第５章　プロジェクトの評価

本章におけるプロジェクトの評価は、事前評価調査での協議結果及びその後の R/D 協議の結果を踏まえたものである。

５－１　妥当性

本プロジェクトは以下の理由から妥当性が高いと判断できる。

＜必要性：対象地域・社会ニーズに合致＞

◆ 本プロジェクト内容は、タンザニア電力供給公社（TANESCO）送配電部門の人材育成に資する内部研修体制を整備することであり、これにより既存設備の持続的維持管理と適正な設備計画が可能となり、停電や低電圧の軽減という TANESCO 電力供給対象地域や社会のニーズに合致している。

＜優先度：相手国の開発政策及び日本の援助政策・JICA 国別事業実施計画との整合性＞

◆ 本プロジェクトは、タンザニアの「成長と貧困削減のための国家戦略（2005 年）」の優先事項である、基礎的インフラ整備による生活環境改善と生計の向上に資するものであり、また、わが国の援助方針や JICA 国別事業実施計画での重要課題に一致するため、本プロジェクトの優先度は高いといえる。

＜手段としての妥当性：アプローチや対象の的確な選定、他ドナーとの援助協調＞

◆ タンザニア経済活動の基盤となる安定的な電力供給のためには、電力設備の更新・新設のほか、設備の維持管理能力強化が必要である。世界銀行をはじめとするドナーは、送配電網の更新・増強を支援しているが、これまで保守管理が適正に行われてこなかったため、ロスも多く停電も頻発していた。したがって、本プロジェクトによる TANESCO の送配電部門の人材育成（特に維持管理に係る）は、過去にわが国がタンザニアにて実施してきた電力セクター支援経験の蓄積を活用できるだけでなく、他ドナー支援との相互補完による相乗効果が期待できるため、実施意義が高いといえる。

５－２　有効性

本プロジェクトは、以下の理由から有効性が見込まれる。

＜PDM の論理構成：プロジェクト目標とその達成に至る道筋が明確＞

◆ プロジェクト目標は、TANESCO 及びエネルギー鉱物資源省（MEM）との協議を経たものである。本プロジェクトは、送配電系統という電気事業の一部門において、①内部人材育成方針やプログラムという内部人材の育成方針や方策の明確化、②設備維持管理に携わる技術者のレベル別研修体制整備、③解析・計画を担う人材の能力強化、④業務改善の一手法としての総合的品質管理（TQM）の活用、という 4 つのアウトプットの達成過程を通じて、プロジェクト目標へと到達することを意図しており、目標達成の道筋は明確である。

＜プロジェクト目標に至るまでの外部条件の充足し得る可能性＞

◆ プロジェクト目標に至るまでの主要な外部条件としては、次の 4 点があげられるが、以下の理由により、現時点ではこれらの充足には問題がないと見込まれる。

① 他の援助パートナーによって予定されている支援を獲得すること
② 人材育成に必要な資金が適宜投入されること
③ 内部資格や内部認定向けの報奨制度が設立され、適用されること
④ 研修を受けたマネージャーが、職場スタッフを巻き込んで TQM 活動を実践すること

①については、既に世界銀行が送配電網の設備更新・増強の支援（Tanzania Energy Development and Access Expansion Project：送配電部門に約 8,600 万ドル）を開始しており、さらに米国 Millennium Challenge Corporation も同様に電力設備更新への資金援助（2 億 600 万ドル）を表明している。

②については、TANESCO 人材開発部で既に人材育成・研修用予算を計上しており（300 万ドル、2008 年）、今後も社の方針として人材育成予算の計上を計画している。

③TANESCO では、社内人材のインセンティブを引き出すような資格制度と結びついた研修体制を構築したいと考えており、その確立に向けて関係機関との協議や情報収集を既に開始している。

④については、関連活動として TANESCO 経営陣対象の TQM ワークショップの実施を計画しており、これにより TQM への全社的理解と取り組みへの下地ができ、TQM のパイロット導入ユニットとして選定されたマネージャーが、孤立することなくスタッフとともに TQM 活動を職場で実践していける社内体制が整えられる。

５－３　効率性

本プロジェクトは、以下の理由から効率的な実施が見込まれる。

＜現地リソースの活用によるコストの縮減＞

◆ 本プロジェクトは、既存の設備・機材・人材を最大限に活用することとしており、例えば現地の事情に通じた現地研修機関〔職業教育訓練機関（VETA）等〕との連携も視野に入れている。また、他ドナー（世界銀行、SIDA、ノルウェー等）の協力を得ることで、コスト的に効率的かつ効果的な業務実施が見込まれる。

＜適切な投入のタイミング＞

◆ 本プロジェクトでは、長期専門家（滞在型）の活動を通じて、内部人材育成方針やプログラムの作成支援を行い、各々の研修ニーズを確認しながら、短期専門家を投入する計画となっている。

５－４　インパクト

本プロジェクトは、以下のようなインパクトの発現が予測できる。

＜波及効果＞

◆ 全国にわたる送配電系統設備（特に配電）の維持管理を行う人材育成体制を整備するため、

トレーナーの育成から始めており、内部的波及効果を十分期待できる。また維持管理の人材が育成されることで、効率性の改善と電力供給の質の向上がなされ、一般の人々の生活条件や産業の発展に大きな波及効果を期待できると思われる。

＜上位目標に至るまでの外部条件の充足し得る可能性＞

◆ プロジェクト目標達成から上位目標に至るまでの外部条件は、次の2点があげられるが、以下の理由により、現時点ではこれらが満たされる可能性は高いと見込まれる。

① 急激な政策変更が起こらない

② 増加する電力需要に応えるための十分な投資が行われる

①については、現在 MEM が中心となって新しく作成している Power Supply Master Plan (PSMP)でも電力セクターの人材育成が重点課題として取り上げられており、TANESCO、MEM ともに人材育成重視の姿勢は今後も堅持されていくものと考えられる。

②については、増加需要に応えるための投資としては、送配電網整備については引き続き世界銀行等の他ドナー支援が期待でき、また電源開発については、民間資金導入が促進される傾向にあり、今後も独立系発電事業者（IPP）による開発可能性が見込まれる。

５－５　自立発展性

本プロジェクトは、以下の理由から、上位目標、プロジェクト目標などのプロジェクトがめざしている効果が、プロジェクト実施終了後も持続することが見込まれる。

＜財政面＞

◆ 2006年12月に就任した新経営陣の下、訓練/研修方針（Training Policy）を作成するなど社内人材育成を重視しており、人材開発部を中心にそのための予算計上に十分な対策が立てられているため、プロジェクト目標達成に必要な財源の継続的な確保が見込まれる。

＜組織面＞

◆ かつて電気事業改革が進められていた際に、人材を削減するとともに、新規採用を見合わせており、この10年間、人材育成をほとんど実施してこなかった経緯があり、組織的には中間技術者が少なく技術者の高齢化が心配されるが、TANESCO では新規採用等による増員と適切な人材配置をめざしている。

＜技術面＞

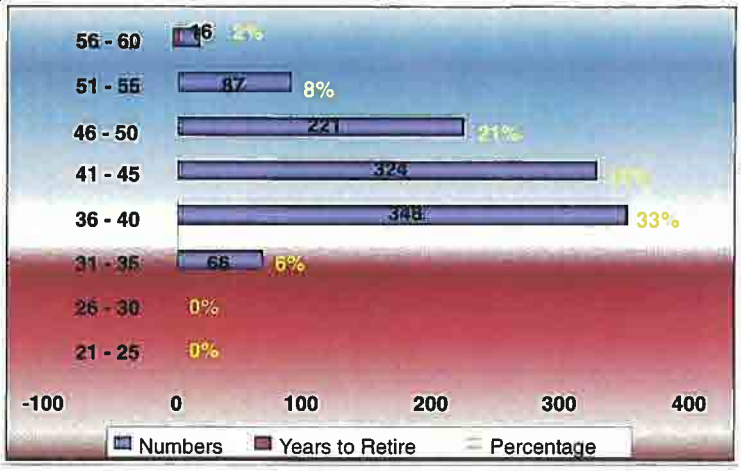
◆ 送配電に関する技術については、TANESCO 内部の技術者が選抜により育成され研修トレーナーとなる、または中核エンジニアの育成により職場での技術継承がなされる、等の社内における技術普及メカニズムが本プロジェクトには取り込まれており、実施終了後もこのメカニズムを維持できる可能性は高い。

第６章　技術協力実施上の留意点

６－１　技術改善計画に応じた研修計画策定と施設整備

本プロジェクトを実施する最初の活動として、技術改善計画（Technical Improvement Plan）の作成があげられる。タンザニア電力供給公社（TANESCO）が自前の研修機能をもつための重要な計画であり、ワーキング・グループ（WG）を中心にTANESCOの技術者や管理職職員らが、JICA専門家と共同で作成するものである。この改善計画に基づいて、プロジェクトにおける研修計画が作成され、必要とされる施設[1]の活用法や必要機材も検討される。また、対象地域については、今後Policyのなかで絞り込みや優先順位づけはあることが十分予想されるが、現在11ヵ所にあるAレベルの事務所（表3-1参照）を中心に、研修センターの配置やそれぞれの地方における研修内容等についても研修計画のなかで明らかにされるべきである。

一方で、本プロジェクトを通じて育成されていくTANESCOの人材の年齢層や規模についても留意する必要がある。TANESCOの職員は2002年に6,433人であったが、年々減少し、5年後の2007年12月末には4,678人までになった。そのうち技術系職員（電工職や技能者、エンジニア等）は、2008年1月現在で、全体の36.6%（1,714人）であるが、事務系（2,967人）にも技術系の職員が一部含まれている。現在残っているベテラン層だけを対象に研修を実施しても、残された期間を考えると、彼らにとってのモチベーションはあまり高いとは考えられない。またこれらベテラン層が退職していくため、毎年定期的な新規採用を計画しており、新人向けの研修計画も策定する必要がある。



