MW, forcing the country to endure a programme of load shedding coupled with unplanned outages. With suppressed sales, TANESCO’s revenues have declined while its costs have increased, thereby exacerbating its already parlous financial state. At the level of the national economy, the electricity shortfalls are imposing considerable costs.

The approach of the Government to dealing with the 2011 crisis is much more comprehensive than in the last drought period of 2006/07. Tanzania’s extensive gas resources, with promising signs of further discoveries being made, gives the country a significant comparative advantage in electricity generation within the region. The Government has recognised that the main element in solving the underlying problems in the electricity sector is to move rapidly to expand gas-fired electricity generation, both for domestic use and potentially also for export into the East African Power Pool (EAPP) and to southern neighbours in the Southern African Power Pool (SAPP).

To get out of the immediate crisis, a short term Emergency Power Plan (EPP) was presented to Parliament and approved on 13 August 2011.

Policy and electricity sub-sector performance update

There were no significant policy changes affecting overall sector performance. During the period under review, there was expansion of generation capacity by supplying fuel to bring 20 MW of the IPTL plant on line, and contracting 80 MW of gas-fired generation from Symbion power, which has purchased the 112.5 MW Dowans plant, losses were reduced from 24% to 20%, mainly through reduction in so-called non-technical losses, connections were increased by 65,925 during 2010, bringing the total number of TANESCO customers to 868,953 by the end of that year, the 220 kV power lines Shinyanga-Buzwagi and Musoma-Mugumu were commissioned and, in rural electrification, REA contracted 41 turnkey grid extension projects which are now under implementation and which will initially benefit 20,000 new customers.

Generation capacity

As of mid 2011, installed generation capacity, including off-grid and imports, was 1,075 MW. If normal hydrological conditions had prevailed in 2010/11, the capacity on the grid connected network of 963 MW would have been the same as the projected peak demand in 2011, implying zero reserve margin. In the event, the hydropower capacity was decimated by severe drought, so that the effective capacity fell far short of maximum demand plus a reserve margin (of approximately 20%).

Emergency Power Plan (EPP)

The extent of power outages and load shedding (planned and unplanned) led to Parliament insisting on an Emergency Power Plan (EPP) being formulated to restore reasonable supplies of power by the end of 2011. The EPP was prepared over a 3 week period by a Technical Working Group (TWG) led by MEM.

The Parliamentary Committee for Energy and Minerals had challenged MEM to come up with an emergency plan for 300 MW. In fact, the increase in capacity envisaged under the EPP is considerably larger than this, totalling 572 MW. This is made up as follows:

* Provide fuel (HFO) for the remaining 80 MW of the IPTL facility.
* Contract the remaining 37 MW from the Dowans plant purchased by Symbion, but due to non-availability of gas, this capacity will have to be operated using JetA1.
* Contract a further 205 MW from Symbion, which will bring the dual fuel plants into the country from abroad (45 MW + 110 MW + 50 MW). These generators will run on JetA1.
* Contract 100 MW of diesel generation capacity from Aggreko (2 x 50 MW).
* Install 150 MW of dual fuel plant (3 x 50 MW), the capital costs being funded by NSSF, the plant to be operated by TANESCO. Liquid fuels will have to be used during the emergency period.

The EPP necessarily involves extensive use of contracted thermal capacity, with liquid fuels as the energy source. The costs of this are extremely high. While the cost of electricity from Songas is around 6.6 USc/kWh, the liquid fuel unit costs in the EPP range from 30 c/kWh (IPTL) to 43 c/kWh (Aggreko).

The total cost of the EPP from August 2011 to December, 2012, has been estimated at TZS 1.241 trillion. This assumes a tax deduction on imported liquid fuels. Of this total, the cost from August to December 2011 is estimated to be TZS 523 billion. This is to be financed in part through tariff revenues from TANESCO (TZS 115 billion) with the remainder being a government-guaranteed loan of TZS 408 billion from local commercial banks. It was noted at the Stakeholder Workshop that any government contribution to the EPP constitutes a subsidy from the Tanzanian population as a whole, in part to the national economy, but directly to the 14% of the population who have access to electricity.

Short-Term Power Generation and Gas Supply Plans

The EPP gives details of previously scheduled generation projects due to come on-stream during 2012. These are Ubungo (Jacobsen) 250 MW gas in stages (March-July 2012) and Mwanza (SEMCO) 60 MW HFO plant, to be available from June 2012. Thereafter, scheduled generation projects are Singida wind (probably 50 MW by 2013 and perhaps another 50 MW by 2014); Kinyerezi combined cycle gas turbine using Mtwara gas (via pipeline) – 240 MW by 2014; Somanga Fungu, gas turbine, pipeline gas or possible own supply from Songo-Songo area – 230 MW by 2014 (IPP); Kiwara coal project – 200 MW by 2014 and the Mtwara combined cycle gas turbine – 300 MW by 2014.

MEM and TPDC have accelerated gas provision projects, which will make possible the rapid expansion of gas electricity generation in the medium term. These are a 24-inch diameter gas pipeline, with a capacity of 130 mmscf/d as far as Somanga Fungu, and 30-inch diameter thereafter to Dar-es-Salaam, raising the capacity to a level in excess of the initial intended delivery volume of 200 mmscf/d. . The additional 70 mmscf/d will be supplied from the Songo-Songo field via another new pipeline (20 inch). This additional gas will make use of the spare processing capacity that is to be available once the Songas expansion project has been completed. The overall availability of gas for these big expansions in pipeline capacity havs been confirmed by TPDC. However, TPDC notes that the pipeline capacities are yet to finalized with the prospective EPC contractor (China Petroleum Technology and Development Corporation –CPTDC).

Critique of the EPP and Short-term Generation Plan

In relation to an agreed projection of unconstrained demand, the current EPP over-provides for capacity increases, much of which will have to be paid for whether or not it is used. In 2012, for example, TANESCO’s figure for unconstrained demand is 1,089 MW (1,307 MW including reserve margin), while the total of EPP and scheduled investments produces a total capacity of 1,855 MW (which would still be above unconstrained demand plus reserve margin even if there is ZERO hydropower capacity available).

**Consultant assessment of the EPP.[[1]](#footnote-2)** The most positive aspect to come out of the crisis conditions in the energy sector this year is the firm commitment of the Government to make full use of Tanzania’s natural gas resources. What is less positive is a further demonstration in the EPP of the inability of the sector to plan properly. The EPP should have been rooted in careful analysis of unsuppressed demand, should have acknowledged the dispersed capacity owned by the private sector, which is appropriately used in times of emergency, and the imminence of the commissioning of generation projects already being implemented (310 MW by mid 2012). The Ministry of Finance should have played a key role in formulating the EPP, requiring the Technical Working Group to carefully weigh up the costs of high levels of capacity increases against the risks of just ‘getting by’ until mid 2012 with a minimalist strategy.

Electricity tariffs

TANESCO submitted a multi-year tariff application during 2010. After carrying out the required consultation process, the decision of the EWURA Board was that the immediate increase averaging 34.6% should be scaled back to 18.5% and the three-year framework was rejected. The increase took effect in January 2011. The EWURA order states that the tariff increases for subsequent years will be reconsidered “once a credible COSS is carried out by an independent expert to be engaged by EWURA”. At present, based on an estimate made in the recent comprehensive loss study, tariffs are covering of the order of 80% of costs. This proportion will fall markedly once the EPP costs are reflected in TANESCO’s books.

Performance update on specified key electricity sector indicators

This can be provided as and when a reply has been received from TANESCO to the consultants’ information request which was submitted in August.

Definition of Electricity Access

The main definitions which are used for energy access relate to whether people live in the vicinity of a source of electricity or whether they are actually using electricity. The latter definition is theoretically preferable and is the definition chosen by SADC so that information on access across its member states will be comparable.

The current figure that is widely quoted in Tanzania is that national access to electricity is 14 per cent of the population. This figure appears to be based on a projection forward of the access figure of 12.7% reported in the 2007 Household Budget Survey carried out by the National Bureau of Statistics.. Ideally, the access ratio should be recalculated on an annual basis. Working with households, the numerator of the ratio would be the existing households using electricity plus the numbers of households becoming main customers of TANESCO plus those using some form of off-grid electricity for the first time (via a mini-grid or a household-level supply, (such as a solar home system). The denominator of the ratio would be a projection forward of the number of households (measured or projected population growth adjusted for any measured or imputed change in average household size). A similar methodology would apply to other electricity access ratios, for example urban access, rural access, or access in different regions of Tanzania.

Electricity sector restructuring

The Electricity Act (2008) gave MEM one year in which to produce a position paper on the reform of the electricity sector. The paper was finalised by MEM in 2010 and the Cabinet Secretariat is yet to approve it for submission to Cabinet. MEM has requested that the paper be considered by Cabinet as soon as the Cabinet schedule permits and believes this will be done before end December 2011. Uncertainty on the future direction of power sector reform hampers stakeholders’ physical and financial planning processes.

Electricity action points

***1 Electricity sector planning***: while TANESCO is the custodian of the optimisation tools needed to derive a least-cost generation and transmission development sequence that meets forecast power and energy requirements, the process of each year updating the Power Sector Master Plan will in future be undertaken as a collaborative effort between MEM, EWURA, REA, TPDC, Ministry of Finance, Planning Commission and TANESCO. It will also involve private sector institutions – Tanzania Chamber of Commerce, Industry and Agriculture (TCCIA), Tanzania Chamber of Minerals and Energy (TCME), Confederation of Tanzanian Industry (CTI) and the umbrella body the Tanzania Private Sector Foundation (TPSF). MEM will coordinate. The issues behind this are discussed under planning in this report, but this fundamental commitment for the electricity sector is included here for the sake of completion. *Target date for start of next update process: Immediate (PSMP update has already started).*

***2 Demand forecasts***: much more attention in future will be paid to the demand forecasts which are the drivers of the PSMP optimisation. As the EPP comes into effect, the levels of unconstrained demand will be properly estimated and projections made which combine top-down and bottom-up forecasts. This will also be a collaborative effort, with economists from the Ministry of Finance and the Planning Commission playing a prominent role. The investment sequence that is planned ideally should match real development of demand, and not lead or lag it, with the proviso that potential exports into the region provide a safety valve in the event of excess capacity. Due account will be taken of foreign customers’ needs for firm contracts with TANESCO to ensure that these supply arrangements are secure and not subject to disruption bring possible future generation shortages in Tanzania. *Target date: PSMP annual update in September 2012.*

***3 Demand side management (DSM)*:** the emergency has highlighted the crucial importance of promoting demand side management and efficiency. Current programmes which are being piloted are compact fluorescent lights (CFLs) and time of use (ToU) tariffs. A recent study of DSM[[2]](#footnote-3) identified household lighting and awareness/public education programmes as having the greatest potential, but also provided cost-benefit analyses of a number of other areas - industrial motors and variable speed drives, power factor correction, more efficient cooling devices (commercial and institutional air conditioners, household refrigerators, refrigerated beverage vending machines), plus industrial energy audits and implementation support. A further promising area deserving of investigation is solar water heating, particularly in the tourism sector. *Target date for start of DSM and energy efficiency programmes costed in the HATCH report: January 2012. Responsibility: MEM, with TANESCO and REA.*

***4 EPP***: The EPP will be monitored and fine-tuned through the up-coming two years, with special attention being paid to developments in demand, availability of gas and commissioning dates of scheduled projects. In particular, commitments to pay capacity charges on rented generation equipment which is to run on liquid fuels will be continuously reviewed and terminated at the earliest possible opportunity. *Target period: August 2011-December 2013.*

***5 Electricity tariffs***: a significant increase in tariffs will be implemented as soon as reasonably reliable supplies are available to TANESCO customers. This will be followed as soon as possible by completion of the COSS study being commissioned by EWURA, a re-assessment of the multiyear tariff application and a clear commitment to future, expeditious raising of tariffs to achieve full cost recovery. The *quid pro quo* on the TANESCO side will be evidence of significant effort being exerted to meet the Key Performance Indicators (KPIs) and other conditions EWURA may impose in its tariff orders. *Target dates, including for the main review public consultations: December 2011 and April 2012.*

***6 Electricity sector restructuring***: the Cabinet paper should have been presented and finalised in 2009. To remove uncertainty in the sector, it should be expedited and a clear statement made about the future structure of the industry. If this is to involve some restructuring, then work on the modalities will commence immediately, with MEM co-opting other parties as needed. *Target date: March 2012*.

***7 Formulate a clear national policy on subsidies to and within the electricity sub-sector*:** This was a recommendation of last year’s JESR: the huge implicit subsidies in the EPP have made a comprehensive subsidy study more urgent this year. MEM has prepared a study terms of reference (TOR) which cover the design of energy access subsidies. MEM will review the TOR and expand them to take an all-encompassing review of subsidies: covering both macro-level subsidies, such as the supply of fuel for the IPTL plant by the Government, as well as consumer-level subsidies. *Target date for MEM to procure consultants and complete the study: January and June 2012, main results to be ready in March/April, in time for the preparation of the 2013 Budget.*

***8 Rural Electrification Master Plan***: As part of rural energy master plan which covers all forms of rural energy, rural electrification master plan is needed to prioritize rural electrification investments. This is because the significant costs of rural electrification are only justified if the electricity is actually used in the newly electrified centres, and this is best assured by focusing on centres with significant potential to provide new jobs and income from the use of electricity. This in turn will ensure that electricity bills can be paid and the scheme will be viable for TANESCO. *Target date for REA to complete negotiations for funding and commence procurement of consultants: December 2011. RE Master Plan study itself to be completed within a year*.

Petroleum and Natural Gas

Upstream

During the year, a number of significant new gas fields were identified, but no oil discoveries were made. This was also a year in which existing gas fields were moved close to production, and major pipeline projects were advanced (details under EPP above).

Upstream petroleum action points

***1 Continued petroleum exploration:***  The Government and TPDC should continue to promote petroleum exploration. *Immediate*

Downstream petroleum

In the downstream petroleum sector, there were few new developments until EWURA changed the price build-up formula and oil companies removed product from the market in the first week of August 2011. The sticking points between the two sides concerned demurrage, removal of the 7.5% add-on to the ‘Indicative Price’ to get the ‘Cap Price’ and a reduction in the allowance for financing costs. An EWURA order and the threat of withdrawal of licences were necessary to force the companies to restore supplies. Further discussions with stakeholders were held and the revised formula has now been accepted and endorsed and is being regularly applied on a two weekly basis. Government has also decided that the TPDC retail subsidiary, COPEC, will play a more active role in the sector, providing competition to the private oil products distributors and providing market intelligence to policy makers from a fully engaged market participant.

Downstream petroleum action points

***1 Implement bulk national procurement of liquid fuels***: Bulk Procurement Technical Committee has been formed. Petroleum Importation Coordinator is to be in place by November 2011. Full consummation of the gains of bulk procurement are expected following commissioning of SPM (single point mooring) offloading system in April 2012;

***2 Consolidate the agreement that has been reached on the price setting methodology*:** EWURA will conduct a study on stock holding and feasibility of limiting price control to the wholesale price cap (excluding all margins). *Target date - July 2012*

**3 *Support research into alternative transport fuels*:** This should build on the work that TPDC is doing with Petrobras on ethanol. *Other fuels to be studied when funds can be secured.*

Natural Gas utilization

The significant change in gas utilisation over the year is the coming on grid of 75 MW of the old Dowans plant, now owned by Symbion. Final agreement on the pricing methodology from EWURA has allowed the Songas expansion project to move to implementation, and the Mtwara pipeline and the duplicate Song-Songo pipeline projects have been advanced in preparation and financing.

Natural gas action points

***4 Natural Gas Act:*** this is needed to clarify roles, responsibilities and accountabilities of stakeholders. MEM has submitted the Bill (draft Act) to CPD. MEM is to continue to follow up with CPD, the follow-ups being with *immediate effect*.

***5 Formulate a National Gas Strategy***: MEM will prepare a Gas Utilization Strategy and Master Plan, with participation of TPDC and agencies involved in power system planning, particularly EWURA and REA. It will be peer reviewed by colleagues from the Caribbean. *Target date for completion: July 2012.*

Renewable and Rural Energy

Progress review

The progress review considers the contributions of the different sources (solar, wind, hydropower, bio-energy, geothermal and ocean energy). In addition to local uses of renewables, on-going and planned projects for large-scale exploitation of renewable energy sources including the new the new ZARS Rukukili project, bio-energies, solar energy, and wind energy. A key development is the planned provision of large-scale power from wind energy (with 50 MW planned to come on power in 2012 - according to the Power Sector Master Plan.

* *Hydropower:* The planned large-scale hydropower generation sources are: Ruhudji (360 MW), Rumakali (22 MW), and Stieglers Gorge (2,100 MW). There has been more activity and interest in small scale and mini hydropower generation over the last year.
* *Biomass energy:* For solid fuels, there are on-going stove projects. In biogas, Tanzania Domestic Biogas Programme (TDBP) is a national programme housed at CARMARTEC in Arusha, part of the 6-nation Africa Biogas Programme. For liquid biofuels, guidelines for sustainable liquid biofuels development were launched in February 2011. These are to be followed by a biofuels policy, and a legal, and regulatory framework. There has also been private investment in biofuels (both ethanol and biodiesel).
* *Solar energy*: The Transformation of Rural Photovoltaic Market in Tanzania (Solar PV Mwanza) Project concluded in December 2010. As an exit strategy, the activities of the Project were transferred to the relevant stakeholders namely TAREA, MEM, local governments and VETA. Beyond solar PV, solar water heating and other thermal applications such as drying and cooking are also being developed, but they have been left mainly to private companies and NGOs. The solar thermal applications, although important, are seen to be given less priority by Government and DPs as compared to PV applications.
* *Wind Energy:* MEM and TANESCO are still doing assessments to determine the wind energy potential across the country. Several sites have been investigated and two potential locations are Makambako and Singida with average wind speeds of 8m/s. Investors at Singida have shown interest and 50 MW (oriented to sales to the TANESCO) should come on stream in 2012, with probably another 50 MW in 2013.
* *Geothermal Energy:* There is a high geothermal resource potential for large-scale power generation in Tanzania, with temperatures of up to 255°C (dry steam). However, there has been no significant progress in developing the resource for power generation. MEM is awaiting the results of research work.
* *Ocean Energies:* There exists a high potential for power generation from ocean energies (tidal, wave and OTEC) in Tanzania. However, not much is known on the resources and the technologies for power generation are still new and have not yet been well developed. Some academic research is underway.

Best Practice in the Development of the Subsector

One project among the many national projects that have been implemented by the Government and stakeholders has properly documented best practices that could be easily accessible and utilised see the description of the Transformation of Rural Photovoltaic Market in Tanzania (Solar PV Mwanza) Project.

Various policy documents, plans and manuals for various renewable energies exist. These include the Biomass Energy Strategy, Guidelines for Sustainable Liquid Bio Fuels Development in Tanzania, Rural Energy Master Plan (in development) and the Rural Energy Report.

Renewable energy action points:

***1 Government to invest more in promotion of renewable energy sources***: *Action: Next review of MTEF Q3 2011/12. Responsibility: MEM.*

***2 Follow up on research for development of large-scale geothermal energy*** for electricity generation and utilise existing capacity in national research and higher learning institutions. *Action: After receipt of research reports. Responsibility: MEM - Task Force on Geothermal Energy*.

***3 Scale-up of renewable energy technologies*** that have projects proved to be technically feasible and economically viable and beneficial to the society. *Action: In line with next update of MEM’s Strategic Plan Q3 2011/12. Responsibility: MEM - Assistant Commissioner, Energy Development*

***4 Follow up on implementation of large-scale wind power projects***: *Action: Immediate. Responsibility: MEM Directorate of Policy and Planning and Assistant Commissioner - Renewable Energy.*

***5 Promote demand side management through energy efficiency and energy conservation***: *Action: Implement existing proposals from 2011/12. Responsibility: MEM - Assistant Commissioner, Renewable Energy and Director of Policy and Planning*

***6 Improve availability of hydropower*** through research and scientific-based resource management. *Action: In line with review of national energy policy. Responsibility: MEM - Assistant Commissioner Energy Development and Director Policy and Planning.*

***7 Encourage large-scale growers of oil seed for biodiesel to build processing plants*** in order to promote the use of biodiesel in the country. *Action: In line with next update of Strategic Plan. Q3 2011/12 Responsibility: MEM - Assistant Commissioner, Renewable Energy and Director of policy and Planning*

***8 Support research in ocean energies:*** *In line with next update of MEM’s Strategic Plan Q3 2011/12. Responsibility: MEM - Assistant Commissioner, Energy Development*

***9 Facilitate further technical support*** to companies that are involved in the manufacture of renewable energy equipment such as small wind turbines and small water turbines. *Action: Ongoing activity. Responsibility: REA.*

***10 Rural Energy Master Plan***: This is to cover all forms of rural energy, but a primary motivation of the Plan is to prioritize rural electrification investments. There is a consensus that a *full-scale rural energy study is needed to prioritize investments properly, and also to explore the potential for renewables, including biomass and initiatives under GoTs SAGOT plan.* In line with contemporary thinking about a Master Plan, this should provide a guiding framework (strategy) rather than being a rigid implementation plan. When under pressure to implement sub-economic schemes, the RE Master Plan will be important in allowing REA to point to a well formulated basis for the promotion and approval of investments. The Rural Energy Master Plan should take into account the current EU-funded project entitled "Integrated Rural Electrification Planning" which is developing tools and methodology for REA and other stakeholders to carry out a participatory and strategic electrification planning in 4 regions (Morogoro, Lindi, Dar es Salaam and Tanga). *Target date for REA to complete negotiations for funding and commence procurement of consultants: December 2011. RE Master Plan study itself to be completed within a year*.

*11* Finalisation of the Biomass Energy Strategy(solid & gaseous). Action: Finalization of Biomass Energy Strategy (BEST) by next year.

Climate Change and CDM Issues

The Vice President’s Office (VPO) is responsible for environment matters. The Department of Environment at VPO is organized in three sections namely Pollution Control; Natural Habitat Conservation; and Environmental Assessments. The climate change portfolio, including CDM, is under the Environmental Assessments Section under a Director for the Section. VPO is preparing CDM Handbook in consultation with, among others, UNIDO, MEM, REA and TIC.

A brief summary of issues in the realm of climate change and CDM is as follows:

* *Research on Climate Change:* There exists a large pool of experts in national institutions of higher learning with expertise and experience to handle energy resources management and environment issues, including climate change. The main challenge in this regard remains that of weak interaction between government and project implementers within higher learning and research and development institutions in the country.
* *Climate Change Adaptation:* The Government through VPO and in collaboration with DPs is implementing at least five projects addressing climate change adaptation.
* *Climate Change Mitigation:* The main strategy here is to apply for CDM credits*.* So far, only 10 projects have applied for CDM and are at different stages in pipeline. No project was certified for CDM within the past one year. The only Tanzania project which was certified earlier remains that of Mtoni Dam Site in Dar es Salaam, which is methane capture/flaring project. New opportunities exist through the Programme of Activities (POA).

Climate change and CDM action points

***1 Review the existing institutional frameworks***for handling environmental issuesrelated to energy projects with a view to improve/streamline coordination of government actors in order to build synergy and avoid duplication in line with the national state of environment*. Action: In line with next update of Strategic Plan Q3 2011/12. Responsibility: MEM - Assistant Commissioner, Renewable Energy.*

***2 Liaise with the Environmental Assessments Section in the Department of Environment****,* with a view to remove bottlenecks in processing CDM applications*. Action: Immediate. Responsibility: MEM - Assistant Commissioner, Renewable Energy*

***3******The Environmental Section at MEM is committed to becoming more visible***specifically to non-government stakeholders participating in climate change matters. *Action: Energy sector communication strategy by June 2012. Responsibility: MEM - Assistant Commissioner, Renewable Energy.*

***4 National research and higher learning institutions:***Government will support and make effective use of the existing capacity in national research and higher learning institutions in addressing climate change issues, energy sector planning and projects implementation. *Action: Immediate. Responsibility: MEM - Assistant Commissioner, Energy Development and Director of Policy and Planning*

***5 Build capacity of existing energy sector personnel on climate change issues****:* This is to be done primarily through national universities*. Action: Immediate. Responsibility: MEM – Environment Unit*

Capacity Building in the Energy Sector

All institutions interviewed on their capacity building initiatives (MEM, TANESCO, REA, EWURA and TPDC) reported financial constraints in financing long-term training, except for TPDC.

Capacity building agreed actions

***1 Agreed action****:* For projects that are using new technology, the project implementers will in future be required to have a plan to allow attachments of trainers and trainees from various technical colleges and universities. The attachment will provide the young technicians with practical experience and will reduce the time and resources for training when they start working. Apart from technical training, staff should also be given the capacity to take up managerial responsibilities especially in MEM and TPDC where senior staff are attaining retiring age leaving the majority at junior levels. Another option will be to fill in the positions through contractual employment, at least temporarily, or have external resident advisors inside the institutions, particularly in MEM and TANESCO. Action will be taken on the World Bank’s ESCAP project to support capacity building.

**Table of contents**

[Preface / Acknowledgements i](#_Toc307558436)

[Executive summary ii](#_Toc307558437)

[Introduction ii](#_Toc307558438)

[Energy Sector Performance Update iii](#_Toc307558439)

[Petroleum and Natural Gas viii](#_Toc307558440)

[Renewable and Rural Energy ix](#_Toc307558441)

[Climate Change and CDM Issues xi](#_Toc307558442)

[Capacity Building in the Energy Sector xii](#_Toc307558443)

[List of tables and figures xv](#_Toc307558444)

[Abbreviations xvii](#_Toc307558445)

[Introduction 1](#_Toc307558446)

[1.1 Purpose of the Report 1](#_Toc307558447)

[1.2 Structure of the Report 1](#_Toc307558448)

[1.3 The JESR 2010/11 Process 1](#_Toc307558449)

[2 Energy Sector Performance Update 3](#_Toc307558450)

[2.1 Performance Overview 3](#_Toc307558451)

[2.2 Electricity Sub-Sector Review 4](#_Toc307558452)

[2.3 Upstream petroleum and natural gas 25](#_Toc307558453)

[2.4 Downstream petroleum 25](#_Toc307558454)

[2.5 Natural Gas 28](#_Toc307558455)

[2.6 Renewable Energy Review 29](#_Toc307558456)

[2.7 Climate Change 42](#_Toc307558457)

[2.8 Capacity Building in the Energy Sector 49](#_Toc307558458)

[3 Sector Governance 50](#_Toc307558459)

[3.1 Actors and Governance Arrangements 50](#_Toc307558460)

[3.2 Joint Energy Sector Working Group (JESWG) 54](#_Toc307558461)

[3.3 Joint Energy Sector Review Process 2011/12 56](#_Toc307558462)

[Sector Policy, Strategy and Planning 57](#_Toc307558463)

[3.4 Introduction 57](#_Toc307558464)

[3.5 The Policy, Strategy, Planning and Budgeting (PSPB) Architecture of the Energy Sector 57](#_Toc307558465)

[3.6 Sector Policy 60](#_Toc307558466)

[3.7 Sector Strategy 62](#_Toc307558467)

[3.8 Sector Plans 64](#_Toc307558468)

[3.9 Sector Planning Tools 73](#_Toc307558469)

[5 Sector Financing and Budget 74](#_Toc307558470)

[5.1 Sources of financing for the energy sector 74](#_Toc307558471)

[5.2 MEM’s Budget Review 76](#_Toc307558472)

[5.3 MEM’s Medium-Term Expenditure Framework 2011/12 to 2013/14 86](#_Toc307558473)

[5.4 Budget 2011/12 88](#_Toc307558474)

[5.5 Financing Plan for the Energy Sector – emergency and long term 90](#_Toc307558475)

[5.6 TANESCO Financial Review 91](#_Toc307558476)

[5.7 REA Financial Review 91](#_Toc307558477)

[5.8 Government Loans and equity holdings in the Energy Sector 91](#_Toc307558478)

[6 Budget Implementation 93](#_Toc307558479)

[6.1 Objectives targets and activities 93](#_Toc307558480)

[6.2 Project Monitoring and Coordination (6299) 100](#_Toc307558481)

[6.3 MCA-T energy projects 103](#_Toc307558482)

[6.4 New and Renewable Energies 105](#_Toc307558483)

[6.5 TEDAP 108](#_Toc307558484)

[6.6 Support Project for Stable Power Supply 109](#_Toc307558485)

[6.7 Emergency Power Plants 112](#_Toc307558486)

[6.8 Natural Gas Dev. Songo Songo & Mnazi Bay 116](#_Toc307558487)

[6.9 Electricity V 118](#_Toc307558488)

[6.10 Rural energy projects funded by Sida 119](#_Toc307558489)

[6.11 Oysterbay Substation 123](#_Toc307558490)

[6.12 Procurement Processes 124](#_Toc307558491)

[6.13 Incorporating DP financed projects in MEM’s Planning, Budgeting and Reporting Systems 124](#_Toc307558492)

[7 Budget and Performance Monitoring 125](#_Toc307558493)

[8 Accounting 126](#_Toc307558494)

[9 Reporting and Audit 128](#_Toc307558495)

[9.1 Reporting 128](#_Toc307558496)

[9.2 Audit 128](#_Toc307558497)

[References / Bibliography 134](#_Toc307558498)

[Terms of reference 139](#_Toc307558499)

[List of stakeholders interviewed 149](#_Toc307558500)

[JESR 2010 recommendations for enhancing effectiveness of JESWG 151](#_Toc307558501)

[MEM Report on JESR 2009/10 recommendations 155](#_Toc307558502)

[JESR 2010/11 Stakeholders’ Workshop Proceedings 158](#_Toc307558503)

[Workshop Content 158](#_Toc307558504)

[Renewable Energy Group 158](#_Toc307558505)

[Electricity Group 161](#_Toc307558506)

[Petroleum and Gas group 166](#_Toc307558507)

List of tables and figures

[Table 2.1 Existing Generation and Import Capacity 6](#_Toc307556812)

[Table 2.2 Costs of electricity from different plants (USc/kWh) 8](#_Toc307556813)

[Table 2.3 TANESCO 2010 tariff application and EWURA award 16](#_Toc307556814)

[Table 2.4 Revenue requirements in the 2007 and 2011 tariff awards 17](#_Toc307556815)

[Table 2.5 Proportions of cost categories in the 2007 and 2011 tariff awards 17](#_Toc307556816)

[Table 2.6 Actions Taken in Addressing Issues Raised in JESR 2010 30](#_Toc307556817)

[Table 2.7 Grants awarded by the Rural Energy Fund in 2010/11 31](#_Toc307556818)

[Table 2.8 SPPAs signed by TANESCO 32](#_Toc307556819)

[Table 2.9 SPP Developer Applications submitted to TANESCO 32](#_Toc307556820)

[Table 2.10 CDM Projects Operational and in Pipeline (November 2010) 46](#_Toc307556821)

[Table 5.1 Actual recurrent, development and total expenditure as a proportion of the budget estimates 2006-07 – 2010/11 80](#_Toc307556822)

[Table 5.2 MEM’s Estimates, Approved and Actual Expenditure for FY2010/11 82](#_Toc307556823)

[Table 5.3 Development Expenditure Reallocations FY2010/11 83](#_Toc307556824)

[Table 5.4 Actual and Approved Expenditure for Development Budget FY2010/11 85](#_Toc307556825)

[Table 6.1 Energy Sector Objectives 2009/10 -2011/12 94](#_Toc307556826)

[Table 6.2 Linking Target Description to Codes, Project Numbers and Approved and Actual Budget in FY2010/11 96](#_Toc307556827)

[Table 6.3 Project Monitoring and Coordination: Breakdown of Actual Expenditure FY2009/10 100](#_Toc307556828)

[Table 6.4 MCC projects: Breakdown of Actual Expenditure FY2010/11 104](#_Toc307556829)

[Table 6.5 New and Renewable Energies: Breakdown of Actual Expenditure FY2009/10 106](#_Toc307556830)

[Table 6.6 Approved Budgets for 3111 Support to Stable Power Supply 2009/10 and 2010/11 111](#_Toc307556831)

[Table 6.7 Support to Stable Power Supply: Breakdown of Approved Expenditure FY2010/11 118](#_Toc307556832)

[Table 6.8 Amounts released vs actual expenditure for 3113 and 3146 for FY2010/11 122](#_Toc307556833)

[Table 6.9 Oyesterbay Substation: Breakdown of Approved and Actual Expenditure FY2010/11 123](#_Toc307556834)

[Table 9.1 Summary of Audit Opinions on Energy Sector Public Bodies 130](#_Toc307556835)

[Figure 2.1 Emergency Power Plan and Short-term Generation Expansion 13](#_Toc307556836)

[Figure 2.2 Comparative electricity tariffs 19](#_Toc307556837)

[Figure 2.3 Electricity access consequent on 110,000 domestic connections per annum 21](#_Toc307556838)

[Figure 2.4 Electricity access consequent on 287,500 domestic connections per annum 22](#_Toc307556839)

[Figure 2.5 Solar PV Capacity Imported 2005-2009 37](#_Toc307556840)

[Figure 3.1 REA/REF Governance Arrangements 53](#_Toc307556841)

[Figure 5.1 Recurrent Budget from FY2005/06 to FY2010/11 79](#_Toc307556842)

[Figure 5.2 MEM Development Budget from FY2006/07 to FY2011/12 by funding source 80](#_Toc307556843)

[Figure 5.3 Actual recurrent and development expenditures as a proportion of the approved budget 2006/07 -2010/11 81](#_Toc307556844)

[Figure 5.4 Proportion of Development Foreign and Local and Recurrent Expenditure 82](#_Toc307556845)

[Figure 5.5 MEM’s Development Budget from FY2006/07 to FY2013/14 86](#_Toc307556846)

[Figure 5.6 Forecasted expenditure for FY2011/12 to FY2013/14 of largest projects 88](#_Toc307556847)

[Figure 6.1 Project Monitoring and Coordination: Expenditure Estimates, Approved Estimates, Released Funds and Actual Estimates from FY2006/07 to FY2011/12 101](#_Toc307556848)

[Figure 6.2 Development Projects in the energy sector funded by MCC from 2008/09 to 2011/12 104](#_Toc307556849)

[Figure 6.3 New and Renewable Energies: Expenditure Estimates, Approved Estimates, Released Funds and Actual Estimates from FY2006/07 to FY2011/12 106](#_Toc307556850)

[Figure 6.4 TEDAP: Expenditure Estimates, Approved Estimates, Released Funds and Actual Estimates from FY2007/08 to FY2011/12 109](#_Toc307556851)

[Figure 6.5 Support Project for Stable Power Supply: Expenditure Estimates, Approved Estimates, Released Funds and Actual Estimates from FY2009/10 to FY2011/12 110](#_Toc307556852)

[Figure 6.6 Emergency Power Plants: Expenditure Estimates, Approved Estimates, Released Funds and Actual Estimates from FY2009/10 to FY2011/12 116](#_Toc307556853)

[Figure 6.7 Natural Gas Development Songo Songo and Mnazi Bay: Expenditure Estimates, Approved Estimates, Released Funds and Actual Estimates from FY2006/07 to FY2011/12 117](#_Toc307556854)

[Figure 6.8 Electricity V: Expenditure Estimates, Approved Estimates, Released Funds and Actual Estimates from FY2008/09 to FY2011/12 119](#_Toc307556855)

[Figure 6.9 Development Projects in MEM funded by Sweden from 2006/07 to 2010/11 (forex component) 120](#_Toc307556856)

[Figure 6.10 REA and REF: Expenditure Estimates, Approved Estimates, Released Funds and Actual Estimates from FY2006/07 to FY2011/12 121](#_Toc307556857)

[Figure 6.11 Capacity Development REA: Expenditure Estimates, Approved Estimates, Released Funds and Actual Estimates from FY2009/10 to FY2011/12 122](#_Toc307556858)

[Figure 6.12 Oysterbay Substation: Expenditure Estimates, Approved Estimates, Released Funds and Actual Estimates from FY2006/07 to FY2011/12 123](#_Toc307556859)

Abbreviations

AfDB African Development Bank

ARGEO Africa Rift Geothermal

CAG Controller and Auditor General

CAMARTEC Centre for Agricultural Mechanisation and Rural Technology

CDM Clean Development Mechanism

CER Carbon Emission Reduction

CME Coordinating and Managing Entity

CO2 Carbon dioxide

CoET College of Engineering and Technology

CoNAS Colleges of Natural and Applied Science

COSS Cost of Service Study

COSTECH Tanzania Commission for Science and Technology

DANIDA Danish International Development Agency

DNA Designated National Authority

DP Development Partner

EAPP East African Power Pool

EASE Enabling Access to Sustainable Energy

EDP Energy Development Partner

EIA Environmental Impact Assessment

ELCT Evangelical Lutheran Church in Tanzania

EMA Environment Management Act

EPP Emergency Power Plan

ES Executive Secretary

ESCAP Energy Sector Capacity Assistance Project

EWURA Energy and Water Utilities Regulatory Authority

FCC Fair Competition Commission

FDI Foreign Direct Investment

GDP Gross Domestic Product

GEF Global Environmental Facility

GHG Greenhouse Gas

GS Gold Standard

GST Geological Survey of Tanzania

GTZ Gesellschaft fuer technische Zusammenarbeit

HFO Heavy Fuel Oil

IMF International Monetary Fund

IPCC International Panel on Climate Change

IPP Independent Power Producer

IRA Institute of Resources Assessment

JESR Joint Energy Sector Review

JESWG Joint Energy Sector Working Group

JI Joint Implementation

KAKUTE Kampuni ya Kusambaza Teknolojia Tanzania   
 (Tanzania Technology Dissemination Company)

KenGen Elecricity Generation Compant in Kenya

KIDT Industrial Development Trust

KPLC Kenya Power and Light Corporation

Ksh Kenya Shillings

kV kilo Volt

kW kilo Watt

kWh kilo Watt hour

LRMC Long Run Marginal Cost

MCA-T Millennium Challenge Account - Tanzania

MCC Millennium Challenge Corporation

MEM Ministry of Energy and Minerals

MES Mkonge Energy Systems

MIGESADO Miradi ya Gesi ya Samadi Dodoma (Dodoma Biogas Projects)

MoF Ministry of Finance and Economic Affairs

mmscf/d million standard cubic feet per day

MTEF Medium Term Expenditure Framework

MTP Medium Term Plan

MW Mega Watt

NAG National Advisory Group

NAMAS Nationally Appraised Mitigation Actions

NAPA National Adaptation Progromme of Action

NDP National Development Plan

NEMC National Environment Management Council

NSGRP National Strategy for Growth and Reduction of Poverty

NGO Non Governmental Organisation

NORAD Norwegian Agency for Development

NSE Nairobi Stock Exchange

OC Other Charges

OTEC Ocean Thermal Energy Conversion

PFM Public Financial Management

POA Programme of Activities

PPP Public Private Partnership

PREA Promoting Renewable Energy in Africa

PRET Promoting Renewable Energy in Tanzania

PROBEC Programme for Biomass Energy Conservation/ Programme for Basic Energy Conservation

PSMP Power Sector Master Plan

PSPB Policy, Strategy, Planning and Budgeting

PV Photovoltaic

R&D Research and Development

REA Rural Energy Agency

REF Rural Energy Fund

REFIT Renewable Energy Feed-in Tariff

RGGI Regional Greenhouse Gas Initiative

SACCOS Savings and Credit Cooperative Society

SADC Southern Africa Development Conference

SAPP Southern African Power Pool

SEA Strategic Environmental Assessment

SEP Special Energy Project

Sida Swedish International Development Agency

SIDO Small Industries Development Organisation

SP Strategic Plan

SPPA Standardised Power Purchase Agreement

SSMP Sustainable Solar Market Packages

SUA Sokoine University of Agriculture

TANESCO Tanzania Electric Supply Company Limited

TAREA Tanzania Renewable Energy Association

TaTEDO Tanzania Traditional Energy and Environment Organisation

TBL Tanzania Breweries Limited

TBS Tanzania Bureau of Standards

TDBP Tanzania Domestic Biogas Programme

TEDAP Tanzania Energy Development and Access Expansion Project

TMA Tanzania Meteorological Agency

ToR Terms of Reference

TPC Tanganyika Planting Company

TPDC Tanzania Petroleum Development Corporation

TRA Tanzania Revenue Authority

TWG Technical Working Group

TZS Tanzanian Shillings

UDSM University of Dar es Salaam

UN United Nations

UNDP United Nations Development Programme

UNEP United Nations Environment Programme

UNFCCC United Nations Framework Convention on Climate Change

UNIDO United Nations Industrial Development Organisation

URT United Republic of Tanzania

USc United States (of America) cents

USD United States (of America) Dollars

VCS Voluntary Carbon Standard

VETA Vocational Education and Training Authority

VPO Vice President’s Office

WB World Bank

WTP Willingness to Pay

Introduction

# Purpose of the Report

The purpose of this report is to provide the Joint Energy Sector Working Group (JESWG) with a review of the performance of the Energy Sector in the period 2010/11 as part of the Joint Energy Sector Review (JESR). The Report is based on the consultants’ review of literature and documentation and on interviews conducted with stakeholders.[[3]](#footnote-4) This Final Consultant’s Report incorporates comments and suggestions made by stakeholders on the consultants’ first draft report submitted in August 2011 and stakeholder recommendations made at the JESR Workshop on 22nd September.

The output of the JESR will form the basis for planning, coordination and financing of the energy sector and establish a common platform for priority setting and for performance monitoring in the energy sector.

# Structure of the Report

The report is structured in order to reflect the purpose and process of the JESR and particularly to reflect the cycle of public financial management that the JESR is reporting on.

Chapter 2 presents an overview of sector performance in 2010/11. This sets out the key achievements of the sector in the fiscal year 2010/11.

After this overview chapter, the following chapters follow the Public Financial Management (PFM) cycle. Chapter 3 starts this approach by presenting and assessing the sector governance arrangements for the PFM process that is presented in the following Chapters: 4 Sector Policy, Strategy and Planning; 5 Sector Financing and Budget; 6 Budget Implementation; 7 Budget Performance and Monitoring and Reporting; 8 Accounting and Audit and 9 Reporting and Audit.

# The JESR 2010/11 Process

The JESR is a review of the “performance” of the energy sector in a 12-month period. Up to this year the time period covered by the JESR has been vague. In previous years, its name has implied a review of performance during a calendar year. For example, the JESR 2009 covered the period January to December 2009. For the JESR 2010, the consultants sought to establish a review of the fiscal year, i.e., July 2009 – June 2010. For this year’s review, the period covered is July 2010- June 2011. The Government’s planning and budgeting systems operate on the July-June fiscal year basis.

## Stakeholder interviews

Stakeholder interviews took place in the period 9th-17th August. A list of stakeholders consulted is shown in Annex B. The stakeholder interview period began with a meeting with the JESWG Core Group on 9th August. The consultants were given guidance on the scope and contact points for interviews.

## Stakeholder JESR Workshop

The Stakeholder Workshop was held on Thursday 22nd September. The workshop reviewed and validated Sections 1-5 of this report through discussion of presentations based on those sections and working group meetings.

The main stakeholder workshop was preceded by a discussion of the Public Financial Management aspects of the review by MEM, TANESCO, REA, TPDC and DPs.

## Proceedings of the 2010/11 JESR Stakeholders’ Workshop

The proceedings of the workshop are reported in Annex

## Final JESR Report

The JESR Final Report is a document produced by MEM. This Final Consultant’s Report serves as an input to and reference for the MEM Report.

1. Energy Sector Performance Update

# Performance Overview

2010/11 has been an exceptionally difficult year for the energy sector. Failed rains, high world energy prices, legacy effects from earlier emergency responses to power supply problems, uncertainty over the electricity tariff regime and the financial position of TANESCO have presented difficulties for all stakeholders but particularly for MEM and its agencies. Media coverage of the sector has focussed on problems (as is so often the case).

There have, however, been positive developments, not least in the field of renewables. The sub-sector performance reviews given below attempt to present a balanced picture.

During the implementation of the Plan and Budget for 2010/11 the energy sector recorded the following achievements:

* Electrification of the District Headquarters of Longido, Singida rural (Ihanja) and Rufiji (which covers Bungu, Somanga, Muhoro, Nyamwage, Nangurukuru, Lindwiti, Kibiti, Utete, Tingi, Nja Nne areas and the Mchukwi Hospital);
* Completion of installation of generators at Kibondo and Kasulu;
* Commissioning of a 7.5 MW gas fired plant at Somanga Fungu
* Commissioning of 6.25 MW generators in Kigoma;
* Completion of the 132kV Ubungu-Makumbusho power line;
* Completion of Way Leave electrification project in Kiwa;
* Installation of smart meters to large power users which have reduced power losses from 26 per cent to 21 per cent and improved revenue collection;
* Launched guidelines for development of the biofuels industry;
* Developed solar standards for Tanzania; and
* Discovery of natural in two deep sea blocks (1 [Pweza-1 and Chew-1 Wells] and 4 [Chaza-1 Well])
* Increase of number of industries/institutions using natural gas from 33 to 37 (Bautech II, MMI Steel II, Iron & Steel and Keko Prison in Dar es Salaam;

There were a number of constraints and challenges. These included:

* Energy crisis in the World (energy crisis in Japan and high oil prices in the world market)
* Increased demand for power;
* Lack of funds to finance new projects;
* Inadequate and untimely flow of funds for some programmes and projects;
* Impediments to revenue collection due to inadequate allocation of funds in the first and second quarters;
* Generation capacity and reliability to meet customers’ growing demand;
* Slow pace of rural electrification projects due to insufficient funds released;
* Insufficient supply of construction materials, particularly poles hamper smooth implementation of some projects;
* Connection fees for service lines limit many rural communities’ access to electricity in areas where electrification had been done; and
* Challenge to achieve 30 per cent electricity access by 2015,

# Electricity Sub-Sector Review

The performance overview for the electricity sector in the JESR report for 2010 noted that there had been a marked improvement in 2009/10 in the electricity sector relative to the crisis conditions prevailing as a result of the 2006/07 drought. Unfortunately, a recurrence of severe drought conditions in 2010/11, which effectively removed around 420 MW from a system of around 900 MW, proved that the electricity supply system remains extremely vulnerable to variations in rainfall. Once again, the country has had to endure a programme of load shedding coupled with unplanned outages. With suppressed sales, TANESCO’s revenues have declined while its costs have increased, thereby exacerbating its already parlous financial state. At the level of the national economy, the electricity shortfalls are imposing considerable costs.

The IMF downgraded its GDP forecast for 2011 from over 7% to 6% due to low levels of rainfall, high oil prices and projected power shortages resulting from gas supply problems, low water levels in hydropower facilities and lack of immediate prospects for augmenting economic supplies. The Confederation of Tanzania Industry (CTI) in July 2011 published a detailed assessment of unreliable electricity supplies on manufacturing industry[[4]](#footnote-5). The paper highlights the adverse effects of poor service quality, power cuts without notice, unplanned power stoppages and interruptions, voltage fluctuations, phase failures and unbalanced voltages on electrical equipment, production costs and competitiveness. It estimates the immediate impact to be an income loss of TZS 31 billion and an employment loss of over 7,300 jobs per annum. Even more serious is the unquantifiable effect of reduced investment in the manufacturing sector on economic growth and job creation.

The realisation of longer-term economic growth potential of the economy as a whole is dependent on future power supplies being secured. The Government’s approach to the 2011 crisis is much more comprehensive than in 2006/07. Tanzania’s extensive gas resources, with promising signs of further discoveries being made, gives the country a significant comparative advantage in electricity generation within the region. The Government has recognised that the main element in solving the underlying problems in the electricity sector is to move rapidly to expand gas-fired electricity generation, both for domestic use and potentially also for export into the East African Power Pool (EAPP) and to southern neighbours in the Southern African Power Pool (SAPP). Tanzania is playing an active role in furthering the EAPP objectives of strengthening both the interconnectors and the regulatory framework for regional electricity trade. It is also a regular participant in SAPP meetings, but will remain a ‘non-operating’ member until the interconnector with Zambia has been completed.

To get out of the immediate crisis, a short term Emergency Power Plan (EPP) was presented to Parliament and approved on 13 August 2011. The EPP necessarily involves procurement of very expensive power generated using liquid fuels, but at the same time the provision of gas infrastructure sufficient for gas-fired generation capacity to play its rightful role in the energy mix is to be accelerated. Investment is also taking place in wind and coal-fired generation. Current plans involve the installation of 1,230 MW of new capacity by 2015, by which time unconstrained demand is expected to have grown significantly due in part to several new mining projects. The proportion of hydropower in the installed generation capacity is programmed to decline from 63% in 2010 to 23% in 2015.