*An estimate of the current workforce is 4700 –the profile above represents the majority of TANESCO staff.
出典：TANESCO Corporate Business Plan 2008 [Final draft]

図６－１　TANESCO workforce profile - Linesman age

６－２　現場での維持管理体制整備

TANESCOでは既存設備の維持管理、増強、更新並びに新規設備に対する投資が十分に行われてこなかったため、増大する電力需要に変電所の機器類は慢性的な過負荷状態が続いてきた。また、配電設備は不適切な修復処置、あるいは老朽化によって故障や事故が頻発してきた。こういった状況は電力設備に過度のストレスを与えることとなり、機器の劣化を速める要因となってい

[1] TANESCOは、2008年中に自前の研修施設（街中の研修センター及びKAUDA）の整備を開始予定である。

る。機種にもよるが機器の寿命は25～30年、日本電機工業会では15～20年を更新推奨時期としている。TANESCOの電力機器には1960年代に製作されたものも多数存在し、過度のストレスを与えられているこうした機器の維持管理には標準以上の細心の注意が必要である。

本プロジェクトで行う研修体制の整備と併せ、その研修成果が現場で発現するよう、これまで不十分な保守管理で済ませてきた現場には意識改革を求め、改めて下記項目を検討させる必要があるだろう。

① 設備の実態に合わせた設備管理の基準の作成
- 設備の運転、取り扱い、点検周期、試験、修理等を盛り込む。

② 保全計画の立案
- 機器ごとに点検項目、点検周期を検討させる。点検作業計画、修理計画を立てさせる。

③ 資材及び設備データの管理
- 整備、修理に必要な資材、工具、予備品の管理
- 関係資料、データ、図面等の整備（中身は常に最新のものにしておく）

④ 記録台帳
- 予備品及び資材の管理台帳

⑤ 保安管理体制
- 業務分担が明確か。責任と権限はどうなっているか。指揮命令系統は明確か。

特に、②～④に関しては、KAUDA で行うであろうリーダー研修とは別に General Manager の命令で各事業所一斉に実施することもできる。本プロジェクトは、当初は対象事業所を絞り込んで実施していくことになろうが、最終的には全国の送配電部門（特に配電）に従事する社員の訓練を目的としたものであるため、TANESCO は組織として本プロジェクトに取り組み、特に General Manager （Marketing 担当）クラスの人間の率先した参画を期待したい。

⑤については、各事業所の事故情報を収集、分析する担当者を置き、事故情報を共有すべきである。現場の事故はよい教材を提供するはずであり、各 region でも同様の事故が発生するおそれがないか予防保全を行わせる。

次に望まれることは、組織として社内の風通しをよくし、情報交換をよくすることである。研修所で型どおりのトレーニングを受けても、故障しやすいあるいは事故の起きやすい設備を抱えた現場ではどんな形で事故が発生するか分からない。したがって、事故の原因を解明し、その結果を他の現場にも公表して、他所で類似の事故が発生しないように対策を講じさせる必要がある。これまで実施してきた「故障が発生したら修理または交換する」「事故が発生したら対策する」という「事後保全」ではなく、事故が起きそうな箇所を見つけて対策する「予防保全」に移行させる必要がある。不適切な処置が事故原因になっている場合もあるため、情報を共有して改善していく必要がある。

６－３　リーダー技術者（中堅技術トレーナー）の育成

各 Region では配電設備の保守要員不足が深刻である。人材の育成は早急に取り組まなければならないが、そのためには各事業所における人材養成能力を高める必要がある。KAUDA における

人材教育と並行して、現場で職場内訓練（OJT）により電工職を育成する体制を整えることが必要である。そのために現場での教育、指導ができるリーダーを早急に育成し、各事業所に配置するべきである。

たとえば、スーパーバイザーあるいは現場の電工職のリーダーとして期待される人材を、実業務に支障を来さない範囲で選定し、KAUDA でトレーニングを行う。トレーニング終了後、彼らは所属先に戻り、部下の OJT を進める。並行して、新たな人材を KAUDA に送り、トレーニングを受けさせる。このような現場での技術教育も念頭に置き、研修体制を整備していく必要があるだろう。現場で主力となる人材をトレーニングに出すとすると、日常の業務に支障が生じることも考えられるが、実施しやすい region から始めることにより、全社的に人材育成が進むと考えられる。人事異動を含めてトレーニングしやすい状況をつくることも必要である。

人材育成は KAUDA だけでは進まず、現場での OJT が不可欠であり、それを早急に効果的に実施していくためには、現場リーダーの早期育成が求められる。

６－４　研修の体制整備及び実施上の技術的留意点

＜損失率及び停電事故回数の減少について＞

TANESCO が今回の技術協力単体により送電損失率が減少するだろうと考えているならば、その考えを改めさせる必要がある。設備増強を行わない送電網で電力需要は増大する一方であれば、送電損失率も増大する。このような状況で損失率を低減しようとすれば、電力料金の確実な徴収、発変電所の所内消費電力の節減を行うことが必要である。しかし、実際には本プロジェクトと同時期に、JICA 及び他ドナーによる送配電網整備が実施されるため、相乗効果が期待される。

停電事故回数の減少を期待しているのであれば、これも容易なことではないことも理解させておく必要がある。TANESCO の電力機器は 1960 年代製作のものが多く、このような耐用年数を経過した機器では、故障率は飛躍的に増大するのである。故障による停電事故率は減らないかもしれないが、これにより研修は無意味であるということにはならない。予防保全を徹底すれば事故率の上昇の度合いを抑えることができる。

(1)　財政的効率性の改善に関する視点

本プロジェクトにおいては、総合的品質管理（TQM）の導入なども含め、経営層への働きかけも行っていく。そうした過程において、「電力設備の更新計画」の考え方を紹介することも大いに意義のあることである。ライフサイクルコストによる経済性評価、故障率、保全（事後及び予防）、耐用年数等の講義や紹介を行うことで、設備更新にかかる財政的効率性という視点の重要性が理解されるだろう。現在の状態は、事故（あるいは故障）後の保全を繰り返しても、劣化、老化現象により故障率が増大し、保全への投資が経済的に引き合わなくなっている状態であると思われる。また、事故停電が頻繁に生じると確実に収入が増えないのである。

(2)　TANESCO への研修について

系統解析については System Control と Planning からトレーニングの要望が出ているが、現在あるいは至近年の系統と長期の計画系統と扱う電力系統に差はあっても、既存の部分については共通のはずであるため、データベースの共有も考えるべきである。PTI 社の解析プロ

グラム PSS/E を使うことになるが、TANESCO エンジニアが訓練を望むポイントは解析のインプット（条件設定）とアウトプット（計算結果の評価、判断）である。

中央給電所では系統指令・データ管理（SCADA）システムが導入されておらず、Kidatu、Kihansi といった大電源の運転状態の把握も電話連絡に依存している。系統表示盤の指示計器の読みはあてにならないという状況である。系統には無効電力供給設備が不足しているので、常時の系統運用は慎重に行う必要がある。系統解析を並行して行い、運用指導する必要があるかもしれない。

系統解析、中央給電所業務ともにトレーニングの対象者は少ない、また業務は同じパターンで行われるものであるから、数度のワークショップの開催と、その後の職場 OJT をうまく組み合わせることで対応できると思われる。

６－５　TQM 普及・促進運動

低品質の商品・サービスは顧客の支持が得られず、競争市場から淘汰されることがビジネスの常識である。顧客の支持が得られて初めて、利潤を得ることができるため、Total Quality Management（TQM）の目的は、質のよいサービスを提供することにより顧客満足度を高めることにある。つまり、TQM は、そのための一連の活動であり、マネージメントツールの一つととらえられる。例として TQM の文脈を TANESCO にあてはめると、「安全で安定的な電力を利用者に提供する」ことが公社としての目的であり、さもなければ顧客の電気料金支払い意欲を減退させ、利用者離れを招く、接続希望者の増加が望めないなどのケースが生じる。十分な料金収入が得られなければ、経営に破綻を来し、新規設備投資はおろか、既存の設備維持管理費用の確保も困難になる。こうして、メンテナンス不足の設備による低品質の電力を供給される顧客は、支払い意欲を失う、という悪循環を呼ぶこととなる。したがって、常に質のよい、かつ効率的なサービスの提供を追求するため、改善活動が必要となる。

「Total」の言葉に表されるように、経営陣であるトップのリーダーシップとボトムである社内各部門の自主的な改善活動の組み合わせという、「全社的な」取り組みであるところが、特徴的である。TANESCO の例でいえば、本社の送電・配電等の各部署や地域事務所の各セクション（料金徴収、設備管理等）のスタッフが、ボトムレベルでの問題発見と解決－改善活動（「カイゼン」「QC サークル」等）を行っていく必要がある。これは、常に問題は現場（ボトム）にあり、解決方法も現場（ボトム）に存在しているからである。しかし、ボトムレベルでの活動は、そのセクション限りの活動にとどまりやすく、組織の提供するサービスの質向上につながりにくい傾向にある。これを補い全社的取り組みへと普及させるためには、「トップ」である経営陣のリーダーシップと全面的なサポートが鍵となる。本プロジェクトでは、「ボトム」と「トップ」をつなぐ役割をもつ、現場により近い中間管理職クラスの能力強化を通じ、現場（ボトム）での迅速な問題分析・解決を図ると同時に、上層部（トップ）を巻き込んだ全社的な改善活動へと発展させたい。具体的には、地域事務所の部署などをいくつか選定し、TQM 研修を受講した中間管理職層を通じてパイロット的に TQM を導入し実践していくこととする。また、本プロジェクトの実施・管理について中心的役割を果たすとともに、総裁（MD）直轄部でもある人材開発部のなかに、経営陣による TQM サポートを確保し、また現場の情報を迅速に汲み上げて経営陣に伝達する役割を担う、TQM 推進チームを設置することとする。