## Policy and electricity sub-sector performance update

There were no significant policy changes affecting overall sector performance. During the period under review, the sector registered the following specific achievements:

1. Expansion of generation capacity by supplying fuel to bring 20 MW of the IPTL plant on line, and contracting 80 MW of gas-fired generation from Symbion power, which has purchased the 112.5 MW Dowans plant.[[5]](#footnote-6)
2. Reduction in losses from 24% to 20%, mainly through measures taken to make it more difficult for customers to steal electricity (i.e., reduction in so-called non-technical losses.)
3. Increase in connections of 65,925 during 2010, bringing the total number of TANESCO customers to 868,953 by the end of that year.
4. Commissioning of 220 kV power lines Shinyanga-Buzwagi and Musoma-Mugumu.
5. In rural electrification, REA contracted 41 turnkey grid extension projects which are now under implementation and which will initially benefit 20,000 new customers;
6. Off-grid rural electrification achievements are reported in the renewables section of this report.

## Generation capacity

As shown in Table 2.1, as of mid 2011, installed generation capacity, including off-grid and imports, was 1,075 MW. The “available capacity” hydropower figures in the table assume normal hydrological conditions. If these had prevailed in 2010/11, the capacity on the grid connected network of 963 MW would have been the same as the projected peak demand in 2011, implying zero reserve margin. Ideally, the reserve margin should be at least the size of the largest unit on the system (200 MW or about 20% of current available capacity). In the event, the hydropower capacity was decimated by severe drought, so that the effective capacity fell far short of maximum demand plus a reserve margin. This is discussed in detail in the next section.

* + - * 1. Existing Generation and Import Capacity

| **No.** | **Station** | **Type** | **Installed Capacity** | **Normally Available Capacity** | **Firm Energy Capability** | **Average Energy Capability** | **Comments** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| A. | National Grid |  | MW | MW | GWh | GWh |  |
|  | Kidatu | Hydro | 204 | 200 | 601 | 1,111 | Hydrological limitation |
|  | Kihansi | Hydro | 180 | 180 | 180 | 492 | Hydrological limitation |
|  | Mtera | Hydro | 80 | 80 | 195 | 429 | Hydrological limitation |
|  | New Pangani Falls | Hydro | 68 | 66 | 201 | 341 | Hydrological limitation |
|  | Hale | Hydro | 21 | 10.5 | 55 | 93 | Hydrological limitation & 1 unit is out |
|  | Nyumba ya Mungu | Hydro | 8 | 4 | 20 | 36 | Hydrological limitation |
|  | Uwemba | Hydro | 1 | 1 |  |  |  |
|  |  |  |  |  |  |  |  |
|  | Total Hydro |  | 562 | 541.5 | 1,252 | 2,502 |  |
|  |  |  |  |  |  |  |  |
|  | Songas |  | 202 | 185 | 1,212 | 1,232 | Availability >95% |
|  | TANESCO Ubungo/Wartsila |  | 102 | 100 | 655 | 666 | Gas supply defines availability |
|  | Tegeta |  | 45 | 41 | 289 | 294 |
|  | Tegeta IPTL |  | 20 | 20 | 140 | 145 |  |
|  | Symbion |  | 75 | 75 | 525 | 535 |  |
|  |  |  |  |  |  |  |  |
|  | Total Thermal |  | 444 | 421 | 2,821 | 2,872 |  |
|  |  |  |  |  |  |  |  |
|  | Total on grid |  | 1,006 | 962.5 | 4,073 | 5,374 |  |
|  |  |  |  |  |  |  |  |
|  | *Others not available in July 2011:* |  |  |  |  |  |  |
|  | Tegeta IPTL |  | 83 | 80 |  |  |  |
|  | Symbion |  | 37 | 37 |  |  | Ex-Dowans |
|  |  |  |  |  |  |  |  |
| B | Off Grid |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  | TANESCO Diesel Plants |  | 36 | 16 |  |  | Plants are old, supply shrinking |
|  | Mnazi Bay Natural Gas |  | 12 | 4 |  |  | Artumas IPP, soon to be increased to 18 MW |
|  | Coal |  | 6 | 1 |  |  |  |
|  |  |  |  |  |  |  |  |
|  | Total off-grid |  | 54 | 21 |  |  |  |
|  |  |  |  |  |  |  |  |
| C | Imports |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  | Sumbawanga (Zambia) |  | 5 | 3.5 |  |  |  |
|  | Kagera (Uganda) |  | 8 | 3.7 |  |  |  |
|  | Namanga (Kenya) |  | 1.8 | 0.8 |  |  |  |
|  |  |  |  |  |  |  |  |
|  | Import capacity |  | 15 | 8 |  |  |  |
|  |  |  |  |  |  |  |  |
|  | Grand Total |  | 1,075 | 991.5 |  |  |  |

Source: TANESCO documents and Vernstrom (2010)

## Emergency Power Plan (EPP)

Last year’s JESR noted that in addition to the lack of reserve margin, generation remains vulnerable to drought as hydro constitutes a large proportion of normally available capacity (63% before and 56% after the addition of 20 MW IPTL and 75 MW Symbion during 2011). The Tanzania Meteorological Agency reported for the March-May rainfall season considerable variation over the country, with some areas (Lake Victoria and Northern Coast) having rainfall well above long-term averages, while some stations in highland catchment areas registered only 50% of normal levels. Low inflows to the relevant river systems (Rufiji and Pangani), coupled with past water management resulted in approximately 420 MW of hydro capacity becoming unavailable during the course of the year. Actual capacity was therefore well below the ‘normally available capacity’ total in the table.

The extent of power outages and load shedding (planned and unplanned) led to Parliament insisting on an Emergency Power Plan (EPP) being formulated to restore reasonable supplies of power by the end of the year[[6]](#footnote-7). The EPP was prepared over a 3 week period by a Technical Working Group (TWG) led by MEM. Members of this group included TANESCO, EWURA, TPDC, the Vice President’s Office and the Ministry of Industry and Trade.

The EPP was presented to Cabinet and then to Parliament within the 3 week deadline. The EPP was accepted on 13 August 2011, and this unlocked Parliament’s willingness to pass MEM’s budget for 2011/12. The significant costs of the EPP were not included in the budget of MEM, but will be provided for via the Ministry of Finance’s budget.

The Parliamentary Committee for Energy and Minerals had challenged MEM to come up with an emergency plan for 300 MW. In fact, the increase in capacity envisaged under the EPP is considerably larger than this, totalling 572 MW. This is made up as follows:

* Provide fuel (HFO) for the remaining 80 MW of the IPTL facility.
* Contract the remaining 37 MW from the Dowans plant purchased by Symbion, but due to non-availability of gas, this capacity will have to be operated using JetA1.
* Contract a further 205 MW from Symbion, which will bring the dual fuel plants into the country from abroad (45 MW + 110 MW + 50 MW). These generators will run on JetA1.
* Contract 100 MW of diesel generation capacity from Aggreko (2 x 50 MW).
* Install 150 MW of dual fuel plant (3 x 50 MW), the capital costs being funded by NSSF, the plant to be operated by TANESCO. Liquid fuels will have to be used during the emergency period.

The EPP necessarily involves extensive use of contracted thermal capacity, with liquid fuels as the energy source. The costs of this are extremely high, because capacity (that is fixed monthly charges for available capacity, whatever extent the capacity is used for generating energy during the month) charges have to be paid in addition to fuel costs, which are about 9 times higher than those associated with gas generation. In the EPP, fuel and all-in costs are given. These are summarised in Table 2.2.

* + - * 1. Costs of electricity from different plants (USc/kWh)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Plant | Fuel | Non-fuel cost | Fuel cost | Total cost |
| Songas | Gas | 2.13 | 5.51 | 6.64 |
| Symbion | Gas | 4.99 | 2.50 | 7.49 |
| IPTL | HFO | 4.10 | 25.94 | 30.04 |
| Symbion | Jet A1 | 5.50 | 31.88 | 37.38 |
| Aggreko | Diesel | 5.77 | 37.01 | 42.78 |

Source: EPP document.

In addition, load flow studies showed that some of the emergency plant would have to be located outside of the Dar-es-Salaam area. For example, the 100 MW Symbion plant is to be installed in Dodoma and the 50 MW plant in Arusha. Moving both the equipment and the fuel up-country clearly adds considerably to already high cost structure.

The first of the additional units is to be installed in September, with others to follow in October and November. It is intended that the full 572 MW of emergency capacity will be available on the system by December.

The EPP notes that the cost of energy (energy charge) and oil plants (fuel charge) of the rented equipment in the period from August 2011 to December, 2012, will reach TZS 1.241 trillion after the Government provides a tax deduction on imported liquid fuels. Of this total, the cost from August to December 2011 is estimated to be TZS 523 billion. This is to be financed in part through tariff revenues from TANESCO (TZS 115 billion) with the remainder being a government-guaranteed loan of TZS 408 billion from local commercial banks. It was noted at the Stakeholder Workshop that any government contribution to the EPP constitutes a subsidy from the Tanzanian population as a whole, in part to the national economy, but directly to the 14 per cent of the population who have access to electricity.

## Short-Term Gas Supply and Power Generation Plans

The EPP gives details of previously scheduled generation projects due to come on-stream during 2012. These are:

Generation projects already well into implementation

* Ubungo (Jacobsen) 250 MW gas turbines - 75 MW to be commissioned in March 2012, 175 MW to be available from June and the full 250 MW from July 2012. It should be noted that the project involving Jacobsen has hitherto been identified as being a 100 MW plant; the much higher figure of 250 MW and the phasing are laid out in the EPP. Concerns about the fuel supply for the larger capacity are raised in the next section.
* Mwanza (SEMCO) 60 MW HFO plant, to be available from June 2012

Details of other projects which are expected to be commissioned between 2012 and 2015 have been supplied by MEM and TANESCO. In view of the significant differences in the fuel costs of gas-fired and liquid fuel-fired generation, MEM and TPDC have accelerated gas provision projects, which should make possible the rapid expansion of gas electricity generation in the medium term.

Gas supply projects

* Song-Songo – the long planned Songas expansion project, increasing the availability of Song-Songo gas from 105 mmscf/d to 140 mmscf/d, is now due for completion in the first quarter of 2013. MEM is investigating “limited notice to proceed” measures to accelerate completion of this project using GoT resources.
* Songo-Songo – the Songas expansion project will upgrade processing plant capacity to 210 mmscf/d, but only 140 mmscf/d will be used in the first instance due to pipeline constraints. MEM and TPDC are promoting a project to install a pipeline to take up the extra processing capacity. This is due to be completed in 2013, adding 210 mmscf/d of capacity to be configured as 20 inch pipeline from Songo Songo to Somanga Fungu. This will connect the new pipeline from Mtwara, with a 30 inch diameter pipeline continuing from Somanga Fungu to Dar es Salaam.
* Mtwara – MEM and TPDC are also promoting the construction of a major pipeline from Mtwara through Dar-es-Salaam to Tanga. This will be 24-inch diameter gas pipeline with a capacity of 130 mmscf/d (as per initial feasibility study) as far as Somanga Fungu, and 30-inch diameter thereafter to Dar-es-Salaam, raising the capacity to a level in excess of the initial intended delivery volume of 200 mmscf/d. This project is being funded by Government, through a guarantee for a commercial loan, (15%) and a loan from the Exim Bank of China (85%). It is due to be completed by 2013.

Concerns have been expressed about the availability of gas for these big expansions in pipeline capacity. In this regard, TPDC asserts that Songo Songo main gas field will be able to provide more than 140 mmscf/d over the remaining lifetime of the infrastructure. A Reserve Certification Report by Mac Daniel of 31st December 2010 provided the following estimates: remaining proved recoverable reserves of 696.7 bcf; proved and probable of 858 bcf and proved + probable + possible reserves of 1,064.8 bcf.

The new Songo Songo to Somanga Fungu gas pipeline was initially planned to be a 20-inch diameter offshore pipeline with a design capacity of 210 mmscf/d. After discussions between TPDC and the prospective EPC contractor (China Petroleum Technology and Development Corporation –CPTDC), some changes in the pipeline design capacity are expected. Apart from the pipeline, the project also envisages putting a gas processing plant at Songo Songo. The intention is for the gas processing plant and pipeline to be constructed by CPTDC to be able to connect all gas resources in the area. Two CPTDC technical teams were in Tanzania recently and the gas processing and pipeline capacities are expected to be known by the end of September 2011.

The gas pipeline from Mnazi Bay to Somanga Fungu was planned to be a 24-inch diameter gas pipeline with a capacity of 130 mmscf/d (as per initial feasibility study). The Somanga to Dar gas pipeline was planned to be a 30-inch diameter pipeline transporting gas from Songo Songo and Mnazi Bay (Mtwara). After recent discussions between TPDC and the CPTDC technical teams, the pipeline size and capacity are being reviewed and firm proposals will be made by end of September 2011.

The intention is for 130 mmscf/d from Mnazi Bay gas to be available for supply to Dar-es-Salaam. A few more wells need to be drilled and connected to a new gas processing plant (the gas processing plant will be part of the CPTDC project). It is TPDC’s understanding that the 300 MW project will be supplied from the existing gas pipeline. The gas reserves at Mnazi Bay are higher than at Songo Songo.

The cost of the pipeline from Mtwara to Somanga/Songo Songo to Dar was initially estimated to be USD 701 million (excluding the gas processing plants and upstream infrastructure (as per the initial feasibility study). Revised costs after discussions with CPTDC will be made at the end of September 2011.

Power Generation Projects

* Singida wind project – probably 50 MW by 2013 and perhaps another 50 MW by 2014; by the nature of wind, this is not firm capacity and has not been included in the available capacity totals.[[7]](#footnote-8)
* Kinyerezi combined cycle gas turbine, Mtwara gas (via pipeline) – 240 MW by 2014.
* Somanga Fungu, gas turbine, pipeline gas or possible own supply from Songo-Songo area – 230 MW by 2014 (IPP).
* Kiwara coal project – 200 MW by 2014.
* Mtwara combined cycle gas turbine – 300 MW by 2014.

## Critique of the EPP and Short-term Generation Plan

The most striking aspect of the EPP presented to Parliament is not what it contained, but what it left out. The fundamental and essential starting point for any power planning exercise is – or should be – a careful, up-to-the-minute estimate of the demand that needs to be met. The demand forecasts are the drivers of the planning process – they determine the projects that are needed to meet the demand (ideally the least cost sequence of such projects) and the consequent costs. Getting the demand forecast wrong can be very costly in economic terms, whether this be due to underestimate of demand (hence under-investment leading to outages and power rationing) or overestimates (leading to excessive investment in the electricity sector, absorbing an inappropriately high proportion of national investment resources and imposing opportunity costs elsewhere in the economy).

The EPP gave no figure for the current level of consumption, or for unsuppressed demand. A growth figure of 12 per cent per annum was given, and mention made of the need to the demand of an increased number of customers who are connected from the current 14.5 per cent to 30 per cent by 2015, but no figure was given for the base on which to apply these growth rates. The realism of doubling access to electricity by 2015 would also need to be questioned. As documented in the JESR 2010 report, against a backdrop of population growth at 1.9 per cent per annum increasing connections by the historically unprecedented target number of 100,000 per annum would result in only 21 per cent of the population being connected by 2020.

Estimates of unsuppressed demand were obtained from TANESCO, the anchor value being 1,884 MW in 2015. With 2011 unsuppressed demand estimated at 955 MW, this implies a phenomenally high assumed annual average growth rate of 18.5 per cent per annum. The reason given by TANESCO for a big rise in demand in 2015 is that a number of new mining operations will require power in that year.

These demand projections, which have not been investigated further, have been adopted for the analysis that follows. It should be noted, however, that these estimates are most likely to be significantly on the high side. The out-turn may well be lower rates of growth of demand. Assuming high rates will bias the investment plans towards over- rather than under-investment.

In evaluating the EPP, two other factors need to be brought into consideration:

* The imminent coming on stream of **planned investment projects** (310 MW is programmed in 2012 and 970 MW in 2014, plus wind power from 2013). The overlap of the emergency provisions with the planned investments makes it very likely that there will be considerable expensive capacity standing idle, even if there is recurrence of drought.
* The existence of probably ***in excess of 300 MW of dispersed privately held generation capacity*** – this assumes that on average 1 in 3 MW of demand is covered by the ubiquitous stand-by generators owned by private companies and households in Tanzania. This is a national investment, which in times of emergency should be taken fully into account in the planning process. As the capital costs have already been paid, the marginal costs are the fuel and maintenance costs. High as these are, they are likely to be less than the costs of the hired-in large generators, on which capacity charges have to be paid.

In regard to the second factor it is worth noting that a national power utility is far more efficient in supplying customers than dispersed self-supply via stand-by generators. One important reason for this is diversity - the maximum demand of a group of consumers is less than the sum of their individual maximum demands. The self-supply capacity has to serve each individual maximum demand - taking account of diversity, a national 300 MW power station would be able to serve many more customers. Economies of scale, which characterize the electricity supply industry, further multiply up the benefit of a national power station. Due to lower investment costs per kW, if the capital investment made in 300 MW of dispersed capacity in very small plants had been put into one big, national power station, this would have had a capacity of the order of 500 MW[[8]](#footnote-9). Operation and maintenance costs per kWh are also lower for a large power station.  Diversity and economies of scale make it vitally important to have a national electricity industry that serves the nation’s needs. The prevalence of standby generators in Tanzania is testimony to prolonged public policy failure.

Figure 2.1 puts together the assumptions about demand, together with a 20 per cent reserve requirement, with the above information about MEM’s EPP and non-emergency investment programme. Several points stand out from this graphical presentation:

* The devastating drought experienced in 2011, which has decimated actual capacity on the grid, is partially but not wholly offset by private entities deploying their standby generators. The adverse effect of electricity shortages on the national economy is thereby mitigated, with the (high) costs of this power being absorbed by the private sector rather than by TANESCO or the Government.
* In 2012, the 572 MW of EPP capacity, plus the additional planned investments which are scheduled to come onto the grid from mid-year, is considerably in excess of demand plus the reserve margin. Doing without 100 MW of Aggreko, 205 MW of Symbion and 150 MW of NSSF would potentially be a problem in the early months of 2012 if the rains failed once again, but a continued squeeze on electricity consumers (including forcing them to use standby generators) would have tied the country over until the Ubungo and Mwanza capacity became available.
* As it is, all of the gas that is available in 2012 will be taken up by existing gas generators (Songas 185 MW, Ubungo Wartsilla 100 MW, Tageta 41 MW, Symbion 75 MW). The new Ubungo (Jacobsen) capacity may well stand idle while rented equipment, on which capacity charges have already been committed, is used instead.
* The commitments to Aggreko and Symbion are for one year, except for the 205 MW of capacity where a two-year commitment has been made. The graph assumes that as much of the rented capacity that can possibly be shed is terminated at the end of 2012; so, in 2013, capacity is reduced by 112 MW (Symbion) and 100 MW (Aggreko).

Emergency Power Plan and Short-term Generation Expansion



* Note that the Symbion capacity, which can be shed after 1 year, is predominantly (75 MW) gas-fired and therefore relatively low cost (2.5 c/kWh gas cost, 7.7 c/kWh all in cost). What cannot be shed until the end of 2014 is the 205 MW of additional capacity. Although the units to be brought in to make up the 205 MW are to be dual fuel, in practice the 100 MW installed in Dodoma and 50 MW in Arusha will have to be run on expensive Jet A1 for the duration of the contract period (32 c/kWh fuel cost and 37.4 c/kWh all in cost). Although the graph assumes that the 112 MW is removed from the system, it may make more sense to retain the 112 MW (all of which by end Q1 2013 could be run on gas), while simply paying the capacity charges on the 205 MW without ever running these units.
* In 2014, it is envisaged that 970 MW of capacity will be added to the system as a result of the commissioning of four major projects – Kinyerezi CCGT 240 MW, Somanga Fungu OCGT(?) 230 MW, Kiwira coal 200 MW and Mtwara CCGT 300 MW. With such a massive single year addition, it would certainly be necessary to discontinue the remaining rental equipment (that is 205 MW Symbion).
* The ambitious power generation investments in gas and coal will reduce the proportion of hydro in the nominally available capacity from 63% in 2010 to 23% in 2015. The graphs include illustration of the effect of a recurrence of drought of the severity of 2011 (i.e. removing 420 MW from the system) in the years 2013-2015. On the assumed EPP and regular investment program, it is only in 2013 and 2015 that there could be a problem. Even in those years, when the dispersed generation capacity is taken into account, the system should be able to manage a recurrence of a severe drought.
* As already mentioned, the extremely rapid expansion of generation capacity that is envisaged is premised in part on Tanzania becoming an exporter of power into the region. There is interest from Mozambique, which requires reinforcement and voltage support for its grid in the north of the country, and the potential to export to EAC countries when the interconnectors are in place. The 400 kV Singida-Arusha-Nairobi line is scheduled to be in place by 2014. Tanzania needs to work with the EAPP to ensure that the supportive contractual and regulatory framework is in place for enhanced levels of electricity trade in the region.

The above discussion takes at face value the EPP and the realisation of non-emergency investment projects in gas and power generation. A few further observations are warranted:

* The financing of the EPP is claimed to be in place, but there are many questions to be asked about this. It would seem that all of the costs of the EPP up to the end of 2012, and much of the costs thereafter, are to be borne by the nation as a whole rather than by electricity consumers. Given the extent of poverty and urgent needs for government support to the non-electrified part of the population, this is highly inequitable and inimical to the objectives which the Government and its development partners aspire to pursue.
* The headline numbers that TANESCO is working with are that the cost per unit of EPP electricity in round numbers will be 40 c/kWh. When blended with other sources of electricity, the average cost may be 25 c/kWh. This is three times the current average level of TANESCO tariff (9 c/kWh), reduced by the collection ratio. TANESCO’s financial position was undermined by the limited tariff increase that was granted by EWURA from January 2011 and will continue to deteriorate until it is awarded a significant tariff increase with indexation of costs over which TANESCO has no control.
* In practice, the financial implications of the EPP and also of the main investment programme may well come to be mitigated by failure to reach the commissioning dates laid out above – indeed, these may anyway prove to be unattainable because of lack of funds for the Government contributions required to several of these projects.
* In the last five years, since 2007, the total new capacity that has been installed is 141 MW (Ubungo Wartsilla and Tageta). The 95 MW capacity additions that were made this year were to bring on a portion of capacity which has been standing idle since 2002 (in the case of IPTL) and 2006 (in the case of Dowans/Symbion), despite chronic electricity shortages in the last drought period (2006-07) and the less chronic but still economically damaging shortages of power since then, leading to another period of crisis in 2011. Against this record, it is certainly quite ambitious to envisage bringing 572 MW of capacity onto the grid in the next four months (September-December 2011) and achieving the commissioning of 970 MW in 2014.

## Conclusion on the EPP and Short-term Generation Plan

The most positive aspect to come out of the crisis conditions in the energy sector this year is the firm commitment of the Government to make full use of Tanzania’s natural gas resources. Within the region, gas is the most economical and environmentally friendly thermal power fuel, and it is appropriate that the country should be orienting itself not just to meeting its own power needs but also to become an exporter of electricity.

What is less positive is a further demonstration in the EPP of the inability of the sector to plan properly. The fact that the EPP was formulated in a highly charged atmosphere of political anger at the on-going power shortages was no reason to disregard normal planning precepts and government procurement requirements. The EPP should have been rooted in careful analysis of unsuppressed demand, should have acknowledge the dispersed capacity owned by the private sector, which is appropriately used in times of emergency, and the imminence of the commissioning of generation projects already being implemented (mid 2012). The Ministry of Finance should have played a key role in formulating the EPP, requiring the Technical Working Group to carefully weigh up the costs of high levels of capacity increases against the risks of just ‘getting by’ until mid 2012 with a minimalist strategy.

As it is, the EPP has over-provided capacity, much of which will have to be paid for whether or not it is used. In Section 2.2.12 below, we recommend that the commitments which involve capacity charges should be curtailed as soon as is contractually possible. We also recommend that there be a significant increase in electricity tariffs. Issues around electricity tariffs are discussed in the next section.

## Electricity tariffs

At the time of the JESR 2010, the electricity tariffs prevailing were those set in 2007. TANESCO had submitted a multi-year tariff application, which was being considered by EWURA. This application was based on thorough studies that had been carried out by reputable consultants, with the results of these studies being fully taken on board by TANESCO.

After carrying out the required consultation process, the decision of the EWURA Board was issued on 18 December 2010, with the new tariffs being effective from 1 January 2011[[9]](#footnote-10). The application for an immediate increase averaging 34.6 per cent was scaled back to 18.5 per cent and the three-year framework was rejected. These are the ‘headline’ items – Table 2.3 summarises the detailed components of the application and the award.

* + - * 1. TANESCO 2010 tariff application and EWURA award

| Item | TANESCO application | EWURA award |
| --- | --- | --- |
| System-wide tariff increases | 34.6% in 2011, 13.8% in 2012 and 13.9% in 2013 | 18.5% in 2011, no further increases until further studies have been completed |
| Rebalancing of tariffs | To take place in 2011 | Deferred |
| Indexation | 2 indexation provisions to protect tariff increases from fuel costs and macro-economic factors | Provisional Fuel Adjustment Charge approved (quarterly when adjustment is more than 3% of approved revenues). Inflation Adjustment Charge deferred. |
| Time of Use (ToU) tariffs | Pilot program, with formal ToU tariffs being offered to the largest customers on a voluntary basis in 2012 | Pilot ToU program approved |
| Special rate for TANESCO staff |  | Abolished, TANESCO staff to become T1 customers |
| Commitments and conditions | Commitment on KPIs | KPIs accepted. Conditions imposed relating to appropriation accounts, debt finance monitoring, stringent quarterly reporting, losses, financial statements and fuel cost changes for the fuel adjustment. |

Source: EWURA Order 010-019

The EWURA order stresses the notion of prudency tests in assessing whether the various constituents of the requested revenue requirement should be accepted. This approach is commendable, but is belied by the fact that EWURA accepted a category of TANESCO expenditure – repair and maintenance costs – which according to the engineers who have looked closely at TANESCO should be at least 10 per cent of revenues[[10]](#footnote-11) and is instead 3.4 per cent of revenues. See Table 2.4 and Table 2.5 below, where the proportions are also calculated using O&M costs in the denominator and, more meaningfully perhaps, O&M less the purchased electricity costs (i.e., repair and maintenance related to the electricity which TANESCO itself produces). Even this last ratio only reaches 7.2 per cent, while in 2007 it was 28.5 per cent.

* + - * 1. Revenue requirements in the 2007 and 2011 tariff awards



* + - * 1. Proportions of cost categories in the 2007 and 2011 tariff awards



The EWURA order states that the tariff increases for subsequent years will be reconsidered once a credible Cost of Service Study (COSS) is carried out by an independent expert to be engaged by EWURA. The current COSS was considered unsatisfactory for the following reasons:

* TANESCO did not ascertain costs of services for generation, transmission, and distribution segments to the satisfaction of the Authority;
* most of the assumptions and concepts as well as the data used are short of reflecting the true Cost of Service; and
* the cost drivers used in the COSS were theoretically assumed and not clearly defined for assessment of their prudency.

Given the evident quality of the studies on which the TANESCO application was based, this assessment is surprising. However, there are always some constraints when such studies are carried out, and it is EWURA’s prerogative to make the judgement that the studies need to be re-done. However, the third point, which states that the cost drivers used in the COSS were *theoretically assumed* suggests that EWURA may not be fully supportive of the accepted international best practice in comprehensive electricity tariff setting. This involves three main steps:

* ***Economic analysis, assessing long-run marginal costs (LRMCs) at each voltage level and for each customer class, as well as seasonal and time of day LRMCs***. The approach in this step is a forward-looking one, treating existing investments as sunk costs, and looking only at the *marginal* costs imposed on the system. These forward-looking calculations are removed from the day-to-day realities of the utility itself and may thus be subject to the accusation that they are ‘theoretical’. It is vitally important, however, to assess the LRMCs as these indicate the efficiency prices. Later on, the strict LRMC-based tariffs are modified to take account of other tariff objectives besides efficiency, but by making this the first step, any adjustments that are made need to be justified as deviations from the efficiency level. LRMC prices are the basis for establishing the ***tariff structure***, in particular the relative tariffs between different categories of customers.
* **Financial analysis, examining the actual financial situation of the utility and critically examining its cost structure and operational efficiency**. In this second step, a backward-looking, accountancy approach is adopted to ascertain the current financial situation of the utility, including, for example, outstanding past loans which will need to be serviced out of future revenues. The financial approach is used to determine the average ***tariff level*** that is required to meet justified revenue requirements. The tariff structure is then scaled to ensure the justified revenue is generated while maintaining the LRMC-defined relative tariff levels.
* **Adjustments to take account of national socio-economic objectives**, such as pro-poor lifeline tariffs. These can be financed by external subsidies paid by the government, but are more commonly achieved through cross-subsidies within or between customer classes. This is where the trade-offs between economic efficiency and other objectives becomes evident.

Another objective that governments often seek to pursue through electricity tariffs is the attraction of investment. As hosts of surveys of investors have shown, the idea of offering discounted electricity tariffs as an incentive is totally misplaced. Investors are well aware that sub-economic electricity tariffs are not sustainable and lead to a situation where the utility is not able to provide an adequate service to its customers. Investors are focussed instead on reliability of supply, and if this involves high tariffs, then so be it.

This is a crucially important point for Tanzania at this juncture. As shown in Figure 2.2, Tanzania’s tariffs (including the January 2011 increases and all taxes) are well below tariffs in other EAC countries. Rwanda has by far the highest electricity tariffs in the region, yet is attracting industrial investors because they perceive a commitment to maintain reliable electricity supplies.

To attract investment, Tanzania needs to discontinue the practice of tariff suppressions and erosion of value due to inflation. There needs to be an immediate significant increase in TANESCO electricity tariffs, and a clear commitment to maintaining full cost recovery tariffs in future.

Comparative electricity tariffs



Source: Compiled from Q1 2011 national data by Economic Consulting Associates

## Performance update on specified key indicators

A comprehensive picture of the supply-demand situation between 2011 and 2015 has been given in previous sections. Due to the EPP being presented to Parliament during the first week of JESR 2011, and urgent follow-ups being made in the second week, it was not possible to obtain all of the data necessary to provide a performance update on several other key indicators for the electricity sector requested in the TOR. A comprehensive information request was submitted to TANESCO, in order to compile this section of the report. It had not been received at the time of writing.

The items in question include: the current financial situation of the utility; the number of new customers connected this year; the update on the population with access to electricity; and a number of supply-side issues (availability of generation plant, power outages, load shedding, technical and non-technical losses, details of transmission and distribution expansion and rehabilitation

## Definition of Electricity Access and Access Projections to 2020

The TOR call for a review of the methodology for defining and determining access to electricity. The first point to make in this regard is that it is not clear in either REA’s or other official documents what the definition and basis is for the generally quoted figure of 14 per cent electricity access, this being an average for the country as a whole. The figure that is commonly quoted for access to electricity is rural areas is 2.5 per cent[[11]](#footnote-12).

In the literature on electricity access, the preferred definition is that households have access to electricity when they actually use electricity to satisfy energy end-uses in their homes. The electricity can be supplied either through connection to the grid or through some form of off-grid electricity. The significance of this definition is best seen in relation to an alternative interpretation of 'access' which considers a household located in a centre where electricity is available as having ‘access’. This concept is more accurately labelled as an electricity 'penetration rate'.

A recent study for SADC of energy access considered various definitions and after discussion and agreement firmly backed the ‘usage’ definition, thereby paving the way for meaningful cross-country comparisons to be made[[12]](#footnote-13). The SADC Regional Energy Access Strategy document points out that access in the usage definition can be usefully disaggregated into the 3 A's - ***availability, affordability*** and ***acceptability*** (this reflecting both cultural acceptability and the consumers' willingness to pay - WTP). The 3 A's indicate why a household which has electricity access will certainly use electricity for lighting but may choose to continue to use, say, charcoal or wood for cooking because electricity for cooking would be unaffordable or perceived to be too expensive relative to other forms of energy for cooking, or may lack other, more subtle, attributes such as the cultural aspects of families congregating around cooking fires. The economic aspects (affordability and WTP) relate both to the capital costs of appliances to use a particular form of high quality energy as well as the recurrent costs of buying the energy that is needed on a regular basis.

Interactions between the 3 A's make for considerable complexity in energy choices, particularly those made by households for cooking and heating. This makes it difficult to neatly carry over the 'usage' concept of access to forms of energy other than electricity. Rich households who can easily afford say LPG for cooking and electrical heaters for space heating may choose instead to use charcoal braziers for most of their cooking and wood fires for heating. It is common for there to be a mix of energy sources used by households on different occasions and in different seasons. Even poor households may use a range of energy sources, but the range from which poor families choose is much smaller.

From this viewpoint, the ideal measure of access would be 'ability to choose' a high quality form of energy for a particular end use, whether or not the high quality energy is actually chosen. Empirically, it is difficult to define a measure to capture 'ability to choose' so in practice actual usage is most usefully taken as the measure of access. In the sort of instances described above, access in the sense of ability to choose energy sources will likely be higher than access measured by actual usage.

The frequently quoted 14 per cent access figure appears to be based on a projection forward of the access figure of 12.7 per cent reported in the 2007 Household Budget Survey carried out by the National Bureau of Statistics. Ideally, the access ratio should be recalculated on an annual basis. Working with households, the numerator of the ratio would be the existing households using electricity plus the numbers of households becoming main customers of TANESCO plus those using some form of off-grid electricity for the first time (via a mini-grid or a household-level supply, such as a solar home system). The denominator of the ratio would be a projection forward of the number of households (population growth adjusted for any measured or imputed change in household size). A similar methodology would apply to other electricity access ratios, for example urban access, rural access, or access in different regions of Tanzania.

Using this approach and National Bureau of Statistics data, Figure 2.3 gives a projection of the growth of rural and urban households and the changing proportion of electrified households if the target of 100,000 TANESCO connections is achieved each year, plus an allowance of at least 10,000 for households to gain access to electricity through solar systems. If the total of 110,000 is to be maintained, then any grid connections to non-domestic households would have to be matched by increased solar systems.

Electricity access consequent on 110,000 domestic connections per annum





In the last 5 years, the average number of connections per annum was 47,000, with 66,000 in the best year (2010). Increasing to 100,000+ per annum and sustaining connections at this level would therefore be a big achievement, yet with the number of households continuing to grow (rural households at 2.2 per cent *p.a.* and urban households at 4.5 per cent *p.a.* in early years) there is a moving target and by 2015 there would still be less than 20 per cent access, and only 23 per cent by 2020.

By the MDG target year of 2015, TANESCO would like to have achieved 30 per cent access. The figures show that this would require increasing the number of connections from 66,000 in 2010 to 287,500 connections every year from 2011. At that rate, rural and urban electrification could reach 20 per cent and 84 per cent by 2020, with a total of 42 per cent overall. At the more feasible and affordable level of 100,000 per annum, the rates for rural and urban access in 2020 are only 9 per cent and 49 per cent respectively. The difficulty of shifting the access numbers make clear that if the energy needs of the majority of the population are to be addressed, there needs to be a focus on energy outside of grid-related electricity, notable small-scale renewables.

Electricity access consequent on 287,500 domestic connections per annum





## Electricity sector restructuring

The Electricity Act (2008) gave MEM one year in which to produce a position paper on the reform of the electricity sector. The paper was only finalised by MEM in 2010 and the Cabinet Secretariat is yet to approve it for submission to Cabinet.

The technical and economic pros and cons of alternative restructuring options have been debated for more than a decade in Tanzania. The mood amongst many of the stakeholders consulted in JESR 2011, is that there is merit in the argument that organisations need periodic shake-ups and some degree of unbundling of TANESCO would be beneficial at this juncture. Decisions on any unbundling even to a limited degree should take into account the additional human resources required to make this work and to make a cautious assessment of the speed with which such resources could be made available.

A first stage would be to unbundle generation and transmission, forming two new entities for these functions, with TANESCO remaining responsible for distribution and supply of electricity to final consumers. The systems operator function would be allocated to the transmission entity. At least initially, TANESCO would be the “single buyer”.[[13]](#footnote-14)

This degree of unbundling would be similar to what has already been successfully undertaken in Kenya. It is significant that the two main companies emerging from the unbundling – KenGen and KPLC – have both been floated on the Nairobi Stock Exchange (NSE). There have been several advantages:

* Government retains majority ownership (70 per cent in KenGen, 51 per cent in KPLC) and control, and is still able to pursue social objectives, but these have now to be very explicit and transparent.
* The corporate culture within KenGen and KPLC is that of a commercial entity, reporting to its shareholders. This is very different to the parastatal mind-set in KPLC prior to unbundling.
* Private portfolio capital can be raised for investment purposes. For example, using its status as a respected NSE company, KenGen in 2009 successfully raised capital on the local market through a bond issue. The offer of KSh 15 billion ten year bonds with a 12.5% coupon rate was oversubscribed and KenGen took up the option of borrowing an additional KSh 10 billion, raising the total to KSh 25 billion (USD 333 million).

## Response to electricity recommendations in the 2010 JESR

Recommended strategic directions are implicitly indicated in the above ‘challenges’. Three specific recommendations for the electricity sector are as follows:

* **Idle IPTL and Dowans generation plant**: while the legal issues surrounding these plants remain unresolved, both plants have already to some extent been brought into operation and will be made fully operation under the EPP.
* **Formulate a clear national policy on subsidies to and within the electricity sub-sector.** MEM has interpreted this as a recommendation for a study of subsidies in rural electrification. The recommendation was intended to be far more all-encompassing than this, covering both macro-level subsidies, such as the supply of fuel for the IPTL plant by the Government, as well as consumer-level subsidies.
* **Update of the Rural Electrification Master Plan**: MEM has pointed out that there is no Rural Electrification Master plan to be updated and that a new plan would have to be started from scratch. Neither MEM nor REA has indicated any interest in taking up this recommendation.

## Electricity recommendations 2011 JESR

The electricity sector recommendations arising from the analysis given, together with other discussions and research by the JESR team, are laid out below. They include carrying over 2 recommendations from last year:

***1 Electricity sector planning***: while TANESCO is the custodian of the optimization tools needed to derive a least-cost generation and transmission development sequence that meets forecast power and energy requirements, the process of each year updating the Power Sector Master Plan will in future be undertaken as a collaborative effort between MEM, EWURA, REA, TPDC, Ministry of Finance, Planning Commission and TANESCO. It will also involve private sector institutions – Tanzania Chamber of Commerce, Industry and Agriculture (TCCIA), Tanzania Chamber of Minerals and Energy (TCME), Confederation of Tanzanian Industry (CTI) and the umbrella body the Tanzania Private Sector Foundation (TPSF). MEM will coordinate. The issues behind this are discussed under planning in this report, but this fundamental commitment for the electricity sector is included here for the sake of completion. *Target date for start of next update process: Immediate (PSMP update has already started).*

***2 Demand forecasts***: much more attention in future will be paid to the demand forecasts which are the drivers of the PSMP optimization. As the EPP comes into effect, the levels of unconstrained demand will be properly estimated and projections made which combine top-down and bottom-up forecasts. This will also be a collaborative effort, with economists from the Ministry of Finance and the Planning Commission playing a prominent role. The investment sequence that is planned ideally should match real development of demand, and not lead or lag it, with the proviso that potential exports into the region provide a safety valve in the event of excess capacity. Due account will be taken of foreign customers’ needs for firm contracts with TANESCO to ensure that these supply arrangements are secure and not subject to disruption bring possible future generation shortages in Tanzania. *Target date: PSMP annual update in September 2012.*

***3 Demand side management (DSM)*:** the emergency has highlighted the crucial importance of promoting demand side management and efficiency. Current programmes which are being piloted are compact fluorescent lights (CFLs) and time of use (ToU) tariffs. A recent study of DSM[[14]](#footnote-15) identified household lighting and awareness/public education programmes as having the greatest potential, but also provided cost-benefit analyses of a number of other areas - industrial motors and variable speed drives, power factor correction, more efficient cooling devices (commercial and institutional air conditioners, household refrigerators, refrigerated beverage vending machines), plus industrial energy audits and implementation support. A further promising area deserving of investigation is solar water heating, particularly in the tourism sector. *Target date for start of DSM and energy efficiency programmes costed in the HATCH report: January 2012. Responsibility: MEM, with TANESCO and REA.*

***4 EPP***: The EPP will be monitored and fine-tuned through the up-coming two years, with special attention being paid to developments in demand, availability of gas and commissioning dates of scheduled projects. In particular, commitments to pay capacity charges on rented generation equipment which is to run on liquid fuels will be continuously reviewed and terminated at the earliest possible opportunity. *Target period: August 2011-December 2013.*

***5 Electricity tariffs***: a significant increase in tariffs will be implemented as soon as reasonably reliable supplies are available to TANESCO customers. This will be followed as soon as possible by completion of the COSS study being commissioned by EWURA, a re-assessment of the multiyear tariff application and a clear commitment to future, expeditious rising of tariffs to achieve full cost recovery. The *quid pro quo* on the TANESCO side will be evidence of significant effort being exerted to meet the Key Performance Indicators (KPIs) and other conditions EWURA may impose in its tariff orders. *Target dates, including for the main review public consultations: December 2011 and April 2012.*

***6 Electricity sector restructuring***: the Cabinet paper should have been presented and finalized in 2009. To remove uncertainty in the sector, it should be expedited and a clear statement made about the future structure of the industry. If this is to involve some restructuring, then work on the modalities will commence immediately, with MEM co-opting other parties as needed. *Target date: March 2012*.

***7 Formulate a clear national policy on subsidies to and within the electricity sub-sector*:** This was a recommendation of last year’s JESR: the huge implicit subsidies in the EPP have made a comprehensive subsidy study more urgent this year. MEM has prepared a study terms of reference (TOR) which cover the design of energy access subsidies. MEM will review the TOR and expand them to take an all-encompassing review of subsidies: covering both macro-level subsidies, such as the supply of fuel for the IPTL plant by the Government, as well as consumer-level subsidies. *Target date for MEM to procure consultants and complete the study: January and June 2012, main results to be ready in March/April, in time for the preparation of the 2013 Budget.*

# Upstream petroleum and natural gas

During the year, no petroleum discoveries were made but a number of significant new gas fields have been identified. BG and its partner Ophir, in April 2011 announced their third Tanzanian gas discovery (18 km offshore in southern Tanzania in a water depth of around 950 metres).

This was also a year in which existing gas fields were moved close to production. The two major pipeline projects intended to duplicate the pipeline capacity from Songo-Songo and providing Mtwara gas to Dar-es-Salaam, were swiftly advanced. In addition, some new fields were licensed for gas development, including a licence to Aminex, allowing the company's Tanzanian subsidiary, Ndovu Resources Ltd. to develop the Kiliwani North Gas Field, which has been shown to have potential production of at least 40 million cubic feet per day.

Assurance of greater reserves of natural gas is what is underpinning the Government’s intention, already discussed in Section 2.2 above, to increase rapidly gas fired electricity generation and other downstream uses of gas.

Upstream petroleum action points

***1 Continued petroleum exploration:***  The Government and TPDC should continue to promote petroleum exploration. *Immediate*

# Downstream petroleum

In the downstream petroleum sector, there were few new developments until the end of the first week of August 2011. The overall performance can perhaps best be assessed by starting with reviewing the recommendations made in JESR 2010:

* **Bulk procurement of refined products -** the implementation of bulk procurement was said to be imminent last year, but has not yet been implemented. It remains a priority action in the sector.
* **Remove petroleum products price setting rules** and allow market forces to determine liquid fuel prices - this recommendation was consistent with the view expressed by EWURA that final product price regulation was no longer necessary. It is only since early 2009 that liquid fuel prices have been regulated – the Petroleum Act stipulates that prices should be determined by the market and it required a special order (Government Notice #5 of January 2009) to enable EWURA to regulate the prices. Recent events in this area are described and discussed below.
* **Support transport fuels research,** covering the effect on engine performance, longevity and fuel use of adulterated petrol and diesel, petrol-ethanol blends in fixed and variable proportions, compressed natural gas, jatropha and other vegetable oils and biodiesel distilled from vegetable oils. In practice, no progress has been made in advancing this research agenda. It was also recommended that there be support for further studies on biofuels and viable biofuels projects – these aspects are reviewed in the chapter on renewables.

The second point was a high profile national concern in August 2011, because some oil companies withdrew product from the market when EWURA changed the pricing formula. This was the result of a review of the formula that had been in operation since 2009 and a tightening of certain provisions. Withdrawal of product quickly led to a crisis in the transport sector. An EWURA order and the threat of withdrawal of licences were necessary to force the companies to restore supplies. Further discussions with stakeholders were held and the revised formula has now been accepted and endorsed and is being regularly applied on a two-weekly basis. Government has also decided that the TPDC retail subsidiary, COPEC, will play a more active role in the sector, providing competition to the private oil products distributors and providing market intelligence to policy makers from a fully engaged market participant[[15]](#footnote-16).

The sticking points in the discussions about the fuel price build-up between EWURA and oil companies were as follows:

* ***Demurrage:*** tankers at anchor are paid demurrage at around USD 20,000 per day. The oil companies claimed 40-60 days of demurrage to be typical, EWURA responded that this is a reflection of poor planning and no more than 3 days should be allowed. A compromise of 15 days was eventually agreed.
* ***Removal of the 7.5% add-on***: in the previous formula, there was a 7.5% add-on to the ‘Indicative Price’, which included all margins and taxes, to arrive at the ‘Cap Price’. EWURA has decided to remove this, as the oil importers and the fuel distributors are already adequately remunerated through their respective margins which are already part of the fuel cost build-up.
* ***Financing costs***: the previous formula included an allowance of 1.75% of CIF import costs for financing. EWURA has reduced this to 1%. The companies cited the long demurrage periods when requesting higher financing costs, but EWURA pointed to the need to treat demurrage as a separate issue.

Concerns were raised during the dispute period about the fairness of the formula in view of the holdings of stocks of product by the oil companies at prices which are different to the prices at which the latest price calculations are applied. The stock holdings issue cuts both ways, however, depending on whether the stocks were bought at prices above or below current market prices. EWURA notes that in the past companies frequently did not hold even the 15 days of stocks which are stipulated in the Petroleum Act. Where large stock holdings are held, this is a commercial decision by the companies and they and not the consumers of petroleum products should take on the associated risks. EWURA is nonetheless proposing to undertake an inquiry on stocks during the up-coming year.

EWURA is also considering whether to control prices only up to the wholesale price (excluding the oil company margin), and leave it to the market to determine the final pump price. This approach may be especially relevant when the bulk national procurement is in full operation, and has been combined with the use of the Single Post Mooring (SPM). The SPM facility is presently being rehabilitated and adapted for petroleum product imports. When it is ready (expected date April 2012), the SPM will allow much larger tankers to dock (100,000 metric tonnes as compared with the 35,000 metric tonne petroleum product vessels which can presently be offloaded at the Dar-es-Salaam port). Increased parcel sizes and much lower transport costs associated with big tankers should result in significant reductions in national procurement costs.

Downstream petroleum action points

***1 Implement bulk national procurement of liquid fuels***: Bulk Procurement Technical Committee has been formed. Petroleum Importation Coordinator is to be in place by November 2011. Full consummation of the gains of bulk procurement are expected following commissioning of SPM (single point mooring) offloading system in April 2012;

***2 Consolidate the agreement that has been reached on the price setting methodology*:** EWURA will conduct a study on stock holding and feasibility of limiting price control to the wholesale price cap (excluding all margins). *Target date - July 2012*

**3 Support research into alternative transport fuels:** This should build on the work that TPDC is doing with Petrobras on ethanol. *Other fuels to be studied when funds can be secured.*

# Natural Gas

The significant change in gas utilisation over the year is the coming on grid of 75 MW of the old Dowans plant, now owned by Symbion. Final agreement on the pricing methodology from EWURA has allowed the Songas expansion project to move to implementation, and the Mtwara pipeline and the duplicate Song-Songo pipeline projects have been advanced in preparation and financing. The current status of these projects was given in Section 2.2 above. The Songas project is due to increase daily capacity by 35 mmscf/d by the first quarter of 2013, while the two new pipeline projects are intended to add 280 mmscf/d from Songo Songo to Dar and 130 mmscfd from Mnazi Bay to Somanga Fungu, also in 2013 but later in the year. This is a very ambitious timetable, which in practice be considerably delayed, thereby allowing more time for upstream developments to ensure availability of gas to match increased pipeline capacity.

As with downstream petroleum, it is useful to go straight to reviewing the recommendations which were made in JESR 2010, which were as follows:

* Ensure **Gas Act** clarifies roles, responsibilities and accountabilities of stakeholders – in practice the Gas Act is still with the legal drafters and has not yet been enacted into law.
* **Formulate a National Gas Strategy** - in respect of this recommendation, MEM has decided to prepare a Gas Utilisation Master Plan, rather than a strategy, and has decided that this will best be done in-house. It will be peer reviewed by colleagues from the Caribbean.
* **Examine the case for developing a gas transmission and distribution grid** – during the year, the decision was made to construct, on a fast track basis, the major pipeline from Mtwara, initially to Dar-es-Salaam, and subsequently to Tanga. This will form the transmission backbone of a national gas grid which will allow gas to be consumed at various points along the pipeline route, thereby spreading the benefits of this national asset more widely across the country.
* **Make contingency plans** for the possibility that a number of gas discoveries are made simultaneously, requiring a very rapid scale-up of negotiation and regulatory capacity and to manage Dutch Disease effects – with support from the World Bank the USD32 million Energy Sector Capacity Assistance Project (ESCAP) will be targeted primarily at the gas and petroleum sector.

Of these recommendations, two remain as action points for 2011/12:

***1 Natural Gas Act:*** this is needed to clarify roles, responsibilities and accountabilities of stakeholders. MEM has submitted the Bill (draft Act) to CPD. MEM is to continue to follow up with CPD, the follow-ups being with *immediate effect*.

***2 Formulate a National Gas Strategy***: MEM will prepare a Gas Utilization Strategy and Master Plan, with participation of TPDC and agencies involved in power system planning, particularly EWURA and REA. It will be peer reviewed by colleagues from the Caribbean. *Target date for completion: July 2012*

Having the Gas Master Plan prepared in house ensures total buy-in from MEM. For the same reason, it is important that TPDC and other gas sector players be included in the planning process. In order to ensure timely completion of this task, it is recommended that a dedicated Gas Master Plan committee be formed, with its members freed of other responsibilities within the Ministry so as to be able to concentrate on producing a comprehensive, well articulated plan in a prescribed timeframe.

With the Government’s renewed commitment to using gas for power generation, it is important that the Gas Master Plan team work closely with the team responsible for updating the Power Sector Master Plan. Ideally, gas sector investments should be included as candidates in the power optimisation model, but at present the upstream costs of gas are assumed to be captured in the fuel price of the gas generators being considered for inclusion in the least cost generation sequence. The constraints on government financing of both gas and power may force modifications to the planned sequence: such constraints should be taken into account while planning rather than emerging later as factors which derail the implementation of the plans.

# Renewable Energy Review

## Introduction

This section reviews progress in the renewable energy subsector; and presents recommendations for best practice for development of the subsector. The progress review considers the contributions of the different sources (solar, wind, hydropower and bio-energies). Also on-going and planned projects for large scale exploitation of renewable energy sources, bio-energies, solar energy, and wind energy have been reviewed. As well prospects for geothermal and ocean energy generation have been considered. The recommendations in JESR 2009/10 have been reviewed to assess how they have been followed up.

The following stakeholders were consulted: MEM; TANESCO; TAREA; REA (also in respect of the Lighting Tanzania Competition); financiers and managers of projects including UNDP/MEM - Solar PV Mwanza Project; World Bank-TEDAP; Norwegian Embassy; UNIDO; European Union Delegation; and private companies including Mkonge Energy Systems (MES). Consultations will continue with the MEM/Sida Solar PV Project, MCC, UNDP, SNV, CAMARTEC, TaTEDO, Oikos East Africa, Green Resources, ZARS, Wind East Africa, Power Pool East Africa, CAMCO Advisory Services and TANWIND.

In terms of recommending best practice for development of the renewable energy sub-sector, a good practice approach has been reviewed in relation to the national projects, mainly on solar PV, that have been implemented in the country including the MEM/UNDP Transformation of Rural Photovoltaic Market Project, MEM/Sida Solar PV Project. Further review has been conducted on other regional and international projects including GTZ’s PRET Project, ETC’s Enabling Access to Sustainable Energy (EASE), Promoting Renewable Energy in Africa (PREA), cook stove projects, biogas projects, and bio-fuels projects.

## Issues raised in JESR 2010

In the Joint Energy Sector Review of 2009/10 a number of issues related to renewable energy were raised either as weaknesses, challenges or recommendations. Table 2.6 summarises them and shows the achievement/progress made during the year.

* + - * 1. Actions Taken in Addressing Issues Raised in JESR 2010

|  |  |  |
| --- | --- | --- |
| **Category** | **Issue** | **Progress Made in 2010/11** |
| **Weakness** | 1. Lack of rigorous implementation strategies for policies and inadequate resource allocations | Moderate progress |
|  | 1. Largely uncoordinated initiatives interventions at national, regional and international level | Very little progress |
|  | 1. Incomplete enforcement of approved standards for renewable energy technologies | * Standards gazetted. TBS trained for verification. * However public and provision of test equipment |
|  | 1. Weak interaction between enterprises and R&D institutions | No progress |
|  | 1. Inexistence of Codes of Practice for renewable energy | No progress |
| **Challenge** | 1. Inadequate attention paid to renewable energy sources | Some improvement |
|  | 1. High up-front cost of renewable energies | Some initiatives by REA, SSMP and other actors |
|  | 1. Concerns on the quality of products in the market and also system designs | Same as for Weakness 3 |
|  | 1. Proven failure of commercial banks in financing small scale renewable technology | No progress |
|  | 1. Mismanagement of hydropower resource | No progress on large scale hydropower but significant achievement in small scale hydropower |
|  | 1. Depletion of forests resources due to excessive and unsustainable utilisation of wood fuel resources | Some progress in implementation of energy efficiency projects. However no progress in ensuring sustainable supply of alternatives |
|  | 1. Vulnerability to climate change and issue of climate change mitigation not getting adequate attention | Commendable progress in training and research but poor progress in mitigation and adaptation measures |
| **Recommendations** | 1. Accord higher priority to renewable energy technologies | Moderate achievement |
|  | 1. Provision of resources for the continued development of renewable energy sources | Moderate achievement |
|  | 1. The environmental benefits of renewable energies are properly recognized in energy prices | No progress |
|  | 1. Wide-spread and effective incentives to stimulate initial application of renewables |  |
|  | 1. Enhance commercial technology transfer links and mechanisms | No progress |
|  | 1. Introduce new laws and policy provisions for renewable | None. Some encouraging initiative by TAREA on REFIT |
|  | 1. Fully utilise the existing carbon trading opportunities, including (CDM) | No progress |

## Progress in the Renewable Energy Subsector in 2010/11

* + - * 1. Grants awarded by the Rural Energy Fund in 2010/11

|  |  |  |  |
| --- | --- | --- | --- |
| **S/N** | **Project name** | **Region** | **Amount (TZS)** |
| **1** | Installation of 10kw wind power turbine at Wama Nakayama girls secondary school | Coast | 45,500,000.00 |
| **2** | Installation of solar PV charging centers for two secondary schools | Kigoma | 39,870,000.00 |
| **3** | Pre - feasibility study of twelve small hydropower sites in Muheza and Lushoto districts in Tanga region | Tanga | 41,730,000.00 |
| **4** | Installation of 5.25kw solar pv backup system at wama Nakayama girls secondary school at Nyamisati village | Coast | 46,035,159.00 |
| **5** | Distribution of 1200 portable solar lighting systems in musoma | Mara | 26,480,000.00 |
| **6** | Installation of solar pv systems for kabagwe and titye secondary schools in Kasulu | Kigoma | 68,860,000.00 |
| **7** | Installation of solar pv systems at mkamba health centre, Mbezi Msufuni and panzuo Kibuyuni in Mkuranga district | Coast | 39,427,080.00 |
| **8** | Construction of three biogas plants in Kwimba | Mwanza | 68,184,250.00 |
| **9** | Installation of solar pv systems in Mtanza Msona villages in Rufiji district | Coast | 13,309,000.00 |
| **10** | Supply and installation of solar pv systems for Kidaru health center and Urughu secondary school in Iramba district | Singida | 43,031,880.00 |
| **11** | Construction of biogas digester to word islamic propagation and humanitarian services (wipahs) in Kibaha district | Coast | 80,110,000.00 |
|  | **Total** | | **512,537,369.00** |

### Hydropower

The contribution of hydropower resource has continued to dwindle due to prolonged droughts in many parts of the country. The large-scale hydropower plants have been generating below capacity.

The planned large-scale hydropower generation sources are: Ruhudji (360MW), Rumakali, (22MW), and Stieglers Gorge (2100MW). There has been more activity and interest in small scale and mini hydropower generation.

Hydro is still the cheapest source of power in the long term (10 plus cents in short term) but in long term could be brought down to less than 10 cents.[[16]](#footnote-17) Not enough attention has been given to improving the hydropower resource availability. REA has compiled an inventory of potential small hydropower sites. There are 114 potential sites at different levels of assessment (reconnaissance, pre-feasibility and feasibility). The total estimated potential capacity of these sites is 485MW.

Large-scale hydropower projects have continued to face environmental challenges. The original Malagarasi project could not be done because of a snail species (environmental problem). It has been relocated to Rumakali. The Stiegler’s Gorge site is in a conservation area (Algiers Protocol Heritage International). For the project to proceed Government action will be required at a legislative level. The project is planned to be developed in four phases: Phase I - 2020 (300MW), Phase II - 2022 (600MW), Phase III - 2023 (300MW) and Phase IV - 2025 (900MW).

Hydropower was not been mentioned in the Government’s Emergence Power Plan (August to December 2011). There is little prospect of further large-scale hydro development in the short term. Government sees hydropower as a risky source of generation. DPs have concerns about the environmental impacts of hydropower developments. There are other stakeholders in the sector who have strong opinions that hydropower is a reliable source of power generation for Tanzania and the most appropriate source for electricity generation in the shorter and longer terms if appropriate management of the resource is exercised. This opinion is as shared by experts in research institutions.

MEM is providing funds to TANESCO to carry out surveys of potential sites. A list of sites, which have already been surveyed, is available. Morogoro and Kigoma were to be surveyed in May 2011. There has been some investor interest in some of the sites.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***No.*** | **SPP *Developer*** | ***Installed***  ***Capacity (MW)*** | ***Maximum Capacity to Sell to TANESCO (MW)*** | ***Date***  ***Signed*** | ***Expected***  ***Online***  ***Date*** |
| **1** | TPC Moshi (co –generation) | 17.487 | 9.0 | 06/10/2009 | 13/09/2010 |
| **2** | TANWAT (Biomass) | 2.5 | 1.4 | 17/09/2009 | 15/06/2010 |
| **3** | Mwenga Hydro Ltd (Mini hydro) | 4.0 | 3.0 | 19/01/2010 | 2012 |
| **4** | Ngombeni Power Ltd (Mafia – Biomass) | 1.4 | 1.0 | 19/01/2010 | 2012 |
| **5** | SAO Hill Energy Ltd (Biomass) | 15.75 | 10.0 | 26/02/2010 | 2012 |
|  | Total expected | 41.1 | 24.4 |  |  |

* + - * 1. SPPAs signed by TANESCO
        2. SPP Developer Applications submitted to TANESCO

| **No.** | **SPP Developer** | **Planned Installed Capacity (MW)** | **Planned Maximum Sale Capacity to TANESCO (MW)** | **Status** |
| --- | --- | --- | --- | --- |
| **1** | Mapembasi Hydro Power Company (mini hydro at big Ruhudgi river) | 12.0 | 9.0 | LOI issued on  25/06/2010 |
| **2** | Andoya Hydro Power Company (mini hydro at Ruhuhu river) | 1.0 | 0.8 | LOI issued on 22/09/2010 |
| **3** | Kilombero Sugar Company (co- generation) | 1.0 | 1.0 |  |
| **4** | EA - Power Limited (Mini hydro at Kiwira river in Tukuyu Mbeya Region) | 10.0 | 10.0 | LOI issued on 9/02/2011 |

Box 2.1 Ruhudji Power Project

Aldwych Interntaional Ltd. is a UK-based IPP company specialised in developing, financing, and operating large infrastructure energy projects in Africa.

Aldwych has been leading the development of the Ruhudji Power project since the end of 2006. Since August 2009, the company has also been co-developing the Wind East Africa Ltd (‘Wind EA’) wind farm project in Singida together with local partner Six Telecoms. Wind East Africa Ltd is a special purpose project company.

The Government of Tanzania formally requested financial support from the World Bank for both these projects and this request received World Bank management approval in July of this year. The IFC, along with other institutions including the African Development Bank and the European Investment Bank have been following both projects and are studying them with a view to supporting their development and financing.

Both projects are among the near term projects to be implemented under the least cost development plan proposed in the Power Sector Master Plan (PSMP) of 2009.

#### Ruhudji 360 MW Hydro Power Project

The Ruhudji Power project was scheduled for completion in 2014 in the PSMP. A likely date for completion is now 2019. [[17]](#footnote-18)

A Government Negotiating Team has been constituted and will begin negotiations with Aldwych International’s subsidiary company Ruhudji Power Development Company Limited, (RPDC) to finalise the Project Development Agreement (PDA), the associated ‘heads of terms’ for an Implementation Agreement and Power Purchase Agreements in Q2 2011/12.

Aldwych International expects that given successful conclusion of those negotiations by end 2011[[18]](#footnote-19), the project could reach financial close and begin construction in 2013/14. Construction is expected to take 5 years.

It is intended that the project will be carried out under a Public Private Partnership arrangement, whereby the Government will contribute certain supporting activities, such as improving access roads and providing the land under a lease, in exchange for an equity stake in the project. The details of this including the final level of the equity stake and which entity of Government will be the shareholders have yet to be determined. It is proposed that the project will be carried out under an “open-book” type arrangement and the final level of the least cost tariff will be determined once certain important pieces of work (e.g. hydro and geotechnical risk allocation, completion of detailed technical design, EPC and project financing, etc) are completed.  Risk allocation and tariff negotiation will be part of the PPA negotiation, but conclusion of this will be contingent on the Government and their advisors having clear guidance from relevant sector policies that are in need of update/formulation.

### Bio energy

Bio fuel use falls into three categories: solid, liquid, and gaseous bio fuels. Solid bio fuels include firewood, charcoal and biomass residues. The first project on efficient use of solid bio fuels was implemented between 1988 and1992. This project was financed by the World Bank and formed the foundation for the development of biomass conservation and the introduction of efficient kilns for charcoal making and cook stoves. Two types of kilns were introduced and promoted. The half-orange kiln is constructed using burnt bricks and is stationary. A Kasamanse kiln was adopted from Senegal. It is a modification of traditional earth kilns. Uptake for the Kasamase kiln was difficult because of its huge chimney, which was heavy to carry. The establishment of TaTEDO was a sustainability measure of the project. TaTEDO has continued to promote these and other new technology. Kilns have not been very successful, but stoves have been taken up. The private sector has taken over the production and supply of the technologies very successfully.

CAMARTEC and the College of Engineering and Technology of the University of Dar es Salaam have developed different energy saving institutional cook stoves. The SADC Programme for Biomass Energy Conservation (PROBEC) was implemented between 2004 and 2010 and financed by the Netherlands and Sweden. The name and scope has changed to Programme for Basic Energy Conservation. The project trained people on the production and use of the technologies. The exit strategy for PROBEC was the transfer of the activity to REA. MEM handles the policy part through a National Advisory Group (NAG) for PROBEC.

#### Solid bio-fuel

Two institutions are involved in making briquettes: the Kilimanjaro Industrial Development Trust (KIDT) in Moshi and a company in Mafinga. Another company in Tanga produces briquettes and supplies a cement factory.

TANWAT Company in Mufindi district, Iringa region is using wood biomass to generate 2.5MW of electricity. Use of bagasse for cogeneration is implemented by TPC (1MW), Mtibwa Sugar, Kilombero Sugar, Green Tea Company and Green Resources. Tanga have plans to build a cogeneration plant using wood biomass.

#### Gaseous biofuels

The main gaseous bio fuel is biogas. Efforts to disseminate biogas technology in Tanzania started in the 1970s under SIDO, who introduced the first digesters. This was carried forward by ELCT and CAMARTEC. The Special Energy Project (SEP) supported by GTZ started with Indian Floating Drum and then later used the Chinese fixed dome. By 1992, Tanzania was leading in the SADC countries on biogas utilisation. People were trained in different aspects of biogas production and utilisation. Problems were encountered with management of the plants because the sizes were too big to handle. Sizes were 8m3, 12m3, 16m3, 32m3 and 50m3. Other institutions including MIGESADO, with financing from Spain, are promoting hybrid technology, combining the features of floating drum and fixed dome designs, which is claimed to be more efficient and user friendly.

Tanzania Domestic Biogas Programme (TDBP) is a national programme housed at CARMARTEC in Arusha. TDBP is part of the Africa Biogas Programme, which is a result of the Biogas for Better Life African Initiative. The programme is implemented in 6 countries - Senegal, Tanzania, Burkina Faso, Ethiopia, Kenya and Rwanda. The project is financed by HIVOS of the Netherlands and is being implemented by the Dutch NGO, SNV. The Tanzania component started in 2009 and progress is very good. By January 2011, 1,006 plants had been installed. The Project is different from previous initiatives for training of artisans as it takes a business approach. There are domestic plants with digester sizes of 4m3, 6m3, 9m3, 13m3, which have been established based on research findings.

Initially, HIVOS financing supported acquisitions through a subsidy/loan financing mechanism. The national project is being implemented in North Eastern, Lake, and Southern Zones. Training is conducted with teams consisting mainly of CAMARTEC staff. Administration of the project includes a Steering Committee chaired by MEM and a Biogas Executive Committee. The project was planned to end in 2013 with the target to install 12,000 household plants. Comparing the achievement so far (1,006 plants at half time) to the target, the project is lagging behind. The main reason for the delay was said to be because of the Government’s counterpart funding not forthcoming on time.

Industrial biogas production by Katani Limited with funding from UNIDO and CFC has continued reaching 300kW. The target is to cover all plantations owned by the company and also sensitise other companies. TBL in Dar es Salaam have a biogas digester but the gas is burned. The Mtoni dumping site project has been advised to build a power plant. There is a proposed gasification project for Mafia Island by a company using coconut waste.

#### Liquid biofuels

For liquid biofuels, MEM’s guidelines for sustainable liquid biofuels development were launched in February 2011. These are to be followed by a biofuels policy, and a legal, and regulatory framework. Drafting of policy has started with consulting support from ECOFICE of the Netherlands and AMA of Tanzania. The process will start with a review of relevant policies for completeness and coherence.

Another activity is on mitigation measures i.e. Strategic Environmental Assessment (SEA) on liquid bio fuels. A consultant will be procured in September 2011. The Government has commissioned an Agro Ecological Zoning Study in order to avoid land conflicts. A Brazilian consultant for this has been identified and will be procured through single sourcing. The ToR are ready and will be funded by MEM using grant funds from the AfDB. The policy, legal and regulatory framework activities are supported by Sida and NORAD.

There has also been private investment in biofuels. Agro Eco Energy Tanzania Limited of Sweden/SECAP wants to plant 22,000ha of sugarcane in Bagamoyo. They have planted seed cane and they want to form a joint venture with TPDC. Products to be produced are electricity, sugar and ethanol. The Government intends to create an ethanol market. TPDC will import ethanol through PETROBRAZ from Brazil, while waiting for production to start. The Petroleum Act 2008 supports blending, but regulations will have to be prepared. Cars will not require any modifications.

Sun Bio fuel of UK has an 8,000ha jatropha farm in Kisarawe and will be producing biodiesel. Guidelines stipulate that they have to satisfy the local market first. However, implementation of this guideline will require a biodiesel plant to be built in Tanzania. PROCON of Germany started farming jatropha in Mpanda through smallholder farmers. Guidelines do not support big jatropha plantations. The plant has to be grown either on boundaries or small farms. This is because there is no experience on jatropha farming; also it is a single use plant.

Diligent Company of Arusha buys jatropha seed from farmers to extract oil for export. The price of bio diesel is nearly the same as that of petrol - TZS 2000 at the moment due to small-scale production. Bio Shape of the Netherlands had a farm in Kilwa but left as a result of the world recession. KAKUTE of Arusha, which deals with technology promotion, is also involved in the jatropha business

Other oil seeds that could be used for bio diesel include croton. This crop is being promoted by Africa Bio Fuels of USA. A study of croton was conducted at the University of Dar es Salaam - College of Engineering and Technology by Dr. Oscar Kibazohi.

Liquid bio fuels production is scaling up slowly and cautiously. Stakeholders are against plantations of liquid bio fuels crops but support small scale farming of liquid bio fuels crops. Molasses is in plentiful supply and could be utilised for ethanol fuel production. There have been complaints of farmers being displaced for jatropha cultivation and they are now facing food shortages.

### Solar Energy

MEM does not have data on installed solar systems. The Transformation of Rural Photovoltaic Market in Tanzania (Solar PV Mwanza) Project concluded in December 2010. As an exit strategy, the activities of the Project were transferred to the relevant stakeholders namely TAREA, MEM, local governments and VETA. Best practices were documented (UNDP/GEF and GoT, 2009). Information is also available from the websites for the project and MEM. Video documentaries showing success, problems and ways forward were produced and the project experience is being disseminated. The main results are in the following areas:

* Standards on solar PV in place
* Mainstreaming of PV training in VETA curriculum
* Waiver of taxes on solar and wind energy equipment
* Incorporation of PV budget in local government budgets in the Lake Zone

The MEM/Sida Solar PV Project was completed in June 2011. The project was almost the same as Solar PV Mwanza Project but the latter was a pilot project for Mwanza region, which was later replicated in the other Lake Zone regions, i.e., Mara, Shinyanga and Kagera. The MEM/Sida Solar PV Project was implemented in 14 regions. The Solar PV Mwanza Project included demonstration projects, while the MEM/Sida Solar PV Project involved only awareness creation. This might have had a difference in people’s response. Currently, final evaluation of the MEM/Sida Solar PV Project is under way and documentation of best practices is yet to be published.

The main challenge in the two projects was in the financial engineering components including consumer and supply chain financing. The financial engineering components of both projects were unsuccessful. The Solar PV Mwanza Project failed to get commercial financial institutions convinced and interested to the finance solar PV business. The Project gave TZS 40 million to support SACCOS. The money was only sufficient to support 40 members of SACCOS and has all been used. The MEM/Sida Solar PV Project faced the same challenge. Initially it had planned to work with a commercial bank in financing the solar PV business but this did not materialise. National and local stakeholders are generally happy with the two projects described above.

The Sustainable Solar Market Packages (SSMP1) Project being implemented in Sumbawanga district, Rukwa region is a component of TEDAP. The SSMP component of TEDAP is financed 85% by the World Bank and 15% by the Government. It involves installation of public solar PV systems in institutions such as schools, health facilities, police stations and streetlights. A total of 300 systems have already been installed. The Project has also targeted the installation of thousands of private systems in the same district. The project is to be replicated in six other districts. One major criticism of the Project, voiced by stakeholders, is that local and to some extent national actors are not involved. This includes local technicians who are already trained on the technology.

According to data obtained from TAREA, trends in installed PV capacity have been growing year by year. This is depicted in Figure 2.3.

Solar PV Capacity Imported 2005-2009



Source: Authors from data provided by TAREA.

Solar water heating and other thermal applications such as drying and cooking are also being developed, but they have been left mainly to private companies and NGOs. The solar thermal applications, although important, are seen to be given less priority by Government and DPs as compared to PV applications.

One company, TATA of India, has shown interest in manufacturing PV modules locally in Tanzania. Previously another company, AATCO, had shown interest.

### Wind Energy

There is no big difference between now and last year, in terms of installed wind energy capacity. MEM and TANESCO are still doing assessments to determine the wind energy potential. Several sites have been investigated and two potential locations are Makambako and Singida with average wind speeds of 8m/s. Investors have shown interest. In Makambako, Sinotan of China is intending to install a 100MW capacity wind farm and sell the electricity to TANESCO. A feasibility study and EIA have already been conducted. Now the company is in the process of sourcing funds. In Singida, two companies are involved. Power Pool East Africa is planning to install 50MW at the start and increase to 200MW. They want to sell the electricity generated to TANESCO. A feasibility study has been completed. Wind East Africa is planning to install a 100MW plant, which is scheduled to be operational in 2014. Several other investors have shown interest by introducing themselves to MEM.

According to MEM’s Budget for the 2011/12 financial year, wind electricity will reach an installed capacity of 450MW by the year 2014. The projects in the pipeline are Singida - Wind East Africa - 100MW by June 2013; Makambako - 50MW and Singida up to 300MW by 2014. Both sites are 8 to 10km from the nearest grid connection.

Power generation from wind energy is becoming increasingly attractive to private local and international investors. There is big competition for the sites that have already been identified. Although wind power generation goes not add to firm capacity, it could contribute significantly to power generation. Tariffs for wind power in Tanzania are estimated at 12 to 14 US cents, but this could be brought down by using commercial loan financing to leverage equity investments.

Small-scale (up to 10kW) systems for isolated electricity generation have been installed in several sites including one at a school in Nyamisati, Coast region. This project was supported by REA. Another turbine of capacity 5kW was installed at Kisiju Kisiwani, Mkuranga district. It is used for lighting the harbour. There is no complete data on small wind energy systems that have been installed. Current information on companies that market wind energy equipment is available at TAREA. There exist several companies manufacturing and installing small-scale wind turbines for both electricity generation and water pumping. They include a company based in Dar es Salaam called REDCOT. However, the quality of products has yet to be assessed. Another potential site was identified in Usevya village, Mpanda district, Rukwa region. Wind assessment in Mafia is being conducted by REA.

**Singida WIND EA 100 MW Wind Farm Project**

The project developer is a partnership between Aldwych International and Six Telecoms. WIND EA has received a grid connection offer from TANESCO, and PPA negotiations with TANESCO started in August 2011.   WIND EA has applied to EWURA for a Generation Licence. EWURA visited the project area in August and is currently reviewing the application. WIND EA expects to be granted a Provisional Generation Licence by the end of 2011. The definitive Generation Licence will come at a later stage upon achievements of the complete list of requirements. The ESIA scoping report was approved by NEMC in 2009. The objective jointly set by MEM, TANESCO and WIND EA is to reach Financial Close in Q4 2012/13, with first power delivered in Q1 2013/14 and full Plant Commissioning (100 MW) in Q3 2013/2014. Aldwych International has seen a very high level of initial interest from the development financing community to invest in/provide debt to the project. The tariff will be finalised once several factors (EPC price, debt terms, timeline, foreign exchange risk, wind risk, Carbon Credits etc) are updated with final analysis and firm offers or agreements. The turbine manufacturer/EPC contractor and the lenders will be selected through international tender. WIND EA plans to launch tenders once an agreement is reached with TANESCO on the PPA.

### Geothermal Energy

There is a high geothermal resource potential for large-scale power generation in Tanzania, with temperatures of up to 255°C (dry steam). However, there has been no progress in developing the resource for power generation. Geothermal power generation has many advantages compared to all other power sources. The total potential geothermal power in the identified 50 sites is 650MW. Songwe in Mbeya region alone could generate 100MW of electricity.

MEM, GST, TANESCO and BGA of Germany investigated and took samples to Germany for analysis. The report has not yet been delivered but it should give good information for selling to investors. The Government has requested UN agencies to assist through access to expertise and funding. The University of Dar es Salaam has some experts in geothermal energy, in its Geology Department. They have been involved in investigating some geothermal sites in Tanzania including volcano activities on Oldonyo Lengai. In the current Sida research support to the University of Dar es Salaam, geothermal energy is one of the projects being supported. Currently there is one MSc. Student but more are showing interest to join.

Tanzania is a member of the rift valley programme - Africa Rift Geothermal (ARGEO). Other member countries are Tanzania, Uganda, Kenya, Ethiopia, Djibouti and Rwanda. The members meet every year. The Steering Committee has two members from Tanzania - MEM (1) and GST (1). A ministerial level meeting will take place this year. ARGEO gets funds from GEF/UNEP. A proposal for UNEP to help in development of geothermal resources is being prepared. TANESCO and the Government are investigating one site in Mbeya. There has not been much interest in geothermal power generation from private investors.

### Ocean Energy

There exists a high potential for power generation from ocean energy (tidal, wave and OTEC) in Tanzania. However, not much is known on the resources and the technologies for power generation are still new and have not yet been well developed. Interest in understanding the nature, potential and existing technologies has started to emerge in the country. This is one of the research projects being conducted under the current Sida research support to the University of Dar es Salaam. One PhD. student is involved in the research, which is based at the College of Engineering.

## Key Actors in Renewable Energy Sub-sector

The key institutions that represent the Government are MEM, REA and TANESCO.

REA is not confined to renewable energy only. However, very few renewable energy projects have been supported. Stakeholders complain that the conditions for accessing REA funds are tough, as a result only foreign companies get funding. The Lighting Rural Tanzania Initiative, which was launched in 2010, has most of the selected projects being based on renewable energy.

At TANESCO, there is a Small Power Producers (SPP) Unit. The unit was formed in 2010. The definition of small in this case is plants with capacity ranging from 100kW to 10MW. The maximum that has been received so far is 3MW. The Unit deals only with small IPPs using renewable energy. TANESCO has signed five SPPAs. Also four developers have signed letters of intent. TPC is now generating 3MW from bagasse but plans to increase to 17MW. TANWAT generates and sells to TANESCO. The developers of hydropower and biomass are happy with the feed in- tariff. Those generating from solar energy are happy with tariff only for mini-grids. Therefore they prefer the off-grid option. When the grid arrives they will have to lower their tariffs.

REA subsidises the cost of distribution networks. Small IPPs are given highest priority. This is in line with EWURA guidelines. SPPA is for 15 years but it can be renewed or terminated after the 15 years. There is a Small Tariff Working Group consisting of representatives from EWURA, TANESCO, Developers, MEM and REA. Under EWURA guidelines reinforcement of the grid is paid by the developer. To date there have no successful off-grid projects. There is a potential project for Mafia Island, which could be successful.

### Development Partners

Development partners have continued to support renewable energy development activities in the country. The major partners are Sweden, Norway, Netherlands, USA, UNDP, UNIDO, European Union Delegation and the World Bank.

### Industry Associations

Tanzania Renewable Energy Association (TAREA) has continued to play its role effectively as the umbrella Association for all actors in renewable energy in Tanzania. TAREA has the following membership categories:

* Corporate members - companies, NGOs and training institutions.
* Professional members - professionals dealing with energy and environment
* Associate - anyone interested in renewable energy issues
* Student members - vocational and higher learning institutions

Membership of TAREA is growing and currently it has more than 280 members of which 30 are corporate members. The TAREA Executive Secretary (ES) reported receiving new applications every week. TAREA has external members including: Simgas and SNV from the Netherlands; Green Energy Resources (Sao Hill Energy) who are developing a 50MW plant for cogeneration from biomass; Rural Energy Foundation formerly known as Solar Now; Solar Aid of UK, E+CO which provides financing to renewable energy projects; and CAMCO Advisory Services based in the UK. The ES also reported that several Chinese companies have applied for membership of TAREA.

The reasons for the increased interest in joining TAREA are the services and benefits they get, which include up to date policy, regulatory and legislative information including information and contacts about doing business in Tanzania; and the very good reputation that TAREA has within government and among the public. TAREA seeks to provide quality assurance on companies active in the sector.

The main activities of TAREA are the following:

Capacity building: TAREA with the support of the Sida/MEM Solar PV Project has conducted training on PV technology to 12 technicians and instructors of vocational training centres in each of the 14 regions in which the Project was implemented.

Renewable energy products quality control: TAREA is working with TRA, TBS and FCC in enforcing quality assurance on renewable energy equipment. It has conducted training to members of staff of the above institutions.

Awareness raising through television, its own quarterly magazine, films, website on potentials and limitations of renewable energy and identifying poor products. A total of 2000 copies of a video produced by TAREA are to be distributed all over the country. This activity has been financed through the Sida/MEM Solar PV Project. Also TAREA is encouraging members to report any malpractice in renewable energy industry.

Organising and participating in energy fairs/exhibitions. Since the last review, TAREA has not organised a national event, but it has been collaborating with other institutions in organising such events. These include the recent Forum of the MEM to mark the 50th Independence of Tanzania; and COSTECH’s Energy Fora.

Policy lobbying and advocacy e.g. on review the Energy Policy of 2003. TAREA’s opinion is that the policy has no strategic goals. Also TAREA is lobbying for Renewable Energy Feed-in Tariff (REFIT) i.e. they want differential tariffs for renewable energy. TAREA has met EWURA and a proposal has been prepared.

TAREA is involved in Clean Development Mechanism (CDM) activities: Currently it is in a study phase, working with CAMCO to see how to support companies through a Programme of Activities (POA) arrangement.

## Best Practice in the Development of the Subsector

One project among the many national projects that have been implemented by the Government and stakeholders that has properly documented best practices that could be easily accessible and utilised is the Transformation of Rural Photovoltaic Market in Tanzania (Solar PV Mwanza) Project.

Various policy documents, plans and manuals for various renewable energies exist. These include:

* Biomass Energy Strategy: being finalized with facilitation by GIZ
* Guidelines for Sustainable Liquid Bio Fuels Development in Tanzania
* Rural Energy Master Plan - under process
* Rural Energy Report

## Action points on Renewable Energy for 2011/12

**1 Government to invest more in promotion of renewable energy sources**: Action: Next review of MTEF Q3 2011/12. Responsibility: MEM (Assistant Commissioner Renewable Energy) and REA.

**2 Follow up on research for development of large-scale geothermal energy** for electricity generation and utilise existing capacity in national research and higher learning institutions. Action: After receipt of research reports due by December 2011. Responsibility: MEM - Task Force on Geothermal Energy.

**3 Scale-up of renewable energy technologies** that have projects proved to be technically feasible and economically viable and beneficial to the society. Action: In line with next update of MEM’s Strategic Plan Q3 2011/12. Responsibility: MEM - Assistant Commissioner, Energy Development and REA.

**4 Facilitate successful implementation of large-scale wind power projects**: Action: Immediate. Responsibility: MEM Directorate of Policy and Planning and Assistant Commissioner - Renewable Energy.

**5 Promote demand side management through energy efficiency and energy conservation**: Action: Implement existing proposals from 2011/12. Responsibility: MEM - Assistant Commissioner, Renewable Energy and Director of Policy and Planning

**6 Improve availability of hydropower** through research and scientific-based resource management. Action: In line with review of national energy policy. Responsibility: MEM - Assistant Commissioner Energy Development and Director Policy and Planning.

**7 Encourage large-scale growers of oil seed for biodiesel to build processing plants** in order to promote the use of biodiesel in the country. Action: In line with next update of MEM’s Strategic Plan. Responsibility: MEM - Assistant Commissioner, Renewable Energy and Director of policy and Planning

**8 Support research in ocean energy resources.** Action: In line with next update of MEM’s Strategic Plan Q3 2011/12. Responsibility: MEM - Assistant Commissioner, Energy Development

**10 Facilitate further technical support** to companies that are involved in the manufacture of renewable energy equipment such as small wind turbines and small water turbines. Action: Ongoing activity. Responsibility: REA.

***11 Rural Energy Master Plan***: This is to cover all forms of rural energy, but a primary motivation of the Plan is to prioritize rural electrification investments. This is because the significant costs of rural electrification are only justified if the electricity is actually used in the newly electrified centres, and this is best assured by focusing on centres with significant potential to provide new jobs and income from the use of electricity. This in turn will ensure that electricity bills can be paid and the scheme will be viable for TANESCO. There is a consensus that a *full-scale rural energy study is needed to prioritize investments properly, and also to explore the potential for renewables, including biomass and initiatives under GoTs SAGOT plan.* In line with contemporary thinking about a Master Plan, this should provide a guiding framework (strategy) rather than being a rigid implementation plan. When under pressure to implement sub-economic schemes, the RE Master Plan will be important in allowing REA to point to a well formulated basis for the promotion and approval of investments. *Target date for REA to complete negotiations for funding and commence procurement of consultants: December 2011. RE Master Plan study itself to be completed within a year*.

# Climate Change

## Introduction

Global warming is the result of an increasing concentration of carbon dioxide (CO2) and other greenhouse gases resulting from human economic activities that interferes with the climate system. The IPCCC fourth report points out that global greenhouse gas (GHG) emissions have grown since pre-industrial times, with an increase of 70% between 1970 and 2004.

Climate change poses a serious threat to development and poverty reduction. The effects of climate change include extreme weather events such as more frequent and severe drought and flooding in new areas and sea-level rise in the continent’s coastal areas. These pose increasing risks to health and life through reduced water supply, decline in crop yields, increase of vector-borne diseases such as malaria and dengue fever, disruption of both terrestrial and marine ecosystems as well as other important natural habitats. In Tanzania, the impacts of global warming are already visible. Analysis of measurements from 21 meteorological stations undertaken during the preparation of National Adaptation Programme of Action (NAPA) has shown a steady increase in temperature of 0.2C for the past 30 years.

Adverse impacts are now felt almost in all sectors of the economy. Severe and recurrent droughts in the past few years have contributed to the recent devastating power crisis. All major dams which are the main source of electrical power in the country fell to their lowest water levels during that period and they were temporarily shut down, leading to long hours of power black-outs. Consequently, additional resources which were allocated to facilitate other development programmes had to be reallocated for thermal electricity production. Furthermore, the drop in water levels of Lake Victoria and Lake Tanganyika in the recent past and the dramatic recession of 7 km of Lake Rukwa in about the past 50 years, are all attributed to climate change. Eighty per cent of the glacier on Mount Kilimanjaro has been lost since 1912. It is projected that the entire glacier will be gone by 2025. The intrusion of seawater into fresh water wells along the coast of Bagamoyo and the submerging of Maziwe Island in Pangani is evidence of the sea level rise impacts.

Adverse impacts of climate change pose a serious threat to social and economic development. Adaptation is an additional burden on developing countries. However, addressing climate change through adaptation measures can support environmental and social sustainability in developing countries.

Mitigation measures including Clean Development Mechanism (CDM) and other carbon trading project activities present a number of opportunities and benefits to the country if properly designed and implemented by stakeholders. Some of the benefits that could result from implementation of CDM projects are:

* Attraction of capital investments
* Technology transfer
* Improvement of efficiency
* Enhancement of sustainable development
* Enhancement of environmental conservation
* Biodiversity conservation
* Employment creation
* Poverty alleviation

CDM projects can be large and small scale. Afforestation/reforestation (A/R) projects, renewable energy, energy efficiency improvement projects and other project activities that result in emission reduction are eligible for CDM funding.

## Policy, Legal and Institutional Framework for Climate Change

The Vice President’s Office (VPO) is responsible for environment matters. The Department of Environment at VPO is organized in three sections namely Pollution Control; Natural Habitat Conservation; and Environmental Assessments. The climate change portfolio is under the Environmental Assessments Section under a Director for the Section. It has a total of 14 professional staff members. The VPO gets DPs support to handle climate change issues.

The three main pillars of climate change interventions are: science, mitigation, and adaption. Mitigation involves reduction of emission while adaptation is about coping with effects of climate change. The Climate Change Section at VPO is divided into mitigation and adaptation. The relevant legislation is the Environment Management Act (EMA) 2004.

Opportunities in climate change include energy efficiency. Methodologies used were provided by the CDM Board and are available at VPO. Renewable energy, natural gas and clean coal technology are seen by the VPO to have a big potential for CDM. Other opportunities include clean coal technology.

VPO is preparing CDM Handbook in consultations with, among others, UNIDO, MEM, REA and TIC. In 2007, VPO issued a CDM Guide for Investors, which outlined how the country can participate in mitigation measures. A Handbook for the Energy Sector, which includes the additionally criteria, is complete.

The National Environmental Management Council (NEMC) was established under the Environmental Management Act of 2004. NEMC’s role in climate change is to oversee the implementation of the law, to educate the public on environmental issues, to conduct research on environment and handling EIA issues. NEMC collaborates closely with VPO. The VPO would like to see NEMC do more to educate and create public awareness on climate change issues.

There exist sector environmental sections in different ministries, as stipulated in the Environment Act. The MEM Environmental Section has more than 10 personnel. However, the visibility of this section in terms of its involvement in handling climate change issues is almost non-existent. Key national actors in the renewable energy sector are not aware of the existence of the Section.

There are complaints about delays in processing CDM applications at the DNA. It is widely agreed among government and private sector stakeholders that the coordination mechanism in climate change is weak. As one stakeholder put it, it is the weakest in East Africa. There are no dedicated people for climate change at VPO. The Climate Change Section has less than 10 personnel (8 staff members). The Climate Change Unit is not visible. Also the budget for review of projects depends on government OC, which is inadequate. Complaints on the inadequate performance of the Units have been heard in government and also private sector.

In its own document, (VPO, 2010) listed the challenges facing the office with regard to CDM as follows:

* Limited funding and financing
* Limited expertise
* Limited awareness to the private sector
* Lack of transparency
* Bureaucracy in the process
* Underdeveloped capacity of the DNA
* Long gestation period on investment returns

## Research on Climate Change

There exists a very high capacity and a large pool of experts in national institutions of higher learning to handle energy resources management and environment issues, including climate change. The University of Dar es Salaam, for example through its Colleges of Engineering and Technology (CoET), Natural and Applied Science (CoNAS) and Institute of Resources Assessment (IRA) have a good track record in relevant subjects at undergraduate and postgraduate levels. Also the University conducts research on energy related environmental issues. It also offers consultancy services and short training courses in the subject.

However, the main challenge in this regard remains that of weak interaction between government and project implementers within higher learning and research and development institutions in the country.

## Climate Change Adaptation

The Government, through VPO and in collaboration with DPs, is implementing a number of projects addressing climate change adaptation. These are highlighted below:

* Adaptation and vulnerability assessments of climate change impacts on vulnerable communities and sectors (agriculture, health and water).
* National Adaptation Programme of Action (NAPA) Preparation: NAPA Committees and Technical teams in place, NAPA project profiles have been identified with financial support.
* NAPA implementation: One project has been approved (USD 3.5 million). Activities will include addressing the impacts of sea level rise Pangani, Bagamoyo and Rufiji. It will also cover awareness and other enabling activities.
* EU Global Climate Change Alliance (GCCA) in Tanzania: Holistic approach to address climate change adaptation and mitigation issues at the community level in three pilot ecovillages representing specific agro-ecosystems of the country (island/coastal, dryland and highland) – EUR 2.2 millions.
* Enabling activities including: a DANIDA capacity Building support (about USD 1.5 million); support to VPO (training; equipment, awareness; Copenhagen process); TMA and quick scan of climate change impacts in Tanzania; and One UN JP 11 programme (USD 4.5 million) to address a number climate adaptation related activities.

Several challenges have been encountered in implementing climate change measures in Tanzania. An interesting observation is that energy projects can act as both adaptation and mitigation projects in Tanzania. There are more needs than the available resources, particularly on adaptation. Of more than ten projects under NAPA only one is being funded. A quick scan exercise has revealed more impacts in almost all sectors that will need increased financial support. Also access to resources is cumbersome and takes time. For example, NAPA was initiated in 2003 and completed in 2007, but the first funding was released in 2010.

Mitigation activities are limited both in scope and available capacity. It is expected that with declining forests and other adverse impacts, energy projects can act as both adaptation and mitigation projects in Tanzania. National and international initiatives complement each other in addressing climate change.

Although the Government has put in place a programme for climate adaptation, which would potentially have positive impacts, the implementation of most of the projects is yet to start.

## Climate Change Mitigation

Carbon markets and project based mechanisms for emissions reductions emerged from the Kyoto Protocol, which came into force in 2005, as part of the United Nations Framework Convention on Climate Change (UNFCCC). The Protocol allows for several flexible mechanisms or tools to assist countries in reducing emissions, including Emission Trading or Cap and Trade, Clean Development Mechanism (CDM) and Joint Implementation (JI). Under the CDM, a renewable energy project, such as the implementation of photovoltaic systems, sells the carbon credits generated by registering the project as a CDM project and thereby realising carbon finance opportunities. However, CDM is criticised for its high processing/registration costs, lengthy delays related to CDM bureaucracy and for uneven distribution of project approvals (the vast majority of CDM projects have been in India and China). One variant of the CDM is the Programme of Activities (PoA), also called ‘Programmatic CDM’, which was initially an attempt to respond to the criticisms of CDM. A PoA is a programme of emission reduction activities of a similar type, under which these projects are processed and registered together as one programme under an umbrella entity, called a Coordinating and Managing Entity (CME).

More than 10 projects have applied for CDM and are at different stages in pipeline. There are also new submissions, which have been received and will be reviewed soon. Many projects will appear under the Programme of Activities (PoA) portfolio i.e. lumping small projects. REA and the World Bank have already compiled a total of 27 projects. Also TAREA and CAMCO have agreed to work together in this respect. A proposal has already been prepared.

No project was certified for CDM within the past one year. The only certified project in Tanzania remains that of Mtoni Dam Site in Dar es Salaam, which is methane capture/flaring project. Artumus Gas Power Plant Project in Mtwara is in the validation stage. As of 10th November 2010, there were 16 CDM Projects registered at the DNA at different stage in the pipeline in Tanzania, see Table 2.10. Even within government the lack of awareness among stakeholders on CDM is considered to be among the causes of this low number of CDM projects.

* + - * 1. CDM Projects Operational and in Pipeline (November 2010)

| **S/N** | **Project Title** | **Project Owner** | **Location** | **Capacity/ Output** | **Life span** | **Status** |
| --- | --- | --- | --- | --- | --- | --- |
|  | Land Gas Recovery “Mtoni Dumpsite” Dar es Salaam, Tanzania | Consorzio Stabile Globus & Dar es Salaam City Council | Dar es Salaam | 2.5 MW and 202,217 t  CO2/year | 10 years | Operational |
|  | Singida Wind Electricity Project | Wind-e-Tanzania | Singida | 60 MW and 70,000 t CO2/year | 10 years | PIN  approved |
|  | Sisal Waste  Electricity  Project | Katani Ltd | Hale -Tanga | 5 MW and 44,087 t  CO2/year | 7 years | PIN  approved |
|  | Improved  Stoves | TaTEDO | Arusha and  Kilimanjaro | 36,000 t CO2/year | 10 years | PIN  approved |
|  | Arusha Biogas | CARMATEC | Arusha | 3,728 t CO2/year | 10 years | PIN  approved |
|  | Mwenga  Hydropower  Project | Mwenga Hydro  Ltd | Iringa | 4 MW and 101,762 t  CO2/year | 7 years | PIN  approved |
|  | Ruhudji  Hydropower  Project | Aldwych  International Ltd | Iringa | 1,980 GW and  1.21million t CO2/year | 7 years | PIN  approved |
|  | Mafia Biomass  Electricity  Project | Ng'ombeni Power  Ltd | Mafia | 1 MW and 66,580 t  CO2/year | 10 years | PIN  approved |
|  | Mapembasi  Small  Hydropower  Project | Natural Resources  Development Ltd | Ihanga Village | 10 MW | 7 years | PIN  approved |
|  | Ngombezi  Small  Hydropower  Project | Mkonge Energy  systems Ltd | Korogwe | 3.2 MW and 12,189 t  CO2/year | 7 years | PIN  approved |
|  | Mbeya Cement  Fuel Switch  Project | Mbeya Cement  Company | Mbeya | 50,343 t CO2/year | 7 years | PIN in  approved |
|  | Tanga Cement  Fuel Switching | Tanga Cement  Company | Tanga | 17.5 MW and 84,673 t  CO2/year | 10 years | PIN in  progress |
|  | Sagera Sisal  Waste Biogas  Project | Sagera Ltd | Tanga | 4 MW and 50,912 t  CO2/year | 7 years | PIN in  progress |
|  | Mtwara Energy  Project | Artumas | Mtwara | 40,000 t CO2/year | 7 years | PIN in  progress |
|  | Sao Hill Energy  Combined and  Power Project | Sao Hill Energy  Ltd | Mufindi | 15 MW and 54,134.7 t  CO2/year | 6 years | PDD not  approved |
|  | Tanzania  Jatropha Stove  Project | Kiwia & Laustsen  Ltd | Tanzania | 45 MW and 40, 750 t  CO2/year | 10 years | PIN not  approved |

Tanzania has a big potential to participate in the new instrument, Programme of Activities (PoA). This is an opportunity for different actors, such as government, utilities, banks, municipalities and other private or public entities and institutions, to tap low-cost GHG reduction and certification potential of micro and small activities in private households, agriculture, small enterprises and the transport sector.