６－６　他の JICA 協力との連携及び教訓の共有

以下に示す協力事業との連携や教訓の共有を念頭に、プロジェクトを計画・実施する。

(1)　資金協力事業との連携

既に本体事業が開始されている JICA 無償資金協力「オイスターベイ送配電施設強化計画」（ダルエスサラーム）のほか、地方州における配電網整備、基幹送電線の増強なども検討中であり、タンザニアの安定的な電力供給に資するため、資金協力を通じて電力インフラ整備の支援を実施していく予定である。本件のようなソフト面の支援とこうしたハード面の支援との組み合わせにより、相乗効果を生むような情報の交換、連携を心がけるべきである。

(2)　タンザニア及び他国における電力訓練/研修プロジェクト

タンザニアにおける類似案件としては、JICA は「ダルエスサラーム電力配電設備維持管理計画：DAMP（1996～99)」（後に「DAMP」からスワヒリ語の「KAUDA」に名称変更）を実施している。このプロジェクトでは、現場に根差した実務的研修と社内人材をトレーナーとして育成することの重要性を示した。このプロジェクトにより育った技術者は、現在もダルエスサラーム近郊の設備維持管理チームの主力や KAUDA の研修トレーナーとして活躍しており、本プロジェクトにおいてもこうしたリソースの有効活用を考慮している。

また、他国における類似プロジェクトとしては、「ベトナム国電力技術者養成プロジェクト（2001-06)」があげられる。このプロジェクトでは、電力公社との連携により、研修トレーナー候補のカウンターパート（電力短期大学の教員）に対し、現地駐在研修により電力設備の運転・保守の実情を学び、現場経験の不足を補う機会を提供した。この経験から、研修トレーナーには、相応の現場経験が必要であり、研修と現場の保守管理体制は常にリンクすべきであることが認識される。本プロジェクトにおいても、教材、シラバス、カリキュラムづくり等の研修体制整備においては、定期的に現場ニーズを的確に把握し、それを個々の研修内容に反映させるような体制を構築することを考慮している。

(3)　電力セクターにおける TQM プロジェクト

電力セクターの TQM 導入の類似プロジェクトとしては、「バングラデシュ国 TQM の導入による電力セクターマネジメント強化プロジェクト」があげられる。このプロジェクトは多くのドナーが支援しているバングラデシュの電力セクター改革のなかで、供給電力のサービスを向上するために必要なマネージメントについて TQM を通じて強化するという、多くの支援活動を下支えするものと位置づけられている。3 年間の実施期間で投入は少ないながらも、マネージメント強化に資するマニュアル、監査・考査制度の構築、現業機関の実務の適用・応用への支援など、数々の活動の相乗効果によって、多くの効果が期待できるとされ、本プロジェクトでも導入を予定している TQM の効果等について事例や教訓を共有していくことが期待される。

付　属　資　料

１．要請書

２．署名したM/M

３．事業事前評価表

４．署名したR/D

５．面談記録

６．収集資料リスト

APPLICATION FORM FOR JAPAN'S TECHNICAL COOPERATION

1 **Date of Entry** _____

2 **Applicant:** The Government of Tanzania

3 **Project Title:** Stregthening the Capacity of Operation and Maintenance

4 **Implementing Agency:** Tanzania Electric Supply Company Limited

Address: Umeme Park Building Ubungo, P.O. Box 9024 Dar es salaam, Tanzania

Contact Person: _____

Tel. No. _____ **Fax No.** _____

e-mail _____

5. Background of the Project

(Current conditions of the sector, Government's development policy for the sector, issues and problems to be solved, existing development activities in the sector, etc.)

Current Condition of the sector

The current conditions of the energy sector as per current energy policy [2003] reveal that, domestic energy demand has grown rapidly due to population growth and increase economic activities during the last ten years. The estimated energy consumption is more than 22 millions tones of oil equivalent (TOR) or TOE per capita. Energy consumption in rural areas accounts for about 85% of total national energy consumption.

The vision of energy sector is to effectively contributes to the growth of national economy and thereby improve the standards of living for the entire nation in a sustainable and environmentally sound manner. However, its mission is to create conditions for the provision of the safe, reliable, efficient, cost effective and environmentally appropriate energy services to all sectors on sustainable basis.

Government's Development Policy for the Sector.

The development policy framework has focused on economic, social, environmental and Institutional with the following objectives:-

Economic:

To enhance the gradual economic growth rate to 6% per year based on assumption that further improvements on infrastructure and normal weather condition will allow for agriculture growth rate of 5 – 6% and investment in newly privatized state owned companies and new mines to increase growth in manufacturing and mining by 6 -7%

and 20% per year, respectively. Investments will take place in mining, Agro-processing and Tourism.

Social

Poverty reduction interventions need to be enhanced in order to facilitate income growth through employment and ensure access to basic services and goods by poor. The main goal of national development strategies is to improve and sustain the welfare and standard of living of the population.

However, the Government has articulated specific goal for poverty eradication in order to reduce poverty by half from the current level of 39% to an estimated 19.5.% of the population by year 2010. The overall vision is total poverty eradication by year 2025.

Environmental

To ensure sustainability, security and equitable use of resources to meet the basic need of present and future generation without risking safety and health. Also to prevent degradation of land, water, vegetation and air constitute our life support systems and to conserve and enhance our natural and man made heritage, including biological diversity of ecosystem of Tanzania. Environmental policy also highlights the important of public awareness and understanding of essential linkage between environment and development, thus promoting individual and community participation in environmental action.

The international cooperation on the environment agenda and expansion of Tanzania participation and contribution to relevant bilateral, sub-regional, regional and International Organization and programmes including the implementation of International Treaties.

Institutional

To ensure a transparent institutional framework with clear division of roles and responsibilities, in line with the global trends of accountability and liberalization of economy. To facilitate development, provides stimulus for private investments initiatives and promote effective regulations, monitoring and coordination of sector. To facilitates on mobilization of resources into areas where market forces fail to ensure adequate energy services.

Issues and problems to be solves

In order to achieve the overall objective of economic growth and poverty reduction,

there is a need for substantial improvement within the energy sector, both on demand and supply sides. The following are some of the challenges.

Increased electricity supply and distribution

Demands for generation of electricity and distribution are expected to triple during the next twenty years in order to meet the projected increase in demand from the industries, agriculture, commence and general population.

Tanzania Electric Supply Company Ltd., TANESCO, is a main Electric Supply Company under the Ministry of Energy and Minerals. The company own big percentage of generation, Transmission and Distribution facility country wide. However, besides inadequate generation capacity to cater for future developments, losses in Transmission and distribution network are very high and contribute much in irrelevancy of quality of the power supply. It is estimated that technical losses accounts for 9.62% of the generation capacity but our objective is to try to reduce the same to 5% and below, it bring the figure within the acceptable range. One of the causes of such losses is predicted to have been attributed by poor workmanship during operation activities, improper skills of our linesmen, lack of modern working tools, modern data base, lack of maintenance management skills and modern technology.

Petroleum development

A sizeable amount of foreign currency earnings are used in financing petroleum products imports. In additional to gas discoveries, an oil discovery would go a long way towards reducing the petroleum import bills.

Regional Interconnections

Regional and International integration of power systems is essential for Tanzania and its neighbouring countries to reach the projected economic growth.

Rural Electrification

Electricity need to be available for economic activities in rural areas, rural township and commercial centers. Rural Electrification is therefore a case of long-term national interest and a prerequisite for a balanced social economics growth for all in Tanzania.

Reaching Rural Households

Around 80% of the population has very low purchasing power and depends mainly on wood fuel for cooking and kerosene for lighting which have negative consequences to the environment and the quality of life especially to the rural poor.

Energy supply policy statements

The high cost of electricity and its low reliability constitutes a major challenge, especially for manufacturing and main sectors. In view of this the following are some of the policy statements:

i) Competition, as a principle to attain efficiency, shall apply to the electricity market.
ii) Generation of electric power shall be full open to private and public investors as independent power producers. Investment shall be based on economic and financial criteria considering open access to regional network, balanced domestic supply and environmental impact.
iii) To encourage efficient end use technologies and good household practices.
iv) Create an enabling environmental for Governmental institutions and private sector, which are engaged in research and development and the distribution of energy products and development of appropriate energy technologies for agriculture.
v) To encourage energy efficient buildings and wide application of alternative sources of energy for cooking, heating, cooling, lighting and other applications.
vi) Ensure safe utilization of household energy appliances through regulations of safety standards.
vii) Ensure sufficient energy supply to meet the increasing demand in agriculture, commence and information technology sectors.
viii) To encourage energy efficiency in irrigation, agro-processing and other agriculture activities.
ix) Facilitate agro-processing centers with appropriate energy alternatives with emphasis on electrification in order to promote the small scale Industry, employments creation and economic growth.
x) Promote energy management practice and encourage efficient use of alternative energy sources.
xi) Promote and enhance use of modern information technology for planning assessments, policy analysis, database networks and managerial services in the energy sector.

Development activities in the sector.

i) Oil exploration,
ii) Mining activities,

iii) Electrification activities,
iv) Development of Major and small Hydro potential,
v) Regional Interconnection possibilities etc.

6. Outlines of the Project.

(1) Overall Goal

(Development effect expected as a result of achievement of the "Project Purpose" in several years after the end of the project period)

i) Improvement on reliability of power supply.
ii) Improvement on safety to workers and general public.
iii) Improvement on the distribution network technical losses from 9.62% down to at least 5% and below if possible.
iv) Improve on skills to TANESCO Distribution, Maintenance and Planning Engineers and Technicians, Training personnel and field workers.
v) Improvement on maintenance of distribution network and hence improvement in quality of power supplied to our customers.
vi) Improvement on maintenance planning and data management as well as maintenance tools.
vii) Improvement on live-line technology to minimize planned interruption

(3) Project purpose

(Objective expected to be achieved by the end of the project period. Elaborate with quantitative indicators if possible)

To strengthen the capacity of Operation and Maintenance in TANESCO Transmission and Distribution networks (at the voltage level of 33kV and below).