Despite the challenges facing the Climate Change Section at VPO, there has been growing interest (increased awareness) on climate change issues on the part of government and private sector. The VPO has organized three workshops for stakeholders. At the international level big developments have sensitized people and made them aware of funding opportunities for carbon trading. Currently the Government is implementing two international conventions.

The project CD4CDM, supported by UNEP and Risoe of Denmark, conducted capacity building for personnel involved in CDM. Also UNDP has CDM capacity building programmes.

There exist a number of barriers for proper participation of Tanzania in GHG emission reduction initiatives including the challenge of dealing with complicated international methodological requirements.

Only two projects have been approved for CDM in Tanzania, with an estimated total of over 240,000 CERs. This makes Tanzania amongst the first ten countries with CDM projects on the continent and the biggest amounts of CERs in Eastern Africa. Also Tanzania has over five CDM projects with LONO and PDD letters issued. These are Katani Limited (2); Mbeya Cement; Segera; TaTEDO and Wind Energy Tanzania.

Activities undertaken are:

* Promotion of renewable energy in rural areas (e.g. wind and solar powered water pumps in North Western Tanzania - Tarime)
* Promotion of low carbon wood fuel cook stoves (e.g. in Morogoro, Coast and Kilimanjaro)
* Support for afforestation and reforestation and enhancement of carbon stocks (e.g. afforestation in Kilimanjaro, Njombe and Songea)

A lot of activity is going on in Tanzania with regard to climate change mitigation, both at government and DP levels and through private initiative. Although very few project have so far applied and/or qualified for GHG emission trading (therefore realising monetary benefits), the impact on climate change mitigation of these and other projects in Tanzania are already being realised.

## Action points on Climate Change and CDM for 2011/12

***1 Review the existing institutional frameworks***for handling environmental issuesrelated to energy projects with a view to improve/streamline coordination of government actors in order to build synergy and avoid duplication in line with the national state of environment*. Action: In line with next update of Strategic Plan Q3 2011/12. Responsibility: MEM - Assistant Commissioner, Renewable Energy.*

***2 Liaise with the Environmental Assessments Section in the Department of Environment****,* with a view to remove bottlenecks in processing CDM applications*. Action: Immediate. Responsibility: MEM - Assistant Commissioner, Renewable Energy*

***3******The Environmental Section at MEM is committed to becoming more visible***specifically to non-government stakeholders participating in climate change matters. *Action: Energy sector communication strategy by June 2012. Responsibility: MEM - Assistant Commissioner, Renewable Energy.*

***4 National research and higher learning institutions:***Government will support and make effective use of the existing capacity in national research and higher learning institutions in addressing climate change issues, energy sector planning and projects implementation. *Action: Immediate. Responsibility: MEM - Assistant Commissioner, Energy Development and Director of Policy and Planning*

***5 Build capacity of existing energy sector personnel on climate change issues****:* This is to be done primarily through national universities*. Action: Immediate. Responsibility: MEM – Environment Unit*

# Capacity Building in the Energy Sector

All institutions interviewed on their capacity building initiatives (MEM, TANESCO, REA, EWURA and TPDC) reported financial constraints in financing long-term training, except for TPDC.

MEM has suffered delays in staff recruitment. Due to cessation of recruitment for ten years from 1997 to 2007, there is huge gap between the senior management level staff and lower levels in the ministry. This can be hindrance to clear succession plan as many of the employees in the principal level are attaining retiring age. The staff should be capacitated to keep up with new technologies, especially with regards to gas. MEM also does not have a library for reference, which would be a welcomed addition.

While TANESCO reported financial constraints to recruit the adequate number of staff, REA on the other hand does not appear to have any major challenges in terms of internal staff as it is a new and growing organization and recruitment procedures are on-going. The main challenge for REA is the capacity of the developers in private sector. They lack financial commitments and skills to develop project plans and execute them as planned.

In EWURA, all staffs are employed on contract terms and training is mainly short term. Currently, it is facing financial constraints in supporting the training of its staff as this is usually costly because most of it is highly specialised.

TPDC reported delays and bureaucracy in recruitment procedures. The corporation has to get approval from President Office Public Sector Management (POPSM/Utumishi) which is usually delayed. Currently, the total establishment is 140 staff, however, the current number of staff in post is 121. With the effect of cessation of employment from 1997 to 2007, the corporation is faced with a succession gap. Staffs at the senior levels are attaining retiring age while staffs at the junior levels have not attained the skills and experience adequate to take up such roles.

***Capacity Building Agreed Action****:* For projects that are using new technology, the project implementers will in future be required to have a plan to allow attachments of trainers and trainees from various technical colleges and universities. The attachment will provide the young technicians with practical experience and will reduce the time and resources for training when they start working. Apart from technical training, staff should also be given the capacity to take up managerial responsibilities especially in MEM and TPDC where senior staff are attaining retiring age leaving the majority at junior levels. Another option will be to fill in the positions through contractual employment, at least temporarily, or have external resident advisors inside the institutions, particularly in MEM and TANESCO. Action will be taken through the World Bank’s ESCAP project to support capacity building.

1. Sector Governance

# Actors and Governance Arrangements

The key actors in Energy Sector Governance are:

* Parliament
* Parliamentary Energy Committee
* Cabinet
* Ministry of Finance
* Ministry of Energy and Minerals
* Energy Development Partners
* TANESCO
* REA
* TPDC
* EWURA

## Parliament

The ultimate authority in terms of sector governance is the Parliament. This year it has exercised its full governance authority over the sector during the debate on the 2011/12 budget for MEM. Members of Parliament (MPs) questioned the clarity of MEM’s budget presentation stressing that it did not have sufficient supporting information on how budgetary resources would be used to overcome the electricity shortage. In response, the Prime Minister sought and obtained an adjournment of the debate on MEM’s budget for a period of three weeks to allow time for a detailed physical and financial plan for resolution of the electricity crisis to be prepared. The debate resumed in full Committee in August and MPs approved the plan and budget.

During discussion MPs indicated that they were concerned that planning process weaknesses in the sector had exacerbated problems arising from poor hydrology and called for improved planning in the sector.

It is to be expected that the Parliament will continue to show a close interest in the sector and in particular to improvements to the planning process.

## Parliamentary Energy Committee

The Parliamentary Energy Committee is a committee of Parliament charged with oversight of the Energy Sector. In the last year it has been active and vocal on issues of resolving the energy crisis and the planning processes in the sector. It has also recommended changes to MEM budgets with increases for Government funding of REA and TPDC.

Last year’s review was intended to cover the role of the Parliamentary Energy Committee. That was not possible as delays in the budget approval process meant that the consultants did not have access to the committee members during the stakeholder interview period. Although the stakeholder interview period was moved for this year’s review, there were delays in the budget approval processes and access was again not possible.

***Action Item:*** *As and when plans in the energy sector are developed or updated MEM should seek to brief the Committee on both the plans themselves and improvements to the process. Specific Action – present the forthcoming update of the Power Sector Master Plan to the Committee. Responsibility: Minister and Permanent Secretary MEM.*

## Cabinet

The Cabinet has overall responsibility for the governance of the energy sector which is delegated in part to the Minister for Energy and Minerals. One of its roles is to determine where provisions of various laws allowing special action in the public interest should apply in relation to the energy sector.

## Planning Commission

The Planning Commission has published the Five Year National Development Plan. This is a new element in the governance structure. The Planning Commission does not formally directly oversee any of the activities of the energy sector, but it is responsible for ensuring consistency in national planning and ensuring synergy between different sector plans. It intends to undertake a monitoring role and lead the planning and budgeting process in Government.

## Ministry of Finance

The Ministry of Finance’s primary role is to scrutinise MEM submissions of the MTEF and the Budget. It does this for and on behalf of the Cabinet through the Budget Commissioner. In addition the minister responsible for finance is required by law:

* to approve and sign all loan agreements between the GoT and lenders (other governments and their agencies, private and public sector lenders, and multilateral institutions);
* to negotiate, approve and sign subsidiary loan agreements with public and private actors in the energy sector;
* to approve and sign any guarantees to public and private actors in the energy sector.

It should be noted that these legal requirements do not include the responsibility for fulfilment of loan conditions and conditions precedent. There have been instances of delays in the process of arranging subsidiary loan agreements and guarantees in recent years in the energy sector.

The legal provisions for issuing government guarantees limit the extent of the guarantee to less than the full amount of the related financial liability. Where it is in the public interest that this limit be raised the minister responsible for finance can recommend special approval by the Cabinet subject to legal procedure. Section 9 reports on how this provision has been applied practice in some instances in the energy sector.

The Permanent Secretary and Paymaster General have specific responsibilities for pubic financial management and oversight of the management action of Warrant holders at Vote level.

## Ministry of Energy and Minerals

The Ministry of Energy and Minerals is responsible for developing and facilitating implementation of energy policies and ensuring sustainable development and utilisation of energy resources in the country. Its fundamental responsibility is to co-ordinate and put in place appropriate policies, laws and regulations and provides their oversight to ensure sustainable development. MEM activities are executed by various departments, units and agencies.

In terms of policy the responsibility lies with the Minister acting for and on behalf of the Government. The Permanent Secretary is the Accounting Office for the Ministry Vote (58) and so is responsible and accountable for all public financial management matters relating to the Vote including the use of on-lent Government resources and the assessment and management of risk associated with guarantees issued by the Government in the sector including those related to Private Public Partnerships.

## TANESCO

TANESCO is a wholly state owned company responsible for transmission and distribution of electricity from it grid. The Chairperson and Board of Directors have governance responsibility for TANESCO acting for and on behalf of the shareholder represented by the Minister of Energy and Minerals.

## Rural Energy Agency (REA)

REA is an autonomous body under MEM. Its main role is to promote and facilitate improved access to modern energy services in rural areas of Mainland Tanzania.

The Rural Energy Board governs REA. It consists of:

* a representative from the Ministry responsible for energy;
* a representative from the Ministry of Finance;
* a representative from the Ministry responsible for regional administration and local government;
* a representative of the Private Sector;
* a representative of the Tanzanian Bankers' Association;
* a representative of a civic society;
* a representative of the Development Partners;
* a representative of consumers.

REA/REF Governance Arrangements



Source: Uisso (2011)

The degree of autonomy has been questioned during this year’s review process with reference to directives from MEM. Formally the governance arrangements are clear. The Board reports to the Minister. The Agency should have an annual performance arrangement with MEM as it is MEM that provides the funding for the agency. How REA is held to account for performance should be set by legislation and regulations. This should operate so that the management decisions of REA are overseen by the Board on a regular basis and in a formal way. MEM should exercise its oversight of REA exclusively through its membership of the Board. The MEM Board member is accountable for the exercise of his or her functions to the Accounting Officer of MEM in respect of financial matters and to the Minister in all other respects. If there is a perceived need for MEM to engage with REA management other than through these governance arrangements it should be treated as an exceptional matter that should be followed up by in an improvement in the operation of the standard performance accountability arrangements between REA and MEM so that the perceived need is not likely to re-materialise.

***Action item****: JESWG will consider whether it should change its membership to include the Managing Director as a member of the JESWG rather than the current arrangement whereby the MD can be asked to report to JESWG. Action Q4 2011. Responsibility: JESWG.*

## EWURA

The Energy and Water Utilities Regulatory Authority (EWURA) is a regulatory authority responsible for regulation of the electricity, petroleum, natural gas and water sectors. Its functions include, tariff review, licensing, performance monitoring and enforcement of standards of regulated goods and services, taking in to account service quality, safety, health and environmental conservation.

EWURA is governed by a 7 member Board of Directors consisting of a non-executive Chairman appointed by the President of the United Republic of Tanzania and five non-executive members appointed by the Minister responsible for EWURA (MEM) from a public competitive recruitment process: the Director General is also an executive member.

## TPDC

The JESR 2010 stressed the importance of clarity of stakeholder roles and responsibilities in the Gas sector. The Draft Gas Act Part II deals with these roles and responsibilities (source MEM report on JESR recommendations implementation - Annex C). The Draft Act is under review by the Attorney General.

# Joint Energy Sector Working Group (JESWG)

The JESWG is one of the institutions through which MEM fulfils its governance responsibilities in the energy sector. It comprises the MEM staff and certain Development Partners. Box 3.2 shows the organisations participating in the JESWG in 2010/11.

The JESWG has terms of reference setting out its purpose, responsibilities and reporting requirements. DP participation in the JESWG is facilitated by the Energy Development Partners’ Group (EDPG). The activities of the EDPG are governed by a memorandum of understanding and a terms of reference which was reviewed and updated this year, The EDPG continues to meet quarterly and operates ‘virtually’ to prepare for JESWG meetings and seeks to speak as “one voice”.

Box 3.2 Organisations participating in the JESWG

**Lead Government Counterparts**

Ministry of Energy and Minerals (Leader)

**Agreed Lead Arrangement**

Lead: Sweden

Deputy: World Bank

**Agreed Active Members**

Norway

Japan

Korea EDCF

AfDB

**Contributing/Delegating**

Netherlands

European Commission

France

USA – Millenium Challenge Corporation

Finland

* + 1. **Performance of the JEWSG**

In last year’s review the JESWG was perceived by the participants consulted to be developing well and to have been successful as a forum for: information sharing; consultation; joint analysis and assessment of (some) energy sector issues. It had not been systematically considering performance issues and providing advice on ‘policy, budgetary and other issues’. EDPG members were generally of the view that the JESWG had been effectively led by MEM. TANESCO presentations had become a regular feature of meetings and were seen by DPs as important and useful, particularly given the significant role of TANESCO as an implementing agent in the energy sector. REA and TPDC attended some meetings in 2010.

Last year’s review reported that EDPs consulted considered that the Lead and Co-Lead DPs had been effective in fulfilling their duties with respect to the JESWG and the EDPG. The EDP Lead continued in the role in 2010/11. It has been agreed that the World Bank and SIDA will swap roles from 1st September 2011, with SIDA taking over as Lead and the World Bank as Co-Lead.

Custom and practice has developed a JESWG Core Group comprising MEM as JESWG lead and the Lead and Co-Lead DPs. This had been an effective ‘working group’ of the JESWG and facilitated the preparations and follow up of JESWG meetings, as well as the commissioning of JESR consultants. It also fulfils the Secretariat role required by the ToR.

JESWG operation has benefitted the functioning of the EDPG. More DPs are joining and the EDPG is open to DPs who currently do not participate either because they are not yet contributing to the sector or are relatively new to Tanzania and not yet familiar with Government-DP co-operation mechanisms. The existing EDPs have asked MEM to encourage participation from China and Russia. MEM has had discussions with China and Russia in developing energy projects.

The EDPs have developed an EDPs Active Projects Matrix, which gives summary information on projects and activities and procurement and contracting progress. This has been expanded in 2010/11 and provides more detailed information on EDP Projects and has taken account of recommendations of last year’s JESR.

## JESWG Meetings in 2010/11

The JESWG group met twice in 2010/11: in December 2010 and in January 2011.[[19]](#footnote-20) A meeting was scheduled for March 2011, but this did not take place. It is expected that the normal process of JESWG meetings will resume from September following the completion of the 2011/12 budget discussions with Parliament and the completion of the Emergency Generation Plan and its integration into the short, medium and long term plan for the power system. MEM’s annual action plans continue to show four quarterly JESWG meetings per year.

In 2010/11, JESWG discussions focused on the finalisation of last year’s JESR report and subsequently issues related the power crisis and how responses to that crisis should fit in with the strategy and planning systems. No meetings were held after January apparently because of changes in MEM management and its focus on the process of preparing the budget. Consideration of the budget preparation process is, however, part of the JESWG terms of reference. EDP members believe that the briefings from TANESCO, REA and TPDC need to be developed further.

Of the 6 recommendations for the operation of the JESWG made in last year’s review only one has been implemented. The 4 agendas for standard quarterly JESWG meetings recommended in last year’s JESR have not been implemented. This recommendation was made specifically to improve the functioning of the JESWG and to address the PFM issues highlighted last year and in particular relating to those of the planning-budgeting link, capture of DP funding in the budget and the “over-budgeting” problem. The recommendations specifically referred to the creation of working groups to operate between JESWG meetings and to prepare for and inform those meetings.

MEM is discussing a Concept Note with SIDA for capacity building support to MEM that includes support to the operation of the JESWG and its Secretariat.

***Consultants’ recommendation*** *on JESWG: The meeting agendas and recommendations of last year’s JESR in respect to the operation of the JESWG, including the use of working groups should be adopted by the JESWG at the earliest opportunity and in advance of any external support that is under discussion between MEM and SIDA. Further support to the operation of the JESWG should be actively explored. Action Q3 2011 Responsibility MEM to initiate.*

Annex C presents the relevant recommendations for the JESWG.

# Joint Energy Sector Review Process 2011/12

The current process for the JESR could work for 2011/12. The key issue is timing the review process so that it fits with the Government’s PFM Cycle. For it to be effective it has to be conducted in the period when MEM’s financial and performance reports for the fiscal year are available, i.e. August 15th. The recommendations for JESWG operation are specifically aimed at achieving that integration with the PFM process. Some aspects of the review process could be enhanced.

The consultants have observed that there is a tendency on the part of JESWG members to see the review as the ‘consultant’s review’. This is despite that fact the ToR for the consultants clearly refers to ‘support’ for the review. There has also been reference to the ‘neutrality’ of the consultants. The review is not a consultants’ review; it is not neutral: it is a ‘joint’ process conducted and published by MEM with the support of its DPs and contracted consultants who report to the JESWG. The JESR is a key document that MEM presents for stakeholders. It is used to inform the annual performance review for General Budget Support. MEM staff actively and effectively supports the consultants’ with respect to the logistics of the review.

It should be noted that TANESCO, REA and TPDC report to MEM on their performance. If that process is effective the performance information relating to these public bodies should be available for the Review through MEM. It should not be necessary for consultants to be collecting data directly from MEM.[[20]](#footnote-21) Consultant contact with these bodies and EWURA in the stakeholder interview process should be focussed on eliciting the views of the management of these bodies on the performance of the sector as stakeholders in the sector.

***Consultant recommendation****: MEM takes a more direct role in the management of the review process and in the process of producing the final JESR Report, particularly in respect of: providing performance reports and data from public sector actors and translating recommendations from the review process into actions for the coming year. Action – from Q3 2011. Responsibility MEM Lead of the JESWG.*

Sector Policy, Strategy and Planning

# Introduction

This section of the report is organised in terms of the PFM process for the energy sector as a whole: i.e., it presents policy in all energy subsectors together, followed by a presentation of strategy for all subsectors and so on for plans and planning tools. This structure is used to assess completeness. For example, is the current policy framework in the energy sector complete? Are all the necessary strategies for achievement of policy goals and objectives decided and in place? Are all the necessary operational plans for implementation of strategy in place? Completeness is important, and so is coherence. This presentation is less useful for an assessment of the coherence of policy, strategy, planning and budgeting within the sub-sectors. For example to show that there is a rural energy policy supported by legislation and regulation with a clear strategy for achievement of the policy goals and objectives supported by clear and feasible plans backed up by budget allocations. This section reports that there are some parts of the policy, strategy, planning and budgeting architecture that have not yet been developed.

# The Policy, Strategy, Planning and Budgeting (PSPB) Architecture of the Energy Sector

The PSPB architecture is hierarchical. Policy informs strategy which informs planning which informs budgeting. Looking at it the other way round: a budget sets out the costs of undertaking the activities set in the plan for one fiscal year; the plan sets out the activities over several years that will be required to implement the strategy; the strategy presents the means by which policy goals will be achieved.

Last year’s review presented a conclusion that the causes of some of the perceived problems in budget and project execution were to be found in planning process weaknesses which were related to insufficient adherence to government planning and budgeting processes. During the course of 2010/11, it became clear that the origins of the energy crisis stem as much from past planning weaknesses as from the immediate water shortage for hydropower generation that emerged from November 2010. Dams had been at a low level because thermal capacity had not been introduced as planned and some thermal capacity had been lying idle. A widely used explanation for this idle capacity was that legal disputes with IPPs prevented TANESCO from using these generation sources. Whilst this was true an important question was why the legal disputes had arisen in the first place. The origins of those disputes have been linked back to weakness in planning processes – notably the failure to apply procedures for financial and risk assessment in relation to IPPs, which are properly part of the planning process.[[21]](#footnote-22)

Problems with the development of sustainable IPP arrangements were not the only reason power generation did not grow. Generation expansion has been a performance indicator for the Performance Assessment Framework (PAF) for the General Budget Support (GBS) arrangements between Government and its DPs. The PAF assessment for the energy sector in 2010 was rated satisfactory because it achieved a score of 63.5 %. Two out of three targets were achieved. The target not achieved was the increase in total installation capacity there was a shortfall of 60 MW or 5 per cent of target level of generation capacity for 2010. The delays in developing this capacity were related to management of the planned implementation process.

Evaluations of project implementation in most cases attribute the cause of the delay to insufficient planning of the details of the process of project implementation and unrealistic timing for completion of each stage of the process. In effect, hurried preparation leads to slow implementation.

There is now widespread[[22]](#footnote-23) stakeholder concern that there are weaknesses in the energy sector planning processes particularly in respect to the power sector master plan. The PSMP is supposed to be updated annually. The last update was in 2009.

The Power Sector Master Plan is what it says it is a ‘Master’ Plan. In many respects it is a strategy and so needs to be supported by more detailed plans. The delivery dates for commissioning of new generation and transmission and distribution capacity are ‘estimates’ of what is thought to be possible. But the estimate is based on rules of thumb for how long it takes to implement a project. This is a reasonable way to approach strategy, but it needs to be supported by comprehensive, detailed plans that take account of all steps and, of course, should be updated as circumstances change.

A IPP hydropower project involves the following stages: project identification; pre-feasibility study; feasibility study; economic appraisal; environmental and social appraisal; technical design, financial appraisal; risk assessment; (perhaps negotiation of Memorandum of Understanding); procurement of advisers and contractors; contracting of advisers and contractors; legal and financial due diligence; licensing; PPP negotiation; PPA negotiation; financing identification; financing negotiation; fulfilling financing conditions; budgeting; and then implementation supervision among others.

At each stage there is a decision point which in itself takes time and may result in changes to the timings of implementation and may result in changes to or cancellation of the project, for example if an environmental and social assessment is unfavourable, or if at the feasibility study stage it is found that circumstances have changed (perhaps costs) so that its place in the least cost schedule should change or even it is unaffordable or cannot be financed.

Decision making requires stakeholder consultation and the proper and timely involvement of the relevant decision makers.

Planning should deal with all these issues carefully so that careful (and perhaps slow) preparation ensures timely and successful implementation.

The identification of planning as a problem is correct, but planning should not be seen independently of the PSPB architecture as a whole. The PSPB architecture in the energy sector is not yet complete. Box 4.1 shows the existing PSPB architecture for the sector and indicates where features are missing, or require updating or in the process of development.

Box 4.1 Policy Strategy Planning and Budgeting Architecture

|  |  |  |
| --- | --- | --- |
|  | **Document** | **Status** |
|  | | |
| **Policy** | | |
|  | National Energy Policy | Not yet updated (due 2011) now scheduled for June 2012?? |
|  | Electricity Sector Policy | Cabinet Paper on the electricity sector required by the Electricity Act of 2008 has still to be presented |
|  | Tariff policy |  |
|  | Rural Electrification Policy | Draft for stakeholder consultation |
|  | New and renewable energy policy | In preparation due for presentation to Cabinet ?? |
|  | Feed-in tariff policy | ?? |
|  | Biofuels Policy | In prepararation with consultant support due for completion by ?? |
|  | Subsidy policy | ?? |
|  | Energy Conservation and Efficiency Policy | At proposal stage |
| **Strategy** | | |
|  | National Growth and Poverty Reduction Strategy 2 | Covers energy but there were delays in preparation and approval |
|  | Power Sector (Reform) Strategy | In preparation |
|  | Gas strategy | Not in place – MEM’s focus is on a Utilisation Master Plan |
|  | Climate Change Adaptation Strategy |  |
|  | PPP Implementation Strategy | In preparation - deadline June 2012 |
|  | Biomass Energy Strategy | In preparation with support from GIZ |
|  | Rural Energy Strategy |  |
|  | Rural Electrification Strategy | After completion of Master Plan |
| **Plans** | | |
|  | National Development Plan | Stresses the importance of energy for growth and development |
| ***Energy Sector Plans*** | | |
|  | MEM 3 year Strategic Plan | Not a rolling plan and needs to be updated and aligned to NDP in 2012 |
|  | Power System Master Plan | Not updated since 2009 |
|  | Gas Utilisation Master Plan | In preparation |
|  | Rural Energy Master Plan | Developed in 2006 |
|  | Rural Electrification Master Plan | In preparation |
|  | Climate Change Adaptation Plan |  |
|  | Environmental Action Plan |  |
|  | TANESCO Financial Recovery Plan |  |
| **Performance Budgeting tools** | | |
|  | MEM Medium Term Expenditure Framework | Updated annually |
|  | Development Projects - Annual Action Plans | Updated annually - although not available for all projects |
|  | MEM Annual Budget | Updated annually |

# Sector Policy

## Energy Sector Policy

The National Energy Policy review and update is underway. It was due to be completed in 2010/11. The Strategic Plan and MTEF refer to a completion date of June 2012. In addition to the Energy Policy there are policy documents relating to the energy sub-sectors and aspects of energy policy that require more specification than presented in the national policy document. MEM also intends to extend its policy with new documents. See the listing in Box 4.1.

***Consultants Recommendation****: A review and update of National Energy Policy should be made which ensures that there is clear policy direction for all sub-sectors in energy. This should ensure completeness and coherence of sub-sector policies. If separate sub-sector policies are deemed appropriate by MEM these should be prepared in parallel. The policy documents should explicitly address energy subsidies and identify supporting legislative actions (laws and regulations) Action: By end 2011 (in order to guide next PFM Cycle) Responsibility: Minister for Energy*

Policy documents generally require further specification through legislation, which in turn is further specified in regulation and guidelines. It is through the combination of policy documents, legislation, regulation and guidelines that policy is fully articulated. Legislation and supporting regulation and guidelines for the energy sector should be presented in one reference document. Time has not permitted a compilation of these for this report.

***Consultants Recommendation****: A comprehensive listing of policy, strategy, plans legislation, regulation and guidelines should be compiled. These should be accessible by stakeholders in printed form and through the Internet. To achieve this they should be posted on the relevant agencies web sites. MEM’s websites should show a full listing BUT should not have all the documents available through its page rather having links to the relevant agency websites where the download can be obtained. This ensures that the agency responsible maintains its website and MEM can over see that this is done. On completion of the listing a test should be made that the downloads can be made from outside – perhaps by an NGO stakeholder. Action: October. Responsibility: MEM.*

## Electricity Sector Policy

A key issue for electricity sector policy regards the financial position of TANESCO. This issue is being approached through a Cabinet Paper on power sector reform rather than as a policy document. A policy document should follow the Cabinet decision.

***Consultant recommendation****: The Cabinet paper on Power Sector Reform should be presented as soon as possible after the Emergency Power Plan and update of the PSMP have been completed: Action before end 2011. Responsibility: Minister.*

Last year’s JESR recommended a policy paper on subsidies in the electricity sector be prepared. This is under consideration in MEM. MCC has offered to provide technical assistance support for such a paper.

Another issue for policy decision is on technology based feed-in tariffs. This particularly affects the wind energy sector where currently generation costs.

A key aspect of existing policy is the use of IPPs and PPPs in electricity generation. The Government has been successful in attracting investors and potential investors in generation. Not all of these investors have proved to be successful partners for the public sector. Managing investor interest in IPPs and PPPs has presented the management of MEM, TANESCO and TPDC with time consuming and disruptive challenges in some cases and has caused exceptions to the least-cost planning principle applied to scheduling of the Power System Master Plan (PMSP).

Apart from the update of the National Energy Policy, which will impact on energy sector policy, MEM is currently developing a power sector reform plan, which may imply changes to policy. These updates are yet to be finalised. A clear and stable policy direction for the electricity is needed to address uncertainty about tariffs, subsidies, and the financial position of TANESCO.

The tariff submission made by TANESCO was not fully accepted which will have raised concerns among some stakeholders that the policy of cost-recovery in the electricity sector is *de facto* being abandoned. Policy and practice as regards cross-subsidies within the sector appear to have been narrowed in the tariff decision for TANESCO.

A key policy announcement was made in the presentation of the Emergency Power Plan to Parliament in August. A new tariff application will be made to support the financing plan. Lifeline tariffs will not be changed, but EWURA will be asked to consider an increase in tariffs for medium and large customers. The announcement indicated that the Confederation of Tanzanian Industries had supported the need for the tariff change.

This change in approach was prompted by the power emergency. This may be an opportunity for proper evidence-based consultation and debate among stakeholders on electricity cost and sustainable power generation.

The timing of the tariff application will have to take account of consumer reaction to the problems created by the power shortage. There will be a reluctance to accept tariff increases in advance of improvements in power supply, with the possibility that EWURA will not be able to approve a tariff increase until the generation capacity of the EPP is installed and operating. This will require a policy decision by MEM on the timing of the tariff application in consultation with TANESCO and EWURA.

## Rural Energy Policy

MEM has prepared a draft of a rural energy policy which is available for stakeholder consultation.

## Petroleum and Gas Policy

At the time of last year’s review, it was expected that the proposed new Gas Act would be passed early in 2011. This would, *inter alia*, spell out Government’s policy in respect of gas exploration and development. A Draft Gas Act is in preparation.

***Consultant recommendation****: All legislation should be preceded by a policy paper. If this has not been done a policy paper ‘explaining’ the Act should be prepared. Few stakeholders find laws accessible documents to read. Action: 2011. Responsibility: Assistant Commissioner Gas and Petroleum.*

## Renewable Energy Policy

A new and renewable energy policy is in preparation.

# Sector Strategy

Energy sector strategy is guided by the National Strategy for Growth and Reduction of Poverty II (NSGRP II). In addition to that there sub-sector strategies are needed for all sector policies. As shown in Box [4.1] these strategies are not yet all in place. In some instances they are awaiting the finalisation of master plans. There appears to be an overlap between what is strategy and what is planning. Formally strategy is a choice among alternatives of a path towards the achievement of a goal (to achieve a state of affairs). A plan is a detailed costed set or actions for implementation of that chosen strategy.

## Energy in NSGRP II

NSGRP II addresses the energy sector within Cluster 1 “Growth for Reduction of Income Poverty” with a focus that includes “affordable and reliable modern energy services”. It notes that installed energy production capacity has increased but lagged behind growth in demand and the power outages are frequent.

NSGRP Goal 2 is “Reducing Income Poverty Through Promoting Inclusive, Sustainable, and Employment- Enhancing Growth and Development”.

The related operational targets for energy are:

* Generation of electricity, utilization of capacity and coverage increased
* Electricity generation increased from 1064MW in 2010 to 1722MW by 2015
* Use of non-hydro renewable for power generation increased from 4 per cent 2010 to 6 percent in 2015
* total length of transmission and distribution lines doubled by 2015
* Access to electricity increased from 2 per cent in 2010 to 6 per cent in 2010 in rural areas; from 14 per cent in 2010 to 18 per cent in 2015 at national level; and
* Access to clean and affordable substitute for wood fuel for cooking increased (from 10 per cent in 2010 to 20 per cent in 2015)

The NSGRP II identifies cluster strategies for the achievement of these targets as follows:

i. Increasing generation of energy, utilization of capacity and coverage;

ii. Developing new power plants (hydro, gas, and coal fired) in order to increase access;

iii. Expanding renewable energies (solar, wind, mini-hydro and biogas) for off- grid areas where distribution costs are prohibitive, especially rural areas;

iv. Promoting PPP especially in IPP schemes;

v. Promoting rural electrification (through supporting the Rural Energy Agency, REA);

vi. Expanding and strengthening the National Grid, which also carries the fibre optic cable up to the district level;

vii. Expanding exploitation of bio-fuel potential without compromising food security,

viii. Promoting use of energy-efficient appliances and equipment, use of natural gas for industrial heating and domestic cooking;

ix. Promoting energy saving technology, at household, firm, institutions, and community levels;

x. Promoting energy efficient and conservation as well as integrated environmental management;

xi. Promoting projects, which qualify for carbon credit through clean development mechanism (CDM) window;

xii. Exploration in search for oil expanded and contribution of natural gas and coal in GDP increased; and

xiii. Collaborating in SADC energy initiatives, the Southern African Power Pool (SAPP) and the Regional Electricity Regulators Association (RERA) to implement the Power Sector Development Roadmap and Regional Generation and Transmission Expansion Plan (the SAPP Pool Plan).

The strategy gives a clear order of Priority Areas in the energy sector

1. New power plants;

2. Renewable energies;

3. Rural electrification;

4. Expanding and strengthening the National Grid;

5. Promoting projects, which qualify for carbon credit;

6. Promoting participation of local land owners in generation

It should be noted that Gas and Coal do not appear in this priority ranking.

## Natural Gas Development Strategy

It was recommended in JESR 2010 that a Gas Strategy be developed and promulgated to provide a strategic framework to guide private sector players about Government’s vision and intentions for gas sector development.

MEM has no plans to develop a strategy for gas sector development. It will develop a Gas Utilisation Master Plan. MEM’s view is that the immediate focus should be on planning, given the fact that gas supply from existing gas production sources is a constraint to electricity generation. However a strategy is still needed to address how Government will address the exploitation of any new finds. This is particularly important for current and prospective investors in gas discovery and utilisation.

The potential for new gas discoveries is good. Even though the lead times on gas development are long it is important for a strategy to be in place soon. If major discoveries are made there will be considerable demands on public sector stakeholders in respect of regulation and PPP negotiations. There will also be significant increase in demand for specialised workers and managers trained, skilled and experienced in regulatory and micro-economics, engineering, geology, chemistry, underwater techniques, etc. and for this a skills development aspect to the strategy is required.

MEM is discussing a capacity building project with the World Bank for the gas sector. This should cover the strategy issue.

***Consultant recommendation****: Reconsider the recommendation for a gas development strategy. Action: in parallel with the preparation of the Gas Utilisation Master Plan. Responsibility: MEM and TPDC. (EWURA also wishes to be involved)*

## Electricity generation strategy

The development of an electricity generation strategy is needed, but should await the outcome of Cabinet deliberations on the Power Sector Reform Plan. The reason for this is the central issue is the future of TANESCO. The reform plan requires decisions on this strategic issue.

## Transmission and distribution strategy

The development of an electricity transmission and distribution strategy is needed, but should await the outcome of Cabinet deliberations on the Power Sector Reform Plan.

## Rural Energy Strategy

A rural energy strategy will be needed once the rural energy policy has been finalised and adopted by Government.

## Renewable Energy Strategy

A renewable energy master plan is being commissioned by REA to prioritize rural electrification investments. In line with contemporary thinking about a Master Plan, this should provide a guiding framework (strategy) rather than being a rigid implementation plan. When under pressure to implement sub-economic schemes, the RE Master Plan will be important in allowing REA to point to a well formulated basis for the promotion and approval of investments. In effect the renewable energy master plan like the power sector master plan will be treated as a strategy.

# Sector Plans

## Introduction

The plan that should ‘drive” the planning process is the National Development Plan. It was drawn from planning documents that pre-dated it, but once approved it becomes the overall plan for the Government.

The PSMP is a long-term perspective plan for the electricity sub-sector currently with a horizon beyond 2030, which is beyond the Vision 2025. PSMP comprises 3 horizons – short term, medium term and long term. It will now have a very short term, ‘emergency’ element dealing with the energy crisis up to December 2011.

With the advent of the NDP the Government has fixed its medium term planning horizon to 5 years. The Strategic Plan and MTEF will now be extended form 3 years to cover the full five years of the NDP.

The linkages between the current elements of the planning process are clear for all elements except for the linkages to and from the PSMP.

The PSMP is supposed to be compiled using the principle of least-cost planning. Application of the principle can lead to a re-phasing of projects in the plan as circumstances change, e.g., relative fuel prices, terms and conditions of IPP arrangements, and the cost of capital for different actors. This means that all other aspects of the planning process need to be flexible to accommodate changes. Changes to sequencing that affects Government funded projects will affect the Government’s plans, including the MTEF and Strategic Plan and potentially the National Development Plan. How and when these changes are reflected is crucial to the effectiveness of the Government’s planning and budgeting systems.

Here we refer to the PSMP. The same applies to other sub-sectors where long term master plans are required, notably in the gas sector and rural electrification. It is also the case that the sub-sector planning processes are interdependent. Gas affects electricity and vice-versa. Generation expansion plans require expansion in upstream gas supply (fields and pipelines). The economic assessment of gas expansion (new wells and pipelines) depends on generation plans. Activities in rural energy access expansion need to take account of gird transmission and distribution expansion plans. The same interdependencies arise in policy and strategy and all depend on tariff and subsidy policy.

A clear presentation of the ‘business process’ of planning is essential for effective planning. The ‘business process’ defines:

* what will be done
* how it will be done
* who will do it
* when it will be done.

These are determined by: policy, legislation, regulations, and strategy and also the characteristics of the energy project. A PPP to build and operate and own an energy asset will have a more detailed and complex process than a project developed with Government funds (with or without DP support) with many variations in-between influenced also by the rules of any DP organisation involved.

It has not been possible to establish a full description of the business process with any reasonable degree of clarity for this report. That requires a detailed investigation of current practice that is beyond the terms of this report. Nonetheless this report is intended to comment, opine and set out recommendations for the planning process. It is clear from the stakeholder interviews and a review of commentary by stakeholders quoted in the press that the sector is currently not well planned and resourced.

A critical aspect of the PSMP is the source of project ideas for generation. In a model where projects are exclusively funded using Government and DP resources (direct or guaranteed), this issue is under control of the Government and its agents. In a model where the private sector is initiating proposals the process becomes more complicated.

During the review we have heard and seen commentary to the effect that private sector initiatives are sometimes discussed at higher levels of Government and taken to a relatively advanced stage of agreement without the benefit of a technical review of initiative through the planning process. Formally this is an issue of Project Cycle Management within the PFM system. It is good practice in such systems for formal project screening to take place before agreements are signed. Private sector lobbying of Government is a normal part of the market economy, however it should fit in with formal Government processes for planning and medium term budgeting.

It is also important to recognise that project development processes can falter, stall and even stop. In any event such delays need to be reflected in deliberate adjustments to the planning and budgeting process at the right time in the PFM cycle and calendar. In particular delays at the pre-feasibility and feasibility stages or in ESIA or licence, IPP, contract and financing negotiations can and have occurred. Whatever the consequence the impact must be taken into account in the planning process and time lines and least-cost assessments must be adjusted accordingly. These adjustments have impacts on medium term and annual budget planning. If the physical process is delayed then the funding requirement for a particular year will change. If these occur within a budget year then there will be under-expenditure of the budget. If these occur before a budget is planned and not reflected in the budget plan then there will be ‘over-budgeting’.

In conducting this review we have observed that little reference is made to documents in reporting progress on project implementation or in reporting likelihoods of prospective projects starting as intended. There seems to be no definitive source – no central, shared plan recording such details.

***Consultant recommendation****: The key actors in the energy sector should jointly review the planning process and formalise the design and the business process. The key actors are MEM, EWURA, TANESCO, REA, TPDC and the DPs (through the JESWG). The design and supporting business processes should be endorsed by the Parliamentary Committee on Energy and presented to other stakeholders including prospective investors so that all know the rules of planning process. This should be done as soon as possible and in conjunction with the review of the PSMP to be completed in November.*

## Lessons from Kenya’s experience.

In July 2011, EWURA led a delegation of Tanzanian officials to Kenya to discuss successful approaches to power planning, procurement and contracting. The lessons drawn by the delegation are presented in Box 4.1.

Box 4.1 Lessons drawn from Kenya’s approach to power planning and procurement

**Power planning**

Stakeholder engagement throughout the process is critical – buy-in from stakeholders creates momentum to implement plans

Planning is a process, not a report

Need to ensure an explicit link between the planning process and procurement

* Including explicit criteria for allocating generation projects between the state-owned generation company and independent power producers

**Power procurement**

Kenya Power has a clear mandate to procure new sources of power and autonomy

Kenya Power has built the capacity needed to run competitive procurement processes through experience—there is no substitute from learning by doing

Unsolicited proposals are challenging for Kenya Power - it is easier to establish value for money through competition, rather than relying on financial models and the claims made by project developers

**Contracting with IPPs**

The party that is responsible for administering the contract and buying the power negotiates the power purchase agreement (Kenya Power)

Responsibilities for any Government review and approval of final contracts are clearly prescribed: why (the objectives of the review), how (the criteria for approval), and what (the consequences for not meeting the criteria)

**Good practices for power procurement**

* Clear allocation of responsibilities, autonomy, and accountability for results
* Capacity and resources
* Processes to ensure plans and projects do not languish

Source: Presentation at 2011 Stakeholders’ Workshop by Ben Geritson of Castalia.

## National Development Plan

A new planning tool was introduced by the Government this year: the Five Year National Development Plan (2011/12 – 2015/16) with a theme of “Unleashing Tanzania’s Latent Growth Potentials”. The Plan is the “formal implementation tool of the country's development agenda, articulated in the Tanzania Development Vision 2025”. (URT POPC 2011: (ii)).

The NDP is the Government’s plan to implement its Vision 2025. In a 2009/10 review of the implementation of the Vision 2025. Two key conclusions on progress were:

*“Efforts taken to transform the country’s supply structure to enable Tanzania to realize the benefits of globalization continue to be hampered by the existence of weak supportive infrastructure, notably, power and transport”* (URT POPC 2011: 3)

*“Despite the existence of numerous power generation sources, the country’s production has remained largely reliant on hydropower, rendering it vulnerable to the vagaries of weather*” (URT POPC 2011: 4).

The NDP is a planning response to problems identified in the achievement of Vision 2025.

i. Misalignment, and in most cases failure to articulate a manageable number of operational priorities led to a thin spread of resources towards a wide range of activities, with little impact and a dampening implementation effectiveness;

ii. In the absence of guiding plans, long term priorities and opportunities were sometimes sacrificed in favor of short-term operational needs;

iii. Identification of projects was done in isolation rather than in a comprehensive and complementary manner; and well articulated implementation sequencing for completeness and harnessing of synergies;

iv. Lack of a clear financing strategy, resulting in high financial unpredictability, overdependence on donations, and under-funding;

v. Weak institutional framework for the implementation of national plans, and

vi. Weak monitoring and evaluation framework to check consistency and coherence.

(URT POPC 2011: 6).

As a “new” planning tool it is important that its relation to the existing PSPB architecture is clear. This is explained in the NDP as follows.

The process of developing [the NDP] was informed by … [*inter alia*]

* Tanzania Development Vision 2025,
* the National Strategy for Growth and Reduction of Poverty (NSGRP/MKUKUTA II, 2010/11-2015/16),
* Sector Strategic Plans,
* Medium Term Expenditure Frameworks (MTEFs),
* Priority Action Programs (PAPs) of Ministries, Departments and Agencies (MDAs)

Thus the NDP takes full account of the existing PSPB architecture, including existing sector level strategies, plans and financing frameworks and is a reinforcement of it, rather than something new.[[23]](#footnote-24)

The NDP sets three **Operational Objectives for the Energy Sector**

(i) Explore the possibility of utilizing other potential of energy – e.g. geothermal, solar, wind, coal, etc;

(ii) Enhance Tanzania’s regional trade share by connecting to at least 50 percent of grids of its riparian countries;[[24]](#footnote-25)

(iii) Improve the institutional management of power generation, transmission and supply.

TheNDP **Goal** for the sector is to develop reliable, economically accessible and appropriately priced energy supplies to facilitate the development of other activities in the economy while ensuring environmental sustainability.

**Strategic Interventions**

1. Increase electricity generation to 2,780 MW by 2015
2. Upgrade and construct new transmission and distribution lines to cope with increased power generation
3. Improve power supply/transmission to rural areas (ongoing and new projects)
4. Enhance the Natural Gas Development Projects
5. Fast-track the Bio- Fuels Development Projects

**Key Output/Targets for 2015**

* Increased consumption from the current 81 Kwhr per capita (using current population of 40 million) to 200 Kwhr (the minimum for LIC). This means current electricity generation capacity has to be increased from 1,100 MW up to 2,780 MW in order to enhance power availability and reliability.
* Enhanced Tanzania’s regional trade share by connecting to at least 50 percent of grids of its riparian countries
* Other potential of energy – e.g. geothermal, solar, wind, coal, increasingly used

Annex 1 of the NDP sets out the strategic interventions, activities and costing for the energy sector.

The annex sets out the four strategic interventions under six headings

* Generation
* Transmission
* Natural Gas Pipeline
* Natural Gas Development Projects
* Bio-Fuels Development Projects
* Improve power supply/transmission to rural areas

**Generation expansion in the NDP**

The NDP envisages eight generation projects which will add a total nominal capacity of 1,788 MW. If implemented on time these projects will meet the generation capacity targets set in the plan. These projects are listed below and an indication of timing and source of funding is given.

**Ubungu Gas Fired Plant 100MW** Shows expenditures in 2011/12 and 2012/13. But only identifies GoT as 10 per cent of total without identifying the others.

**Mwanza Heavy Fuel Oil Fired Plant 60 MW** Shows expenditures in 2011/12 and 2012/13. But only identifies GoT as 15 per cent of total without identifying the others.

**Kiwira Coal Fired Plant 200MW** TZS 612 billion GoT 91.8 billion and loans TZS 520.2 billion Shows expenditure in 2011/12 of TZS 183.6 billion (higher than total GoT spending so implies project start with loans in place in the coming financial year. Completion prior to June 2014.

**Kinyerezi Gas Power Plant 240MW** Total cost TZS 719.1 billion of which GoT 15.3 billion the remainder from Loans. Expenditure in 2011/12 TZS 215.73 billion Completion in 2013/14

**Mtwara Gas Fired Plant 300 MW** Total TZS 459 billion GoT TZS 68.85 billion Loans TZS 390.15 billion Final expenditure in 2013/14

**Somanga Fungu Gas Fired Plant 230 MW** Total cost TZS 535.5 billion (not broken down by source of funds) final expenditures in 2013/14

**Ruhudji Hydro Power Plant 358 MW Total** cost TZS 1,377.5 billion Source of funds indicated as loans final expenditures in 2015/16.

**Mchuchuma Coal Fired Electricity Project 300 MW** Total cost TZS 750 billion all under GoT final expenditure 2015/16

**Transmission development in the NDP**

**Backbone Transmission 440kV line from Iringa to Shinyaga** Total cost TZS 676.3 billion GoT and loans expenditure to start in 2012/12 and to end in 2014/15.

**Makambako- Songea 132 kV**

## MEM Strategic Plan

The current three year strategic plan for MEM covers the years 2009/10, 2010/11 and 2011/12. It was revised in November 2010.

Part of the preparation of the Strategic Plan is a SWOC analysis. The weaknesses of MEM reported were:

* Inadequate skilled staff;
* OPRAS not fully operationalised;
* Weak feedback mechanism;
* Elements of corruption, particularly in licensing; contracts/agreement and procurement;
* Poor record’s management;
* Inadequate capacity in enforcement of acts and regulations;
* Poor working conditions; and
* Inadequate office spaces.

Three of these weaknesses highlight serious concerns for sector governance.

The challenges identified in the SP were.

* Inadequate financial and human resources;
* Skilled labour turnover;
* Dependency on donor funding;
* Poor environmental management;
* Management of procurement process;
* HIV/AIDS and other diseases;
* Low remunerations;
* Corruption;
* Drought;
* Economic instability;
* Volatility in oil price in the world market;
* Political interference in technical decisions;
* Development of small scale mining;
* Conflict of interest;
* Provision of reliable and affordable energy to consumers; and
* Inadequate and inconsistent release of funds

This list includes at least three challenges relating to sector governance arrangements.