(Indicators)

i) The percentage of technical loss in the Transmission and distribution line (33kV voltage level and below) will decrease to at least 5% or below from the current value of 9.62%, depending on the possibilities.
ii) Number of planned outage will be reduced to zero due to application of live line Technology and unplanned outage (tripping) hours will be reduced from the current 40,078 hours annually (2005) to 10,020 hours per year (which is 75% improvement) and finally 4,008 hours if possible (which is 90% improvement).
iii) Operation and maintenance negligence to be reduced to minimum due to

improvement in field skills.

iv) Field workers to adopt new technology which will reduce the time spent on attending temporary breakdown.

v) Live line technology in TANESCO will be continually practiced on distribution maintenance in TANESCO by 70% from current 0%.

vi) Accidents in Transmission and Distribution Network (33kV voltage level and below) will be reduced to 0%.

(3) Outputs

(Objectives to be realized by the "Project Activities" in order to achieve the "Project Purpose")

In the coverage of TANESCO class "A" Regions (Dar es salaam Tanga, Arusha, Kilimanjaro and Mbeya) the following are objectives to be realized:-

i) The Operation and Maintenance plans are established and revised periodically.

ii) The sufficient number of engineers, Technician and Linesmen (Artisan) will be trained.

iii) Maintenance using Live line technology will be re-established and planned power interruption cases are reduced to minimum.

iv) The Operation and maintenance data base will be established and intensively used.

(4) Project Activities

(Specific actions intended to produce each "Output" of the project by effective use of the "Input")

i) Provision of Expert (JICA Expert) as an advisor to the Maintenance Section / Long term basis and Maintenance instructors (JICA Experts)/short term basis, to be attached to Maintenance Section in TANESCO (DAMP Offices - Masaki) for advisory on the Operation and Maintenance Planning.

ii) JICA technical experts to conduct daily basis training, and some workshops and seminar on routine Operations, Maintenance and Troubleshooting in the field of:-

- Transmission line maintenance (33kV voltage level and below),
- Distribution line maintenance (33kV voltage level and below),
- 33/11 kV Distribution primary substation maintenance.

iii) JICA Expert to help TANESCO staff on capacity building by training few

Instructors who will later train linesmen (in field training) and artisan country wide.

(5) *Input from the recipient Government*

(Counterpart personnel (identify the name and position of the Project manager), support staff, office space, running expenses, vehicles, equipment, etc.)

Staff

i) Establishment of Steering committee to be done by TANESCO;

ii) Deployment of counterpart personnel as needed for the project to be established by TANESCO.

Name and position of the Project manager

The name and position of Project Manager will be decided later by TANESCO.

Office Space

Provision of sustainable office space, office equipment and furnishings for project experts and personnel will be varnished by TANESCO. Suggested space - DAMP Offices in Masaki area

Supporting Staff

Support staff will be provided by TANESCO.

Office Running Expenses

i) Will be born by TANESCO.

ii) However, we request for Equipments and vehicles expenses to be born by the Government of Japan.

(6) *Input from Japanese Government*

Expert

i) Dispatch of Japanese long Term Expert – 3 to 5 years

ii) Dispatch of Japanese short term expert – 2 to 3 per year and few personnel as need may be.

Training in Japan

Four (4) - Staff per year, depending on the convenience/or as per JICA formalities.

Conference, workshops and on job training in Tanzania

To cover TANESCO class "A" Regions (Dar es salam, Tanga, Kilimanjaro, Arusha

and Mbeya).

Vehicles and Equipments

Low Cost Maintenance supervision cars, Low cost Crane tracks, Maintenance Equipments (i.e. wire rope hoist & gin-pole, Pole jacks, and other pole lifting levers), Low cost Pole Erector (Non Engine operated – for off road activities), pole levers, Live - line tools trailers c/w live line tools, bucket wagon (Non Engine operated – for tree trimming), etc.

7. Implementation schedule

Month *July* Year *2007* - Month *March* Year *2012* **(Subject to discussion)**

8. Implementing Agency

(Budget, staffing, etc.)

The Implementing Agency is Tanzania Electric Supply Company Limited (TANESCO). Budget to run the Office as well as provisional of Office and Staff will be born by TANESCO. We request for the Experts budget to be born by JICA.

9. Related Activities

(Activities in the sector by the recipient government, other donors and NGOs)

vi) Oil exploration,
vii) Mining activities,
viii) Electrification activities,
ix) Development of Major and small Hydro potential,
x) Regional Interconnection possibilities etc.

10. *Gender Consideration*

(Any relevant information of the project from gender perspective.)

The following are extracts from the Energy Policy of Tanzania.

i) Training and incentives for increase female participation as decision makers at all levels need to be encouraged.
ii) The energy policy therefore introduces an Institutional focus on improvement of Rural and Semi Urban energy practice in order to reduce women workload and to involve them in the problem solving and decision making processes on energy issues.

11. Environmental and Social Considerations

(Please fill in the attached screening format.)

Environmental consideration

Environmental impacts and hazards shall be addressed by rigorous environmental management regime in all energy activities and by applying the economic instruments for changing market behaviour. This will encourage any use of environmentally unsound energy technologies (energy inefficiency, unclean practice).

Social Consideration

For the coming decades, the socio-economic challenge for Tanzania is to obtain a robust economic growth, with positive impact on the whole population.

12. Beneficiaries

(Population for which positive changes intended directly and indirectly by implementing the project and gender disaggregated data, if available)

Urban population of class "A" TANESCO Regional townships as shown below:-

i) Dar es salaam – 2,497,940.
ii) Tanga - 1,642,015
iii) Arusha - 1,292,973
iv) Kilimanjaro - 1,381,149
v) Mbeya - 2,070,046
Total Population - 8, 884,122

13. Security Conditions

There is no problem in terms of security conditions

14. Others.

No any

２．署名したM/M

MINUTES OF MEETING
BETWEEN
THE JAPANESE PREPARATORY STUDY TEAM
AND
AUTHORITIES CONCERNED OF THE GOVERNMENT OF
THE UNITED REPUBLIC OF TANZANIA
ON
JAPANESE TECHNICAL COOPERATION
FOR
THE PROJECT FOR CAPACITY DEVELOPMENT OF EFFICIENT DISTRIBUTION AND TRANSMISSION SYSTEMS

Japan International Cooperation Agency (hereinafter referred to as "JICA") has sent the Japanese Preparatory Study Team (hereinafter referred to as "the Team") headed by Mr. Toshiyuki Hayashi to the United Republic of Tanzania from 22nd January to 6th February 2008.

The purpose of the Team was to discuss the concept and scope of the Technical Cooperation Project for Capacity Development of Efficient Distribution and Transmission Systems (hereinafter referred to as "the Project").

During their stay in Tanzania, the Team had a series of discussions on the Project with the authorities of the Government of the United Republic of Tanzania and Tanzania Electricity Supply Company LTD. (hereinafter referred to as "the Tanzania side").

As a result, the Team and the Tanzanian side agreed on the matters referred to in the documents attached hereto.

Dar es Salaam, 1st February, 2007

Mr. Toshiyuki Hayashi
Leader
Preparatory Study Team
Japan International Cooperation Agency

Dr. Idris M. Rashidi
Managing Director
Tanzania Electric Supply Company LTD.

Witness:

Mr.Bashir J.Mrindoko
Commissioner for Energy and Petroleum Affairs
Ministry of Energy and Minerals
United Republic of Tanzania

ATTACHMENT

1. BACKGROUND

Electric power demand in Tanzania has increased in recent years due to economic development and population growth. However, Tanzania Electric Power Company LTD. (TANESCO), which is responsible for power supply in the country, has had impediments to reliable power supply to customers.

After the government announced the future plan of TANESCO privatization, TANESCO had not invested in maintenance, and strengthening and rehabilitation of existing and new electric power facilities during the past decade from the late 1990s up to 2006. Additionally, experienced personnel have left TANESCO, new recruitment had not been implemented, and training for technical staff who works on the ground had not been provided. Consequently, TANESCO power facilities have been degraded and poorly maintained, which leads to frequent outages and resulted in barriers against various social and economic activities. Reflecting this situation, the government finally decided not to specify TANESCO in the privatization list and to support TANESCO for reconstruction. Consequently, new management started in January 2007.

At present, TANESCO management considers human resource development significantly important for reconstructing TANESCO and improving reliability and efficiency in power supply. At this juncture, TANESCO started formulating Training Policy and subsequent Training Program.

This is the background where Tanzanian government requested Japanese government to extend technical cooperation to TANESCO for human resource development. Responding to the Tanzanian request, JICA sent the first preparatory study team in July 2007. The study team collected information and data, investigated TANESCO distribution and transmission facilities, and had series of discussions with TANESCO Managing Director, managers and engineers in head office and regional offices. . Subsequently, TANESCO and JICA study team reached the basic concept of the technical cooperation for TANESCO, and signed the Minuets of Meeting on 2nd August 2007.

Following the previous study, JICA sent the second preparatory study team to discuss more detailed activities and scope of the technical cooperation from 22nd January to 6th February, 2008.

2. PROJECT DESIGN MATRIX AND PLAN OF OPERATION

The Project Design Matrix (hereinafter referred to as "PDM") and the Plan of Operation (hereinafter referred to as "PO") were elaborated through the joint meeting on 24th and 30th January 2008, and the series of other discussions in head office and Morogoro regional office. Both sides agreed to recognize PDM and PO as an important tool for the project management and the basis for monitoring and evaluating the Project. The PDM and PO will be utilized by both sides throughout the implementation of the Project.

The PDM and the PO will be subject to revision within the framework of the Record of Discussions whenever needs arise in the course of the implementation of the Project with mutual consultation.