Corruption was identified as weakness, a challenge and a critical issue in the SP. The SP envisaged the implementation of the National Anti-Corruption Strategy with training for 120 staff trained in corruption awareness by June 2012[[25]](#footnote-26), four meetings of the Integrity Committee to be held during the plan period and four reports prepared by June 2012. The expected outcomes were staff behaviour changes and reduced corruption cases. This was to be measured by the percentage of stakeholders who complain about corruption. In the monitoring plan a base line of the percentage of stakeholders who complain about corruption was identified as 60 per cent of stakeholders in 2008/09. This was to be reduced to (presumably below) 45, 40, and 30 per cent in years 2009/10, 2010/11 and 2011/12 respectively. This was to be measured by an annual study of stakeholders using raw data from employees’ employment records undertaken by the DAHRM.

***Consultant recommendation****: In reviewing planning processes and the related institutional arrangements in the sector, MEM should consider adopting a rolling approach to its Strategic Plan so that it is updated and extended each year. Whilst this is not in line with current procedures, it is the consultant’s view that a rolling planning approach should be taken rather than static one. This is particularly important for the Energy Sector where investments have long lead and build times that go beyond the three year horizons of the Strategic Plan and which will also go beyond the horizon of the 5 year MUKUTA 2 and the NDP with two years.*

## Power sector master plan

Although entitled a plan the PSMP is a strategy. It needs to be revised and augmented with detailed plans for generation and transmission and distribution as discussed in section 4.5.1.

## Rural energy plan

The rural energy plan from 2006 needs to be updated.

## Renewable Energy Plan

A renewable energy master plan is being commissioned by REA. This is to be a Master Plan and therefore a strategy and will need to be augmented by detailed plans for renewable energy which should be specific to renewable energy types.

## Natural gas supply plans

A Gas Utilisation Master plan is in preparation. Again this will be a strategy and will need to be augmented by specific plans.

# Sector Planning Tools

The key requirements for improvement of the sector planning tools are: (i) to ensure the integrity of the least cost approach to planning; (ii) to review the business process of planning and (iii) ensure that physical plans are properly reflected in the MTEF and Annual Budgets.

1. Sector Financing and Budget

# Sources of financing for the energy sector

## Overview of sector financing

Public financing for the energy sector comes from:

Government Budget:

Vote 58 Ministry of Energy and Minerals

Vote 50 Millennium Challenge Corporation

EWURA Levy

REA/REF Levy

Project Support from Development Partners

TANESCO financing

TPDC financing

Private sector financing comes from:

Public Private Partnerships and Private Investors

Private Investors

Non-governmental organisations

Standby generation

## MEM’s Energy Receipts

In addition to exchequer receipts and payments controlled by third parties (principally DP funding outside the budget, MEM receives non-tax revenues. The principal energy related receipts were for sales of gas TZS 14.4 billion (94 per cent of budget forecast and an increase of 94 per cent over 2009/10. MEM also received TZS 598.2 million from TPDC Exploration Activities. These non-tax receipts are transferred to the exchequer and not retained by MEM.

## REA/REF Levy

In 2009/10 REA/REF received TZS 7.2 billion from the electricity levy.

## EWURA Levy

In 2009/10 EWURA received just over TZS 16 billion in revenue from the regulatory levy on electricity (25.5%), petroleum (70.5%) and natural gas (4%): an increase of 94 per cent over the previous year and representing 96 per cent of its operating revenue.

## Project Support from Development Partners

MEM’s development partners provide data on their funding support in the Active Projects Matrix. The March 2011 version of the matrix showed project support totalling TZS 1.7 trillion.

## TANESCO Financing

This requires information from TANESCO which was not made available at the time of the review.

## TPDC Financing

TPDC receives income from sales of gas. The Government has agreed that TPDC can retain 50 per cent of the income it collects from sales of gas from the Songo Songo gas and Mnazi Bay projects that is received under the terms of the shareholding in these gas projects.

## PPPs and Private Investors

Financing by PPPs and Private Investors comes in the form of equity investment, debt finance and retained earnings (profits). Some of the financing in these organisations comes from the Government through equity stakes and lending (and in some instances the provision of guarantees).

## Non-governmental organizations

Non-governmental organisations (NGOs) active in the energy sector receive funding from private and public sector sources – both domestic and foreign. The private sector sources of financing could be calculated by a survey of NGOs active in the energy sector. This is beyond the scope of this report. It would be useful for MEM to commission research into this financing source at least to obtain an order of magnitude.

Foreign public financing provided through NGOs is not captured in the budget or through D Funds. In many cases it cannot be captured through EDP offices in Tanzania as some of the funding money is channelled to NGO organisations at their headquarter level. A similar survey approach could be used to capture this information.

## Standby Generation

Standby generation financing is the financing use by the private and public sectors (including for their own supply of electricity from fuel fired generators used when grid electricity is not available. An estimate of the amount of standby generation is given in section [ ]. This is an estimate. The costs of generator acquisition, maintenance and operation have not been estimated but will be a significant amount of the financing of the energy sector and will have been substantially higher in 2010/11 than in 2009/10 because of the power outages and load shedding.

It should be possible to calculate the cost of standby generation for Government MDAs from budget expenditure data. This has not been attempted in this review but would be useful as it could serve as a baseline to measure offset savings in the budget to the costs of the emergency power plan in 2011/12.

# MEM’s Budget Review

## Introduction

The 2010 JESR provided an extensive description of MEM’s budget process, linking policy and planning to budget execution, accounting and reporting. The analysis showed how there have been problems of ‘over-budgeting’ and ‘under-recording of expenditures’ and emphasised that assessments of overall expenditure performance (comparing total actual development expenditures with development budget totals) must take account of the fact that the development budget is mainly made up of a few large projects and where there is a problem in a large development project its impact can skew the picture of overall expenditure performance. Box 5.1 explains these issues in more detail.

Box 5.1 Limitations of a budget analysis for the energy sector

A descriptive analysis of the budget data for the energy sector does not provide reliable information regarding the performance of the sector in a particular year and over time. There are three main reasons:

1. Data weaknesses: Reviewing the expenditure data from different sources reveals serious challenges in reconciling data across the different agencies that interact with MEM. This issue is not singular to the energy sector and has been acknowledged by the Government.
2. Over-budgeting problems: A review of individual projects accounting for a large part of MEM’s budget shows how although budget execution rates are very low, a large part of it is explained by inflated figures in the original budget. This is because of a flaw, recognised by Government, in the process by which development partner “expenditure plans” are captured in the budget preparation process.
3. Aggregate expenditure skewed by large projects: In the energy sector, there are a handful of projects that account for over 80% of the development budget. Their apparent execution rates skew aggregate figures.

Source: (OPM, 2010)

Last year’s JESR budget analysis presented information on the whole of MEM budget. In one respect, that approach over-counted energy expenditure and in another respect, it under-counted it. After last year’s JESR process a more detailed analysis of the budget was undertaken with a sharper focus on the energy element of the budget. This new approach is taken for this year’s review. Each year MEM and its DPs undertake an analysis of the budget as part of the annual General Budget Support performance review. This analysis for 2010/11[[26]](#footnote-27) provided a new presentation of the budget in relation to the energy sector: it took explicit account of that fact that:

* MEM’s budget covers both energy and minerals sectors;
* MCC-funded energy projects do not appear in MEM’s budget (Vote 58) but in the MoF’s budget (Vote 50)[[27]](#footnote-28); and that
* MoF’s budget includes expenditure for management of the MCA (T) programme which includes management of the MCC – financed energy projects.

In previous year’s, analyses of the energy sector budget have covered the whole of MEM’s budget. That approach over-counts energy related expenditure. MEM’s budget includes expenditures related to minerals as well as energy so the mineral related element has to be excluded to avoid over-counting energy expenditure. Last year, information on MCC financed energy projects was used as well to avoid an under-counting of energy expenditure if the focus is solely on the energy component of MEM’s budget. Management expenditures apply to energy and other projects both within MEM and the MoF budgets and these needs to be taken into account in presenting energy-related expenditure to avoid another aspect of under-counting.

With respect to MEM expenditure, in order to avoid over-counting energy expenditure it is necessary to take account of both the recurrent and development expenditures that relate to minerals as well as energy. MEM has management and specialist functions under 9 sub votes[[28]](#footnote-29) where recurrent expenditures cover both minerals and energy related activities – it is a ministry for energy and minerals. Of these nine, three have development expenditures that relate to both parts of the Ministry.[[29]](#footnote-30)

Of the total recurrent 2010/11 approved budget for MEM of TZS 97.74 billion 69 per cent could be attributed to energy exclusively and 24 per cent to minerals exclusively leaving 7 per cent of recurrent expenditure that relates to either energy or minerals or both, in terms of amount these are:

(A) TZS 67.1 billion of recurrent energy expenditure;

(B) TZS 23.6 billion of recurrent mineral expenditure; and

(C) TZS 7 billion of unallocated recurrent expenditure.

Expenditure amount (C) can be apportioned to the two parts of the budget by imputing shares of this expenditure to each part in proportion to the weight of each part in the total of the expenditures that are exclusive to the parts, i.e., energy would be apportioned a share of by a formula C x A/(A+B). An alternative would be to take account of staff numbers in the two divisions for some of the expenditures. In this review the expenditure share is used to apportion (C). For recurrent expenditure the share apportioned to energy is 7.2 per cent.

For development expenditure, of the total amount of TZS 184 billion, 90 per cent was exclusively energy expenditure and 9.7 per cent exclusively mineral expenditure, with 0.3 per cent related to management and specialist functions covering both.

MCC funded expenditure in the MoF budget, is classified as development expenditure.[[30]](#footnote-31) MCC finances activities in the energy sector and other sectors. One of the MCC development projects is expenditure related to the operation of the MCA-T management function which covers management of all MCC projects not just those in the energy sector. A share of this management function can be apportioned to MCC energy projects in a similar manner to that explained above for MEM recurrent expenditure.

The Rapid Budget Analysis for the 2010/11 original budgets showed management expenditure as a proportion of total energy related expenditures (calculated using the methods described above as 3.8 per cent for MEM and 5.3 per cent for MCC/MCA-T.[[31]](#footnote-32)

## Budgeted and actual expenditure

Figure 5.1 shows recurrent budget estimates and actual expenditures of MEM for 2006/07 to 2010/11.

Recurrent Budget from FY2005/06 to FY2010/11

Source: Public Expenditure Estimates, Volume IV, from FY2005/06 to FY2011/12 for Estimates and Actual Expenditure, except for Actual Expenditure in FY2009/10 which is from the Financial Statement and Actual Expenditure for FY2010/11 which is from the ‘itemized’ outturn soft copy for that year.

The data used for Figure 5.1 (and Figure 5.2) do not separate energy from minerals expenditure. The figure is presented to give an historical perspective and to provide some continuity with previous JESR reports, where the issue of over-budgeting has been highlighted. For recurrent expenditure, actual expenditure appears to have been either in line with budget or overspending with respect to original estimates after in-year reallocations.

Figure 5.2 shows development budget estimates and actual expenditures for 2006/07 to 2010/11 and the budget for 2011/12.

MEM Development Budget from FY2006/07 to FY2011/12 by funding source

Source: Public Expenditure Estimates, Volume IV, from FY2006/07 to FY2011/12 for Estimates, Approved and Actual Expenditure, except for Actual Expenditure in FY2009/10 and FY2010/11 which is from the Financial Statement.

Table 5.1 shows the percentage of actual expenditure as a share of budget estimates for each year.

* + - * 1. Actual recurrent, development and total expenditure as a proportion of the budget estimates 2006-07 – 2010/11

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | **2006/07** | **2007/08** | **2008/09** | **2009/10** | **2010/11** |
| MEM | Recurrent | 157% | 98% | 102% | 148% | 130% |
|  | Development | 8% | 100% | 38% | 43% | 77% |
|  | *Local* | 3% | 100% | 95% | 46% | 84% |
|  | *Foreign* | 13% | 100% | 13% | 40% | 62% |
| MCC | Recurrent | - | - | - | - | - |
|  | Development | - | - | 24% | 10% | 62% |
|  | *Local* | - | - | - | - | - |
|  | *Foreign* | - | - | 24% | 10% | 62% |
| MEM and MCC | Recurrent | 157% | 98% | 102% | 148% | 130% |
|  | Development | 8% | 100% | 37% | 22% | 72% |
|  | *Local* | 3% | 100% | 95% | 46% | 84% |
|  | *Foreign* | 13% | 98% | 14% | 5% | 62% |

Source: Ratio calculated from Public Expenditure Estimates, Volume IV, from FY2006/07 to FY2010/11 for Estimates and Actual Expenditure, except for Actual Expenditure in FY2009/10 which is from the Financial Statement and Actual Expenditure for FY2010/11 which is from the ‘itemized’ outturn soft copy for that year provided by MEM. Note: All of MCCs expenditure is classified as Development Foreign and therefore, the ratios of MEM and MCC’s budgets aggregated for Recurrent and for Development Local are the same as those of MEM.

Figure 5.3 presents the data in Table 5.1

Actual recurrent and development expenditures as a proportion of the approved budget 2006/07 -2010/11

Source: Ratio calculated from Public Expenditure Estimates, Volume IV, from FY2006/07 to FY2010/11 for Estimates and Actual Expenditure, except for Actual Expenditure in FY2009/10 which is from the Financial Statement and Actual Expenditure for FY2010/11 which is from the ‘itemized’ outturn soft copy for that year provided by MEM. Note: MCC projects appeared first in the budget in FY2008/09.[[32]](#footnote-33)

For recurrent expenditure, budget execution performance has been consistently in line with budget or higher than original budget after in year reallocations, specifically in FY2006/07, FY2009/10 and FY2010/11. The in-year reallocations for the later year are explained in Section 5.2.3 below.

Development expenditure performance has been much weaker than for recurrent expenditure, particularly in the case of foreign funded expenditure in both MEM and MCC projects, however the expenditure performance for all three improved relative to 2009/10.

The Rapid Budget Analysis for the Energy Sector (OPM, 2010) provided a closer look at the data for FY2009/10 and identified the largest projects that contribute to the budget. There are 8 large projects in the budget that account for over 90% of total expenditure approved, released and actual in FY2009/10. These projects also explain 90% of the TZS 132 billion recorded as under-spent. Some of these under-spends are known to be because of over-budgeting and under-recording of expenditures and may also be straightforward under-spending due to under-releases or implementation delays with respect to action and procurement plans. For example, Electricity V was entirely over-budgeting. On the other hand, the MCC projects presented in Section 6 also recorded large under-spending but given that MCC is part of the MoF Vote, it is assumed that the dummy voucher system operates there and so it would have be pure under-spending. On the positive side, some of these errors were corrected in FY2010/11 and for example, Electricity V was not allocated funds in that year as it was evident that monies would not be spent until FY2011/12, when it reappears in the budget. Similarly, the recording of TEDAP’s budget appears to have improved. The apparent under-spending in MCC projects has now been identified as having resulted from over-optimistic budget projections.[[33]](#footnote-34) In 2010/11 MCA-T had completed the contracting for all major projects financed by MCC and so the figures in the budget for 2010/11 and 2011/12 reflect what is required to service those contracts and thus do not over-budget. The MCC funding arrangements will end in September 2013 and so the budget for 2012/13 will be known with certainty at the outset of the budget preparation process later in 2011.

## Energy budget and actual expenditure in 2010/11

Section 5.2.2 gives an overview of budget and actual expenditure since 2006/07. This section focuses on 2010/11.

The original budget for MEM for 2010/11 was 10% per cent higher than in 2009/10 in total and 19% per cent higher for recurrent expenditure and 7% per cent higher for development expenditure. Table 5.4 shows the original, revised and final budget and actual expenditure for energy in 2010/11.

* + - * 1. MEM’s Estimates, Approved and Actual Expenditure for FY2010/11

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Estimates** | **Approved** | **Actual** | **Actual wrt to Estimates (%)** | **Actual wrt to Approved (%)** |
| Development Local | 124.93 | 124.93 | 104.97 | 84% | 84% |
| Development Foreign | 59.07 | 59.07 | 36.35 | 62% | 62% |
| Development Total | 184.00 | 184.00 | 141.32 | 77% | 77% |
| Recurrent | 65.91 | 97.71 | 85.64 | 130% | 88% |
| **Total MEM budget** | **249.92** | **281.72** | **226.96** | **91%** | **81%** |

Proportion of Development Foreign and Local and Recurrent Expenditure

Original Estimates Revised Estimates Actual Expenditure

In 2010/11 the budget was revised during the year with an increase in budgeted recurrent expenditure of TZS 31.826 billion.[[34]](#footnote-35) This increase was allocated as follows:

* Transfer to IPTL – TZS 28.5 billion
* Transfer to TPDC for Biofuel/SECAB Project – TZS 1.5 billion
* Payment of salary increases - TZS 1.826 billion

In addition MEM made internal reallocations between development projects within the Energy and Petroleum sub-vote to provide for contractual payments for the Emergency Power Project as shown in Table 5.3.

* + - * 1. Development Expenditure Reallocations FY2010/11

|  |  |  |
| --- | --- | --- |
| **Project Code** | **Project Name** | **Amount (TZS)** |
| 3110 | TZ-Access Expansion Project | - 7,898,121,800 |
| 3112 | Rural Electrification | - 6,000,000,000 |
| 3113 | Rural Energy Agency & Rural Energy Fund | - 21,101,878,200 |
| 3115 | Petroleum Sub-Sector Development Project | - 3,470,400,000 |
| 3176 | Natural Gas Dev. Songo Songo & Mnazi Bay | -2,000,000,000 |
| 3147 | Emergency Power Plants | + 40,470,400,000 |

### Capacity charges

Capacity charges in 2010/11 were TZS 45.8 billion (TZS 2.1 billion higher than in 2009/10). The original budget was for TZS 18 billion and the final budget was for TZS 46.5 billion, as explained by the reallocation warrant for a transfer to IPTL for operation of generators and purchase of HFO. (MEM FS 10/11).

### Electricity, Diesel and Petrol

In 2010/11 MEM spent less on energy for its own operations. TZS 108 million were spent on electricity 16 per cent less than in 2009/10. Diesel expenditures were TZS 575 million (47 per cent less than in 2009/10). Petrol expenditures were TZS .46 million compared with TZS 12 million in 2009/10.

### Consulting work

The final budget for consulting work was TZS 9.9 billion. TZS 4 billion[[35]](#footnote-36) or 41 per cent of budget was spent. In 2009/10 TZS 60 billion had been budgeted and TZS 37 billion (62 per cent) was spent.

### Contractual liabilities

Contractual liability payments were TZS 94.6 billion compared with a final budget of TZS 125 billion.

### Transfers to REA and TPDC

MEM transferred TZS 24.9 billion to REA (38 per cent less than the final budget of TZS 40.5 billion).

MEM transferred TZS 4 billion to TPDC (17 per cent less than the final budget of TZS 4.8 billion).

### Credibility of the 2010/11 Budget

In 2010/11, the over-budgeting problem seems to have been resolved to a large extent. A few, large projects concentrated all the expenditure in MEM. In particular, monies were only spent for 6 projects in the energy section which accounted for 94% of total expenditure in the ministry.[[36]](#footnote-37) These projects are TEDAP, Biofuels Development, the Emergency Power Plants, REA and REF, Oyterbay Substation and the Natural Gas Songo Songo and Mnazi Bay. It is worth noting that the Emergency Power Plants alone accounted for 64% of total actual expenditure, i.e., TZS 90 billion out of TZS 141 billion. Further information on these projects and their performance over time is provided in Section 6.

* + - * 1. Actual and Approved Expenditure for Development Budget FY2010/11

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Approved** | **Approved** | **Approved** | **Act** | **Act** | **Act** | **% of total actual** | **% actual vs. app** |
|  |  | **Local** | **Forex** | **Total** | **Local** | **Forex** | **Total** |  |  |
| **Proj. No** | **Project Name** | **Shs** | **Shs** | **Shs** | **Shs** | **Shs** | **Shs** |  |  |
| 3102 | New and Renewable Energies | 1.75 | 2.22 | 3.97 | - | 1.01 | 1.01 | 1% | 26% |
| 3109 | 10th EDF Energy Programme | - | 2.66 | 2.66 | - | - | - | 0% | 0% |
| 3110 | TZ-Access Expansition Project | 2.00 | 18.10 | 20.10 | 0.80 | 10.41 | 11.21 | 8% | 56% |
| 3111 | Support for Stable Power Supply | - | 1.46 | 1.46 | - | - | - | 0% | 0% |
| 3112 | Rural Electrification | 0.22 | - | 0.22 | - | - | - | 0% | 0% |
| 3113 | Rural Energy Agency & Rural Energy Fund | 16.17 | 9.75 | 25.91 | 9.57 | 8.09 | 17.65 | 12% | 68% |
| 3115 | Petroleum Sub-Sector Development Project | 1.53 | - | 1.53 | - | - | - | 0% | 0% |
| 3117 | Rural Pv-Market (Barrier Removal) | - | 0.27 | 0.27 | - | - | - | 0% | 0% |
| 3120 | Oysterbay Substation | - | 10.93 | 10.93 | - | 9.95 | 9.95 | 7% | 91% |
| 3146 | Capacity Development REA | - | 0.84 | 0.84 | - | - | - | 0% | 0% |
| 3147 | Emergency Power Plants | 90.01 | - | 90.01 | 89.89 | - | 89.89 | 64% | 100% |
| 3148 | Energy Facilities | - | 0.46 | 0.46 | - | - | - | 0% | 0% |
| 3176 | Natural Gas Dev. Songo Songo & Mnazi Bay | 7.17 | - | 7.17 | 3.36 | - | 3.36 | 2% | 47% |
| 3191 | Electricity V Project | 0.20 | - | 0.20 | - | - | - | 0% | 0% |
| 6298 | Institutional Support | 0.72 | - | 0.72 | - | - | - | 0% | 0% |
|  | *Other* | *5.16* | *12.39* | *17.55* | *1.36* | *6.88* | *8.24* | *6%* | *47%* |
|  | **Total of Vote** | **124.93** | **59.07** | **184.00** | **104.97** | **36.35** | **141.32** | **100%** | **77%** |

Source: Itemized data for FY2010/11 provided by Accounting section in MEM.

# MEM’s Medium-Term Expenditure Framework 2011/12 to 2013/14

The Medium Term Expenditure Framework (MTEF) is a key element in the Government’s PFM system. It has two purposes. It provides Government with a forward indication of the future budgetary requirements for the implementation of MEM’s Strategic Plan. It is also a document that shows in detail how budgetary funds are planned to be allocated to finance the implementation of MEM’s activities that will meet the delivery of its performance targets that lead to achievement of MUKUKTA objectives. This second purpose is to serve as an operational tool for performance planning and monitoring by the management of MEM.

Figure 5.5 shows how MEM’s Strategic Plan requires a large increase (doubling) in its budget for the two coming years 2012/13 and 2013/14.

MEM envisages a large increase in its budget in the two coming years from

TZS 325 billion in the FY2011/12 estimates to

TZS 693 billion in FY2012/13 and to

TZS 762 billion in FY2013/14.

The largest increase comes from the foreign component of the budget, increasing from TZS 89 billion in FY2011/12 to TZS 469 billion and TZS 559 billion respectively in FY2012/13 and FY2013/14.

MEM’s Development Budget from FY2006/07 to FY2013/14

Source: Public Expenditure Estimates for Estimates, Approved and Actual from FY2006/07 to FY2011/12 and MEM’s MTEF for FY2012/13 and FY2013/14. Note that this has been aggregated from the individual ‘Form 6’ for all of MEM’s projects.

The single largest project that explains the increase is the Mnazi Bay 300 MW Development Project (3153) which accounts for TZS 414 billion or 60% and 48% respectively of the total development budget forecasted for FY2012/13 and FY2013/14, of which TZS 331 billion each year are from foreign funds from China.

In the MTEF MEM’s budget for the project is TZS 83 billion in 2012/13 and TZS 31.8 billion in 2013/14. Under the terms of a Memorandum of Understanding for the project EXIM Bank of China is providing 85 per cent of the funding. MEM is seeking to secure a further commercial loan to finance its contribution, which will be supported by a Government guarantee.

Other large projects reported in the MTEF include:

* the 132 KV Makambako-Songea (co-funded by Sida);
* the Rural Energy Fund (co-funded by Sida);
* TEDAP;
* the Iringa-Shinyanga Backbone Transmission Investment Programme (co-funded by the WB);
* the rehabilitation of transmission lines and substations in Kilimanjaro region;
* energizing rural Tanzania: power supply to Ngara, Biharamulo and Mpanda;
* rehabilitation of Hale hydropower plant (co-funded by Sida);
* improving power supply reliability in the city of Dar es Salaam (co-funded by Finland); and
* Electricity V (co-funded by AfDB).

Together, the above mentioned projects account for over 90% of the funds in MEM’s MTEF for the next three years. Figure 5.5 shows the amounts estimated for these projects over the next three years.

Forecasted expenditure for FY2011/12 to FY2013/14 of largest projects



Source: MEM’s MTEF for FY2011/12 to FY2013/14. Values lower than TZS 5 billion are not labelled but are included in the bars. These include in FY2011/12, TZS 3.7 billion for ‘Improving Power Supply reliability in Dar Es Salaam, TZS 2.5 billion for ‘Rehabilitation of Hale Hydro power plant’ and TZS 2.6 billion for ‘Electricity V’; and in FY2012/13, TZS 3.8 billion for TEDAP.

***Consultant Recommendation****: As MTEF preparation in Q3 of the fiscal year is a very intense and time pressured process, a thorough review of the MTEF should be undertaken at a quieter time of year to verify the consistency of the data, ensure that the latest project information is fully and accurately captured, (especially with respect to the PSMP and gas sector expansion plans) and to ensure consistency with DP information on existing and future projects. Action – when PSMP is updated. Responsibility: MEM led by Director of Policy and Planning.*

# Budget 2011/12

MEM’s priorities in the plan and budget for 2011/12 (MTEF:vii)

Increase electricity generation

100MW gas fired DSM

60MW HFO Mwanza

300MW Gas fired plant Mnazi Bay

Strengthen and expand infrastructure for transmission and distribution of electricity

400kV Iringa- Dodoma-Singida-Shinyanga

220kV Khama-Geita

300kV Mtwara – Singida High Voltage Direct Current

132kV Makambako-Songea power line

Continue electrification of District HQ of Kibondo, Kasulu, Nanyumbu, Nkasi, Ngorongoro, Bukombe and other rural areas through REA/REF.

Continue exploration for natural gas and petroleum in Blocks 3,4,5 in deep sea and Nyuni off-shore

Expand natural gas infrastructures through construction of a new pipeline connecting Mnazi Bay, Songo Songo, Kilwani to Dar es Salaam.

Mtwara Power Project: Engineering Procurement Contract was signed in November 2010 between TANESCO and M/S China National Machinery and Equipment Import and Export Corporation (CMEC). The plant construction has an estimated total cost of USD 383.2 million and the Government’s contribution will be 15 per cent (USD 57.5 million), which is to be paid within three months of contract signature. (MTEF:7)

The pipeline and facilities of the Songo Songo gas field have reached its full capacity of 105 mmscfd. Government has identified short and medium term power generation projects of 870MW that will need an additional 160mmscfd of natural gas.

TANESCO Jacobsen 100MW 20mmscfd

Kinyerezi (combined) 240MW 35 mmscfd

Somangu-Fungu 230 MW 45 mmscfd

Bagamoyo EPZ (Zinga) 100MW 20mmscfd

Mukuranga – NSSF 200 MW 40 mmscfd

In order to address the problem of gas to industrial customers and power shortages, the Government plans to connect a new pipeline of more than 160 mmscfd to Dar es Salaam and Tanga. Pipeline costs are estimated at USD 701 million – TZS 1,052 billion) Pipeline will be owned by Government through TPDC. (MTEF: 8-9)

The Budget for 2011/12 has been the subject of extended debate in Parliament. During the debate on the 2011/12 many parliamentarians expressed concern that the proposed budget did not provide sufficient information on how MEM would be addressing and solving the power crisis. As a result the Prime Minister asked for an adjournment of the discussions on the budget proposal and invited MEM to rework the submission for re-presentation to Parliament in August. Parliament resumed discussions sitting as a Committee on 13th August.

The Minister for Energy and Minerals resumed discussions by responding to earlier questions and presenting MEM’s proposals for addressing and solving the energy crisis. The key additional information provided included the financing plan.

# Financing Plan for the Energy Sector – emergency and long term

## Emergency Power Plan financing

The cost of energy (energy charge) and oil plants (fuel charge) of the rented equipment in the period from August 2011 to December, 2012, will be TZS 1.241 trillion. There will be a tax exemption on oil used for energy production.

Of this TZS 408 billion will be required up to December 2011. These funds are expected to be obtained as loans from commercial banks with government guarantees.  
  
The total cost of purchase of emergency power up to December, 2011 is TZS 523 billion Sales of electric power from emergency power will be TZS 115 billion shillings. The loss to TANESCO will be TZS 408 billion that will be financed through a private sector loan to TANESCO fully guaranteed by the Government.

Proceeds from the loan will be applied as follows:

Purchase of fuel and operational costs of machinery (IPTL) TZS 152 billion

Infrastructure for electricity generation TZS 90 billion

Cost of operating the emergency equipment and purchase of electricity TZS 166 billion

Government entities owed TZS 86 billion in May 2011 in unpaid electricity bills. These debts are being paid and will be used to secure TANESCO borrowing. TZS 12 billion of this debt has already been paid.

Government also transferred to TANESCO TZS 20 billion to enable TANESCO to facilitate the installation of emergency plants.

This information on the financing plan is drawn from information presented by MEM to Parliament. The financing sources for the period up to December 2011 are clear in outline.

It does not explain the sources of financing for the remaining TZS 833 billion for the calendar year 2011. The Government has ceilings on its non-concessional financing as part of its agreement with the International Monetary Fund. These will have to adjust to accommodate the new financing. This will require close involvement of MoF.

***Consultant recommendation:*** *In conjunction with the update of the PSMP and the recommended review of the MTEF, the sources of financing should be clarified, in advance of the annual review of the PAF and certainly in advance of the mid-year budget review in December. Action immediate. Responsibility: MEM Accounting Officer.*

## MEM 2011/12 Budget Reallocations

In addition to the new loan financing for the sector, MEM has sought Treasury approval for some reallocations, recommended by the Parliamentary Committee on Energy, within its budget as follows:

* Reductions in allocations to non-energy related projects of TZS 8.223 billion.
* Reductions in TEDAP and biofuels project of TZS 2 billion.

These reductions will be used to increase allocations to:

* Rural Energy Fund TZS 5 billion
* TPDC TZS 3.5 billion
* Oil Purchases TZS 1.3 billion
* Others TZS 0.5 billion

***Consultant recommendation:*** *As these reallocations do not balance the figures should be reviewed during the commentary period. Action August 2011. Responsibility: MEM*

## Creation of an Energy Fund

For longer term financing of the energy sector the Government plans to create an Energy Fund. It is intended that the Fund be financed by VAT on electricity sales and import and excise duties on spare parts and fuel used in electricity generation.

***Consultant recommendation****: If the Government wishes to pursue this idea it will need to consider the governance and budgeting arrangements for the Fund. Creation of such a Fund will require legislative action. Stakeholders may also lobby for similar treatment for gas used in electricity generation or even all gas. MEM in consultation with MoF should provide more information on this proposal, particularly in terms of when it can realistically come into effect and what the likely annual flows will be from the various sources in the short term during the emergency and in future fiscal years. MEM should also take into account the effect of the waiver on fuel import duties for power generation approved for the 2011/12 fiscal year. Action – August 2011. Responsibility – MEM Management.*

# TANESCO Financial Review

A financial review of TANESCO could not be provided for the review as the Board of Directors had yet to approve the Report and Accounts for 2009/10.

# REA Financial Review

REA’s Annual Financial Statements for 2009/10 show that the agency had an excess of liabilities over assets of TZS 44 billion. The Agency recognises full liability for grants awarded immediately after signing of grant contracts. The CAG gave an unqualified opinion on the accounts.

The reasons for the net liability position were: i) REA’s policy of recognising full liability for grants awarded immediately after signing grant contracts, while implementation of projects and settlement of grantees’ demand notes are made gradually on completion of projects or part thereof and submission of invoices; and ii) REA’s policy not to show as accounts receivable (i.e., assets) funds approved for the next financial year both from the Government Budget allocations and Development Partners that would be used to settle liabilities appearing in the financial statements as accounts payable. This is the case for funding from Sida – a key partner for REA since SIDA respects Government’s wishes and channels its funds through the exchequer with the effect that even if a commitment has been made by Sida (and could be treated as an account receivable) it cannot be recognised as such until the amount is received.

# Government Loans and equity holdings in the Energy Sector

For a full review of financing of the energy sector it is important that stakeholders take account not just of the annual flows to the sector through MEM’s budget but also of loans and equity financing. Some of the loan resources are reflected in MEM’s budget, but not completely and not transparently. This is in part due to the requirements of the public finance act and the process of securing loans and making payments. Formally from an accounting point of view the Government is one unit. The MDAs are simply a convenient way of managing that unit. In essence the Government has one account at the Central Bank (with some satellite accounts for ease of financial management but considered as one for accounting purposes). As a result of these mechanisms, loan drawdowns and repayments and interest charges are not shown in MEMs budget (they are shown in the MoF Vote 58 but in an aggregated way).

During the stakeholder interviews the consultants asked MoF staff for a full listing of loan and equity related financial information for the energy sector in order to show a full picture of energy sector financing. For administrative and technical reasons the request could not be met.

Presenting full financial information is important not just for accounting completeness. The CAG has drawn Parliament’s attention to some aspects of loan financing in the energy sector and also in relation to guarantees given to PPP arrangements in the sector. In addition the experience with loan financing in one major electricity project in the past was delayed due to insufficient management attention to loan financing issues. Moreover, the Government is now borrowing significant sums from private sector financial institutions to finance its emergency generation plan. Furthermore, TANESCO’s financial position requires continuing financial review.

***Consultant recommendation:*** *The JESR should show a full listing of Government Loan and Equity holdings (stocks and flows and interest and dividend flows) in the energy sector – in both private and public sector bodies. MEM should seek this information from the Paymaster General and the Accountant General. Action – August 2011. Responsibility: MEM Accounting Officer/Chief Accountant.*

1. Budget Implementation

# Objectives targets and activities

The budget is a request by Government to Parliament to approve expenditures (make appropriations up to a maximum amount) for the financing of activities that if successfully completed will deliver performance outputs (targets) that will contribute to the achievement of Government’s objectives.

Government objectives have changed in each of the years 2009/10, 2010/11 and 2011/12. These are shown in Table 6.1.

In 2010/11 a new objective was added to take account of the National Anti-Corruption Strategy. All other objectives remained unchanged.[[37]](#footnote-38)

In 2009/10 the objective for MCC projects was 50B “Equitable Growth Improved” which does not link to MEM’s energy objectives. MCC does not only support energy, but there is no reason why the energy related projects should not be linked to energy sector objectives.

In the current MTEF MEM reviewed the performance of policies and strategies in achieving these objectives. The policies and strategies were all assessed to have had positive impacts and no negative impacts, but there were insufficient funds available for the attainment of each of these objectives.

Under each of these objectives there is a set of targets. The Ministry has 24 targets in total for FY2010/11. The delivery of these targets is intended to be achieved through the implementation of development projects.

For some of the targets, there is only 1 project planned to achieve the target. For example, the target to ‘Increase electricity generation capacity (Ubungo, Mwanza, Kinyerezi, Ruhudji and Mchuchuma) to at least 485MW by June 2012’ is planned to be achieved by project 3147, i.e., the Emergency Power Plants.

For other targets, there are various projects that in combination aim to achieve the target. This is the case, for example, for the target to ‘electrify 12 districts headquarters (Kilolo, Kilindi, Bahi, Simanjiro, Mkinga, Kibondo, Kasulu, Loliondo, Uyui, Rufiji, Ngorongoro and Nanyumbu) and other rural areas by June, 2012’. The combination of 6 projects is expected to achieve this target. However, of theses 6 projects in the original budget, monies were only spent for the REA and REF project.

Table 6.2 below lists the 24 targets and which projects are planned to achieve them, as well as the amount allocated to them in the 2010/2011 budget (after revisions) and actual spent. The table also links target descriptions to target codes. For 10 out of the 24 targets MEM, there was no expenditure in FY2010/11.

* + - * 1. Energy Sector Objectives 2009/10 -2011/12

| **2009/10** | | | **2010/11** | | | | **2011/12** | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Code** | **Objective** | | **Code** | | **Objective** | | **Code** | **Objective** | |
| A | HIV/AIDS infection reduced and support services to employees improved | | A | | HIV/AIDS infection reduced and support services to employees improved | | A | HIV/AIDS infection reduced and support services to employees improved | |
|  |  | | B | | Enhance, sustain and effect implementation of the National Anti-corruption strategy | | B | Implementation of National Anti-Corruption Strategy effected, enhanced; | |
| B | Human resource and financial management improved | | C | | Human resource and financial management improved | | C | Human resource and financial management improved | |
| C | Management of energy and mineral sectors improved | | D | | Management of Energy and Mineral sectors improved | | D | Management, Coordination, Monitoring and revenue collection from energy and Mineral sector improved | |
| D | Credibility and timeliness of information to the public improved | | E | | Credibility and timeliness of information to the public improved | |  |  | |
| E | Access to modern energy services by rural communities improved | | F | | Access to modern energy services by rural communities improved | | E | Access to modern and renewable energy services and supply of reliable and quality energy improved | |
| F | Reliability and quality of energy supply to the public improved | | G | | Reliability and quality of energy supply to the public improved | |  | (incorporated in E above) | |
|  |  | |  | |  | | F | Mineral Policy and Environmental Management improved | |
| G | Health, safety and environmental management of small scale miners improved | | H | | Health, safety and environmental management of small-scale miners improved | |  |  | |
| H | Share of new and renewable energy use increased and energy conservation and efficiency to industries, households and public institutions enhanced | | I | | Share of new and renewable energy use increased and energy conservation and efficiency to industries, households and public institutions enhanced | |  |  | |
| I | Government revenue from energy and mineral sectors increased | | J | | Government revenue from energy and mineral sectors increased | |  | Incorporated in D above | |
|  |  | |  | |  | |  |  | |
| **MCC/MoF Objectives** | | | | | | | | | |
| B | | Equitable economic growth improved | |  | |  |  | |  |
|  | |  | | C | | ?? |  | | ?? |

* + - * 1. Linking Target Description to Codes, Project Numbers and Approved and Actual Budget in FY2010/11

| **Target Code** | | **Target Description** | **Pr. Nr** | **Project Name** | **Approved** | **Actual** |
| --- | --- | --- | --- | --- | --- | --- |
| ***Sub-Vote 1001: Administration and General*** | | | | | | |
|  | 1001C07S | MEM Client Service Charter operationalised by June, 2012. | 6284 | Public Sector Reform Programme | 146,788,000 | - |
| ***Sub-Vote 1003: Policy and Planning*** | | | | | | |
|  | 1003D01S | Plan and Budget coordinated and prepared annually by June, 2012 | 6299 | Project Coordination and Monitoring | 799,800,000 | 470,940,245 |
| 1003D02S | Physical monitoring and evaluation on Plan and Budget conducted annually by June, 2012. | 6299 | Project Coordination and Monitoring | 107,720,000 | 7,220,546 |
| 1003D03S | Mineral and energy policies, acts, laws and regulations formulated and reviewed by June 2012.[[38]](#footnote-39) | 6299 | Project Coordination and Monitoring | 84,480,000 | - |
| ***Sub-Vote 1008: Environment Management Unit*** | | | | | | |
|  | 1008D01S | Environmental Action Plan for MEM prepared and operationalised by June, 2012 | 6571 | Environment Mgt ACT Implementation | 180,000,000 | 97,325,000 |
| ***Sub-Vote 3001: Energy and Petroleum*** | | | | | | |
|  | 3001D01S | Mineral and energy policies, acts, laws and regulations formulated and reviewed by June, 2012 | 6298 | Institutional Support (Sweden) | 9,520,000 | - |
| 3001F01D | 12 districts headquarters [Kilolo, Kilindi, Bahi, Simanjiro, Mkinga, Kibondo, Kasulu, Loliondo, Uyui, Rufiji, Ngorongoro and Nanyumbu] and other rural areas electrified by June, 2012 | 3109 | 10th EDF Energy Programme (EC) | 2,659,005,000 | - |
| 3112 | Rural Electrification | 215,430,000 | - |
| 3113 | REA and REF (Sweden) | 25,913,590,865 | 17,654,831,145 |
| 3146 | Capacity Development REA (Sweden) | 839,651,774 | - |
| 3191 | Electricity V (AfDB) | 200,000,000 | - |
| 6298 | Institutional Support (Sweden) | 10,470,000 | - |
| 3001F02D | 5MW electricity produced from solar, 75MW from biomass co-generation and 50MW from small hydro installed in rural areas by June, 2012 | 3110 | TEDAP (WB) | 20,076,878,200 | 11,205,654,629 |
| 3117 | Rural Pv-Market (Sweden) | 272,538,910 | - |
| 3001F03D | 50 developers/investors in off-grid facilitated by June, 2012. | 3110 | TEDAP (WB) | 25,000,000 | - |
| 6298 | Institutional Support (Sweden) | 41,810,000 | - |
| 3001G01D | Increase electricity generation capacity (Ubungo, Mwanza, Kinyerezi, Ruhudji and Mchuchuma) to at least 485MW by June 2012 | 3147 | Emergency Power Plans | 90,013,791,000 | 89,887,796,168 |
| 3001G02D | 1492 km of transmission and distribution lines constructed and up-graded by June 2012 | 3111 | Support to Stable Power Supply (JICA) | 1,456,237,442 | - |
| 3120 | Oysterbay Substation (JICA) | 10,931,088,278 | 9,954,090,810 |
| 6298 | Institutional Support (Sweden) | 470,000,000 | - |
| 3001G03S | Petroleum (Exploration and Production) Act, 1980 and Model of Production Sharing Agreement revised, Gas Supply Act and Natural Gas Master Plan developed by June, 2012 | 3176 | Natural Gas Development Songo Songo and Mnazi Bay | 7,173,000,000 | 3,358,790,634 |
| 3001G06D | Energy Information Management System improved by June, 2012 | 6298 | Institutional Support (Sweden) | 188,200,000 | - |
| 3001I01S | Biofuel policy, legal and regulatory frameworks and Guidelines prepared by June, 2012 | 3102 | New and Renewable Energies (?) | 3,292,482,113 | 1,014,866,048 |
| 3001I02S | Diversification of energy sources through the use of new and renewable energy enhanced by June, 2012 | 3102 | New and Renewable Energies (?) | 51,000,000 | - |
| 3001I03S | Baseline indicator value on use of alternative, new and renewable sources of energy established by June, 2012 | 3102 | New and Renewable Energies (?) | 200,000,000 | - |
| 3001I04S | Energy efficiency guidelines formulated and disseminated to the public by June, 2012 | 3102 | New and Renewable Energies (?) | 218,500,000 | - |
| 3001I05S | Demand Side Management (DSM) of energy in energy intensive industries conducted by June, 2012 | 3102 | New and Renewable Energies (?) | 41,500,000 | - |
| 3001I06S | Biomass energy strategy prepared and disseminated to public by June, 2012 | 3102 | New and Renewable Energies (?) | 90,500,000 | - |
| 3001I07S | LPG, natural gas, coal and biomass briquettes technologies for cooking disseminated by June 2011 | 3102 | New and Renewable Energies (?) | 77,500,000 | - |
| 3115 | Petroleum Sub-Sector Development Project | 1,529,600,000 | - |
| 3148 | Energy Facilities (EU) | 455,233,418 | - |
| **Sub-Vote 2002: Minerals** | | | | | 16,230,080,000 | 7,668,804,983 |
| **Grand Total** | | | | | **184,001,395,000** | **141,320,320,208** |

Source: 2010/2011, ‘Itemized budget’, electronic copy. The targets are ordered first by Sub-Vote and then alphabetically within the Sub-Vote. However, as explained in last year’s JESR, some targets cut across sub-votes and in the 2010/11 budget, this is the case of’ Mineral and energy policies, acts, laws and regulations formulated and reviewed by June 2012’. It is not possible to separate them without repeating the targets. We have therefore repeated this target under the two different sub-votes it cuts across and made it explicit with a footnote.

The projects in Table 6.2 for which actual expenditures under Sub-Vote 3001were recorded by MEM are presented below.

|  |  |  |  |
| --- | --- | --- | --- |
| **Target** | **Pr Nr** | **Project Name** | **Amount** |
| 12 districts headquarters [Kilolo, Kilindi, Bahi, Simanjiro, Mkinga, Kibondo, Kasulu, Loliondo, Uyui, Rufiji, Ngorongoro and Nanyumbu] and other rural areas electrified by June, 2012 | 3113 | REA and REF | 17,654,831,145 |
| 5MW electricity produced from solar, 75MW from biomass co-generation and 50MW from small hydro installed in rural areas by June, 2012 | 3110 | TEDAP | 11,205,654,629 |
| Increase electricity generation capacity (Ubungo, Mwanza, Kinyerezi, Ruhudji and Mchuchuma) to at least 485MW by June 2012 | 3147 | Emergency Power Plants | 89,887,796,168 |
| 1492 km of transmission and distribution lines constructed and up-graded by June 2012 | 3120 | Oysterbay Substation | 9,954,090,810 |
| Petroleum (Exploration and Production) Act, 1980 and Model of Production Sharing Agreement revised, Gas Supply Act and Natural Gas Master Plan developed by June, 2012 | 3176 | Natural Gas Development Songo-Songo and Mnazi Bay | 3,358,790,634 |
| Biofuel policy, legal and regulatory frameworks and Guidelines prepared by June, 2012 | 3102 | New and Renewable Energies | 1,014,866,048 |

All of these projects are reviewed one by one in more detail in the remaining of Section 6.

A review of progress is presented for the following sub-set of MEM’s development budget projects:

1. Project Monitoring and Coordination (6299)
2. MCA-T Energy Projects (3142, 3143, 3144 under Vote 50)
3. New and Renewable Energies (3102)
4. TZ-Access Expansion Project (3110)
5. Support Project for Stable Power Supply (3111)
6. Emergency Power Plants (3147)
7. Natural Gas Dev. Songo Songo & Mnazi Bay (3176)
8. Electricity V (3191)
9. Rural energy projects funded by Sida, including
   * REA and REF (3113)
   * Capacity Development to REA (3146)
10. Oysterbay Sub-station (3120)

To the extent that the national budget is the mechanism by which policy is delivered, planning and budgeting accurately for these projects is the necessary intermediate step to ensure the high level development goals translate into government’s spending plans.

Some of these projects are largely or exclusively funded by DPs, which has presented additional challenges to integrate them into government’s plans. In FY2010/11 and FY2011/12, the foreign component of the energy projects appears to have been captured relatively accurately, at least in the budget books and financial statements from MEM. This represents a significant improvement with respect to previous years. However, they still remain outside some of the ministry’s key tools for intra-annual planning and monitoring, such as the ministry’s action plans and progress reports. On the local component of the development budget, there are still some gaps in the information presented and not all the action plans or progress reports were available either for domestically funded projects.

***Action Item for 2011/12*** *Review the allocations in the budget for FY2011/12 to ensure that over-budgeting has not occurred. Date: Q2 2011/12 Responsibility: JESWG*

# Project Monitoring and Coordination (6299)

This project is solely financed by local funds. The two targets of this project are: (i) to coordinate and prepare the plan; and (ii) to budget and conduct monitoring of MEM projects. These targets are recurrent.

The action plan for FY2010/11 details the following activities of the project:

* To review the Ministry’s Strategic Plan
* To prepare the inputs to the budget guideless for Plan and Budget
* To coordinate and prepare the MTP and MTEF 2011/12
* To prepare MEM’s budget speech for FY2011/12
* To conduct monitoring and evaluation, and prepare development plans implementation reports
* To collect, update, analyze and disseminate energy and minerals data and revenue collection performance
* To equip the Department with working facilities
* To train 7 staff in short courses

The first 6 activities are recurring, routine activities of MEM.

At the level of activities ‘equipping the Department with working facilities’ and ‘staff training’ there is some capital and development expenditure.