The draft PDM and PO are herewith attached as ANNEX I and ANNEX II respectively.

3. RECORD OF DISCUSSIONS

Based on the field investigation and the series of discussions between the Team and the Tanzanian side, the draft Record of Discussions (hereinafter referred to as "R/D") has been prepared and agreed between the two parties. After confirmation by JICA Head Office, R/D will be signed by the Managing Director of Tanzania Electric Supply Company LTD., and the Resident Representative of JICA Tanzania Office prior to the implementation of the Project.

The R/D confirms the framework of the Project and the measures to be taken by the Tanzanian side and JICA.

The draft R/D is attached in ANNEX III.

4. JICA's Strategy of Technical Cooperation for TANESCO

The Team explained the fundamental concept of JICA's Technical Cooperation for TANESCO. JICA's strategy of Technical Cooperation for TANESCO is inherently "Capacity Development." Although the capacities TANESCO has to develop are

immense, one important capacity TANESCO has to develop as a power utility is the capacity of internal training system, and autonomous activities and mechanism that utilize the outputs of the training system, so that the improvement in power supply reliability and efficiency can be attained. At this juncture, it is important to emphasize that a power utility is a unique industry whose technical features and business environment are quite different from other industries. This fact indicates that training needs for a power utility is also quite different from other industries. Because of this reason, TANESCO recently started its efforts to develop their own internal training system, which will be tailor-made to their training needs on the ground. Therefore, JICA's intention is to create and develop TANESCO's own capacity to train its employees through the internal training system, and autonomous activities and mechanisms for power supply improvement through the activities of Total Quality Management (TQM). Around the time of the project termination, JICA expects TANESCO to continue the internal training, and activities and mechanisms of power supply improvement through TQM without outside assistance and interventions.

5. Preliminary Concept for Internal Training System

The Team discussed with TANESCO the preliminary concept of internal training system. The concept is summarized below and subject to change when Internal Training Policy and Program are prepared during the initial stage of the Technical Cooperation.

(a) Training for artisans and technicians for distribution systems

Trainer's training

Based on the internal training program, potential trainers (previous and present trainers and engineers) will prepare curriculum and syllabus for respective training courses in collaboration with JICA experts. Based on the curriculum and syllabus, training materials will be prepared by the potential trainers in collaboration with JICA experts. Through the preparation process of curriculum, syllabus and training materials with JICA experts, potential trainers will be able to get more experience for trainers. In addition to these activities, potential trainers will undertake additional training by JICA experts for further technical knowledge and experience, and pedagogical training at VETA trainer's training centre.

Trained potential trainers will start training for respective areas of specialization; while JICA experts and trainers from VETA oversee their training. After carrying out training under the oversight, the potential trainer

will undertake written and practical examination for the qualification. If the potential trainer is successful, he will become a qualified trainer.

Decentralized training (cascade training) system for artisans and technicians

There are many technicians and artisans in regional offices throughout the country. Therefore, it will not be efficient to organize the training in one central facility for them, and it is preferable to organize the training locally. The possible localities would be zonal offices. Initially, trainers will be trained at the central training centre. Then, potential trainers will be chosen form zonal offices, and they will attend the trainer's training at the central training centre. After successful qualification examination, potential trainers will return to their respective zonal offices as qualified trainers. It would be efficient for zonal offices if VETA facilities are used for class work in their localities.

Internal Certification System and National Certification

According to the Training Policy, training for artisans and technicians will be carried out in modules. If it would be possible for artisans and technicians to undertake training modules with certification examination for internal certification system in a step by step manner, and these training modules are accredited for national certification for high voltage electrical works, it would be a great incentive for artisans and technicians to undertake training modules with serious attention. At this juncture, coordination and collaboration with VETA will be important.

(b) Training for engineers

Method of Training

Because practical training needs for engineers can not be defined uniformly, technical workshops will be useful method for defining training needs for engineers. During the course of JICA Technical Cooperation Project, JICA experts together with their task members will investigate the existing technical conditions and problems of power supply, and define some topics for such workshops. At the same time, JICA experts will be resource persons for the workshops. The workshops will be held in class rooms and/or engineer's work places.

Training for Core Engineers

After undertaking some workshops, it would be possible for JICA experts and the task members to formulate some practical training courses for engineers, especially for those working at Head Office in distribution, transmission and power dispatching. Because these engineers working at Head Office are limited in number, core engineers will be especially trained by JICA experts so that the core engineers will be able to train other engineers with less experience in their working places after JICA expert left Tanzania.

Training for Newly recruited Engineers

Although newly recruited engineers are to undertake 18 month on-the-job training at present, the Internal Training Policy and Program will have to address how to train new engineers initially in TANESCO. Based on the training policy and program, overall training curriculum will be prepared by HR in collaboration with other departments. Then, JICA experts and the task members will prepare the technical components of the overall curriculum and other necessary training materials for developing training courses for new engineers in the field of distribution, transmission and substations.

Collaboration with TQM training

Most of the engineers with some years of experience in TANESCO are leaders or managers at various levels of organizational hierarchy. For these engineers, management of their jobs and human resources are one of the important issues they face in their daily business. Therefore, it would be beneficial for the engineers to undertake TQM training in some extent during the course of the technical workshops mentioned above.

(c) Total Quality Management (TQM)

The purpose and method of training for TQM are substantially different from the technical training. The target group for TQM training would be middle managers working on the ground. The method of the training will be participatory workshops. The purpose of the training will be to prepare the trainees to implement TQM activities in their respective working places for improving the efficiency and reliability of their work. The prerequisite to introduce TQM into a large organization such as TANESCO is the commitment of top management for TQM activities. Otherwise, TQM activities will not be able to evolve into

internal mechanism of quality improvement and attain the expected results. It is also important to note that TQM should be introduced in a step by step manner, and it takes time to see significant changes. During the course of JICA Technical Cooperation Project, JICA experts together with the Working Group members will initially coordinate with the top management of TANESCO, and organize and carry out the introductory workshops for the top management. Then, TQM secretariat or unit attached to the top management will be organized under the auspices of the top management. The secretariat or unit will oversee TQM activities on the ground and liaise between the top management and middle management.

6. Detailed Project Activities

During the joint meeting detailed project activities were explained as is shown in ANNEX IV. These detailed project activities have been reorganized for PDM format.

7. Coordination and Collaboration with other Cooperation Partners

It is understood that the World Band, Swedish Government and Norwegian Government are important cooperation partners for TANESCO as well as Japanese Government. It is also important to note that the areas TANESCO has to improve its reliability and efficiency are not limited to the areas JICA is going to extend technical cooperation. Commercial areas in addition to the other technical areas still require significant improvement for reconstructing financial and technical efficiency of TANESCO. The Team and TANESCO have confirmed that it is necessary for TANESCO and JICA to coordinate and collaborate with other cooperation partners for attaining TANESCO's ultimate goal.

ANNEX I	DRAFT PROJECT DESIGN MATRIX
ANNEX II	DRAFT PLAN OF OPERATION
ANNEX III	DRAFT RECORD OF DISCUSSIONS
ANNEX IV	DETAILED ACTIVITIES OF THE PROJECT
ANNEX V	LIST OF PARTICIPANTS AT THE DISCUSSIONS

ANNEX I

PDM Version 1.1 (Draft) Date: 2008/2/1

Project Title: The Project for Capacity Development of Efficient Distribution and Transmission Systems
Implementing Agency: Tanzania Electric Supply Company LTD. (TANESCO)
Target Group: Artisans, Technicians, and Engineers of TANESCO
Project Site: Tanzania
Project Period: 2008– 2013 (5 years)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Overall Goal: Efficiency and reliability of Power Supply are improved.	• Quality of power supply will be significantly improved, and customers satisfy TANESCO power supply. • TANESCO's financial status is sound because of quality power supply and customer satisfaction.	• Annual reports of TANESCO • Statistical reports by TANESCO and MoEM	There will be no drastic policy change in electricity industry in Tanzania. Enough investment will be made for meeting increasing power demand.
Project Purpose: The capacity for Planning, and Operation and Maintenance in Distribution and Transmission Systems is strengthened.	• Number and duration of blackouts, and fluctuations in frequency and voltage will be significantly reduced. • Availability of TANESCO's power system will be increased.	• Annual Operations reports • Annual Maintenance reports	Corporate Business plan will be properly implemented. Enough financial resources will be secured. The expected supports by other development partners will be obtained.
Outputs: 1. Internal training policy and program for distribution and transmission systems including power dispatching are prepared and approved.	1-1 Contents and quality of draft Internal Training Policy and Program	1-1 Reports of consultative workshops 1-2 Draft Internal Training Policy and Program	TANESCO Board will approve the Internal Training Policy and Program. Enough fund for human resource development will be allocated. Trained trainers will continue their training. Incentive system for internal qualification and certification will be established and applied. Local VETA training centers will support TANESCO training.
2. Internal training system for operation and maintenance of distribution and transmission systems including substations is developed and utilized.	2-1 Number of qualified and certified trainers and trainees 2-2 Number and contents of technical improve method suggested by engineers	2-1 Annual training reports 2-2 Business Plan of Division and Regional offices	
3. Capacity for distribution and transmission system analysis and planning, and capacity for power dispatching are strengthened through internal training.	3-1 No. of Improvement plans reflecting TANESCO's own technical conditions 3-2 Electric supply costs	3-1 Technical Improvement Plan 3-2 Annual training reports 3-3 TANESCO Business Plan	