As shown in Figure 6.1, their execution rates have been high which is to be expected given the recurrent nature of the activities (100% in FY2007/08 to FY2009/10). The budget has doubled for two years in a row reaching close to TZS 1 billion in FY2010/11. Actual expenditure in 2010/11, however, was TZS 478.2 million, 48 per cent of budget.[[39]](#footnote-40)

* + - * 1. Project Monitoring and Coordination: Breakdown of Actual Expenditure FY2009/10

|  |  |  |
| --- | --- | --- |
|  | **TZS mn** | **% of total** |
| **Per Diem – Domestic** | 98.5 | 23% |
| **Sitting Allowance** | 75.0 | 17% |
| **Research and Dissertation** | 65.0 | 15% |
| **Upkeep Allowances** | 50.0 | 12% |
| ***Other*** | *145.8* | *34%* |
| **Total** | **434.3** | **100%** |

Source: Actual Expenditure FY2009/10, softcopy from MoF ‘Outturn 2009-10’. ‘Other’ includes 9 items, none of which are larger than TZS 28 million.

Table 6.3 shows a breakdown of expenditure items. Per Diems, Sitting Allowances and Upkeep Allowances accounted for over 50% of monies spent. These are ‘current’ expenditures and, as they occur every year, should be classified under ‘Recurrent Expenditure’. As explained in the 2010 JESR Report (See Annexes, Box I.1), monies spent on operational costs of the MDAs to run their day to day activities which are expected to be similar across years should be classified as ‘recurrent’ expenditure. Other expenditure items in this project include tuition fees, reports and documents, ground gravel, diesel, conference facilities, air travel tickets, training allowances, motor vehicles and watercrafts, and civil works. Of these, only the latter two can be considered as ‘capital’ expenditure although some might be considered ‘development’ in the sense that they are spent to develop MEM’s organisational competence. However, if it is seen as maintaining this competence (to replace competencies that have been ‘lost’ through promotions and staff turnover then it should be recurrent.

Project Monitoring and Coordination: Expenditure Estimates, Approved Estimates, Released Funds and Actual Estimates from FY2006/07 to FY2011/12

Source: Public Expenditure Estimates, Volume IV, from FY2006/07 to FY2011/12 for Estimates, Approved and Actual Expenditure, except for Actual Expenditure in FY2009/10 and FY2010/11 which is from the Financial Statement. As noted in section 8, there are variations in figures from different data sources, which would require further scrutiny to validate them.

**MTEF Targets, Annual Action Plans and Activity Costing**

Skills and competencies of 1472 staff enhanced by June 2016.

This actually appears in the indicators as 13 staff enhanced in each of the next three years.[[40]](#footnote-41)

***Consultant recommendation****: remove the number 1472 from the target: it is misleading as it suggests a full re-training programme. A better target would be “staff skills and competencies raised/maintained to ensure full organisational competence of MEM taking account of staffing changes and turnover and new roles and responsibilities for MEM*”

Plan and budget coordinated and prepared annually by June 2012[[41]](#footnote-42)

Unit of Measure is document produced and the target is shown as 1 document is produced each year.[[42]](#footnote-43) The Plan and Budget are two separate documents and they are scheduled for production by MEM prior to June in each year. These are not the only documents that are related to planning and budgeting. For example in the Financial Statements for 2009/10 actual progress under this item reported much more detail: “Inputs into the Plan and Budget Guidelines, MTP/MTEF Budget Memorandum and Budget Speech, Ministry’s Action Plan, Ministry’s Quarterly implementation reports and Ministry’s Annual Performance Report were coordinated, prepared and timely submitted.” Not all of these documents are for plan and budget and some should be reported on under the next target.

***Consultant recommendation****: consider using an alternative formulation of the target (without a year date) such as “Inputs and documents for planning and budget coordinated, prepared and submitted in line with procedural requirements, regulations and law” and possibly enumerating the documents. Action: For next revision of the MTEF. Responsibility Director of Policy and Planning*

Under this target MEM PPD has identified 6 activities and has costed them for 3 years in the MTEF. The detail in these activities provides information that is recommended to be (partially) included in the target itself. The recommendations are not seeking a repetition of information. They reflect the fact that the target level information is public and widely reported and therefore should give a clear picture of what is to be covered. It is also the level at which senior management’s attention is likely to be focused. The dates attached to these activities are all set at June 2012. The year should be removed from the titles and the months made more specific. Activities 01-05 below are sequential and so will be completed sequentially and in different months. The MTEF submissions are very detailed and run to hundreds of pages. As far as possible the amount of text and table adjustment required to update the MTEF annually especially for continuing activities should be reduced. There are inconsistencies in the timings presented in the activity level information. This undermines the key purpose of performance budgeting at this level of detail: to have an operational performance management tool **for the managers of MEM.** As it stands the activity costing appears to fulfill only one of its functions – to indicate future costs to MoF. The MTEF as developed in Tanzania can and should be much more than that.

***Consultant recommendation****: PPD should recognize that the process of updating and rolling forward the MTEF is a pressured process during the year and take the time at a quieter time of the year to do a systematic quality review of the whole MTEF and use this as a basis for preparing training for MEM staff as under Activity D01S06. (Train departmental Units budget officers in budget preparation and processes by June 2012.) Action this should occur before the start of the next planning and budgeting cycle. Responsibility: Director Policy and Planning.*

**Commentary on the Activity Costing in the MTEF**

The MTEF document provides detailed information on the costs of activities. The total cost of this target for 2011/12 was identified as TZS 73.75 billion. This is set to rise by 126% in the next year and again by 4% in the following year to reach TZS 172.83 million in 2013/14. In addition to planning a significant increase in financial resources for these activities, PPD is envisaging a significant increase in human resource input into its planning and budgeting activities after this current financial year.

* Consultancy Fee days for preparation of the SP and its alignment with the NDP will be 84 in 2013/14 rising from 20 in the previous year and from 1 in the current year.
* Extra Duty Days will rise from 769 in 2010/11 to 2304 (200%) in 2012/13 and to 2408 (4.5%) 2013/14
* Sitting allowances will rise from 390 units for the first 5 activities in 2010/11 to 1,245 in 2013/14 and to 1,270 in 2013/14.
* Per diems will rise from 135 days for those 5 activities to 230 days (70%) in 2012/13 and 2013/14.

Physical monitoring and evaluation on Plan and Budget conducted annually by June 2012.

Unit of measure is ‘report document produced’ and the target is shown as 4 each year. The target suggests that there is either a report produced each quarter to 2 half year reports.

**Consultant recommendation**: *Specify the reports and timing of completion by month within the year taking account of the fact that a report on activities will come sometime after the completion of the period.*

Mineral and energy policies, acts, laws and regulations formulated and reviewed by June 2012

Unit of measure: documents formulated and target is shown as 2 per year (if target is presented cumulatively).

***Consultant recommendation****: Given the number of specific requirements for new policies and laws and plans within the Energy Sub-Vote – specified in this report and in the action plans for sub-sectors of the sub-vote (e.g., electricity, renewables, petroleum and gas), this target should be more clearly specified and if not actually identifying in advance (which should be possible) the subjects of the documents to be formulated then at least to ensure that the numbers in the targets accord to the ambition for such documents to be reviewed and formulated.*

# MCA-T energy projects

A five-year Compact was signed in February 2008 granting the GoT through the Millennium Challenge Corporation (MCC) funding for targeted infrastructure investments in transport, energy, and water sectors. The funding is under the Ministry of Finance and Economic Affairs (Vote 50 and Sub-Vote 1007) who established the Millennium Challenge Account Tanzania (MCA-T) as an independent department within the Ministry of Finance to implement the Compact. The energy sector projects include (See Box 6.1 for details):

* Second Zanzibar Interconnector (3142);
* Distribution Systems Rehabilitation and Extension in 6 Regions (3143); and
* Malagarasi Hydropower and Kigoma Region Distribution (3144).

There is a signed Implementing Entity Agreement between MCA-T and TANESCO and MoU between TANESCO and ZECO for the implementation of the Zanzibar Interconnector project which was signed in August 2009.

In FY2008/09, the budget included almost TZS 20 billion in total for these three projects, but less than TZS 5 billion was spent. TZS 60 billion was allocated in the FY2009/10 budget and once again there was significant ‘under-spending’: less than TZS 6 billion was spent. Some of this under spending was due to over optimistic budget projections when the early year activities were concentrated on preparatory studies and procurement. In FY2010/11 and FY2011/12 respectively, about TZS 77 billion and TZS 136 billion has been allocated. These higher amounts reflect the fact that contracts have been signed and implementation of the projects is under way.

MCA-T disbursed USD 48.1 million or TZS 77.2 billion for its energy projects in FY2010/11 which is in line with the budget estimates.

The breakdown of actual expenditure for FY2010/11 shows how 53% of monies was spent on civil works for the Zanzibar Interconnector, 31% on consulting work for the three projects, 10% on power lines for the Rehabilitation and Extension of TANESCO Distribution System and the remaining 5% for compensations on 2 of the 3 projects.

* + - * 1. MCC projects: Breakdown of Actual Expenditure FY2010/11

|  |  |  |  |
| --- | --- | --- | --- |
| Type of Expenditure | Project | Actual expenditure | % of total |
| Civil Works | Zanzibar Interconnector | 25,409,934,554 | 53% |
|  | ***Civil Works Sub-Total*** | ***25,409,934,554*** | ***53%*** |
| Compensations | Zanzibar Interconnector | 289,401,009 | 1% |
|  | Rehabit and Extens of TANESCO Distr. Syt | 2,296,513,300 | 5% |
|  | ***Compensations Sub-Total*** | ***2,585,914,309*** | ***5%*** |
| Consulting Work | Zanzibar Interconnector | 4,548,636,755 | 10% |
|  | Construction of Malagarasi Hydropower Distr. | 2,300,664,996 | 5% |
|  | Rehabit and Extens of TANESCO Distr. Syt | 8,134,418,296 | 17% |
|  | ***Consulting Work Sub-Total*** | ***14,983,720,047*** | ***31%*** |
| Power Lines | Rehabit and Extens of TANESCO Distr. Syt | 4,624,467,723 | 10% |
|  | ***Power Lines Sub-Total*** | ***4,624,467,723*** | ***10%*** |
| Total |  | **47,604,036,633** | **100%** |

Source: Itemized data 2010-11, 6D Item Description Column.

Development Projects in the energy sector funded by MCC from 2008/09 to 2011/12

Source: Public Expenditure Estimates, Volume IV, from FY2008/09 to FY2011/12 for Estimates, Approved and Actual Expenditure. Actual expenditure for FY2008/9 from MoF soft copy.

Box 6.1 MCC projects in the energy sector

**Zanzibar interconnector**

The project will provide a supplemental 132 kV – 100MW submarine transmission line to Zanzibar (Unguja Island) from Ubungo power station in Dar es Salaam to Mtoni substation outside the Stone Town in Zanzibar. A new overhead line is required from Ubungo to a landing station adjacent to the existing Ras Kilomoni on the mainland, thence via submarine power cable to a landing site adjacent to the existing Ras Fumba in Unguja.

The submarine cable is expected to be routed adjacent to the existing 45 MW cable. Additional 132kV switchgear is to be installed at Ubungo, Kunduchi (Tegeta) and Mtoni substations respectively. At Mtoni, new 132/33 kV transformers are to be installed, together with a quantity of 33 kV switchgear sufficient to interconnect into the existing 33 kV system.

A fibre optic cable will be incorporated into both the overhead line (in OPGW) and submarine cable with spare capacity for uses other than power circuit protection and supervision.

**Malagarasi Hydropower and Kigoma Region Distribution**

The Malagarasi Hydro Plant was originally planned to electrify Kigoma and the villages along the Transmission and Distribution routes. However, due to environmental concerns, the project will not be funded under the current MCC Compact. Alternative activities have been developed which can be completed during the remaining Compact period. The project consists of:

1. Feasibility study and preliminary designs for Stage III development of the Malagarasi Hydropower Plant (41MW).
2. Kigoma substation, Kigoma distribution system rehabilitation and extension
3. Renewable energy for Kigoma ( Solar PV Systems)

**Distribution Systems Rehabilitation and Extension in 6 Regions**

The project covers six regions of mainland Tanzania; Tanga, Dodoma, Morogoro, Iringa, Mwanza and Mbeya and includes 186 sub projects. Its purpose includes:

* Network Extension: Make extensions to the 33 kV, 11 kV and LV distribution systems. Improve supply quality e.g. reduce voltage fluctuations by improving quality of power supply improve reliability for existing customers, which will also attract new customers.
* Reinforcement: In the same regions reinforce the supply to the distribution networks from grid and primary substations.

Source: TANESCO’s website: [http://www.TANESCO.co.tz](http://www.tanesco.co.tz) with additional information provided by MCC.

# New and Renewable Energies

This programme is co-funded between the GoT and Germany[[43]](#footnote-44). It is sub-divided into:

* Biofuel Development;
* Joint Programme on Environment (JP11); and
* Other renewable energies (Solar, wind, biomass and geothermal)

In FY2006/07, the project appeared in the budget with TZS 3.3 billion budgeted for with German funds and TZS 300 million of domestic funds. Judging by the low execution of funds in that first year, this project also exemplified the ‘over-budgeting’ problem as only TZS 300 million was spent in FY2006/07 and much lower amounts were voted in the following years’ budgets. Execution of the locally funded part of the project appears to have performed relatively well up until FY2009/10. None of the TZS 1.75 billion of local development budget was spent in FY2010/11 and only TZS 1 billion (50 per cent) of the foreign development budget was spent. The large variation between budget allocation and actual spent of foreign funds could be due to the reporting issues discussed in section 8, and not merely due to an implementation problem.

Table 6.5 provides a breakdown of actual expenditures for 2009/10. The expenditure for this project is ‘current’ in nature, with almost 60% of the funds spent on air travel, sitting allowances and domestic and foreign per diems. The other expenditure items are also all of current nature and include ground travel, consultancy work, upkeep allowances, conference facilities, diesel, printing and photocopying, reports, documents, research and dissemination, food and refreshments and office consumables.

New and Renewable Energies: Expenditure Estimates, Approved Estimates, Released Funds and Actual Estimates from FY2006/07 to FY2011/12

Source: Public Expenditure Estimates, Volume IV, from FY2006/07 to FY2011/12 for Estimates, Approved and Actual Expenditure, except for Actual Expenditure in FY2009/10 and FY2010/11 which is from the Financial Statement. As noted in section 8, there are variations in figures from different data sources which would require further scrutiny to validate them.

* + - * 1. New and Renewable Energies: Breakdown of Actual Expenditure FY2009/10

|  |  |  |
| --- | --- | --- |
|  | **TZS mn** | **% of total** |
| **Air Travel Tickets** | 165.0 | 20% |
| **Sitting Allowance** | 116.0 | 14% |
| **Per Diem - Domestic** | 111.8 | 13% |
| **Per Diem - Foreign** | 100.0 | 12% |
| ***Other*** | *348.8* | *41%* |
| **Total** | **841.6** | **100%** |

Source: Actual Expenditure FY2009/10, softcopy from MoF ‘Outturn 2009-10’. Other includes 9 items none of which amount to more than TZS 66 million.

## Project Objectives, Targets and Activities

The MTP and MTEF for 2011/12-2015/16 shows the following objectives, targets the project are aimed at and describe the activities for the project.

Objective D:

Target 02S: Mineral and energy acts and regulations formulated and reviewed by June 2012

Activity 04: Legal framework for geothermal development prepared by June 2012.

Objective E:

Target 05D: At least 50 developers/investors in off grid facilitated by June 2012.

Activity 04: Assess wind regime for power development by June 2012.

Activity 05: Assess geothermal energy resources potential by June 2012

Activity 06: Assess other renewable energy resources by June 2012

Activity 07: Prepare inventory and monitoring of biomass power plants by June 2012

Target 09S: Energy efficiency standards, policy, legislation, biomass energy strategy and biofuel policy, legal and regulatory framework prepared by June 2012

Activity 01: Conduct energy survey in transport, households, industrial and commercial sectors

Activity 02: Prepare database for industrial energy use

Activity 03: Prepare and distribute calendars and fliers on energy efficiency and conservation

Activity 04: Promote efficient use of bio-waste stoves and other energy efficient appliances

Activity 05: Co-oridinate technical and steering committee meetings on biomass strategy

Activity 06: Facilitate preparation of Biomass Energy Strategy

Activity 07: Study/review policies, legislation and institutional framework relevant to biofuel development and prepare biofuels policy

Activity 08: Facilitate biofuels Project Implementation Unit, Task Force and Committee meetings

Activity 09: Provide information and education on biofuel development to different target groups

Activity 10: Visit assess and monitor biofuel projects

Activity 11: Facilitate mapping and land zoning for bio-fuels’ crop production

Activity 12: Undertake Strategic Environmental Assessment for biofuels development

Activity 13: Undertake feasibility study for production of biofuels

Activity 14: Build capacity for government departments and institutions to co-ordinate biofuels activities and projects

Activity 15: Build capacity for financial institutions to assess biofuels industry from a fiscal and financial perspective

Activity 16: Attend local and international seminars, conferences and exhibitions related to renewable energy programmes

Activity 17: Facilitate development of energy efficiency standards and labelling

Target 10S: LPG, natural gas, coal and biomass briquettes technologies for cooking disseminated by June 2012

Activity 01: Promote utilisation of clean coal for households and institutions

Activity 02: Advocate and promote production of quality coal briquettes and usage

Activity 03: Promote utilisation of LPG

Activity 04: Promote use of biomass briquettes production and usage

Activity 05: Promote usage of Biogas

Activity 06: Prepare and inventory and monitoring of biogas plants developed by different stakeholders

# TEDAP

TEDAP was one of the projects reviewed in the 2010 JESR[[44]](#footnote-45). As explained then, the budget allocations revealed the ‘over-budgeting’ issue with actual expenditure representing less than 5% of the amount in the ‘approved budget’ in FY2008/09 and the budget approved being reduced by close to 50% in the following year’s budget (FY2009/10), indicating an attempt to correct the issue. The Financial Statement from MEM for FY2009/10 dated September 30th 2010 was able to capture the actual amounts spent in the project signalling the good functioning of the reporting mechanisms of D-funds at least for this project. The vast majority of expenditure under TEDAP is for ‘Consultancy Work’ and ‘Technical Service Fees’, which together accounted for over 95% of actual expenditure in FY2009/10.

Actual expenditure in 2010/11 recorded in MEM’s Financial Statements was TZS 10.4 billion (40 per cent of budget).

During the year MEM reallocated TZS 8 billion from this project to the Emergency Power Project. Most of this reallocation was from the foreign funding component.

TEDAP: Expenditure Estimates, Approved Estimates, Released Funds and Actual Estimates from FY2007/08 to FY2011/12

Source: Public Expenditure Estimates, Volume IV, from FY2007/08 to FY2011/12 for Estimates, Approved and Actual Expenditure, except for Actual Expenditure in FY2009/10 and FY2010/11 which is from the Financial Statement. As noted in section 8, there are variations in figures from different data sources which would require further scrutiny to validate them.

# Support Project for Stable Power Supply

This project is financed with a grant from Japan of JPY 400 million (TZS 4.7 billion) and is focussed on improving the maintenance of TANESCO’s transmission and distribution system through staff capacity building.

The project began at the start of 2009/10. [[45]](#footnote-46) The training curriculum has been developed and the first three-month training course was completed in August 2010. JICA’s approach to its project support is to ensure careful preparation to ensure effective and smooth implementation it is currently focusing on training 2,000 artisanal staff in TANESCO and ZESCO has been invited to participate. A training curriculum for technicians and engineers is underway and equipment is being purchased. The project will last for another 3 years. TANESCO’s training facilities that were in Morogoro were sold to a university at the time TANESCO was scheduled for privatisation. TANESCO has built a new training facility. Trainees successful in end of course examinations are provided with certificates jointly issued by TANESCO and VETA. The first 3 month training programme was completed in August 2011.

Figure 6.5 shows expenditure estimates, approved estimates, and actual expenditures for FY2009/10 and FY2010/11 and the budget for 2011/12. The project is not recorded in the current MTEF.

Support Project for Stable Power Supply: Expenditure Estimates, Approved Estimates, Released Funds and Actual Estimates from FY2009/10 to FY2011/12

Source: Public Expenditure Estimates, Volume IV, from FY2007/08 to FY2011/12 for Estimates, Approved and Actual Expenditure, except for Actual Expenditure in FY2009/10 and FY2010/11 which is from the Financial Statement. As noted in Section 8, there are variations in figures from different data sources which would require further scrutiny to validate them.

The EDP Active Projects Matrix names the project as: Project for Capacity Development of Efficient Distribution and Transmission Systems. It is scheduled for completion in August 2014 and is considered to be ‘on track’.

The project was shown as 3111 Support for Stable Power Supply in the 2009/10 budget[[46]](#footnote-47) as foreign development expenditure of TZS 463.2 million. Actual expenditure in 2009/10 was recorded as TZS 181 million in the Budget Estimates for 2011/12 (40 per cent of budget). No expenditure was recorded in MEM’s Financial Statements for 2009/10. [[47]](#footnote-48).

In the FS 2009/10 the project identified as “3111 Support to Project Power”.

In 2010/11 the project budget was TZS 1.456 billion of foreign expenditure.[[48]](#footnote-49) The approved budgets for the project for 2009/10 and 2010/11 are shown in Table [ ].

In the 2010/11 budget, the project is shown as contributing to the achievement of Objective E: Access to modern energy services by rural communities improved and Target E01D: '13 districts headquarters [Kilolo, Kilindi, Bahi, Mkinga, Kibondo, Longido, Kasulu, Uyui, Nanyumbu, Nkasi, Namtumbo, Ngorongoro and Bukombe] electrified by June, 2012.

The project log frame shows the following performance information.

Project overall goal: Efficiency and reliability of power supply are improved.

Project Purpose: Capacity for planning, operation and maintenance in Distribution and Transmission systems is improved.

Project outputs:

* Internal policy and programme prepared and approved
* Internal training system developed and utilised
* Capacity strengthened through internal training

A performance assessment for this project in 2010/11 has not been prepared, as MEM’s performance reporting against Action Plans had not been completed at the time of writing. MEM’s (draft) Action Plans for 2011/12 did not include this project. As the project is solely foreign funded and provided direct to TANESCO (outside the exchequer and not captured in the D Funds system), action plans and progress reports are not compiled by the Planning and Policy Division. Progress reporting is limited to the project implementer, TANESCO and JICA and in a summary form within the EDPs Active Projects Matrix which is shared with MEM.

The project has no funds allocated in the budget for FY2011/12 and is not presented in the current MTEF.

* + - * 1. Approved Budgets for 3111 Support to Stable Power Supply 2009/10 and 2010/11

|  |  |  |
| --- | --- | --- |
| **Budget** | **2009/10** | **2010/11** |
|  | Approved | Approved |
|  | *TZS* | *TZS* |
|  | *millions* | *millions* |
| **Item (6FGFS)** |  |  |
| Training Allowances | 80.0 | 393.0 |
| Per Diem Foreign | 37.0 | 198.2 |
| Training Materials | 15.0 | 190.0 |
| Conference Facilities | 42.0 | 110.0 |
| Per Diems-Domestic | 68.0 | 95.0 |
| Air Travel Tickets | 40.0 | 75.0 |
| Sitting Allowance | 65.0 | 35.0 |
| Diesel | 1.2 | 30.0 |
| Reports, documents, etc. | 15.0 | 30.0 |
| Upkeep Allowances | 50.0 |  |
| Ground Travel | 15.0 |  |
| **Total** | 463.2 | 1,456.2 |

Source: 2010/11 Budget Document, Financial Statement 2010/11 (Draft) and information from IFMS.

## Issues in recording actual expenditure

There are differences in the presentation of actual expenditures for this project between the budget documents and the Financial Statements. In the one it appears that the project is on budget and on report and in the other it only appears on budget and not on report. The following is a possible explanation for the differences in information.

The absence of information in the 2009/10 Financial Statements for actual expenditure was because MEM only captures information on projects that use the exchequer system or information flows to MEM so that the D Funds system can be used. MEM prepares Dummy Warrants for D Funds (non-exchequer funds), where the expenditure information is captured by MEM. Grant funding from Japan is a ‘tied-aid’ format and is paid direct to project.[[49]](#footnote-50) The D Funds system does not operate in circumstances where the project is implemented by MEM controlled entities such as TANESCO.[[50]](#footnote-51)

The project budget and actual expenditure for 2009/10 were nonetheless reported in the 2010/11 Budget Documentation produced by MoF through the use of the Aid Management Platform (AMP). The AMP is a mechanism through which MoF requests information directly from DPs on planned and actual expenditures when it is preparing the budget documents. This information is not provided through MEM. This means that MEM does not verify consistency of information reported in the AMP with its own records. The MoF has indicated that the AMP system is an open one and can be accessed by MEM. So it is possible for the consistency to be made after the information is entered by DPs in the system.

MEM’s Financial Statement FY2010/11 shows the approved budget amount but does not record any releases or actual expenditure for the project. Again this is due to the fact that the D Fund system is not being used to capture expenditures in this project.[[51]](#footnote-52)

The absence of a budget in 2011/12 suggests that the AMP system did not capture JICA’s disbursement plan for this year, despite capturing JICA disbursements for 2009/10.

JICA indicated that it complies fully with the AMP process and that data entry is made by the JICA project manager and not by administration staff.

This project review has highlighted particular issues for the forthcoming review by the JESWG of the way DP projects are captured in MEM’s planning, budgeting and reporting systems. These are by no means unique to this project, but the tied aid nature of, and direct provision to TANESCO by the project means that it can serve to identify the full range of issues that the JESWG should address in its review.

# Emergency Power Plants

The budget for the project is entirely local development funds and is presented in MEM’s budget. TANESCO is responsible for managing project implementation through procurement and management of consultants and contractors. Budget funds are transferred to TANESCO to finance the construction of two new electricity generation plants: a 100 MW gas fired power plant at Ubungo (Dar es Salaam) and 60 MW HFO power plant at Nyakato-Mwanza projects[[52]](#footnote-53)

This project appeared first appeared in the budget for 2009/10 with a budget of TZS 1 billion for: technical materials 350 million, consulting work (Feasibility Studies and Design) TZS 150 billion and Equipment TZS 500 million.

MEM’s Financial Statements for 2009/10 showed no approved budget or actual expenditure in that year. In the 2010/11 budget document, actual expenditure was shown as TZS 1 billion. The discrepancy between the two sources of actual expenditure requires reconciliation and/or explanation. The consultants have not been able to do this formally, but it is reasonable to assume that the error lies in the figure reported by MoF for actual expenditure for 2009/10 in the Budget Estimates Document for 2010/11. What has not been possible to ascertain is at what point during 2009/10 the original estimate of TZS 1 billion was removed from the budget.

Delays in this project were due to the procurement processes operated by TANESCO. This delay caused the Performance Assessment Framework target not to be achieved. The target are used to determine Government performance and informs the dialogue on future GBS support. The delay was caused by procurement problems which are not directly under the control of the Government.

MEM and the EDPs have discussed how the implementation of this project can be presented in the PAF Indicators for 2011, but the detail of the indicator has yet to be specified.

MEM requested the consultants supporting the JESR process to suggest a definition of the indicator for 2011/12. DPs have been concerned about progress in the implementation of this project and have sought to set it in terms of the two plants adding 160 MW of capacity by the intended date of project completion. Given the current state of the project, and given that progress depends on performance by TANESCO and its consultants and contractors (as and when procurement and contracting is complete - due end September 2011)[[53]](#footnote-54) an appropriate PAF indicator would be to capture aspects of the project’s progress that are within the control of MEM. Thus the indicator should be set in terms of:

1. the 2011/12 budget allocation being demonstrably sufficient to fund the TANESCOs contractual liabilities for the year;
2. the quarterly cash flow plan presented by MEM to MoF on approval of the 2011/12 budget for the project for the year is demonstrably consistent with the project’s procurement and action plans for 2011/12;
3. a cash flow plan (by quarter) is prepared by TANESCO, sent to MEM, and presented to MoF by end Q1 2011/12 for the remainder of the project (consistent with contractual arranegments with the project consultants and contractors and the project’s procurement and action plans); and TANESCO confirms in writing to MEM that it its own action and financial planning is consistent with its obligations under the contracts with consultants and contractors.

The means of verification for this indicator could be a letter from the MEM Accounting Officer to MoF confirming that the target as described has been met on time.

#### Project budget, expenditure and performance for 2010/11

The original budget for 2010/11 was TZS 49.5 billion. By December 2010 actual expenditure had been TZS 40 billion. After December, MEM received approval from MoF for an increase to the project budget of TZS 40.47 billion through reallocation of funds from other energy projects for details. The final budget for the project was TZS 90 billion.

MEM’s FS 2010/11 show the budget after reallocations and records actual expenditure of TZS 89.8 billion for “contractual liabilities.” This project accounted for 20 per cent of the original budget for the energy sector[[54]](#footnote-55) development expenditure and for almost 50 per cent of actual energy sector development expenditure.

A performance assessment for this project for the whole of 2010/11 has not been prepared, as MEM’s performance reporting against Action Plans had not been completed at the time of writing.

In reporting on performance in 2010/11 in April 2011, MEM reported that “[t]he Government through TANESCO [had] procured consultants for construction of power plants in Dar es Salaam (100MW) and Mwanza (60 MW). The Government had paid down-payments for both plants and preliminary works had started.” (MTEF:34).

The same report provided information on projected expenditures for 2011/12, 2012/13 and 2013/14. It also provided information on the objectives and targets that the project aimed to achieve and described the activities for the project as follows.

Objective (E) –Access to modern and renewable energy services and supply of reliable and quality energy improved.

Target 01D: Power plants (Ubungo, Mwanza, Kiwira, Somanga Fungu, Mnazi Bay and Mchuchuma) contributing at least [ ][[55]](#footnote-56) MW constructed by June 2012.

Activity 16: Implement emergency plants (rental plants in DSM and Tanga).

The local funding items for this activity in the MTEF for 2011/12 were TZS 12 billion

* 2011/12 Capacity charges TZS 5 billion
* Fuel TZS 5 billion

In the 2011/12 budget the local development expenditure is shown as TZS 90 billion.

For the outer ‘forward budget’ years the April 2011 MTEF showed local development expenditure requirements of: .[[56]](#footnote-57)

2012/13

* Capacity charges: TZS 12 trillion
* Fuel TZS 8 trillion

2013/14

* Capacity charges: TZS 35 trillion
* Fuel TZS 13 trillion respectively

The presentation of these funding requirements and their relation to the project implementation performance report in the same document and the subsequent budget estimates and action plans for the project in 2011/12 suggest that they did not take account of the following.

The project had not reached a point where capacity and fuel charges could be paid in 2011/12.

MEM has however been paying for fuel and capacity charges in respect of IPTL generation this is treated as current (and recurrent) expenditure. The payments in 2011/12 for the EPP project in 2010/11 have been development expenditures. If there were to have been or are to be capacity charges in respect of the new power plants then they should be classified as current non-development (therefore recurrent expenditures) payments in respect of capacity charges and similarly not applied to a project.

Given the very high public profile of these new generation plants MEM should consider the following issues.

The project expenditure is currently classified in the Budget and MEM’s Financial Statements as contractual liabilities.

* The contracts for the design and build of these plants is between TANESCO and Jacobsen and SEMCO
* The power plants will be owned and operated by TANESCO and will appear as assets in TANESCO accounts
* In accounting terms TANESCO is a significant controlled entity of MEM
* Unless MEM is formally a party to the TANESCO design and build contracts the budgets for this project should not be classified as if they are expenditure direct by MEM.
* The proper classification should be as a capital transfer/subsidy to TANESCO in the development budget.
* As the plants are separate and physically distinct, MEM should separate them into two projects in the budget for greater transparency and ease of progress monitoring and reporting.
  + TANESCO Capital Grant 100MW Ubungo
  + TANESCO Capital Grant 60MW Mwanza

The activity shown for the project is to “facilitate the implementation of the projects”. This should be more specific in terms of what that facilitation involves. If it is limited to funding the payments by TANESCO to the contractors this should be explicit and indicate what

MEM presented an additional TZS 123.6 billion in the proposed budget for FY2011/12.

MEM has changed its Objectives for 2011/12. The project is now linked to Objective F “Reliability and quality of energy supplies to the public improved”.

The project action plan shown in the (draft)[[57]](#footnote-58) Physical Action Plan for 2011/12 reads F02D04 “1492km of transmission and distribution lines constructed and upgraded” and seems to be a misidentification of the target.

The activity for the project is described as “Facilitate installation of Emergency Power Plants by June 2013. The Annual Plan Target reads “Procurement, installation and commissioning of 100MW & 60MW power plants”. The quarterly physical targets showed that by end September 2011 the contracts are to be finalised and that construction of the power plants will continue for the remainder of 2011/12. The action plan shows a Project completion date of October 2011. This could have been the originally intended completion date when the project was first budgeted in 2009/10.

Emergency Power Plants: Expenditure Estimates, Approved Estimates, Released Funds and Actual Estimates from FY2009/10 to FY2011/12

Source: Public Expenditure Estimates, Volume IV, from FY2009/10 to FY2011/12 for Estimates, Approved and Actual Expenditure, except for Actual Expenditure in FY2009/10 and FY2010/11 which is from the Financial Statement. As noted in section 8, there are variations in figures from different data sources which would require further scrutiny to validate them.

The project refers to emergency power plants. The Government has a new Emergency Power Plan. It will be important to distiguish the existing project from the plan, and not only becasuse the acronyms would be the same.

In the same way as the emergency powr plants would be better presented as separate projects in the budget, the plants in the emergency power plan should be presented in the budget as separate projects.

# Natural Gas Dev. Songo Songo & Mnazi Bay

This project has been mainly funded by domestic sources since FY2008/09. The large difference between the budget and actual expenditure exemplifies the ‘over-budgeting’ problem as there were over TZS 50 billion of foreign funds budgeted, which were not spent and did not appear in subsequent years budgets. In FY2009/10, TZS 8.7 billion was approved and about TZS 8.2 billion was spent. For FY2010/11, TZS 9.2 billion was approved but only TZS 3.4 was spent. For FY2011/12, the expenditure estimates presented to Parliament amounted to TZS 9.2 billion, similar to the previous year. The vast majority of expenditure in the approved budget for FY2010/11 was for contractual liabilities and consultancy work, which together accounted for 92 per cent of the total.

Natural Gas Development Songo Songo and Mnazi Bay: Expenditure Estimates, Approved Estimates, Released Funds and Actual Estimates from FY2006/07 to FY2011/12

Source: Public Expenditure Estimates, Volume IV, from FY2006/07 to FY2011/12 for Estimates, Approved and Actual Expenditure, except for Actual Expenditure in FY2009/10 and FY2010/11 which is from the Financial Statement. As noted in section 8, there are variations in figures from different data sources which would require further scrutiny to validate them.

The MTP and MTEF for 2011/12-2015/16 shows the following objectives, targets the project is aimed at and describes the activities for the project.

Objective E: Access to modern and renewable energy services and supply of reliable and quality energy improved

Target 03S: Petroleum (Exploration and Production Act, 1980 and model of Production Sharing Agreement revised, Gas Supply act and Natural Gas Master Developed by June 2012.

Activity 01: Monitor implementation of Mnazi Bay and Songo Songo Natural Gas Expansion Projects

Activity 02 Review Agreements of Songo Songo Natural Gas to Electricity

Activity 03 Monitor implementation of Compressed Natural Gas and PNG Projects

Activity 04: Monitor Mkuranga, Songo Songo and Nyuni Gas discoveries

Activity 05 Prepare Natural Gas Utilisation Master Plan

Activity 06: Not named

Activity 07: Finalise implementation of Way Leave village electrification scheme

Activity 08 Pay second instalment of National Tariff Equalisation Fund (NTEF) for Mnazi Bay project

Activity 09: Finalise Gas Supply Act

Activity 14: Facilitate construction of Songo Songo Police Post

The costs for the second instalment of the NTEF were shown as TZS 5.173 billion for 2011/12: the same amount as for 2010/11. Actual payment in 2010/11 was TZS 3.4 billion. The amount for each of the outer two years of the MTEF is TZS 5.7 billion.

|  |
| --- |
| Mnazi Bay Gas to Electricity Project 3153 |
| In the MTEF the project is shown as contributing to objective E and Target 06D. The activity is shown as Implement Mnazi Bay Gas to electricity project by June 2012. The activity did not appear there in the Inputs to the Budget Guidelines (IBG).  The MTEF sought TZS 12.5 million for compensation for the project in 2011/12. This amount was forecast to rise to TZS 20 billion in 2013/14.  In the text of the IBG it is addressed under Partcipation of TPDC in Mnazi Bay and Songo Songo Gas projects. “TPDC has a contractual commitment for a 20 per cent participation in the joint development of the Mnazi Bay and Songo Songo gas development projects. This will result in an increase of the Government profit share by 8 per cent for Mnazi Bay and between 13 and 15 per cent for Songo Songo depending on the level of gas sales. The Government has approved 50 per cent retention from gas sales to enable TPDC to invest in these projects. But the IBG was a draft… |

* + - * 1. Support to Stable Power Supply: Breakdown of Approved Expenditure FY2010/11

|  |  |  |
| --- | --- | --- |
|  | **TZS mn** | **% of total** |
| **Contractual Liabilities** | 7,098.0 | 77% |
| **Consulting Work** | 1,298.0 | 14% |
| ***Other*** | *777.0* | *8%* |
| **Total** | 9,173.0 | 1.0 |

Source: Approved Expenditure FY2010/11, softcopy from MoF ‘Approved 2010-11’. Other includes 6 items, none of which are larger than TZS 110 million. Other includes 13 items, none of which is larger than TZS 154 million.

# Electricity V

The 2010 JESR reviewed the implementation of this project and explained how it exemplified the problem of over-budgeting and the importance of taking ‘shovel-readiness’ into account during annual budget preparation, as although there were funds in the budget since FY2008/09, activities on capital works were not expected until the following year.[[58]](#footnote-59) This is not the only explanation behind the odd pattern of the budget of Electricity V as there were also severe delays in setting a subsidiary loan agreement between the GoT and TANESCO. Following last year’s review, the AfDB, MEM and TANESCO took action to ensure the issues are resolved. After a year with no funds in the budget acknowledging the expected later date of start of works while the design phase and bidding processes are completed, the project is estimated to require TZS 2.5 billion in FY2011/12 as shown in Figure 5.8. Financing for capital works will be required in the budget year 2012/13.

Electricity V: Expenditure Estimates, Approved Estimates, Released Funds and Actual Estimates from FY2008/09 to FY2011/12

Source: Public Expenditure Estimates, Volume IV, from FY2008/09 to FY2011/12 for Estimates, Approved and Actual Expenditure, except for Actual Expenditure in FY2009/10 and FY2010/11which is from the Financial Statement. As noted in section 8, there are variations in figures from different data sources which would require further scrutiny to validate them.

The MTP and MTEF for 2011/12-2015/16 show the following objectives, targets the project is aimed at and describes the activities for the project.

Objective E: Access to modern and renewable energy services and supply of reliable and quality energy improved

Target 01D: Fifteen new district and remaining nine district headquarters and other rural áreas electrified by June 2012

Activity 07: Implement construction of distribution networks in Dar es Salaam, Arusha, Shinyanga and Mwanza regions.

# Rural energy projects funded by Sida

## Overview of Sida’s projects in the budget

As explained in the 2010 JESR, Sweden is one of the highest contributing development partners in the energy sector (if not the highest) and in recent years has particularly funded a number of projects on rural energy.[[59]](#footnote-60) Figure 5.9 updates the budget trends on these projects since last year. It is worth noting the addition of the 132 KV Makambako - Songea Project which has an allocation of TZS 3.8 billion for FY2011/12 following severe delays that led to the removal of the project in the budget in FY2010/11. This figure has been cross checked with Sida’s forecast of disbursement for the project and the two figures coincide. In addition, there are two project on rural energy funded by Sida in the FY2011/12 budget: REA and REF (3113) and Capacity Development to REA (3146). An overview of the budget implementation of these two projects is presented below. The Rural Pv Marked Development project (3117) has been finalised during FY2010/11.

Development Projects in MEM funded by Sweden from 2006/07 to 2010/11 (forex component)

Source: Public Expenditure Estimates, Volume IV, from FY2006/07 to FY2011/12 for Estimates, Approved and Actual Expenditure, except for Actual Expenditure in FY2009/10 and FY2010/11 which is from the Financial Statement. As noted in section 8, there are variations in figures from different data sources which would require further scrutiny to validate them.

## REA and REF

This project[[60]](#footnote-61) is co-funded by the GoT and Sweden. It is continuing since FY2006/07 and was also reviewed in the 2010 JESR. The funds for this project are aimed at strengthening and facilitating REA/REF in promoting and facilitating access to modern energy services in the rural areas of Mainland Tanzania through: the electrification of district headquarters and other rural energy projects; evaluation and submission by REA of proposals to Rural Energy Board for consideration and approval and preparation of contracts for signing with project developers of the approved projects; monitoring implementation rural energy projects; evaluate proposals from project developers; and monitoring and evaluation of rural energy projects.

The budget data show how actual expenditure has been significantly lower than the approved budget in recent years, with TZS 13.3 billion spent in FY2009/10 out of over TZS 36 billion approved, and about TZS 17 billion spent out of over TZS 47 billion approved in FY2010/11. For FY2011/12, the amount in the budget more than triples what has been released in FY2010/11. This is because about TZS 17 billion are expected to be disbursed before December 2011, half of which has already been processed. There is another SEK 100 million (about TZS 26 billion) forecasted up until December 2012 which in theory could all be disbursed before June. The economic classification shows that all the monies spent in FY2009/10 and approved for FY2010/11 were for current grants.

REA and REF: Expenditure Estimates, Approved Estimates, Released Funds and Actual Estimates from FY2006/07 to FY2011/12

Source: Public Expenditure Estimates, Volume IV, from FY2006/07 to FY2011/12 for Estimates, Approved and Actual Expenditure, except for Actual Expenditure in FY2009/10 and FY2010/11 which is from the Financial Statement. As noted in section 8, there are variations in figures from different data sources which would require further scrutiny to validate them.

The MTP and MTEF for 2011/12-2015/16 shows the following objectives, targets the project is aimed at and describes the activities for the project.

Objective E: Access to modern and renewable energy services and supply of reliable and quality energy improved

Target 01D: 13 New Districts and Remaining 9 districts headquarters and other rural areas electrified by June 2012

Activity 01: Facilitate ongoing electrification of 9 district headquarters and other off-grid projects

Activity 02: Facilitate electrification of 13 new districts and other Grid projects

Activity 03: Facilitate identification and development of new and potential rural energy sources

## Capacity Development REA

This project was reviewed in the 2010 JESR. As explained then, since Sida channels the funds for this project through the exchequer system (i.e., it’s ‘aid on treasury’), this facilitates the reconciliation of accounts among different stakeholders and as shown in , releases are captured by MEM as soon as they happen.

According to the data, all expenditure in FY2010/11 was for ‘current grants’ while in FY2009/10 expenditure was for feasibility studies, project preparation and design. This is assumed to be a matter of a difference in the classification of expenditure rather than a change in the activities performed under the project. The 2011/12 MTEF which contains the information of actual expenditure up until December 2010 indicated that none of the amounts released had been spent, but this could be a data management issue rather than reflecting actual performance of the project.

Figure 6.11 shows that no funds were spent in FY2010/11.There might have been a classification error in the accounts on actual expenditure for this project. Data on releases showed that all funds for this project had been released and in parallel, the project reviewed above (3113) showed that the amount spent was higher than released and the difference amounted to exactly the same as funds released for this project, i.e., TZS 864 million.

* + - * 1. Amounts released vs actual expenditure for 3113 and 3146 for FY2010/11

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Released | Actual Expenditure | Variance |
| 3113 | Rural Energy Agency & Rural Energy Fund | 16,790,845,531 | 17,654,831,145 | 863,985,614 |
| 3146 | Capacity Development REA | 863,985,614 | - | (863,985,614) |

Source: Released figures from MEM’s PPD and Actual Expenditure from MEM’s Financial Statement.

Capacity Development REA: Expenditure Estimates, Approved Estimates, Released Funds and Actual Estimates from FY2009/10 to FY2011/12

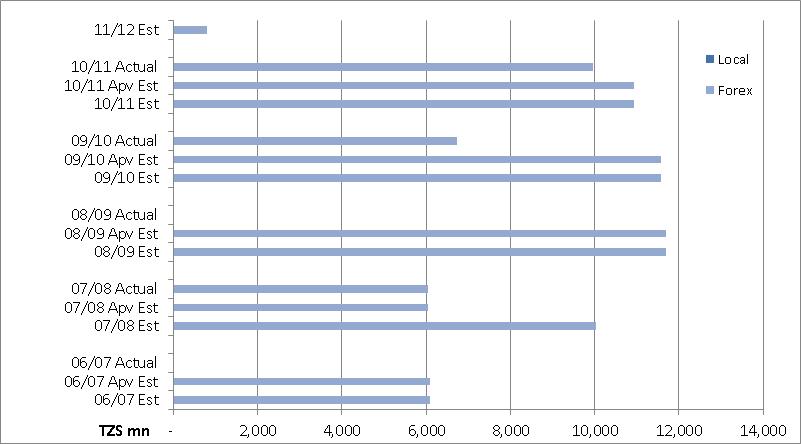
Source: Public Expenditure Estimates, Volume IV, from FY2006/07 to FY2011/12 for Estimates, Approved and Actual Expenditure, except for Actual Expenditure in FY2009/10 and FY2010/11 which is from the Financial Statement. As noted in section 8, there are variations in figures from different data sources which would require further scrutiny to validate them.

# Oysterbay Substation

This project is solely funded by Japan and has been in the budget since FY2006/07. In FY2006/07, TZS 6 billion was budgeted but no actual expenditure was recorded. In FY2007/08, out of the TZS 10 billion approved, TZS 6 billion of actual expenditure was recorded. In FY2008/09 and FY2009/10, TZS 11.7 billion n and TZS 11.6 billion were budgeted in each year respectively of which TZS 6.7 billion was spent in FY2009/10. For the latest financial year, FY2010/11, TZS 10.9 billion was approved of which TZS 9.9 billion was spent, representing 91% of the approved budget.

Table 6.9 shows the breakdown of approved and actual expenditure in FY2010/11 by economic classification. The vast majority of it is for contractual liabilities, which were all spent in line with the budget. The remaining amounts were for ‘Small Tools and Implements’ and ‘Compensations.

Oysterbay Substation: Expenditure Estimates, Approved Estimates, Released Funds and Actual Estimates from FY2006/07 to FY2011/12



Source: Public Expenditure Estimates, Volume IV, from FY2006/07 to FY2011/12 for Estimates, Approved and Actual Expenditure. Actual Expenditure for FY2010/11 is from Itemized data provided by MEM. As noted in section 8, there are variations in figures from different data sources which would require further scrutiny to validate them.

* + - * 1. Oyesterbay Substation: Breakdown of Approved and Actual Expenditure FY2010/11

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Approved | | Actual | |
|  | TZS mn | As % of total | TZS mn | As % of total |
| Contractual Liabilities | 9,350.8 | 86% | 9,350.8 | 94% |
| Small Tools and Implements | 1,492.9 | 14% | 603.3 | 6% |
| Compensations | 87.4 | 1% | - | 0% |
| Total | 10,931.1 | 100% | 9,954.1 | 100% |

Source: Itemized data for FY2010/11, sum of approved and expenditure columns, 6D Item Description.

# Procurement Processes

## Procurement Plans

Procurement plans in MEM in relation to procurement for its own operation are regularly prepared and delivered. There does not appear to be a process whereby procurement planning by implementing agencies – TANESCO and REA is monitored by MEM. The procurement remains the responsibility of the agencies, but MEM is accountable for the meeting performance targets and objectives set in MUKUKUTA, the NDP, its own Strategic Plan, its MTEF and annual action plans supporting the budget. It is also accountable for the delivery of targets set in the Performance Assessment Framework. The achievement of these targets and objectives in the energy sector depend on the effectiveness of procurement. Therefore MEM has a need to monitor procurement plans, to agree with the procurement plan (in respect of concordance with target achievement) and to monitor progress on implementing those agency plans (especially in cases where implementation requires supporting action from MEM including in the release of funds).

## Procurement Procedures

Government procurement procedures were assessed as part of last year’s review and were found to be of a good standard.

## Procurement Recommendations

The CAG has recommended that attention should be given by MDAs to preparation and compliance of annual procurement plans and in particular to contract management issues including records management.

# Incorporating DP financed projects in MEM’s Planning, Budgeting and Reporting Systems

Full capture of a DP funded project in MEM’s planning budgeting and reporting processes requires the following to be undertaken for any project.

Project identification: Project identification should result from energy sector strategies and plans. Where the project idea agreed by JESWG is additional to strategies and plans these should be amended formally to reflect the change.

Revise the AMP process: either amend (in consultation with MoF) the AMP process so that DPs report to MEM and MEM inputs data into the AMP or JESWG requests DPs to copy information provided to the AMP to MEM

1. Budget and Performance Monitoring

The issue of improving monitoring is seen as a Government-wide challenge and has received specific attention in relation to the preparation and implementation plans of MUKUKUTA 2. The ToR requires proposals for state and performance measurement indicators based on MUKUKUTA 2 and to identify information sources. A first attempt at this was undertaken in last year’s review with reference to the draft MUKUKTA document.

Last year’s finding was that all of the necessary indicators have already been identified but that these are dispersed across many documents, may not all be entirely consistent, and are in many cases not SMART and so can only be partially monitored. It is beyond the scope of this review to compile and reconcile those information sources fully. In last year’s consultant reports for the review it was noted that MEM has a great deal of performance target and delivery information, but that these are used mostly internally and not adequately and systematically disseminated. In the time available with access to information a preliminary view now is that much of the information is compiled for use outside MEM notably by MoF in scrutinising MTEF and Budget submissions and in progress reports supporting release requests. The coherence and consistency issues indicate that insufficient management attention is given to these performance indicators.

The 2010 Rapid Budget Analysis for the Energy Sector identified how the 2010/11 Budget was mapped to MUKUKTA objectives and MEM targets. Data reliability issues were highlighted and it was concluded that the budget-performance indicator link should be treated with caution. As a result that assessment of the 2010/11 Budget is not presented at this time.

1. Accounting

In their analysis last year the JESR consultants found that not all budget information is systematically available at the right time (see Annex H of 2010 JESR). Issues about the accuracy and consistency of this information were also highlighted. These issues hamper analysis and the thorough presentation of what MEM and its agencies, with the support of its development partners, are financing. These challenges persist and a lot of time has been spent in cleaning the data collected from different sources. This is a very important issue, not only because it undermines the credibility of the budget but most importantly, because it misleads policy decisions taken based on this data

Concerns remain among some analysts and observers that there are major execution problems in the sector. Problems in execution do exist but measuring the extent to which they exist is made almost impossible by the “over-budgeting” problem, which arises because of inaccurate capture of budget information (estimates and actuals) at different stages of the budget cycle.

This is more than an accounting matter. The figures in the budget books are the basis for assessment of MEMs expenditure performance. If these do not agree with the financial statements the assessment is being made on inaccurate information. The issue is compounded by the fact that the data used for the Rapid Budget Analysis of the Energy Sector is also not consistent with MEM’s financial statements for that year.[[61]](#footnote-62) Inaccurate and inconsistent information undermines the evidence basis for decision-making and is therefore not a ‘dry accounting matter’: it has real consequence.

A particular concern is the large differences between the data published in MoF’s Public Expenditure Estimates and the data from MEM’s Financial Statement on Actual Expenditure for FY2009/10. Actual Expenditure for FY2009/10 is published by MoF in June 2011 with the Public Expenditure Estimates for FY2011/12. The same data is published previously by MEM in September 2010 through its Financial Statement for Year End 30th of June 2010. This is therefore, post-mortem data. Box 8.1 shows how almost all of the projects in the Development Budget presented large differences between these two statements. These differences do not appear to follow a particular pattern, for example, happening only in the foreign component, which could be attributed to the challenges of capturing donor funds outside the exchequer. These differences appear both, in funds from local sources as well as foreign sources. For example, the Petroleum Sub-Sector Development Project, Songo Songo, and Institutional Support are fully funded from local sources and there were large differences in the data.

An issue of Government accounting policy arose during discussions with stakeholders relating to the translation of transactions in foreign currency. The notes to MEM’s financial statements indicate that: “Foreign currency transactions are translated into Tanzanian Shillings using the exchange rates prevailing at the dates of the transactions. Foreign missions and entities that predominantly transact in foreign currencies translate transactions at average monthly exchange rates. Foreign exchange gains and losses resulting from the settlement of such transactions and from the translation at year-end exchange rates of monetary assets and liabilities denominate in foreign currencies are recognised in the statement of financial performance.” This inevitably means that sometimes and in some cases the TZS amounts received by projects will differ from the estimates given in the budget.

Box 8.1 Data reconciliation

The table shows almost all of the projects in the Development Budget presented large differences between these two statements. The first three columns correspond to the Public Expenditure Estimates book submitted to Parliament and published in June 2011 by MoF. The table presents the data from MEM’s Financial Statement published in September 2010, signed by the Permanent Secretary and audited accounts published in March 2011.

**Differences on Actual Expenditure for FY2009/10 between the MoF and MEM’s published data**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **MoF PPEs** | | | **MEM's Financial Statement** | | | **Diff MoF minus MEM data** | | |
| **(In TZS bn)** | Local | Forex | Total | Local | Forex | Total | Local | Forex | Total |
| **Tanzania Multi Sectoral HIV/AIDS** | - | - | - | - | 0.12 | 0.12 | 0.00 | 0.12 | 0.12 |
| **Public Sector Reform Programme II** | - | 0.17 | 0.17 | - | 0.05 | 0.05 | 0.00 | -0.12 | -0.12 |
| **Cleaner Artisnal(Global Mercury)** | 0.02 | - | 0.02 | 0.60 | 0.86 | 1.46 | 0.59 | 0.86 | 1.44 |
| **Regional Mining Offices Development** | 0.25 | - | 0.25 | 0.57 | - | 0.57 | 0.32 | 0.00 | 0.32 |
| **Sustainable Managt of Mineral Resources** | 5.50 | 1.39 | 6.89 | 1.35 | 3.71 | 5.06 | -4.15 | 2.32 | -1.83 |
| **Environmental MagtAct Implementation Progr** | - | - | - | - | 0.07 | 0.07 | 0.00 | 0.07 | 0.07 |
| **New and Renewable Energies** | 0.84 | - | 0.84 | 0.82 | 0.21 | 1.02 | -0.02 | 0.21 | 0.18 |
| **10th EDF Energy Programme** | - | - | - | - | 0.90 | 0.90 | 0.00 | 0.90 | 0.90 |
| **TZ-Access Expansion Project** | 4.73 | 22.83 | 27.56 | 1.46 | 0.32 | 1.77 | -3.27 | -22.52 | -25.79 |
| **Support for Stable Power Supply** | - | - | - | - | 0.18 | 0.18 | 0.00 | 0.18 | 0.18 |
| **Rural Electrification** | 9.95 | - | 9.95 | 26.65 | - | 26.65 | 16.70 | 0.00 | 16.70 |
| **Rural Energy Agency & Rural Energy Fund** | 12.00 | 1.39 | 13.39 | 13.00 | 1.00 | 14.00 | 1.00 | -0.39 | 0.61 |
| **Petroleum Sub-Sector Development Project** | 1.86 | - | 1.86 | 2.25 | - | 2.25 | 0.39 | 0.00 | 0.39 |
| **Rural Pv-Market (Barrier Removal)** | - | 0.63 | 0.63 | - | 0.79 | 0.79 | 0.00 | 0.16 | 0.16 |
| **Oysterbay Substation** | - | - | - | - | 6.74 | 6.74 | 0.00 | 6.74 | 6.74 |
| **132 KV Makambako-Songea** | - | - | - | - | 0.21 | 0.21 | 0.00 | 0.21 | 0.21 |
| **Tegeta 45 MW Gas Fired Plant** | - | 2.00 | 2.00 | - | 2.95 | 2.95 | 0.00 | 0.95 | 0.95 |
| **Capacity Development REA** | - | 0.72 | 0.72 | - | 0.10 | 0.10 | 0.00 | -0.61 | -0.61 |
| **Emergency Power Plants** | - | - | - | 1.00 | - | 1.00 | 1.00 | 0.00 | 1.00 |
| **Energy Facilities** | - | - | - | - | 0.45 | 0.45 | 0.00 | 0.45 | 0.45 |
| **Natural Gas Dev. Songo Songo & Mnazi Bay** | 7.55 | 0.70 | 8.25 | 3.83 | - | 3.83 | -3.72 | -0.70 | -4.42 |
| **Electricity V Project** | - | - | - | 0.10 | 0.17 | 0.27 | 0.10 | 0.17 | 0.27 |
| **IPTL Conversion to Gas** | - | - | - | 0.02 | 2.00 | 2.02 | 0.02 | 2.00 | 2.02 |
| **Institutional Support** | 0.25 | - | 0.25 | 0.15 | - | 0.15 | -0.10 | 0.00 | -0.10 |
| **Total of Vote** | 44.78 | 29.83 | 74.61 | 53.63 | 20.82 | 74.45 | 8.85 | -9.01 | -0.16 |

Source: MoF Public Expenditure Estimates for FY2011/12, which include Actual Expenditure for FY2009/10 and MEM’s Financial Statement for Year end 30th of June 2010.

The JESR Consultants discussed this with the accountants at MEM and cross-checked the data with the IFMIS data. The discussions concluded that it appears that the data from the Public Expenditure Estimates books is incorrect and MEM is taking measures to resolve the issue with MoF. For this review, the data used is the one from MEM’s Financial Statement. However, the Public Expenditure Estimates book is widely used for other analysis by Government and donors and decisions are made based on those numbers.

***Consultant recommendation****: Reconcile the differences. Action – August 2011. Responsibility: MEM and its counterparts in the MoF and Accountant General’s Department.*

1. Reporting and Audit

# Reporting

MEM’s Accounting Officer signed the financial statements for the year 2009/10 on 30th September 2010.

The MTEF Target relating to the annual financial report is “Annual Financial Report prepared by June” this is not possible and should be amended to annual financial report presented to [Parliament/CAG] by [30th September].

# Audit

## Audit opinions on MEM Accounts

The Controller and Auditor General (CAG) published its report on the Financial Statements of the Ministry of Energy and Minerals – Vote 58 for the financial year ended 30th June 2010 in March 2011 that is 8 months after the end of the financial year and 5 months after publication of the Financial Statements of the MEM. The Financial Statements were signed by the MEM Accounting Officer on 30th September 2011, 3 months after the year end.

The audit report of the CAG is addressed to the Permanent Secretary who is the Accounting Officer for the Vote and so responsible for preparing the financial statements that give a true and fair view of the receipts and payments of MEM.[[62]](#footnote-63)

The CAG’s opinion was that the financial statements presented fairly, in all material respects the results of the operations of MEM. The opinion was unqualified. The CAG did draw the attention to users of the financial statements that four government vehicles had been unoperational for some time and that MEM had outstanding liabilities of TZS 100.8 million arising from services rendered by various suppliers.

The CAG also stated that MEM had generally complied with the Procurement Act and its underlying regulations.

The CAG also issued a Management Letter to the Accounting Office (Permanent Secretary) setting out the audit findings and recommendations arising from the examination of the accounting records, appraisal of MEM’s activities as well as evaluation of the internal control system which requires management’s attention and action.

The presentation of the CAG’s report is the end of the PFM cycle relating to a particular year. It is at this stage that the final assessment of the financial performance of MEM for 2009/10 can be made. The figures also provide the final data for actual expenditure by MEM for that year. See Section 7 in relation to the consistency of the budget book actual expenditure figures with those of MEM’s Financial Statements.

MEM, like other MDAs, rightly stresses the importance of an unqualified audit opinion: it sets this as a performance target in its Strategic Plan. The target set is not the best way of addressing this aspect of performance. The issue is presented Box 9.1

Box 9.1 Target for Quality of Audit Report Performance

In MEM’s SP a target was set for the audit report as “type of audit report qualified or unqualified”. As noted the audit report on the 2009/10 statements was unqualified. The indicator values in the SP are set in %age terms, with a baseline figure for 2008/09 of 70% and a target of 75% for 2009/10 and further increases to 85% and 90% in 2010/11 and 2011/12 respectively.

A qualified audit report is a serious matter. A qualified audit report is questions the truthfulness and fairness of the financial statements as provided by the Accounting Officer. The measure should be qualified or unqualified it cannot be measured in percentage terms.

This indicator was intended to measure the “quality of the report”. But this is not an appropriate indicator of quality of financial management. The “quality of the audit” report is a measure of the quality of the work done by the CAG not of the quality of the work done by MEM.

The indicator relates to the objective of “Improved Human and Financial Management”. Unless the audit report for 2008/09 was “qualified” the indicator could not be a measure of ‘improvement.’ The objective would need to be changed, at least in respect of financial management. What should to be measured here is the extent to which the Accounting Officer has fulfilled the Management’s Responsibilities for the Financial Statements.

These responsibilities are:

* To prepare financial statements which give a true and fair view of the receipts and payments of MEM as at the end of the financial year using appropriate accounting policies supported by reasonable and prudent judgements and estimates in conformity with the requirements of legislation and regulations
* To ensure MEM keeps proper accounting records, which disclose with reasonable accuracy at any time the financial position of MEM.
* To safeguard MEM’s assets and to take reasonable steps for the prevention and detection of fraud, error and other regularities
* To establish an effective internal control system, internal audit unit and audit committee appropriate to the circumstances of MEM.

As noted above there is a Management Letter to the AO from the CAG indicating where improvements can be made. This is not usually made public unless required as evidence for a hearing of a Public Accounts Committee (PAC) of Parliament.

***Consultant recommendation.*** *If MEM wishes to maintain some measure of the performance of its financial management system in the future it should simply use an unqualified audit opinion from the CAG as the indicator (And not seek to apply percentage measures). It if it wishes to go further in assessing quality of and improvements to its financial management system, it may wish to establish an indicator such as “issues requiring attention as emphasis of matter in the audit report or in a Management Letter from the CAG effectively followed up within the next financial year”. However, that can only be independently verified by the CAG or the PAC.[[63]](#footnote-64) It should also review the activities related to that target with a view to using that information to making the target clearer and more easily measurable.*

## Audit Opinions on Public Bodies in the Energy Sector

In addition to the audit of MEM’s accounts, the CAG is also responsible for auditing public bodies in the energy sector – EWURA, REA/REF, TANESCO and TPDC. Auditing issues specific for REA and TANESCO are discussed in sections [ ] and [ ] of this report. Table [ ] presents a summary of the audit opinions.

* + - * 1. Summary of Audit Opinions on Energy Sector Public Bodies

|  |  |
| --- | --- |
| Public Body | Audit Opinion and status (March 2011) |
| **TPDC** | Unqualified (adopted by Board of Directors) |
| **EWURA** | Unqualified (adopted by Board of Directors) |
| **EWURA Consumer Consultative Council** | Unqualified  (Awaiting adoption by Board of Directors) |
| **TANESCO** | Unqualified with Emphasis of Matter  (Awaiting adoption by Board of Directors) |
| **Rural Energy Agency** | **No reference found in CAG Report** |

*Source: Authors from Appendix II (CAG 2011b)*

The remainder of this section highlights CAG findings on and related to public bodies and PPP arrangements in the energy sector as presented in the CAG’s Report of March 2011.

## CAG commentary and recommendations on Control Procedures over Public-Private Partnership (PPP) Arrangements

PPPs are an important part of the energy strategy in electricity generation, gas supply development, rural electrification and renewables development. The CAG has commented at length and in detail on existing PPP arrangements and has made detailed recommendations on how future PPP arrangements should be managed by Government. These are presented in some detail here as they warrant attention from energy sector stakeholders.

“*PPP in … power, ... and utility sectors has not successfully been implemented.” … examples where the Government has entered into agreements with private investors where in [the view of the CAG], there were some gaps and flaws with little success in their implementation.”* (CAG 2011: 63)

The CAG report noted the following:

* “… *all existing agreements or memoranda of understanding entered into by any contracting authority with the private party before the commencement of the [PPP Act 2010] shall not be affected by the coming into force of the Act).*
* *“There was no evidence that a thorough Cost-benefit and value for money analysis were carried out when assessing the investment proposals.”*
* *“It was not certain whether competitive procurement procedures were employed including having competent multi-disciplinary negotiating teams during the process of getting the prospective investor.”*
* *“Monitoring of projects being implemented under PPP arrangements was assessed to be inadequate.”*
* *“There was no evidence that adequate risk assessment and analysis was carried out to identify the vulnerabilities to which the Government is exposed in relation to PPP arrangements and determine how risk shall be shared between the private investors and the government before a decision to und*ertake a PPP project is taken.” (CAG 2011: 63)

The CAG “*could not establish whether a comprehensive evaluation of the financial capability of some of the investors was done [and]… noted some instances where the Government had to take the responsibility of refinancing some operations of the private investors through direct financing or issuing loans or guarantees*.” (CAG 2011:63)

The CAG noted that as a result:

* *“The Government may be forced to meet unpredicted costs through PPP that are not fully captured in the national budget” and*
* *“In the absence of a comprehensive risk analysis of some of the investors, the government may end up inviting private investors who are not financially capable. In addition, the government is likely to bear the full burden of risks. Without detailed Cost-benefit and value for money analysis, some of the investments may not be economically viable.”* (CAG 2011:64)

The CAG further noted:

* *“Giving on lent loans and guarantees to private investors is contrary to the requirements of Section 13 & 14 of the Government Loans, Guarantees and Grants Act (1974) (revised 2004).*” (CAG 2011: 64)
* “… *assets of the Government including those under PPP arrangements and Liabilities (including contingent liabilities) are not well recorded in the books of account and properly disclosed in the National Consolidated Accounts…*” (CAG 2011: 65)

The CAG’s recommendation for the Government to improve implementation of PPPs were:

“(*i) The Ministry of Finance should prepare a comprehensive list of the government’s fiscal exposures including both explicit and implicit contingent liabilities arising from PPP arrangements*

*(ii) The costs of contingent liabilities should be quantified and the expected cost of exposures valued in order to influence the decision whether to undertake the project or not and to provide policymakers with a better indication of the level of losses or liabilities the government needs to anticipate.*

*(iii) The Government should carry out a thorough Cost- benefit and value for money analysis of the proposed PPP projects during the process of assessing investment proposals.*

*(iv) All PPP proposals should be subjected to a multistage review by people with expertise in PPPs and fiscal management at the prime Minister’s office and Ministry of Finance before a contract is signed.*

*(v) To enhance transparency, the Government should publish all PPP contracts along with other information on the costs and risks of the financial obligations they impose on the government and a summary description of their financial implications.*

*(vi) The Government should ensure that there is adequate monitoring and supervision of all the PPP projects (both existing and those to be implemented later) so that precaution measures can be taken to reduce the magnitude of the risk of contingent liabilities and the likelihood of such events.*

*(vii) The Government should also consider reviewing the existing contracts to see if there are gaps which can be rectified to ensure that the government benefits from these undertakings and avoid shouldering all the risks arising from these agreements.*

*(viii) The Government (through appropriate Parent Ministry) should commission a Consultant to carry out management audits of the operational performance of all the companies under observation*

*(ix) In addition, the Government should look for legal advice in the process of considering terminating all the contracts with all the private companies that have failed to observe the terms and conditions of their contracts*.” (CAG 2011: 177-178)

Further recommendations for Management of Contingent Liabilities and Accounting for PPP Assets and Liabilities were:

* *“The Government through the Ministry of Finance should avoid giving on lent loans and guarantees to private investors. Investors with inadequate financial capability should not be accepted to be partners with the Government. Reasons for not complying to Section 13 & 14 of the Government Loans, Guarantees and Grants Act (1974) should be given.*
* *In case it is established that it is not prudent for parastatals to pledge collaterals when issued with loans or guarantees, the Government Loans, Guarantees and Grants Act (1974) should be amended to suit that situation.*
* *The Government budgetary system should be modified so that it can be able to capture the costs of contingent liabilities including those arising from PPPs.*
* *All PPPs that are likely to cause contingent liabilities which may result into future spending by the government should be approved by both the Ministry of Finance and Parliament before their contracts are signed.”* (CAG 2011:179)

It should be noted that the Prime Minister’s Office and the Ministry of Finance completed its PPP strategy and regulations in July 2011.

***Consultant recommendation****: MEM senior management and DPs should pay close attention to new regulations relating to PPPs. The issues raised at length by the CAG on PPPs are very relevant to the energy sector and the recommendations of the CAG if followed up by the Public Accounts Committee and Government would, require action by MEM and a more demanding approach to arranging and approving PPPs in the energy sector in the future. This too could apply in instances where DPs support the development of PPPs through direct financing or guarantee arrangements. In addition, it should be expected that the new regulations will lengthen project processes and may affect the timings of the PMSP.*

## Outstanding matters from Audit Opinions on Energy Sector Public Bodies

Among the recommendation of the CAG from previous years the following relating to the energy sector were outstanding at end March 2011.

* TANESCO management should justify the payment of USD 4,865,000 paid to M/s Dowans in respect of charter aircraft.
* TANESCO Management should ensure that it implements its generation capacity additional program and build the required transmission.
* The Government should enter into performance contracts with Boards of Directors of PA&oBs and set the pre-determined deliverables to be achieved during its tenure which will be made public. In this regard, Boards of Directors should also sign performance contracts with Chief Executive Officers who will also sign performance contracts with their subordinates.
* The Government should consider splitting TPDC into two entities, one that is responsible for commercial activities and the other one that is responsible for awarding licenses, undertaking inspections and doing more regulatory work.
* Results of the Special Audits Conducted at TANESCOThe Board of Directors of TANESCO should comply with the Public Procurement Act No. 21 of 2004 and its related Regulations of 2005 and ensure Value for Money is obtained when overseeing daily undertakings of the Company.

## Issues raised in Management Letters from CAG

The CAG reported that TANESCO:

* had not been complying with monthly revenue reconciliation requirements.
* continued to incur significant losses in generation and distribution of electricity and from ‘unfaithful’ customers, wrong billing, and illegal connections.
* did not conduct regular reconciliation between the number of customers per the system (Hi- Affinity) and the number of actual customers per operation reports.
* did not reconcile between thermal fuel consumed and the amount reported where a difference of TZS 3.4 billion was noted.

## Other matters noted by the CAG

### Involvement of Members of Parliament in Operational Activities of the Public Authorities.

The CAG noted that Government had not taken steps to ensure that in our previous reports, we emphasized on the fact that to address interference of members of Parliament in the affairs of Tanzania Petroleum Development Corporation (TPDC).

### Independence of Boards of Directors in Directing the Public Authorities

The CAG reported noted that in general that “although the Board of Directors have powers to decide on policies and investments of the organizations they are expected to lead, in some instances there has been interference by the Government in issuing directives and policy formulation as well as contracting and investing. This condition is unhealthy from the governance point of view because when the Government interferes with the powers of the board of directors, then the chain of accountability becomes feeble.” TANESCO was cited as an example where this has occurred ‘substantially’.

### Under-capitalization of Pubic Bodies

The CAG opined that some underperforming entities “the rescue of the Government injection of funds to revamp their operations”. TANESCO was noted to be underperforming due to lack of capital.

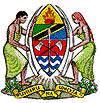
References / Bibliography

|  |
| --- |
| AEA (2011) WFC Criticizes IPCC Report on RE, 10 May 2011, <http://ae-africa.com/read_article.php?NID=2944> |
| Afrepen (2011) Country Energy Profile: Tanzania |
| Bwakea, T. (2011) Formation, Reforms and Plans of the energy sector, presentation by Ag. Commissioner Energy and Petroleum Affairs at MEM's stakeholder forum, July |
| Controller and Auditor General (2011a) Annual General Report of the Controller and Auditor General On the Audit of the Financial Statements of the Central Government for the year ended 30th June, 2010, Dar es Salaam.  <http://www.nao.go.tz/files/GENERAL%20REPORT%20CENTRAL%20GOVERMENT%202009-2010.pdf> 22/8/2011  CAG (2011b) ANNUAL GENERAL REPORT OF THE CONTROLLER AND AUDITOR GENERAL On the Audit of Public Authorities and Other Bodies for the financial year 2009/2010  <http://www.nao.go.tz/files/PUBLIC%20AUTHORITIES%20GENERAL%20REPORT%202009-2010.pdf> 22/8/2011  Cooksey, B. (2002) The power and the vainglory: Anatomy of a $100 million Malaysian IPP in Tanzania  Curren, J., (2010a) Renewable Energy Feed-in Tariff - Feeding Development, A Study Conducted for Tanzania Renewable Energy Association (TAREA), Dar es Salaam.  Curren, J., (2010b) Tanzania Renewable Energy Association (TAREA) Sustainability Strategy 2011 - 2014, Tanzania Renewable Energy Association (TAREA), Strategic Plan, Dar es Salaam  Curren, J., (2011) Study on the Role of TAREA in Accessing Carbon Finance for Small-Scale Renewables in Tanzania, A Study Conducted by CAMCO, for Tanzania Renewable Energy Association (TAREA). |
| EarthTrends (2003) Energy and Resources Tanzania, Earth Trends Country Profiles |
| Edenhofer, O., R. Pichs-Madruga, Y. Sokona, K. Seyboth et al (2011) Special Report Renewable Energy Sources, Intergovernmental Panel on Climate Change (IPCC) |
| Ford, C. (2011) Songas: A realistic way forward on gas infrastructure and the power crisis, Parliamentary Committee Briefing Paper, August |
| EWURA (2010) Annual Report for the year ended 30th June 2010, December |
| GBS Annual Review 2010, A review of budget execution for 2009/10 and Medium Term Expenditure Focus for 2010/11, presented by Mrs. Monica L. Mwamunyange on 07/12/2010 |
| GBS Annual Review 2010, Annual National Policy Dialogue: Final Report |
| GBS Annual Review 2010, Attraction and Retention of Human Resoures in the undeserved areas for equitable service delivery, presented on 07/12/2010 |
| GBS Annual Review 2010, Comment on the synoptic note on RBA for the FY2010/11, presented by Mr. John Mihayo Chayo on 03/12/2010 |
| GBS Annual Review 2010, Key Issue 4: Budget, presented on 07/12/2010 |
| GBS Annual Review 2010, Macro-Fiscal Framework FY2010/11, presented on 07/12/2010 |
| GBS Annual Review 2010, PFM at Central and Local government, presented on 07/12/2010 |
| GBS Annual Review 2010, Presentation of Progress against the Performance Assessment Framework 2010 targets, presented by MoF on 07/12/2010 |
| GBS Annual Review 2010, Public Expenditure Review, Medium-Term Strategy and Cross Cluster MTEF, presented on 03/12/2010 |
| GBS Annual Review 2010, Rapid Budget Analysis 2010: Key Findings and Recommendations, presented on 03/12/2010 |
| Gratwick, K., R. Ghanadan, A. Eberhard (2006) Generating power and controversy: Understanding Tanzania's Independent Power Projects, Management programme in infrastructure reform and regulation (MIR), Working Paper, March |
| Hamisi, A. (2011) Tanzania expects $%700m for power dams, article in East African Business Week, 2 May 2011, http://www.busiweek.com/11/news/tanzania/910-tanzania-expects-700m-for-power-dams, accessed 19/05/2011 |
| Hart Group (2011a) Tanzania Extractive Industries Transparency Imitative, Final Report, 8th February 2011 |
| Hart Group (2011b) Tanzania Extractive Industries Transparency Imitative, Workplan 2010-12 |
| Huysen, R. (2008) The Zambia-Tanzania-Kenya power interconnector project, presentation by TANESCO  Hayashi, D., Michaelowa, A., Dransfeld, B., Niemann, M., Marr, Marc A., Müller, N., Wehner, S., Krey, M., Oppermann, K., and Neufeld, C. S., (2010) PoA Blueprint Book: Guidebook for PoA Coordinators under CDM/JI, 2nd Edition, KfW Bankengruppe Palmengartenstraße, Frankfurt am Main.  Institute of Resource Assessment (IRA) (2010), University of Dar es Salaam (UDSM), Annual Report, July 2009 – June 2010 |
| Kagya, M. (2011) Exploration and Developments of East Africa’s passive margins – Presence of effective petroleum system in onshore and offshore basins Tanzania: Recent Exploration Development, presentation by the Principal Petroleum Geochemist, Tanzania Petroleum Development Corporation, at the 5th East African Conference and Exhibition  Kimambo, C. Z. M. (2009), Best Practices in Dissemination of Solar Photovoltaic Technology: Experiences of the Solar PV Mwanza Project in Tanzania, Transformation of Rural PV Market in Tanzania Project, GoT, MEM and UNDP, November. |
| Kimbute, J. (2011) With court fiat on Dowans, TANESCO sale now looming, 11 March 2011 |
| Kisembo, P. (2011) Power crisis: Miracle in 3 weeks?, article in The Guardia, 19 July 2011  Komba, K. (2011) The hydrocarbon potential and development in the oil and gas sector in Tanzania, presentation by Principal Geophysicist, Tanzania Petroleum Development Corporation, Tanzania, at the 5th East African Conference and Exhibition |
| Kupaza, R. (2011) “Tanzania: Electricity Shortage as Opportunity”, article in The Arusha Times available from All Africa.com, 5 March 2011, http://allafrica.com/stories/201103070586.html, accessed 19/05/11 |
| Makamba, J. (2011) Politics and power cuts in Tanzania, article in Business Times, 1 July 2011, http://www.businesstimes.co.tz/index.php?option=com\_content&view=article&id=1186:politics-and-power-cuts-in-tanzania&catid=40:marketandeconomy&Itemid=58 |
| Mbawala, A. and C. Greacen (2010) Towards a light handed Regulatory system for promoting grid and off-grid small power producers (SPP): An update on the Tanzania SPP program, AFTEG and African Electrification Initiative (AEI) presentation at WB, Washington, November |
| MEM (2008a) Power System Master Plan, Final Report, September 2008 |
| MEM (2008b), MEM Financial Statement for the year ended 30th June 2008 for MEM, September 2008 |
| MEM (2009a) Power System Master Plan, 2009 Update, August 2009 |
| MEM (2009b), MEM Financial Statement for the year ended 30th June 2009 for MEM, September 2009 |
| MEM (2010a), Inputs to the plan and budget guidelines for 2011/12, November 2010 |
| MEM (2010b), MEM Financial Statement for the year ended 30th June 2010 for MEM, September 2010 |
| MEM (2010/11), Compiled Action Plans and Progress Reports for MEM's Development Projects, various dates |
| MEM (2011a), Medium-Term Plan and Medium-Term Expenditure Framework 2011/12, MEM, April 2011 |
| MEM (2011b), MEM Budget Memorandum, June 2011 |
| MEM (2011c), MEM Budget Speech 2011/12, July 2011 |
| MEM (2011d), Matrix on recommendations from 2009 and 2010 JESR |
| Mhando, W. (2011) Development of Energy Sector: 50 years since independence, presentation by MD of TANESCO at MEM's stakeholder forum, July |
| MoF (2011), Guidelines for the preparation of Medium Term Plan and Budget Framework 2011/12 to 2013/14, March  Mrindoko, B. (2011) A success story of the National Energy Policy 2003 – The Songo Songo Natural Gas Development and Power Generation Project, presentation by the Commissioner Energy and Petroleum, Ministry of Energy and Minerals, Tanzania, at the 5th East African Conference and Exhibition |
| Mugarula, F. (2011) MP proposes zonal electricity grids to solve chronic problem, in The Citizen, 8 May 2011, http://thecitizen.co.tz/sunday-citizen/40-sunday-citizen-news/10719-mp-proposes-zonal-electricity-grids-to-solve-chronic-problem.html, accessed 19/05/11 |
| Mwakalukwa, G. (2011) The Rebirth of Stamico, presentation by Director General at MEM's stakeholder forum, July |
| Mwakyusa, A. (2011) Bulk fuel imporatation in pipeline, article in Daily News, 6 June 2011 |
| Mwamunyange, J. (2011) Experts warn Dar not to hire generators, in The East African, 16 May 2011, http://www.theeastafrican.co.ke/news/Experts+warn+Dar+not+to+hire+generators/-/2558/1162758/-/6i26fa/-/, accessed 19/05/2011 |
| Mwita, S. (2011) Bunge prevails on energy budget, article in Daily News, 18 July 2011, http://www.dailynews.co.tz/home/?n=21906&cat=home |
| Ng'wanikilala, F. (2011) Tanzania faces new round of power-rationing, in www.reuters.com, 18 May 2011, http://af.reuters.com/article/investingNews/idAFJOE74H0CG20110518, accessed 19/05/2011 |
| Perry, S. (2011) Dowans - TANESCO Saga: Tanzania to pay security over ICC Award, article on Business Times, 5 August 2011, http://www.businesstimes.co.tz/index.php?option=com\_content&view=article&id=1276:dowans-TANESCO-saga-tanzania-to-pay-security-over-icc-award&catid=1:latest-news&Itemid=57 |
| PPRA (2007) Procurement, Contract and Performance Audit: TANESCO, Final Report, August |
| REA (2010) REA Financial Statement for Year Ended 30th June 2010, December  Renewable Energy Policy Network for the 21st Century (REN 21), Renewables 2010 Global Status Report, |
| Semkiwa, P. (2006) Sustainable electric power generation using coal resources of Tanzania: Prospects and constraints, presentation at workshop on sustainable energy options for Tanzania, May |
| Simbakalia, J.L. (2006) Mchuchuma coal to electricity project, presentation by Managing Director of National Development Corporation at workshop on sustainable energy options for Tanzania, May |
| TANESCO (2011a) Electricity charges from February 2011 |
| TANESCO (2011b) Investment Opportunities for power sector in Tanzania, speech by the Managing Director of TANESCO at the Africa Investment Forum, Dar es Salaam, April |
| TANESCO (2011c) TANESCO brief, presentation by the Managing Director at the Joint Energy Sector Working Group, January |
| TANSECO (2011d) Presentation by Managing Director of TANESCO at the EAPP 13th Steering Committee meeting and donor conference, Dar es Salaam, February  Tanzania Renewable Energy Association (TAREA) (2010), Report on Tanzania Solar PV Market Trends Study for Years 2008 and 2009, Report Submitted to Sida/MEM Solar PV Project, Dar es Salaam |
| Tarimo, J. (2011a) Govt: No way out of looming power crisis, 1 May 2011, in www.ippmedia.com, http://www.ippmedia.com/frontend/index.php?l=28979, accessed 19/05/2011 |
| Tarimo, J. (2011b) Power crisis: Rescue package proposed, article in The Guardian, 16 July 2011 |
| Tarimo, J. (2011c) Race to get Mnazi Bay power into grid, in www.ippmedia.com, 13 May 2011, http://www.ippmedia.com/frontend/index.php?l=29044 , accessed 19/05/2011 |
| TEDPG (2011a), Minutes of the meeting held on August 4th 2011 at the WB offices |
| TEDPG (2011b), Request for a meeting on sector strategy on behalf of the Tanzania Energy Development Partners Group, Letter sent to the Permanent Secretary of MEM on 1st of July 2011 |
| Uisso, J. (2011) Rural Energy Agency and innovation in delivery of modern energy services to rural areas, presentation by REA at MEM's stakeholder forum, July |
| Unkonwn (2010) Overview of Energy Sector, Tanzania |
| URT (1992) The Energy Policy of Tanzania, Ministry of Water, Energy and Minerals, April |
| URT (2004), The Environmental Management Act, Dar es Salaam  URT (2005a), Medium Term Strategy Planning and Budgeting Manual, Working document, November 2005 |
| URT (2005b), Public Procurement (Selection and Employment of Consultants) Regulations, URT, 2005 |
| URT (2005c), The Rural Energy Act - 2005 |
| URT (2006), Public Expenditure Estimates 2006/07 - Development Votes (Volume IV) – Ministerial and Regional Development Program |
| URT (2007a), Public Expenditure Estimates 2007/08 - Development Votes (Volume IV) – Ministerial and Regional Development Program  URT (2007b), National Adaptation Programme of Action (NAPA), Vice President’s Office (VPO), Division of Environment, Dar es Salaam. |
| URT (2008a), Electricity Act 2008 |
| URT (2008b), Petroleum Act, 2008 |
| URT (2008c), Public Expenditure Estimates 2008/09 - Development Votes (Volume IV) – Ministerial and Regional Development Program |
| URT (2009), Public Expenditure Estimates 2009/10 - Development Votes (Volume IV) – Ministerial and Regional Development Program |
| URT (2010a), MKUKUTA II Final Draft July 2010 |
| URT (2010b), Public Expenditure Estimates 2010/11 - Development Votes (Volume IV) – Ministerial and Regional Development Program |
| URT (2010c), Draft Clean Development Mechanism Handbook, Vice President’s Office (VPO), Division of Environment, United Republic of Tanzania, Dar es Salaam  URT (2010d), Guidelines for Sustainable Liquid Biofuels Development in Tanzania Ministry of Energy and Minerals (MEM), Dar es Salaam.  URT(2010e), Climate Change: National Implementation Strategies and Priorities for Addressing Climate Change in Tanzania, Paper Presented at the Seminar on Promoting Partnerships for Energy and Climate Change Initiatives in Tanzania, Vice President’s Office (VPO) Dar es Salaam |
| URT (2011a) Renewable Energy Bill, Memorandum, Date of Gazette notification, 21st April 2011 |
| URT (2011b) The Tanzanian 5-Year Development Plan FY2011/12 to FY2015/16: Unleashing Tanzania's greatest growth potential, President's Office, Planning Commission, draft version from May 2011 |
| URT (2011c), Public Expenditure Estimates 2011/12 - Development Votes (Volume IV) – Ministerial and Regional Development Program |
| Valentino, S (2011) Biofuels boom in Africa as British firms lead rush on land for plantations, article in The Guardian, 31 May 2011,  <http://www.guardian.co.uk/environment/2011/may/31/biofuel-plantations-africa-british-firms> |
| WB (2011a) Energy Sector Capacity Assistance Project, Project Information Document, June |
| WB (2011b) Singida wind power project, Project Information Document, July |
| WB (2011c) Tz-Ruhundji HPP Guarantee and SIL, Project Information Document, July |
| WB and REA (2010), Lighting Rural Tanzania: Paving the Way for a brighter Tanzania, Lighting Rural Tanzania Competition 2010 Booklet  Yussuf, I. (2011) Desertification encroaches on Zanzibar fast, article in Daily News, 6 June |

Terms of reference

THE UNITED REPUBLIC OF TANZANIA

**MINISTRY OF FINANCE**



Telegrams: “TREASURY”,

Tel: 2124634, Fax: 2124644,

Telex: 41329

Dar es Salaam,

www.mca-t.go.tz

Development House,

Kivukoni Front/Ohio Street,

P. O. Box 8327,

Dar es Salaam,

Tanzania.

**MILLENNIUM CHALLENGE ACCOUNT – TANZANIA**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

TERMS OF REFERENCE

FOR

CONSULTANCY SERVICES FOR THE JOINT ENERGY SECTOR REVIEW (JESR) 2011

1. **Background Information**

1.1 The Joint Energy Sector Review (JESR) is the key element for coordination, planning and financing for the energy sector and it establishes a common basis of performance monitoring and sets the priorities of the energy sector. The Ministry of Energy and Minerals (MEM) has been facilitating JESRs in collaboration with some active Development Partners (DPs) in the energy sector since 2007. The exercise is carried out annually to generate inputs for the General Budget Support (GBS) review as well as to give a general overview of the sector performance to the public and private stakeholders involved in the energy sector.

1.2 Over the last 4 years the JESR has delivered broad and very valuable information updates on all the aspects of the Tanzania energy sector and also closely monitored the Performance Assessment Framework (PAF) and related indicators, taking into account MKUKUTA Cluster I targets. Furthermore, the coordination and collaboration efforts between the MEM and the active EDPs in the energy sector have been further strengthened. This led to the establishment of the Tanzania Energy Development Partner Group (EDPG) which now accounts for close to 12 active DPs in the energy sector and from the MEM’s side the frequency of Joint Energy Sector Working Group (JEWSG) meetings with EDPG was increased to ensure a close sector monitoring and regular dialogue.

1.3 For the first three years the JESR was done with a focus on electricity subsector followed by the Public Finance Management and Budgeting on the latest JESR. The review process is usually followed by the stakeholder’s workshop which is a forum for collecting their recommendations which would be followed up by the JESWG throughout the following year. Usually MEM and the EDPG would suggest a few priority areas to be reviewed more intensively during the period of review.

1.4 A consultancy team with expertise in financial, technical, sectoral policy and strategy issues in the Energy Sector is to be procured and financed by MCA-T in close collaboration with MEM to undertake this task. This fifth annual JESR is expected to conclude with a workshop to be held at the mid of September 2011 in Dar es Salaam during which the results of the herein proposed study and way forward for 2011/12 will be discussed.

1. **General Objectives**

The overall aim of this study is to provide substantial input to the JESR process 2011, make recommendations and build consensus among energy stakeholders on certain aspects of the Tanzanian Energy Sector as per the following objectives:

* 1. Overall Sector Performance Update:

Provide an Update on the current situation of the energy sector and assess any progress made compared to last year’s JESR study report “Performance of the Energy Sector Assessment” including, but not limited to, the progress made on the 2011 Energy Temporary Process Actions (TPA) and Outcome Indicators as agreed during the Annual Review 2010.

* 1. Sector Policy and Strategy:

In the context of the overall sector performance review, to focus on progress made on existing policy and strategies and development of new ones and, depending on the progress made, recommend on concrete strategies and actions to be envisaged by the JESWG to improve the current situation.

* 1. Review of follow up actions on Sector Governance and Financing structure:

Review the actions taken by the GoT and the EDPs since the last JESR 2010 on the subject of Sector Governance and the Sector’s Financing Structure. This will include a review of MEM’s Budget planning process and an assessment of GoT’s strategy for financing the medium term power sector generation expansion plan.

1. **Scope of Services**

The scope of this study is limited to mainland Tanzania.

* 1. **Overall Sector Performance Update:**
     1. Review the JESR 2010 Report and Proceedings of the Workshop including the underlying situational Analysis; Policy and Planning; Sector Financing and key issues to be monitored.
     2. Electricity Sector Update.
        1. Assess current state (values) of the set of MKUKUTA II and PAF-indicators, e.g. Installed capacity (MW), availability (%), Population with access of electricity (%) as well as technical and financial loss (%) during transmission and distribution of electricity.
        2. Review methodology for defining and determining access to electricity and recommend (where necessary) improvement.
        3. Provide an overview on the current financial situation of the major sector entities, MEM, TANESCO and REA.
        4. Update on the overall development of demand and supply situation in the last 12 months including estimated unconstrained demand levels, generation mix, power outages and most likely demand & supply scenario for the next 12 months. (It may be advisable to consider power generation that contributes solely to industrial sector separately as it cannot be considered as part of power supply to the general public.)
        5. Review the capacity building and facilitation for energy projects
        6. Assess the current measures for mitigation of climate change impacts.
     3. Petroleum and Natural Gas Sector Update:
        1. Review last year’s JESR assessment of the sub-sectors and compare the current situation with regard to recommendations made in last year’s review.
        2. The consultant shall assess the status/progress of efforts and plans to increase the gas supply, taking the GoT generation expansion plans into account.
     4. Renewable Energy

Review progress made in renewable energy subsector and recommend best practices for development of the sub-sector in Tanzania.

* 1. **Sector Policy and Strategy:**
     1. Review and comment on any changes/updates to the electricity sector policy framework and their implications for the overall sector performance. This shall also include a review of the update of the National Energy Policy, which is supposed to be disclosed while the Consultant is carrying out his assignment.
     2. Review, assess and comment on GoT’s current planning tools with regard to the power generation sub-sector’s expansion plans. Within this Task, the Consultant is requested to review the current roles of MEM, REA and TANESCO in planning and executing future power generation projects and to assess the adequacy of current arrangements. The Consultants shall also review and opine on the adequacy of the planning tools used by the Government stakeholders in planning and preparing future new electricity generation Projects (i.e. PSMP or other means) and principles applied (i.e. Least cost planning etc.).
     3. Review, assess and comment on GoT’s current strategy and planning tools for transmission and distribution system. Consultants shall review and assess not only expansion and rehabilitation of transmission and distribution system, but also its efficiency and adequacy of operation and preventive maintenance of relevant equipments/facilities that would have significant impact on technical loss and power outage.
     4. Following up on the recommendations made during the last JESR Workshop (2010), the Consultant should review and opine on progress made with regard to the establishment of a clear strategy for the rural and renewable energy sector (such a strategy was recommended to be backed up with an adequate legal and regulatory framework and to include a comprehensive rural and renewable energy policy and develop a Rural Electrification Master Plan).
     5. Review and comment on GoT’s initiatives taken since the last JESR Workshop (2010) on promoting enhanced private sector participation in the power generation sub-sector.
     6. Review, comment and evaluate on GoT’s initiatives taken since the last JESR 2010 on (i) Energy conservation/efficiency and demand side management initiatives, (ii) Development of a National Policy on Electricity Subsidies, and (iii) GoT’s efforts made in enhancing promotion and implementation of CDM supported energy generation Projects.
     7. Review and comment on GoT’s initiatives taken since the last JESR Workshop (2010) on establishing a comprehensive strategy for the development of Tanzania’s Natural Gas sector.
  2. **Follow up Review on Sector Governance and Financing structure:**
     1. Review GoT’s follow up on last year’s JESR 2010 recommendations with regard to improvements of PFM problems (including credible budgeting, budget execution, project preparation, procurement and budget release). The Consultants should assess whether progress made is sufficient and if earlier identified problems like low budget execution rate and inadequate budget allocation have been addressed.
     2. With regard to the Tasks under 3.2 above the Consultants shall assess the GoT’s proposed financing plan for the planned new generation expansion projects in the medium term (until 2018) and whether the Projects’ funding is secured. On that Task the Consultant should also opine on the GoT’s efforts to enhance private sector participation in the implementation and financing of such projects.
     3. Analyze progress made on implementation of a sub-set of projects (DP and GoT funded), review efficiency and timely execution of procurement procedures by the Project Implementation Units (PIUs) and make recommendations on how procurement processes can be strengthened and made more efficiently to allow for timely implementation of Projects.
     4. Review, analyze and comment on progress made by the GoT and EDPs on exchange of sector information including strategy, financing requirements, sector policy and Government Donor-collaboration (improvements made on the JESWG proceedings as per last year’s JESR 2010 recommendations).
  3. **Recommendations for JESR 2011:**
     1. Based on the overall findings of the study, propose a road map for implementation of JESR for 2012.
     2. Make any recommendations on the format for continued energy sector review including organization and time frame over the year (given the respective plan of operations for the respective projects); and
     3. Propose a set of indicators by which the state and performance of the sector could be measured, including sources of information. The set of indicators should be based on the MKUKUTA II.
  4. **Participation in and/or facilitation JESR 2011 stakeholder’s workshop**.
     1. The Consultant shall assist the Client in preparing, organizing and implementing the 2011 JESR workshop by:
        1. Proposing the structures of workshops and a method of facilitation. Such proposals will be discussed and validated with the Client;
        2. Preparing the detailed agenda;
        3. Presenting briefs, and taking part in workshop proceedings, especially by clarifying the assumptions chosen during discussions and further analyses to be made consequently;
        4. Contributing to workshop proceedings, especially by ensuring that discussions effectively lead to the formulation of relevant conclusions.
        5. Playing the role of the facilitator and/or advising the Client on such a role in order to structure the conduct of the workshops and summarize the various conclusions.
  5. **Deliverables and payment schedule**
  6. **Deliverables**

The following deliverables will be expected under this assignment:

* + 1. Inception report detailing how the consultant is to undertake the assignment under the provided scope and proposed approach and methodology;
    2. Draft report for presentation to the Joint Energy Sector Working Group for their comments and suggestions;
    3. Well structured draft final report (in hard and editable soft copies) submitted to MEM, MCA-T and the chair of the EDPG;
    4. Presentation of the draft final report at the 2011 JESR stakeholders’ workshop in Dar es Salaam; and
    5. Final JESR 2011 report submitted to MEM, MCA-T and Chair of EDPG having incorporated stakeholders’ inputs and ideas.

**Note:** all reports to be submitted on a compact Disk, in MS Office 2003 compatible format and in three (3) hard copies.

* 1. **Payment Schedule**
     1. 10% upon submission of an Inception report;
     2. 15% upon submission and acceptance of a Draft report for presentation to the Joint Energy Sector Working Groups for their comments and suggestions;
     3. 30% upon submission of a well structured draft final report (in hard and editable soft copies) to MCA-T with copies to MEM, Sida, and the chair of the EDPG;
     4. 25% upon completion of Presentation of the draft final report at the JESR stakeholders’ workshop 2011 in Dar es Salaam; and
     5. 20% upon submission and acceptance of a final JESR report (having incorporated stakeholders’ inputs and ideas) to MCA-T with a copy to MEM, and Chair of EDPG.