4. Total Quality Management (TQM) is introduced and utilized for improving efficiency and reliability in power supply.	4-1 Degree of participation and expectation for TQM training and activities 4-2 Number of improvement suggestions made as outcomes of TQM activities	4-1 Workshop reports 4-2 TQM evaluation report	Managing Director and General Managers will support TQM activities. Trained managers will introduce and implement TQM activities in their working places. Workers under the trained managers will have good incentives to involve themselves in TQM activities. Trained core managers will continue TQM training.
Activities: **1. Internal training policy and program for distribution and transmission systems including power dispatching are prepared and approved.** 1-1. Organize internal consultative workshops for discussing training policy and program. 1-2. Prepare Draft Internal Training Policy and Program. **2. Internal training system for operation and maintenance of distribution and transmission systems including substations is developed and utilized.** 2-1. Prepare Technical Improvement Plan through internal consultative workshops. 2-2. Prepare curriculum, syllabus, training manuals and textbooks for trainers' training, and artisan and technician training. 2-3. Prepare Development Plan of Training Facilities. 2-4. Conduct trainers' training and training for artisans and technicians. 2-5. Provide qualification and certification examinations for trainers and trainees. 2-6. Conduct in-house training for distribution and transmission engineers including newly recruited engineers.	**Inputs (Means and Cost)** **Japanese Side** A. Experts 1. Long-term (Resident) Experts • Chief advisor / Distribution or Transmission, and • Coordinator / Power Utility Training Program. 2. Short-term (Visiting) Experts Short-term experts will be assigned in the following specialized fields: • Operation and Maintenance of Distribution Systems including Substations, • Distribution System Analysis and Planning, • Transmission System Analysis and Planning, • Power Dispatching and System Control, • Maintenance of Transmission Lines and Substations, • Construction Design of Transmission Lines and Substations, and • Total Quality Management. Short-term experts in other specialized fields will be assigned depending on the requirement for effective implementation of the Project. B. Training in Japan • Counterpart Training • Group Training Course for Distribution • Third country training if necessary C. Equipment etc. The equipment and tools will be provided depending on the necessity for effective		**Pre-conditions** Task members are assigned and Working Group is formed. Necessary budget, office space and facilities for the Project are allocated.

2-7. Prepare manuals for artisans, technicians and engineers. 2-8. Assist artisans, technicians and engineers for improving efficiency and reliability. 2-9. Prepare manuals for core engineers and further train core engineers. **3. Capacity for distribution and transmission system analysis and planning, and capacity for power dispatching are strengthened through internal training.** 3-1. Prepare Technical Improvement Plan for power system analysis and planning, and power dispatching. 3-2. Prepare In-House Training Plan for engineers. 3-3. Prepare training manuals and textbooks for in-house training. 3-4. Conduct in-house training for engineers. 3-5. Prepare manuals for core engineers and further train core engineers 3-6. Conduct workshops for improving efficiency and reliability. **4. Total Quality Management (TQM) is introduced and utilized for improving efficiency and reliability in power supply.** 4-1. Conduct introductory workshops of TQM for TANESCO top management. 4-2. Prepare Introduction and Utilization Plan of TQM through Internal Consultative Workshops. 4-3. Conduct TQM workshops for the managers from selected sections or units. 4-4. Implement TQM activities for selected sections or units. 4-5. Prepare curriculum, syllabus and training materials for training the facilitators. 4-6. Train facilitators for TQM workshops. 4-7. Monitor and evaluate the outcomes of TQM activities.	implementation of the Project. The following areas of activities are provisionally selected: • Training for distribution, transmission, substation and power dispatching, and • Distribution and substation maintenance works. Details will be discussed during the project. <u>Tanzania Side:</u> A. Joint Coordinating Committee (JCC) Provisional Members are; • Chairperson: Managing Director of Tanzania Electric Supply Company LTD • Members of TANESCO a) Senior Manager, Human Resources Department, b) Working Group members, c) Other personnel concerned to be assigned by the request of JICA or TANESCO, if necessary. B. Working Group (WG) Provisional Members are; • Chairperson: Manpower Development and Training Manager, Human Resources Department • Members a) Senior Manager Marketing & Customer Services or deputy, b) Senior Manager System Control and Transmission or deputy, c) Senior Manager Strategic Planning & Projects or deputy, and d) Zonal Managers or deputy The members will be discussed and finalized when the Project started. The membership will be flexible for accommodating changing requirement for the WG functions. C. Task Members Task members will be assigned to the respective experts for working in a collaborative manner for undertaking the relevant activities summarized in Project Design Matrix. They will be selected from the relevant departments, and Zonal and Regional offices. The task members are the primary target for technical transfer from JICA experts. D. Land, Buildings and others Office space and necessary facilities for Japanese experts and Task Group members.	

Plan of Operation (Draft)
Project Title: The Project for Capacity Development of Efficient Distribution and Transmission Systems
Implementing Agency: Tanzania Electric Supply Company LTD. (TANESCO)
Target Group:Artisans: Technicians, and Engineers, Core Engineers of TANESCO

Activities	Japan 2008				Japan 2009				Japan 2010				Japan 2011				Japan 2012				Japan 2013					Target groups
	2008				2009				2010				2011				2012				2013					
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	
Project period: 5 years (2008 - 2013)																										
1. Internal training policy and program for distribution and transmission systems including power dispatching are prepared and approved.																										
1-1 Consultative Workshops			→																							
1-2 Preparation of Draft Internal Training Policy and Program			→	→																						
2. Internal training system for planning, and operation and maintenance of distribution systems including substations is developed and utilized.																										
2-1 Consultative Workshops and Preparation of Technical Improvement Plan					→	→																				
2-2 Preparation of curriculum, syllabus, training manuals and textbooks for trainers' training, and artisan and technician training.						→	→																			
2-3 Prepartion of Development Plan of Training Facilities						→	→	→	→	→	→	→	→													
2-4 Trainers' Training and training for Artisans and Technicians							→	→	→	→	→	→	→	→	→	→	→	→	→	→	→					
2-5 Qualification and certification examinations for trainers and trainees.							→	→	→	→	→	→	→	→	→	→	→	→	→	→	→					
2-6 In-house training for distribution and transmission engineers including newly recruited engineers.									→	→	→	→	→	→	→	→	→	→	→	→	→					
2-7 Preparation of manuals for artisans, technicians and engineers.									→	→	→	→	→	→	→	→	→	→	→	→	→					
2-8 Assistance to artisans, technicians and engineers for improving efficiency and reliability.										→	→	→	→	→	→	→	→	→	→	→	→					
2-9 Prepare manuals for core engineers and further train core engineers											→	→	→	→	→	→	→	→	→	→	→					
3. Capacity for distribution and transmission system analysis and planning, and capacity for power dispatching are strengthened through internal training.																										
3-1 Preparation of Technical Improvement Plan					→	→																				
3-2 In House Training Plan for engineers						→	→																			
3-3 Preparation of training manuals and textbooks for in-house training.							→	→	→																	
3-4 In-house training for engineers									→	→	→	→	→	→	→	→	→	→	→	→	→					
3-5 Preparation of manuals for core engineers and further training for core engineers										→	→	→	→	→	→	→	→	→	→	→	→					
3-6 Workshops for improving efficiency and reliability.													→	→	→	→	→	→	→	→	→					
4. Total Quality Management (TQM) is introduced and utilized for improving efficiency and reliability in power supply.																										
4-1 Introductory workshops of TQM for TANESCO top management.					→	→																				
4-2 Preparation of introduction and Utilization Plan of TQM through Internal Consultative Workshops.						→	→																			
4-3 TQM workshops for the managers from selected sections or units									→	→	→	→	→	→	→	→	→	→								
4-4 Implement TQM activities for selected sections or units.									→	→	→	→	→	→	→	→	→	→	→	→	→					
4-5 Prepare curriculum, syllabus and training materials for training the facilitators.											→	→	→	→												
4-6 Train facilitators for TQM workshops.													→	→	→	→	→	→	→	→	→					
4-7 Monitoring and evaluation of the outcomes of TQM activities.									→	→	→	→	→	→	→	→	→	→	→	→	→					
Mid-term Evaluation of the project																										
Final Evaluation of the project																										

ANNEX III

DRAFT RECORD OF DISCUSSIONS
BETWEEN
JAPAN INTERNATIONAL COOPERATION AGENCY
AND
AUTHORITIES CONCERNED OF THE GOVERNMENT OF THE UNITED REPUBLIC OF TANZANIA
ON
JAPANESE TECHNICAL COOPERATION
FOR
THE PROJECT FOR CAPACITY DEVELOPMENT OF EFFICIENT DISTRIBUTION AND TRANSMISSION SYSTEMS

Japan International Cooperation Agency (hereinafter referred to as "JICA") had a series of discussions with the Tanzanian authorities concerned with respect to desirable measures to be taken by JICA and the Government of the United Republic of Tanzania for the successful implementation of "the Project for Capacity Development of Efficient Distribution and Transmission Systems" in the United Republic of Tanzania.

As a result of the discussions, and in accordance with the provisions of the Agreement on Technical Cooperation between the Government of Japan and the Government of the United Republic of Tanzania, signed in Dar es Salaam on November 2, 2004 (hereinafter referred to as "the Agreement"), JICA and the Tanzanian authorities concerned agreed on the matters referred to in the document attached hereto.

Dar es Salaam, March **, 2008

Mr. Makoto Kashiwaya
Resident Representative
Japan International Cooperation Agency
Tanzania Office

Dr. Idris M. Rashidi
Managing Director
Tanzania Electric Supply Company LTD.

Witness:

Mr.Bashir J.Mrindoko
Commissioner for Energy and Petroleum Affairs
Ministry of Energy and Minerals
United Republic of Tanzania

ANNEX III

THE ATTACHED DOCUMENT

I. COOPERATION BETWEEN JICA AND THE GOVERNMENT OF THE UNITED REPUBLIC OF TANZANIA

1. The Government of the United Republic of Tanzania will implement the Project for Capacity Development of Efficient Distribution and Transmission Systems (hereinafter referred to as "the Project") in cooperation with JICA.