1. P**roposed Approach and Methodology**
   1. Literature search (suggestion has been made to the consultant to review the documents as listed under item 9.0);
   2. Carry out interviews with relevant officials in MEM, EDPG, TANESCO, TPDC, REA, EWURA, SONGAS, IPTL, National Bureau of Statistics; Ministry of Finance (MoF); President’s Office-Planning Commission; and REPOA just to mention a few; private organizations and individuals;
   3. Process and analyze the collected information and data, and submit a draft report;
   4. Make a Power Point Presentation of the draft report to the JESWG for comments and suggestions;
   5. Revise the first draft report based on the received comments by the Working Groups;
   6. Make presentation at the JESR workshop in September 2011; and
   7. Submit final report to MEM, Sida, MCA-T and EDPG chair having incorporated comments/inputs from the stakeholders’ workshop.
2. **Team Organization**:
   1. The consultancy team will be led by a Team leader who will be responsible for the execution of the contract, as well as coordination of all consultancy activities, and may choose to represent the other consultants to meetings with Sida, MCA-T, MEM and EDPs. He/she will also be accountable for report writing and submission, organizing the group, preparing JESR document and making presentations.
   2. It is also recommended that the Consultant’s team provides a good mix of local and international experts assuring as a team the availability of qualifications as per 8.0 below.
3. **Time Frame & Reporting**

The main part of the consultancy services are expected to be rendered between April and September 2011. The proposed schedule is as follows:

|  |  |  |
| --- | --- | --- |
| Date(s) | Activity | Remarks |
| March 2011 | Contract negotiation and signing | Contract signed between MCA-T and the Consultants |
| April-June 2011 | Work plan  Desk study & Stakeholder interviews in Tanzania, and report writing | Consultants to get the necessary reference literature, and interviews with major stakeholders in the energy sector. |
| 1st week of July 2011 | Present the draft report to the Joint Energy Sector Working Group [JESWG] | Comments from JESWG to be incorporated into the draft report for improvement. |
| End of August 2011 | Submission of the improved report | To be submitted in electronic (editable) and hard copies (5). |
| 15 September,2011 | JESR Workshop 2011: Presentation at Stakeholders’ workshop | The consultants will be expected to record comments and ideas from stakeholders for incorporation into the draft final document. |
| 15 October, 2011 | Final submission after incorporation of comments from the consultants. | The final JESR 2011 document to be submitted for GBS meeting. |

1. **Consultants Qualifications**

The team of consultants must together cover the following competences:

* 1. Masters Degree or above in Economics, Engineering, Business, Finance, or related subjects;
  2. Excellent knowledge of Tanzania and the Energy sector and the private sector;
  3. Experience in Tanzania Government Budgeting and Planning system;
  4. International expertise on energy sector frameworks, policies and set up.
  5. International expertise on Development Partner/Government coordination including knowledge about energy sector or other infrastructure Sector Wide Approaches (SWAp).
  6. Sufficient exposure to energy assessments, reviews, performance indicators and monitoring;
  7. Strong knowledge of MKUKUTA II and other national policies/strategies; and
  8. Proficiency in English and strong communication skills.

1. **Guiding Reports and Documents for the Energy Sector Review** 
   1. National Energy Policy (NEP 2003);
   2. Electricity Act 2008 ; and Petroleum Act, 2008;
   3. National Growth and Reduction of Poverty Strategy II (MKUKUTA II);
   4. GBS Annual Review Report 2010 including PAF 2010(PRBS secretariat)
   5. GBS Work plan 2011 & PAF 2011 (PRBS secretariat)
   6. JESR 2010 report and Proceedings (MEM)
   7. Medium Term Plan (MTP) and Mid Term Expenditure Framework (MTEF) - (MEM) 2010/11
   8. MKUKUTA Annual Implementation Report (MoF)
   9. Final Power Systems Master Plan Update (2009- 2033)
   10. Poverty and Human Development Report (REPOA) 2009
   11. Household Budget Survey 2009
   12. Public Expenditure Estimates 2009- Development Votes (Volume IV) – Ministerial and Regional Development Program
   13. Public Expenditure Estimates 2009- Development Votes (Volume II) – Supply Votes (Ministerial)
   14. The Economic Survey of 2007, 2008 and 2009
   15. Appropriation Accounts and other Statements for the Year ended 30th June, 2009
   16. MEM’s Budget Speech 2010/11 available in July 2010
   17. MEM’s Budget Memorandum (June 2011)
   18. Annual Progress report of:- MEM; TANESCO; TPDC; REA and EWURA.

**10. Reporting.**

10.1 The Consultant shall report to the Director for Energy Projects, MCA-T, for day-to-day activities and for submission of all reports.

List of stakeholders interviewed

|  |  |  |
| --- | --- | --- |
| **Organisation** | **Position** | **Name** |
| **Government Ministries and Organisations** | | |
| Ministry of Energy and Minerals | Assistant Commissioner for Energy Development | Eng. Hosea A. Mbise |
| Ministry of Energy and Minerals | Assistant Commissioner for Electricity | Eng. Masanja |
| Ministry of Energy and Minerals | Assistant Commissioner for Petroleum and Gas | Eng. Prosper A. M. Victus |
| Ministry of Energy and Minerals | Assistant Commissioner for Renewable Energy | Mr. Edward Ishengoma |
| Ministry of Energy and Minerals | Director of Policy and Planning | Mr. Invocavit Humphrey Swai |
| Ministry of Energy and Minerals | Senior Economist | Ms. Wanja A. Mtawazo |
| Ministry of Energy and Minerals | Energy Engineer | Mr. John F. Kitonga |
| Ministry of Energy and Minerals | Energy Engineer | Mr. Noel A. Mwakabungu |
| Ministry of Energy and Minerals | Energy Engineer | Mr. Samuel Mgweno |
| Ministry of Energy and Minerals | Energy Engineer | Salum Inergeja |
| Ministry of Energy and Minerals | Energy Engineer | Seleman Hatibuc Chombo |
| Ministry of Energy and Minerals | Principle Petroleum Geologist | Marisa Gilbert |
| Ministry of Energy and Minerals | Economist | Nsalu Nzowa |
| Engineers Registration Board | Chairman | Eng. Prof. Ninatubu M. Lema |
| Ministry of Finance | Acting Assistant Commissioner for Budget | Mr. Mpanda |
| Ministry of Finance | External Finance Department, Finance Analyst | Mr. Francis M Chacha |
| EWURA | Technical Manager Electricity | Matthew Mbwambo |
| EWURA | Commercial Manager -Electricity | Mr. Nobert Kashoza |
| EWURA | Gas Distribution Manager | Thobias Rwelamila |
| EWURA | Principal Human Resource  Officer | Lawrence Sawe |
| TANESCO | Senior Manager, Strategic Planning and Projects | Eng. Maneno Katyega |
| TANESCO | Small Power Projects | John Kabadi |
| TANESCO | Small Power Projects | Charles Shayo |
| REA | Director General | Lutengano Mwakahesysa |
| REA | Director Technical Services | Mr. Bengiel Msofe |
| REA | Human Resources Manager | Amina |
| REA | Capacity Building and Training  Officer | Grace Mathew |
| TPDC | Chief HR and Adminstration | Braison M. Kunyalanyala |
| TPDC | Selengia Mlawi | Corporation Secretary |
| **Development Partners Representatives** | | |
| World Bank | Robert Schlotterer | Senior Financial Analyst, Energy Team |
| Sida | Samer Al-Fayadh | First Secretary/Program Officer for Energy |
| Sida | Stephen Mwakifwamba | Program Officer Energy |
| African Development Bank | Prajesh Bhakta | Country Programme Officer |
| European Commission | Baptiste Bobillier | Program Officer Environment, Energy and Climate Change |
| Norway | Alexander Mwalyoyo | Program Officer Energy |
| Norway | Geir Yngve Hermansen | Counsellor/Energy and Infrastructure |
| Finland | Juho Uusihakala | Counsellor (Governance) |
| JICA | Minako Yamamoto | Representative |
| MCC | Matthew Kavanagh | Deputy Resident Country Director |
| Netherlands | Dirk-Jan Brouwer |  |
| **Private Sector representatives** | | |
| TZ Chamber of Commerce Industry and Agriculture | Adam Zuku | Senior Chamber Development Officer |
| Songas | Malcolm Taylor | Songas Gas Infrastructure Manager |
| TAREA | Godwin Msigwa | Technical Committee Chair |
| TAREA | Matthew Matimbwi | Executive Secretary |
| Pan Africa Energy | William Chiume | Deputy GM |

JESR 2010 recommendations for enhancing effectiveness of JESWG

The JESR 2010 Consultants made 6 recommendations for enhancing the effectiveness of JESWG.

1. JESWG sets four regular meetings in each FY as follows with an established core agenda for each meeting:

Annual Reporting Meeting FY Q1)

Policy and Strategy Review Meeting FY Q2

Medium Term Expenditure Planning Meeting FY Q3

Annual Budgeting Meeting FY Q4

1. JESWG Core Group reviews the agenda for each meeting in advance of the next annual meeting and identifies which items might benefit from the creation of and inputs from a JESWG Sub-Working Group.
2. EDPG develops the DP Active Projects Matrix to align it with Government planning and performance reporting structures, for example using: Chart of Accounts (CoA) codes; budget document project short names; an output/target presentation of project components and deliverables (consistent with CoA); TZS as the currency of reporting.
3. EDPG propose and discuss a structuring of DP funded projects with MEM.
4. EDPG Lead circulates JESWG ToRs to members.
5. Current EDPG members commit to briefing their replacements on the JESWG ToR.

Annual Reporting Meeting in the Q1 of FY (July-Sept)

|  |  |
| --- | --- |
| ***Annual Reporting Meeting*** | ***Timing: FY Q1 - CY Q3.*** |
| *Core Agenda[[64]](#footnote-65)*   1. *Q4 and annual (t-1) Financial and Physical Performance (including analysis of funding requests and releases)* 2. *Reports from JESWG ad hoc working groups[[65]](#footnote-66)* 3. *Review proceedings and recommendations of Joint Energy Sector Review Workshop* 4. *Finalisation of Joint Energy Sector Review* 5. *Report to Cluster Working Group 1 on Review* 6. *Inputs to Annual MKUKUTA Implementation Report/ Biennial MKUKUTA Status Report* 7. *Inputs to Poverty and Human Development Report* 8. *Inputs to JAST review and annual progress report* 9. *Report to Cluster Working Group on progress against GBS Performance Assessment Framework* 10. *Inputs into GBS Annual Review Report* 11. *Participation in GBS Annual Review* 12. *Requirements for Energy sector (PER/MKUKUTA) studies* 13. *Assessment of operation of JESWG in previous year* 14. *Stakeholder Presentations to JESWG for coming year* 15. *Changes to Terms of Reference for next JESR and commissioning financing next JESR, establish ad hoc working group to report at next JESWG.* 16. *Energy Development Partners on EPDG Discussions* | |

Source: Authors.

Policy and Strategy Review Meeting in the Q2 of FY (Oct-Dec)

|  |  |
| --- | --- |
| ***Policy and Strategy Review Meeting*** | ***Timing: FY Q2- CY Q4.*** |
| *Core Agenda:*   1. *Q1 Financial and Physical Performance (including analysis of funding requests and releases)* 2. *Report on Cluster Working Group, GBS Review, JAST Review* 3. *Reports from JESWG ad hoc working groups* 4. *Policy Review* 5. *Strategy Review* 6. *Resource requirements for implementing energy sector policies, strategies and programmes* 7. *Energy Development Partners’ external resource projections for FY+1, 2, 3* 8. *Guidance for MEM Inputs into the Plan and Budget Guidelines for FY+1, 2, 3* 9. *Report of JESR ad hoc working group* 10. *SWAp development in the Energy Sector* 11. *Energy Development Partners Report on EPDG Discussions* | |

Source: Authors.

Medium Term Expenditure Planning Meeting in Q3 of FY (Jan-March)

|  |  |
| --- | --- |
| ***Medium Term Expenditure Planning Meeting*** | ***Timing: FY Q3- CY Q1[[66]](#footnote-67)*** |
| *Core Agenda*   1. *Q2 Financial and Physical Performance (including analysis of funding requests and releases)* 2. *Reports from JESWG ad hoc working groups* 3. *Medium Term Plan and Forward Budget* 4. *Memorandum on Recurrent Budget* 5. *Memorandum on Development Budget* 6. *Energy Development Partners Report on EPDG Discussions* | |

Source: Authors.

Annual Budgeting Meeting in Q4 of FY (April-June)

|  |  |
| --- | --- |
| ***Annual Budgeting Meeting*** | ***Timing: FY Q4 – CY Q2*** |
| *Core Agenda*   1. *Q3 Financial and Physical Performance (including analysis of funding requests and releases)* 2. *Reports from JESWG ad hoc working groups* 3. *Reactions from Parliamentary Committees on MTP and Forward Budget* 4. *Revised budget ceilings* 5. *Proposed changes to MTP expenditure plans* 6. *Implications for EDP funding* 7. *Budget Speech* 8. *Energy Development Partners Report on EPDG Discussions* | |

Source: Authors.

MEM Report on JESR 2009/10 recommendations

| **No.** | **Recommendation** | **Responsible** | **Action Taken/Action to be Taken** | **Due /Follow Up Date** |
| --- | --- | --- | --- | --- |
| **1** | Accord higher priority to renewable energy technologies in the pursuance of energy, SME development, community development and environmental policies - this should be a key element of the strategy for improving access to modern energy services in rural areas. | Ag. ACRE | Barrier removal barriers for solar PV as well as wind technologies through the UNDP/GEF Mwanza Solar PV project as well as Sida/MEM Solar PV project and the World Bank Solar PV project under TEDAP | June 2011 |
| To facilitate the formulation of New and Renewable Energy policy and Biofuel policy | On going |
| **2** | Explore ways of harnessing private and public sector actions and resources for the continued development of renewable energy sources | Ag. ACRE | Investors (private and public) on wind, small hydro, solar and biofuel development are being encouraged through creation of conducive environment. Eg under TEDAP, there matching grants, performance grants; PPP policy | On going |
| **3** | In examining subsidy policy issues in the context of the overall strategy for renewable energy development, assess how environmental benefits of renewable energies can be reflected in energy prices and how high upfront costs of renewable energy development including feed-in tariffs and credit resources for the banking sector. | Ag. ACRE | Renewable energy feed-in tariffs being assessed involving stakeholders and EWURA | On going  2011 |
| Implementation of Joint Programme for Environment under Energy Efficiency and Conservation Unit of MEM | 2011 |
| Tax exemption for all solar products and wind turbine of less than 30Kw. |  |
| **4** | Introduce new laws and policy provisions for renewable including policy targets, subsidy programs, feed-in tariffs that are favourable to renewable | ACED | Policy statements in the revised National Energy Policy will take care | 2012 |
| **5** | As one of the key strategies, rural energy access interventions should fully utilise the existing carbon trading opportunities, including the Clean Development Mechanism (CDM). | ACED | Designated National Authority (DNA) and REA are developing and promoting the initiative | On-going |
| **6** | Ensure Gas Act clarifies roles, responsibilities and accountabilities of stakeholders. | ACPG | Part II of the draft Gas Act clearly clarifies the roles, responsibilities and accountability of stakeholders | Awaiting decision from Attorney General |
| **7** | Formulate a National Gas Strategy, in consultation with other MDAs and gas sector stakeholders. A Strategy rather than a Master Plan is very suitable for the gas sector at this time. In a largely private sector-led sector, what is needed is a framework within which private initiative can emerge, with the public sector playing a supportive and facilitative role. | ACPG | Currently the Ministry is preparing Gas Utilization Master Plan rather than strategy During the process of preparing the Master plan it involve both public and private stakeholders | On going |
| **8** | Within the framework of the National Gas Strategy, examine the case for developing a gas transportation and distribution grid. | ACPG | The Ministry is in progress for the development of Gas Utilization Master Plan and these will eventually entail gas transmission and distribution grid | Commenced in early April 2011 expected to be implemented 2014 |
| **9** | Make contingency plans for the possibility that a number of gas discoveries are made simultaneously, requiring a very rapid scale-up of negotiation and regulatory capacity and to manage Dutch Disease effects. | ACPG | The Ministry is in process of reviewing the National energy policy, gas policy as well as Petroleum and gas Institution set up e.g. has formulated a section called Gas Utilization which will oversee and define the allocation of gas according to priority and availability | On going |
| **10** | Ensure bulk national procurement commences as soon as possible and monitor the results | ACPG | The Government has formulated Bulk Petroleum Procurement Regulations to be reviewed by the Attorney General | On going |
| **11** | Remove petroleum products price setting rules and allow market forces to determine liquid fuel prices | ACPG | The Government through GN no. 5 of 2009 gazetted a pricing formulae for setting limits for highest and lowest petroleum product prices | Underway |
| **12** | Support research into the effect on engine performance, longevity and fuel use of:   * adulterated petrol and diesel; * petrol-ethanol blends in fixed and variable proportions ; * compressed natural gas; * jatropha and other vegetable oils; * bio-diesel distilled from vegetable oils. | ACED | Funds are being mobilized to facilitate the research in the areas identified. College of Engineering and Technology of University of Dar es salaam, Dar es salaam Institute of Technology and Tanzania Industrial Research and Development Organization (TIRDO) will be involved. |  |
| **13** | Support biofuel projects which studies have shown to be economically viable and environmentally sustainable (or the studies themselves, where these have not yet been conducted). | Ag. ACRE | Biofuel guidelines developed and launched, and are readily available for public use | 19th Jan 2011 |
| Information and education on biofuels programmes was provided to different target groups | 2010 |
| Policy, Legal and Regulatory Framework are under preparation | 2012 |
| **14** | Formulate a clear national policy on subsidies to and within the electricity sub-sector. At present, there is no clearly articulated policy and hence subsidies tend to be rather *ad hoc* and do not necessarily further the intended objectives. | ACED | Subsidy study will be undertaken through facilitation of MCA-T. ToR were prepared by MEM and procurement of a consultant is underway.  Findings of the referred study will be used as an input to the ongoing National Energy Policy (2003) review. | Ongoing |
| **15** | Update the Rural Electrification Master Plan, with a focus on identifying centres with significant potential to provide new jobs and income from the use of electricity and of laying out low cost means of making grid connections. | ACED | There is no Rural Electricity Master Plan (REMP) to be updated. ToR for development of the REMP are being finalized through the consultant under TEDAP. JICA have expressed interest to fund the referred REMP.  REA have engaged a consultant | On going |

***Source:*** Ministry of Energy and Minerals

JESR 2010/11 Stakeholders’ Workshop Proceedings

1. Workshop Content

The JESR 2010/11 Stakeholders’ Workshop was held at the Kilimanjaro Hotel Dar es Salaam on Thursday 22nd September.

The Workshop comprised presentations drawn from Section 2 of this report. In addition there was a presentation on a field visit to Kenya organised by EWURA.

Workshop participants joined one of three working groups organised to review the action points set out in Section 2 and to comment.

The three groups were:

* Rural Energy Group
* Electricity Group
* Petroleum and Gas Group

The remainder of this annex presents information on the composition of those groups and the results of their work. The information was compiled by staff of MEM.

1. Renewable Energy Group

**List of Participants**

| **S/N** | **Name** | **Organization** |
| --- | --- | --- |
| 1 | Lilian Masalu | JICA |
| 2 | Juma Shamte | KATANI/MeS |
| 3 | Peter Mtui | UDSM |
| 4 | James L. Ngeleja | NEMC |
| 5 | Finias Magesa | UNDP |
| 6 | Emmanuel Michael | UNIDO |
| 7 | Lutengano Mwakahesya | REA |
| 8 | Gissima Nyamohanga | REA |
| 9 | Joshua Chikowero | REX |
| 10 | Mussa Muze | REA |
| 11 | Rosemary Sago | NGSEN |
| 12 | Leonard C. Pesambili | TaTEDO |
| 13 | Stephen Mwakifwamba | Embassy of Sweden |
| 14 | Baptiste Bobillier | EU |
| 15 | Paul Kiwele | MEM |
| 16 | Clara Picanyol | OPM |
| 17 | Stella Mrosso | MEKONSULT |
| 18 | Joseph R. Lupembe | KEPOCO |
| 19 | Cuthbert Kimambo | UDSM |
| 20 | Adam Gahhu | TPSF |
| 21 | Emillian Nyanda | MEM |
| 22 | Pankras Uwoya | MEM |
| 23 | Issa Isihaka | DATA |
| 24 | Frank Ole Mejooli | MEM |
| 25 | Innocent Mjema | CAMARTEC |
| 26 | Hamisi Komba | MEM |
| 27 | Justina Uisso | REA |
| 28 | George Nchwari | REA |
| 29 | Alex Magayane | MEM |
| 30 | Oscar Lema | Alternative Energy Ltd |
| 31 | Hassan M. Saidy |  |
| 32 | Alex O. Lema | Sino Tan renewable Energy Ltd |
| 33 | Samuel I. Mgweno | MEM |

This group was tasked to work on the renewable action points as proposed in the report. The group worked on the basis of action plan by confirming, adding or modifying them.

There were nine action points; the group added a tenth action point by separating the 7th action plan into Solid & Gaseous Biomass thus making ten action plans, the group also was added one new action plan which was not previously considered by the consultant this was on the Tanzania Domestic Biogas program (TDBP).

Government to invest more in promotion of renewable energy sources.

The Group proposed the title to read: Government to invest more in awareness creation, promotion and sensitization of renewable energy services to both general public and private institutions. It was also suggested that the Government should set enabling policy and a conducive environment that will entice private sector investment in RE. Responsibility - MEM and REA

Follow up on research for development of large-scale geothermal

The Group suggested replacing the word “research” with “Study” Responsibility – MEM, Task Force on Geothermal Energy

Scale up of renewable energy technologies

The Group proposed to change the title to “create enabling environment to scale-up production and use of renewable energy”. Responsibility – MEM, Assistant Commissioner – Energy Development

Follow up on implementation of large-scale wind power projects

No changes. The Group emphasized the need for the Government to clear all pending issues that hamper development of wind projects.

Promote demand side management through energy efficiency and energy conservation

The Group suggested replacing the word ‘promote’ with “facilitation”. Responsibility – MEM, Assistant Commissioner – Renewable Energy; Director Policy and Planning

Improve availability of hydropower

The Group suggested to change to: “Research on improvement of the available hydro sources to generate electricity” emphasized used scientific based approach in finding solutions to the management of hydro sources, considering factors such as hydrology, encroachment and climate changes. Responsibility – MEM, Assistant Commissioner – Renewable Energy; Director Policy and Planning

Encourage large-scale growers of oil seed for biodiesel to build processing plants

The Group suggested local demand of biodiesel to be given first priority with only excess supply to be considered for export. Responsibility – MEM, Assistant Commissioner – Renewable Energy; Director Policy and Planning

Support research in ocean energies

The Group proposed this should read “Support research in Ocean resources”. Responsibility – MEM, Assistant Commissioner – Energy Development

Biomass development:

The Group proposed a new action plan to focus on promotion of Biomass technologies (solid & gaseous). Action: Finalization of Biomass Energy Strategy (BEST) by next year

Support Tanzania Domestic Biogas Programme (TDBP)

The Group proposed that the Government should act on the commitment in funding the Tanzania Domestic Biogas programme (TDBP) – Donors are ***unhappy*** with the current situation. Responsibility – MEM, Assistant Commissioner – Renewable Energy; Director Policy and Planning

**Facilitate further technical support:**

No change

1. Electricity Group

**List of Participants**

| **No:** | **Name** | **Organization** |
| --- | --- | --- |
| 1 | Said S. Abdallah (Chairperson) | Wind East Africa |
| 2 | Tomoko Tauchi (Rapporteur) | JICA |
| 3 | Samer Al Fayadh | SIDA/Swedish Embassy |
| 4 | Minako Yamamoto | JICA |
| 5 | Sang Yun Lee | EDCF, Korea |
| 6 | Emmi Puputhi | Embassy of Finland |
| 7 | Prajesh Bhakta | AfDB |
| 8 | Hans Determeyer | BEST-AC |
| 9 | William P. Mhando | TANESCO |
| 10 | Subira E. Wandiba | TANESCO |
| 11 | Maneno J.J. Katyega | TANESCO |
| 12 | Bastiste Berges | Aldych Inter/ Wind EA |
| 13 | Peter B. Robinson | ECA/OPM-Consultant |
| 14 | Ben Gerrtsen | CASTALIA |
| 15 | Pascal Malesa | NDC |
| 16 | Omari Athuman | POPC |
| 17 | Zawadi Nzotta | TRA |
| 18 | D. Mafunda | COSTECH |
| 19 | I.Nzowah | KEPOCO |
| 20 | T.S. Ndatulu | RUBADA |
| 21 | Invocavit H. Swai | MEM |
| 22 | Edwin A. Ngonyani | MEM |
| 23 | Shubi Byabato | MEM |
| 24 | Marwa Petro | MEM |
| 25 | John F. Kitonga | MEM |
| 26 | Salum M. Inegeja | MEM |
| 27 | Chatila Juma | MEM |

| **S/No** | **Issue** | **Response** |
| --- | --- | --- |
|  | The current position of power crisis was brought by poor planning and political interference | The situation will be solved by unbundling of TANESCO and follow Kenyan experience |
|  | Involvement of the private sector on the planning process of the power sector | Private sector can also be involved in planning to the power sector but strengthening of TANESCO and unbundling it will creates the private sector participation in power sector |
|  | Use of geothermal for power generation rather than depending on thermal (HFO and natural gas) and hydro only. Let us learn from Kenya where they are using geothermal for power generation | There are specific agreements to explore the geothermal resources to generate electricity; |
|  | Use of bio-energy especially in rural areas in order reduces green gas emission and climate change. | MEM and REA facilitates and supports bio-energy and other renewable energy in order to reduce in house gas pollution and to save the environments. |
|  | Request for pension funds to facilitate the power projects and rural electrification in the country. | The Government is working together with pension funds to facilitate the energy projects example NSSF is committed to install 150 MW using thermal. |
|  | Why TANESCO is not be registered on the Dar es Salaam stock exchange. | TANECO will be registered to Dar es Salaam stock exchange until it will be strengthened, so that its balance sheet can be balanced. |
|  | Why emergency power plants and short term plan are all intended on gas usage while we are not informed on about the gas which we have and which is being exploited. | The emergency power plants are there to rescue the situation and condition.  Up to now Tanzania has 4 gas discoveries at Songosongo, Mnazi Bay, Kiliwani and Mkuranga but the Production at Songosongo -2 TCF; Mnazi Bay- 5TCF; discoveries at Kiliwani – 500 TCF and Mkuranga- 200 TCF. Example Songosongo reserves can be used up to 25 years. |
|  | The consultant should mention supply and demand on renewable energy rather than mentioning the company which deals with biomass and renewable energy. | The consultant has indicated the supply and demand of renewable energies in the country like the SSPA signed and MW injected on national grid. |
|  | Updates of the Power System Mater Plan in order to in cooperates the emergency power plants (EPP) | The Power System Master Plan will be updated on June, 2012. |
|  | Fast track/emphasis on the medium term plan of the power projects from the government. | The Short term project will be implemented accordingly after revision of Power System Master Plan. |
|  | The Government should encourage energy mix due to the resources which Tanzania has example coal, wind and geothermal. | Government is encouraging the energy mix due to resource which we have, example on 21st September, 2011 the Government signed a contract with China investor to invest on coal for power production |
|  | When the Government will restructure and unbundle of TANESCO. | The unbundling of TANESCO is under government approval machinery. |
|  | If the planning is stable and good why are we having two plans like PSMP and EPP | Planning is good but the implementation is delays due to budget constraints and delays of procurement process. |

Group Discussions and Recommendations

**Electricity Sector Planning**

The group agreed that while TANESCO is the custodian of the optimization tools needed to derive a least-cost generation and transmission development sequence that meets forecast power and energy requirements, the process of updating the Power System Master Plan should in future be undertaken as a collaborative effort between MEM, EWURA, REA, TPDC, MoF, Planning Commission, TANESCO and the private sector. Other stakeholders such as are TCME, CTI, TPFS, TCCIA should be full involved with coordination from MEM. The date for start of next update process is *December, 2011*.

**Demand Forecasts**

The group emphasized that much more attention should be paid to the demand forecasts which is the driver of power planning process and Power System Master Plan optimization. As the emergency power plants come into effect, the levels of unconstrained demand should be properly estimated and projections made should combine top-down and bottom-up forecasts. This should also be a collaborative effort with economists from the Ministry of Finance and the Planning Commission playing a prominent role. The investment sequence that is planned should match real development of demand, and not lead or lag it, with the provision of potential exports into the region to provide for a safety valve in the event of excess capacity. However, due care of the foreign customers should be considered by having firm contracts with TANESCO to ensure that their supply arrangements are secure and not subject to disruption from generation shortages in Tanzania. Target date will be *September 2012* by annual update of Power System Master Plan.

**Demand Side Management (DSM)**

The group appreciated the power shortage has highlighted the importance of promoting demand side management and efficiency. Current programmes which are being piloted include compact fluorescent lights (CFLs) and time of use (ToU) tariffs. A recent study conducted in DSM identified household lighting and awareness/public education programmes as having the greatest potential. The study also provided cost competitive advantage for a number areas such as industrial motors and variable speed drives, power factor correction, more efficient cooling devices (commercial and institutional air conditioners, household refrigerators, refrigerated beverage vending machines), plus industrial energy audits. The other promising area deserving an investigation is solar water heating particularly in the tourism sector which consumes much energy. Target date for start of DSM and energy efficiency programmes casted in the HATCH report in *January, 2012*. Responsibility is MEM, with TANESCO and REA.

**Emergency Power Plan (EPP)**

The EPP should be monitored and fine-tuned through the up-coming two years, with special attention being paid to developments in demand, availability of gas and commissioning dates of scheduled projects. In particular, commitments to pay capacity charges on rented generation equipment which is to run on liquid fuels should be continuously reviewed or terminated at the earliest possible opportunity. The period which is targeted is *August, 2011* to December, 2013.

**Electricity tariffs**

A significant and progressive increase in tariffs should be implemented as soon as reasonably reliable supplies are available to TANESCO customers. This should be followed by completion of the Cost of Service Study to be commissioned by EWURA, a re-assessment of the multiyear tariff application and a clear commitment to future, expeditious rising of tariffs to achieve full cost recovery. The quid pro quo on the TANESCO side will be evidence of significant effort being exerted to meet the Key Performance Indicators (KPIs) and other conditions EWURA may impose in its tariff order. Target dates, including for the main review public consultations is *December, 2011 and April, 2012*.

**Electricity sector restructuring**

The cabinet paper should have been presented and finalised in 2009. To remove uncertainty in the sector, it should be expedited and a clear statement made about the future structure of the industry. If this is to involve some restructuring, then work on the modalities will commence immediately, should be done but MEM co-opt to leading a technical group involving the same parties as those involved in the Power System Master Plan planning. The target date is *March, 2012.*

**Formulate a clear national policy on subsidies to and within the electricity sub-sector** This was a recommendation of last year’s JESR and the huge implicit subsidies in the EPP have made a comprehensive subsidy study more urgent this year. MEM has prepared study terms of reference (TOR) which cover the design of the energy access subsidies. MEM will review the ToR and expand them to take an all-encompassing review of subsidies, covering both macro-level subsidies, such as the supply of fuel for the IPTL plant by the Government, as well as consumer-level subsidies. Target date for MEM to procure consultants and complete the study: *January and June, 2012*.

**Rural Electrification Master Plan**

The significant costs of rural electrification are only justified if the electricity is actually used in the newly electrified centres, and this is the best assured by focusing on centres with significant potential to provide new jobs and income from the use of electricity. This in turn will ensure that electricity bills can be paid and the scheme will be viable for TANESCO. There is a consensus that a full-scale rural electrification study is needed to prioritise investments properly and also to explore the potential for renewable, including initiatives under GoTs SAGOT plan. In line with contemporary thinking about a Master Plan, this should provide a guiding framework (strategy) rather than being a rigid implementation plan. When under pressure to implement sub-economic schemes, the RE Master Plan will be important in allowing REA to point to a well formulated basis for the promotions and approval of investments. Target date for REA to complete negotiations for funding and commence procurement of consultants: *December 2011*. Rural Electrification Master Plan study itself to be completed within a year.

**WAY FORWARD**

Proposed action plan for implementation of key activities:

|  |  |  |  |
| --- | --- | --- | --- |
| **S/No.** | **Action** | **Responsible party** | **Latest Completion Date** |
|  | Electricity sector planning should in future be done on collaborative basis, MEM coordinating EWURA, REA, TPDC, MoF, Planning Commission and Private Sectors | MEM to ensure PSMP update | Start December, 2011 |
|  | Government should make sure that much greater attention is paid to demand forecasts | MEM should involve MoF and Planning Commission | March, 2012 |
|  | Demand side Management should pursued vigorously | MEM | January, 2012 |
|  | EPP should be closely monitored and capacity charge commitments terminated at the earliest opportunity | MEM | September, 2011 to December, 2013 |
|  | Electricity tariffs increase in December, when stable supplies restored and credible commitment to cost coverage in post-COSS review in 2012 | EWURA | December, 2011 and April, 2012 |
|  | Electricity sector restructuring should be commenced immediately to work on modalities if cabinet decides on that matter. | MEM | March, 2012 |
|  | Undertake a National Energy Sector subsidies policy study which include both macro and micro level subsidies | MEM | January to June, 2012 |
|  | Rural Energy Master Plan should prepared as early as possible to priorities investments properly, including role of renewable energy | REA | December, 2012 |

1. Petroleum and Gas group

**List of Participants**

|  |  |  |
| --- | --- | --- |
| **No** | **Name** | **Organization** |
| 1. | Sebastian Shana | TPDC |
| 2. | Godfrey Hicheka | MFC |
| 3. | Thobias Rwelamila | EWURA |
| 4. | Akira Lavault | BHC |
| 5. | Neema Mwasha | MEM |
| 6. | Lwaga Kibona | TPDC |
| 7. | Prosper Victus | MEM |
| 8. | Greyson Mwase | MEM |
| 9. | Issare Maulid | MEM |
| 10. | Daniel Msolwa | NBS |
| 11 | Noel Mwakabungu | MEM |
| 12. | Nsalu Nzowa | MEM |
| 13. | Ismail Chami | MEM |

Discussion started by defining the word “petroleum” which means all products which are produced from petroleum which include oil and gas.

**Upstream Petroleum**

During the discussion it was advised that Government should promote exploration of oil and gas by putting a conducive environment for exploration.

**Downstream petroleum**

***1 .Implement bulk national procurements of liquid fuels***

*G*overnment has already formed the company which is in its initial stage. Also there is a formation of two committees which are;

i) Bulk procurement committee

ii) Petroleum import coordinator

***2. Consolidate the agreement that has been reached on the price setting methodology***

EWURA still work on it by conducting a study on stock holding and feasibility of limiting price control to the wholesale price cap and it will be finished June 2012

***3. Support research into alternative transport fuel***

TPDC is doing this with different private actors and companies like Petrobras on ethanol.

**Natural gas action points**

**4. *Present Gas Act to Parliament***

A draft is already submitted to chief Parliamentary draftsman (CPD) office for the collection and forwards it to the Parliament. MEM will continue to insist them to submit it to the Parliament for discussion.

***5. Formulate a National Gas strategy***

MEM is prearing a zero order draft. Different energy stakeholders like EWURA, TPDC and TANESCO will be included during the process.

**Summary of Group Discussion:**

The following were the outcome of the group discussion on proposed action plan

**Petroleum Upstream**

|  |  |  |  |
| --- | --- | --- | --- |
| **Action** | **Discussion / issues** | **Owner** | **When** |
| 1.Continue with promotion of petroleum and gas exploration | - BG plans to build LPG plant at shore to process gas for export and domestic use | MEM/TPDC | Continuous |
| 2. Strengthen capacity at all levels in sectors supporting upstream activities. Come up with local content policy | - MEM and TPDC urged to develop policy for encouraging private sector to harness gas development related activities | MEM/TPDC | 1st draft to stakeholders Dec 2012 |

**Petroleum Downstream**

|  |  |  |  |
| --- | --- | --- | --- |
| **Action** | **Discussion / issues** | **Owner** | **When** |
| Implement bulk national procurement of liquid fuels (lifted as it is) | Bulk Procurement Technical Committee already established and Petroleum import coordinator (PIC) is in the process of being formed | MEM/TPDC | Immediately |
| Consolidate the agreement that has been reached on the price setting methodology (lifted as it is) |  | EWURA | July 2012 |
| Supporting research on alternative transport fuels (lifted as it is) |  | TPDC | Continous |

**Natural Gas Utilization**

|  |  |  |  |
| --- | --- | --- | --- |
| **Action** | **Discussion / issues** | **Owner** | **When** |
| Presentation of Gas Act to Parliament | Draft act submitted to CPD, no further progress made thereafter  Difficult to attach date as MEM has no direct control of the process.  There is a need for MEM to closely follow up on the progress | MEM | ?? |
| Formulation of natural gas strategy (lifted as it is) | Involving regulator in strategy formulation and preparation of master plan recommended, others TANESCO, REA | MEM/TPDC | July 2012 |

**Generals Comment / Observation**

To achieve development goals in any sector, **Policy – Strategy – Plan – Budget** chain need to be followed. The existing PSMP is more of a strategy rather than a plan. Thus, lack of a concrete plan to implement the strategy possibly is a reason for its failure.

1. The consultant’s assessment of the EPP was presented to the JESWG in August and discussed again in September. MEM agreed that the EPP could be reviewed and agreed further and that MEM and Tanesco would meet again to discuss this assessment of the EPP with the Consultants prior to the submission of this revised report. The meeting was not called by MEM before the deadline for submission of this report. [↑](#footnote-ref-2)
2. HATCH (2010): *Energy Rationalization & Demand Response in Tanzania*, consultancy report for TANESCO [↑](#footnote-ref-3)
3. A list of documents consulted is provided on page and a list of stakeholders interviewed is shown in Annex B. [↑](#footnote-ref-4)
4. Confederation of Tanzania Industries (2011): *Challenges of Unreliable Electric Power Supply to Manufacturers in Tanzania*, Dar-es-Salaam, July [↑](#footnote-ref-5)
5. Revisions to MW figures provided in comments from EWURA. [↑](#footnote-ref-6)
6. Data has been requested on outages and load shedding in the commentary period. It will be reported in the revised version of this document. [↑](#footnote-ref-7)
7. Two companies, Wind East Africa and Power Pool East Africa are seeking to develop these projects. [↑](#footnote-ref-8)
8. This does not mean that the dispersed generators should be linked to the grid – that would be impossible. [↑](#footnote-ref-9)
9. EWURA: *The Electricity (Tanzania Electric Supply Company Limited) (Tariff Adjustment) Order 2010, Order No. 010-019*, made under Section 23 of the Electricity Act. [↑](#footnote-ref-10)
10. The TANESCO MD identified a target of 12 per cent of revenues in his address the JESWG in January 2011 [↑](#footnote-ref-11)
11. See, for example, pg6 of the REA Annual Report for 2010. [↑](#footnote-ref-12)
12. SADC (2010): *Regional Energy Access Strategy and Action Plan*, Gaborone [↑](#footnote-ref-13)
13. The CTI report discussed earlier is concerned about the lack of an enabling environment for large private sector generation projects. The paper recommends unbundling of generation, with TANESCO retaining responsibility for both transmission and distribution. [↑](#footnote-ref-14)
14. HATCH (2010): *Energy Rationalization & Demand Response in Tanzania*, consultancy report for TANESCO [↑](#footnote-ref-15)
15. The prices set on 12 September 2011 were around 8% lower than they would have been if the old formula continued to be in use. The effect of the new arrangements has been a market reduction in the number of tankers waiting at anchor outside Dar-es-Salaam port and a higher level of stocks being maintained by the oil marketing companies. COPEC has tendered for imports of product. [↑](#footnote-ref-16)
16. Data request for TANESCO for cost of electricity from hydro-power generation for the grid. [↑](#footnote-ref-17)
17. The original timing of the project in the PSMP did not reflect the time taken to procure technical, legal and financial advisors to support the Government Negotiation Team. [↑](#footnote-ref-18)
18. The date set by MEM and Aldwych for the end of the negotiation process. [↑](#footnote-ref-19)
19. It also met prior to that in relation to the finalization of last year’s JESR. [↑](#footnote-ref-20)
20. It should also be noted that these public bodies need authorization from MEM to meet and share information with the supporting consultants. [↑](#footnote-ref-21)
21. See CAG 2011 and Section 9.2. [↑](#footnote-ref-22)
22. That is within Parliament, MEM and its agencies, among DPs and in the private sector. [↑](#footnote-ref-23)
23. The document also notes that implementation of Vision 2025 had originally been intended to be supported by a series of 5 year plans. “*However, in the period following the adoption of the Vision (2025), Tanzania embarked on far reaching policy and institutional reforms, which had a negative impact on the country’s poor. In view of this, and with the help of the development partners, short and medium term Poverty Reduction Strategies (PRS) were adopted as a safety net for the poor. First came the three year PRS (2000-2003) and then the first five year National Strategy for Growth and Reduction of Poverty (NSGRP/MKUKUTA, 2005-2010). In the absence of Five Year Medium Term Plans, … MKUKUTA, though designed as an implementation strategy, took precedence as the medium term plan to implement Vision 2025.*” (URT POPC 2011:2-3) [↑](#footnote-ref-24)
24. Consultant’s comment: This is a vague objective. It is termed in terms of enhancing a share in regional trade – this is not solely within Tanzania’s control. Connections to at least 50 per cent of riparian countries is not at all clear. Tanzania borders 8 countries – the target means at least 4 countries (if all bordering states are ‘riparian’. There are existing connections. Given the time taken to establish such connections it would be expected that the new connections to be established would have been identified and so the objective could have been made more specific. From a reading of the activity section of the NDP it is not clear which activities will contribute towards the achievement of this operational objective. [↑](#footnote-ref-25)
25. This training was to be measured as milestone to be achieved in June 2012. No earlier measure of the number of staff to be trained was set. [↑](#footnote-ref-26)
26. (OPM 2010) [↑](#footnote-ref-27)
27. MCC funded energy projects are managed through the MoF vote because of the terms of the agreement with MCC. MCC also funds other projects in other sectors which are similarly managed. [↑](#footnote-ref-28)
28. These are: 1001 Adminstration and General; 1002 Finance and Accounts; 1003 Policy and Planning; 1004 Internal Audit; 1005 Legal Services; 1006 Information, Education and Communication; 1007 Procurement Management Unit; 1008 Environmental Management Unit; and 1009 Management Information Systems. [↑](#footnote-ref-29)
29. In the 2010/11 approved estimates these were: 1001 Administration and General; Policy and Plannning; and 1008 Environmental Management Unit. [↑](#footnote-ref-30)
30. There was a very small amount of locally funded recurrent expenditure in the budget for 2010/11. [↑](#footnote-ref-31)
31. Calculated from figures shown in OPM (2010), Table 1.1. [↑](#footnote-ref-32)
32. The exact matching of actual expenditure with budget estimates for recurrent and development budget in FY2008/09 is believed to reflect data reconciliation and accounting issues. Further details of were reported in last year’s review. [↑](#footnote-ref-33)
33. Explanation provided by MCC in September 2011. [↑](#footnote-ref-34)
34. The increase was made through reallocation warrants from other MDA budgets. [↑](#footnote-ref-35)
35. Expenditure controlled by MEM was TZS 1.29 billion. Expenditure controlled by third parties was TZS 2.74 billion. [↑](#footnote-ref-36)
36. The remaining 6% was spent on the Sustainable Management of Mineral Resources project (5.29%), the Project Monitoring and Coordination (0.34%0, the Regional Mining Offices Development project (0.14%) and the environment Management Project (0.07%). [↑](#footnote-ref-37)
37. It would have been better if MoF had MEM allowed MDAs to append the new objective to the end of its alphabetic list of the previous year. As changing the code of an existing and unchanged objective does not respect the idea of a coding system and intertemporal comparison. The objective may have been a cross-cutting objective for all MDAs but the subsequent lettering of objectives is unique to each MDA. MoF could have worked up from Z for such objectives. [↑](#footnote-ref-38)
38. Note that this target is divided in two different projects under two different sub-votes, 1003 and 3001. It is therefore repeated under Sub-Vote 3001. [↑](#footnote-ref-39)
39. MEM FS (2010/11:63) [↑](#footnote-ref-40)
40. There seems to be some variance in the style of setting targets by year. In most cases it seems to be cumulative, but in some cases is annual. The better way of presenting it would be as annual indicators and not cumulatively. [↑](#footnote-ref-41)
41. The year is obviously wrong and has not been updated from the previous MTEF. [↑](#footnote-ref-42)
42. This is not a cumulative target. [↑](#footnote-ref-43)
43. The reference to Germany comes from the budget books. It is probably the case that original development partner for this project was Germany but are no longer providing support, Th Budget Bokk will need to be ameneded to reflect this. [↑](#footnote-ref-44)
44. The reader is advised to refer to that report for further details, including Annex I. [↑](#footnote-ref-45)
45. The project design was agreed between JICA and TANESCO in 2007 and witnessed by MEM. [↑](#footnote-ref-46)
46. The budget amount was shown in both the MoF Budget Estimates and in MEM’s Financial Statements for 2009/10. [↑](#footnote-ref-47)
47. The source for this data is the IFMS. [↑](#footnote-ref-48)
48. In the MoF Budget Estimates and in the MEM Financial Statements for 2010/11. [↑](#footnote-ref-49)
49. . Loans from Japan are, however, more flexible in format as in the case of Japan’s support to the Backbone Project which is procured using AfDB procedures. [↑](#footnote-ref-50)
50. The significant (MEM) controlled entities in the energy sector are: REA, TPDC, TANESCO, and Songosongo Project. (MEM FS 2010/11: 50). [↑](#footnote-ref-51)
51. It has not been ascertained whether any actual expenditure has been reported for 2010/11 in the AMP. [↑](#footnote-ref-52)
52. MTEF:7 [↑](#footnote-ref-53)
53. According to MEM’s draft project quarterly physical action plan. [↑](#footnote-ref-54)
54. MEM development budget plus budget for MCC energy projects (not including management apportionment). [↑](#footnote-ref-55)
55. Not specificied in the document. [↑](#footnote-ref-56)
56. The data entered in the MTEF is almost certainly exaggerated by a factor of 1,000 and so these figures should be in billions and not trillions. Form 6 in the MTEF do not indicate that the amounts should be entered in TZS millions and so the convention is not systematically applied in the Forms completed by MEM. [↑](#footnote-ref-57)
57. The draft Action Plans were shown to the Consultants in August 2011. They may have been revised since then. [↑](#footnote-ref-58)
58. The reader is advised to refer to the 2010 JESR for further information on the project, including Annex J. [↑](#footnote-ref-59)
59. The reader is advised to refer to the 2010 JESR for further information on these projects, including Annex K. [↑](#footnote-ref-60)
60. The name of this project is as it appears in the budget estimates. [↑](#footnote-ref-61)
61. The Rapid Budget Analysis data are also not consistent with the presentation in the budget books. [↑](#footnote-ref-62)
62. The report is also copied to the Chief Secretary at State House and to the Permanent Secretary and Paymaster General at the Ministry of Finance. [↑](#footnote-ref-63)
63. In its performance reporting as part of its financial statements for 2009/10 MEM did indicate that eight Management Letters were sent replies and all 38 audit queries were replied to with 21 days. [↑](#footnote-ref-64)
64. This agenda appears to be heavy and for a first meeting would probably be quite time consuming. It should be possible to manage this agenda with appropriate allocations of reporting responsibilities and the use of smaller working groups to prepare for particular items in advance of the meeting, thus reducing the business burden. Other standard agenda items – approval of minutes of last meeting, apologies for absence, agenda adoption, any other business, action points, and date of next meeting are omitted here ease of presentation of a ‘core agenda’. [↑](#footnote-ref-65)
65. This item is a place marker for such items. In practice these reports would come under the relevant agenda item. [↑](#footnote-ref-66)
66. The timing of this meeting is intended to be when MEM has drafted the documents for each item and is able to share them with JESWG for review and comment, prior to submission to MoF etc. [↑](#footnote-ref-67)