2. The Project will be implemented in accordance with the Outline of the Project that is given in Appendix I.

II. MEASURES TO BE TAKEN BY JICA

In accordance with the laws and regulations in force in Japan, and the provisions of Article III of the Agreement, JICA, as the executing agency for technical cooperation by the Government of JAPAN, will take, at its own expense, the following measures according to the normal procedures of its technical cooperation scheme.

1. DISPATCH OF JAPANESE EXPERTS

JICA will provide the services of the Japanese experts as listed in Appendix II.

The provision of Article III of the Agreement will be applied to the above-mentioned experts.

2. PROVISION OF MACHINERY AND EQUIPMENT

JICA will provide such machinery, equipment and other materials (hereinafter referred to as "the Equipment") necessary for the implementation of the Project as listed in Appendix III.

The provision of Article III of the Agreement will be applied to the Equipment.

3. TRAINING OF TANZANIAN PERSONNEL IN JAPAN

JICA will receive the Tanzanian personnel concerned with the Project for technical training in Japan.

ANNEX III

III. MEASURES TO BE TAKEN BY THE GOVERNMENT OF THE UNITED REPUBLIC OF TANZANIA

1. The Government of the United Republic of Tanzania will take necessary measures to ensure that the self-reliant operation of the Project will be sustained during and after the period of Japanese technical cooperation, through full and active involvement in the Project by all related authorities, beneficiary groups and institutions.

2. The Government of the United Republic of Tanzania will ensure that the technologies and knowledge acquired by the Tanzanian nationals as a result of Japanese technical cooperation will contribute to the economic and social development of the United Republic of Tanzania.

3. In accordance with the provisions of Article V of the Agreement, the Government of the United Republic of Tanzania will grant in the United Republic of Tanzania privileges, exemptions and benefits to the Japanese experts referred to in II-1 above and their families.

4. In accordance with the provisions of Article V of the Agreement, the Government of the United Republic of Tanzania will take the necessary measures to receive and use the Equipment provided by JICA under II-2 above and equipment, machinery and materials carried in by the Japanese experts referred to in II-1 above.

5. The Government of the United Republic of Tanzania will take necessary measures to ensure that the knowledge and experience acquired by the Tanzanian personnel from technical training in Japan will be utilized effectively in the implementation of the Project.

6. In accordance with the provision of Article V of the Agreement, the Government of The United Republic of Tanzania will provide the services of Tanzanian counterpart personnel and administrative personnel as listed in Appendix IV.

7. In accordance with the provision of Article V of the Agreement, the Government of The United Republic of Tanzania will provide the buildings and facilities as listed in Appendix V.

8. In accordance with the laws and regulations in force in the United Republic of Tanzania, the Government of the United Republic of Tanzania will take necessary measures to supply or replace at its own expense machinery, equipment, instruments, vehicles, tools, spare parts and any other materials necessary for the implementation of the Project other than the Equipment provided by JICA under II-2 above.

9. In accordance with the laws and regulations in force in the United Republic of Tanzania, the Government of the United Republic of Tanzania will take necessary measures to meet the running expenses necessary for the implementation of the Project.

IV. ADMINISTRATION OF THE PROJECT

1. Senior Manager of Human Resources Department of Tanzania Electric Supply Company LTD (TANESCO) will bear overall responsibility for the administration and implementation of the Project.

2. Manpower Development and Training Manager of Human Resources Department of TANESCO will bear the direct responsibility for managing and implementing the Project.

3. The Japanese Experts will provide necessary recommendations and advice to the Senior Manager and the Manpower Development and Training Manager of Human Resources Department on any matters pertaining to the implementation of the Project.

4. For the effective and successful implementation of the Project, the Joint Coordinating Committee (JCC), Working Group (WG), and Task Members (TM) will be established. Japanese Experts will give necessary technical guidance and advice to them. The functions and members of the JCC, WG, and TG are stipulated in Appendix IV.

5. Project Implementation Structure is shown in Appendix V.

ANNEX III

V. JOINT EVALUATION

Evaluation of the Project will be conducted jointly by JICA and TANESCO at the middle and during the last six months of the cooperation term in order to examine the level of achievement.

VI. CLAIMS AGAINST JAPANESE EXPERTS

In accordance with the provision of Article VI of the Agreement, the Government of the United Republic of Tanzania undertakes to bear claims, if any arises, against the Japanese experts engaged in technical cooperation for the Project resulting from, occurring in the course of, or otherwise connected with the discharge of their official functions in the United Republic of Tanzania except for those arising from the willful misconduct or gross negligence of the Japanese experts.

VII. MUTUAL CONSULTATION

There will be mutual consultation between JICA and the Government of the United Republic of Tanzania on any major issues arising from, or in connection with this Attached Document.

VIII. MEASURES TO PROMOTE UNDERSTANDING OF AND SUPPORT FOR THE PROJECT

For the purpose of promoting support for the Project among the people of the United Republic of Tanzania, the Government of the United Republic of Tanzania will take appropriate measures to make the Project widely known to the people of the United Republic of Tanzania.

IX. COOPERATION PERIOD

The duration of the technical cooperation for the Project under this Attached Document will be starting from XXXXX, 2008 for five [5] years.

ANNEX III

ANNEX III

APPENDIX I OUTLINE OF THE PROJECT

1. Title of the Project

The Project for Capacity Development of Efficient Distribution and Transmission Systems

2. Overall Goal

Efficiency and reliability of Power Supply are improved.

3. Project Purpose

The capacity for Planning, and Operation and Maintenance in Distribution and Transmission Systems is strengthened.

4. Outputs of the Project

1. Internal training policy and program for distribution and transmission systems including power dispatching are prepared and approved.
2. Internal training system for operation and maintenance of distribution and transmission systems including substations is developed and utilized.
3. Capacity for distribution and transmission system analysis and planning, and capacity for power dispatching are strengthened through internal training.
4. Total Quality Management (TQM) is introduced and utilized for improving efficiency and reliability in power supply.

5. Activities of the Project

Output 1. Internal training policy and program for distribution and transmission systems including power dispatching are prepared and approved.

1-1. Organize internal consultative workshops for discussing training policy and program.

1-2. Prepare Draft Internal Training Policy and Program.

Output 2. Internal training system for operation and maintenance of distribution and transmission systems including substations is developed and utilized.

2-1. Prepare Technical Improvement Plan through internal consultative workshops.

2-2. Prepare curriculum, syllabus, training manuals and textbooks for trainers' training, and artisan and technician training.

2-3. Prepare Development Plan of Training Facilities.

2-4. Conduct trainers' training and training for artisans and technicians.

2-5. Provide qualification and certification examinations for trainers and trainees.

2-6. Conduct in-house training for distribution and transmission engineers including newly recruited engineers.

2-7. Prepare manuals for artisans, technicians and engineers.

2-8. Assist artisans, technicians and engineers for improving efficiency and reliability.

2-9. Prepare manuals for core engineers and further train core engineers.

Output 3. Capacity for distribution and transmission system analysis and planning, and capacity for power dispatching are strengthened through internal training.

3-1. Prepare Technical Improvement Plan for power system analysis and planning, and power dispatching.

3-2. Prepare In-House Training Plan for engineers.

3-3. Prepare training manuals and textbooks for in-house training.

3-4. Conduct in-house training for engineers.

3-5. Prepare manuals for core engineers and further train core engineers

3-6. Conduct workshops for improving efficiency and reliability.

Output 4. Total Quality Management (TQM) is introduced and utilized for improving efficiency and reliability in power supply.

4-1. Conduct introductory workshops of TQM for TANESCO top management.

4-2. Prepare Introduction and Utilization Plan of TQM through Internal Consultative Workshops.

4-3. Conduct TQM workshops for the managers from selected sections or units.

4-4. Implement TQM activities for selected sections or units.

4-5. Prepare curriculum, syllabus and training materials for training the facilitators.

4-6. Train facilitators for TQM workshops.

4-7. Evaluate the outcomes of TQM activities

ANNEX III

APPENDIX II LIST OF JAPANESE EXPERTS

1. Long-term (Resident) Experts

(1) Chief advisor / Distribution or Transmission, and

(2) Coordinator / Power Utility Training Program.

2. Short-term (Visiting) Experts

Short-term experts will be assigned in the following specialized fields:

(1) Operation and Maintenance of Distribution Systems including Substations,

(2) Distribution System Analysis and Planning,

(3) Transmission System Analysis and Planning,

(4) Power Dispatching and System Control,

(5) Maintenance of Transmission Lines and Substations,

(6) Construction Design of Transmission Lines and Substations, and

(7) Total Quality Management.

Short-term experts in other specialized fields will be assigned depending on the requirement for effective implementation of the Project.

Note:

Assignment schedule of experts depends on the progress of the Project and availability of the suitable experts, and will be decided through mutual consultations for respective Japanese fiscal years.

ANNEX III

APPENDIX III LIST OF MACHINARY AND EQUIPMENT

The equipment and tools will be provided depending on the necessity for effective implementation of the Project. The following areas of activities are provisionally selected:

a) Training for distribution, transmission, substation and power dispatching, and

b) Distribution and substation maintenance works.

Details will be discussed during the project.

APPENDIX IV JOINT COORDINATING COMMITTEE, WORKING GROUP AND TASK MEMBERS

1. Joint Coordinating Committee (JCC)

(1)Function

The Joint Coordinating Committee will meet at least once a year or whenever the necessity arises in order to fulfill the following functions:

1) To evaluate the annual work plan of the Project,
2) To review the progress of the annual work plan,
3) To review and discuss major issues that may arise during the implementation of the Project, and
4) To discuss any other issue(s) pertinent to the smooth implementation of the Project.

(2)Provisional Members

1) Chairperson: Managing Director of Tanzania Electric Supply Company LTD

2) Member of TANESCO
   a) Senior Manager, Human Resources Department,
   b) Working Group members,
   c) Other personnel concerned to be assigned by the request of JICA or TANESCO, if necessary.

3) Member of the Japanese side
   a) JICA Experts,
   b) Representatives from JICA Tanzania Office,
   c) Other personnel concerned to be assigned by the request of JICA or TANESCO, if necessary.

2. Working Group (WG)

(1) Provisional Function

The Working Group will meet once a month or whenever the necessity arises in order to fulfill the following functions;

1) To ensure involving the task members of respective departments and zonal offices into the project activities,

2) To supervise the progress of Project activities,

3) To coordinate the project activities between concerned departments and zonal offices,

4) To give necessary advice to task members on managerial and institutional issues,

5) To liaise with senior management, and

6) To discuss any other issue(s) pertinent to the effective implementation of the Project.

The functions of WG will be discussed and finalized when the Project started.

(2) Provisional Members

1) Chairperson: Manpower Development and Training Manager, Human Resources Department

2) Members

a) Senior Manager Marketing & Customer Services or deputy,

b) Senior Manager System Control and Transmission or deputy,

c) Senior Manager Strategic Planning & Projects or deputy, and

d) Zonal Managers or deputy

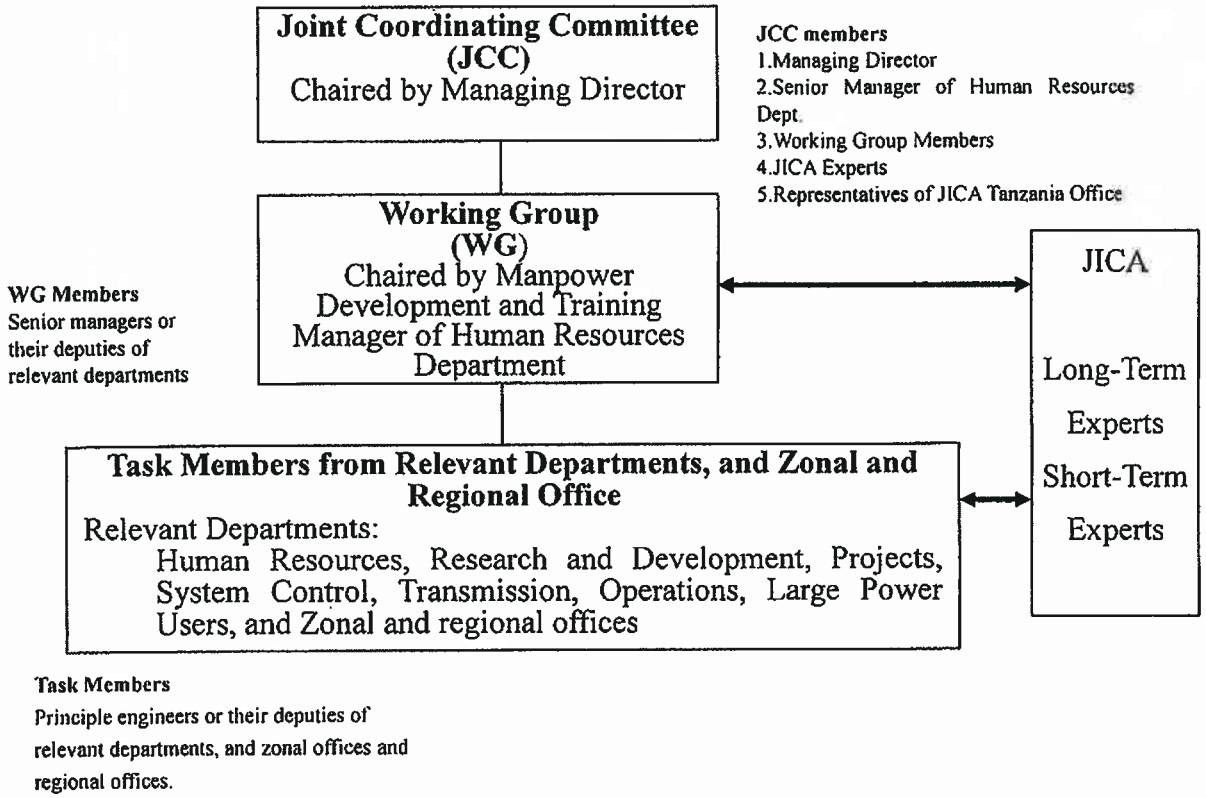
The members will be discussed and finalized when the Project started. The membership will be flexible for accommodating changing requirement for the WG functions.

3. Task Members

Task members will be assigned to the respective experts for working in a collaborative manner for undertaking the relevant activities summarized in Project Design Matrix. They will be selected from the relevant departments, and Zonal and Regional offices. The task members are the primary target for technical transfer from JICA experts.

ANNEX III

APPENDIX V PROJECT IMPLEMENTATUION STRUCTURE



ANNEX III

APPENDIX VI LIST OF LAND, BUILDINGS AND FACILITIES

1. Office space and necessary facilities for Japanese experts and Task Members.
2. Other facilities mutually agreed upon as necessary for the implementation of the Project

ANNEX IV

DETAILED ACTIVITIES OF THE PROJECT

1. Preparation of Internal Training Policy and Program

1-1. Review TANESCO Training Policy and Program.
1-2. Organize internal consultative workshops for discussing training policy and program, and reach consensus on Internal Training Policy and Program.
1-3. Prepare Draft Internal Training Policy.
1-4. Prepare Draft Internal Training Program .

2. Activities for developing internal training system for distribution systems including substations

Consultative Workshops and Preparation of Technical Improvement Plan

2-1. Investigate distribution facilities including substations, and Zonal and Regional Offices for finding out and confirming the present conditions of distribution facilities and distribution planning.
2-2. Organize internal consultative workshops for discussing and preparing Technical Improvement Plan, and for identifying training needs for distribution technical business.

Trainers' Training for Artisans and Technicians

2-3. Review the present technical standard and manuals.
2-4. Prepare curriculum and syllabus for trainers' training for artisans and technicians according to the Internal Training Program.
2-5. Prepare training manuals and textbooks for trainers' training for artisans and technicians.
2-6. Conduct trainers' training for artisans and technicians, and provide Qualification Examination.

Training for Artisans and Technicians

2-7. Prepare curriculum and syllabus for artisan and technician training according to the Internal Training Program.
2-8. Prepare training manuals and textbooks for artisan and technician training.
2-9. Prepare Development Plan of Training Facilities for artisans and technicians according to the Internal Training Program, curriculum and syllabus.
2-10. Provide equipment and tools for training.
2-11. Conduct training for artisans and technicians at training facilities, and provide certification examination.
2-12. Prepare manuals of operation and maintenance for distribution systems including substations for artisans and technicians.

Workshops and In-House Training for Engineers

2-13. Conduct workshops for improving efficiency and reliability in distribution power supply according to the Technical Improvement Plan.
2-14. Conduct in-house training for distribution engineers including newly recruited engineers on technical issues identified in the workshops.
2-15. Conduct in-house training on distribution system planning for distribution engineers.
2-16. Prepare manuals for distribution system planning.

2-17. Assist engineers and managers on the ground for improving efficiency and reliability in distribution power supply according to the Technical Improvement Plan.

Training for Core Engineers

2-18. Chose core engineers who will conduct in-house training for other engineers.

2-19. Prepare manuals for core engineers and further train core engineers for in-house training that will be conducted by the core engineers.

3. Activities for developing internal training system for transmission system analysis and planning, and power dispatching

Preparation of Technical Improvement Plan

3-1. Investigate the present database and method of transmission system analysis and planning for finding out and confirming the present technical conditions of power system analysis and planning.

3-2. Investigate the present database, facilities and equipment, and method of power dispatching for finding out and confirming the present technical conditions of power dispatching.

3-3. Prepare Technical Improvement Plan for improving efficiency and reliability in power system analysis and planning, and power dispatching.

In House Training for Transmission and Power Dispatching Engineer

3-4. Prepare In-House Training Plan for engineers working for transmission system analysis and planning, and power dispatching.

3-5. Review the present technical standard and manuals.

3-6. Prepare training manuals and textbooks for in-house training.

3-7. Conduct in-house training for engineers working for transmission system analysis and planning, and power dispatching.

Training for Core Engineers

3-8. Chose core engineers who will conduct in-house training for other engineers.

3-9. Prepare manuals for core engineers and further train core engineers for in-house training that will be conducted by the core engineers.

Workshops

3-10. Conduct workshops for improving efficiency and reliability in power system analysis and planning, and power dispatching according to the Technical Improvement Plan.

4. Activities for developing internal training system for transmission and substation maintenance.

Consultative Workshops and Preparation of Technical Improvement Plan

4-1. Investigate transmission system including substations for finding out and confirming the present conditions of transmission and substation facilities, and method of operation and maintenance.

4-2. Organize internal consultative workshops for discussing and preparing Technical Improvement Plan, and for identifying training needs for transmission system and substations.

Trainers' Training for Technicians

4-3. Review the present technical standard and manuals.

4-4. Prepare curriculum and syllabus for trainers' training for technicians operating

and maintaining transmission system and substations according to the Internal Training Program.

4-5. Prepare training manuals and textbooks for trainers' training for the technicians working for transmission system and substations.

4-6. Conduct trainers' training for the technicians, and provide Qualification Examination.

Training for Technicians

4-7. Prepare curriculum and syllabus for training technicians operating and maintaining transmission system and substations according to the Internal Training Program.

4-8. Prepare training manuals and textbooks for operation and maintenance training for transmission system and substations.

4-9. Conduct operation and maintenance training for transmission system and substations, and provide examination for artisans and technicians.

4-10. Prepare operation and maintenance manuals for transmission system and substations.

Workshops and In-House Training for Transmission and Substation Engineers

4-11. Conduct workshops for improving efficiency and reliability in transmission system operation and maintenance according to the Technical Improvement Plan.

4-12. Conduct in-house training for transmission and substation engineers on technical issues identified in the workshops.

Workshops and In-House Training for Designing Transmission Lines and Substations

4-13. Conduct workshops and in-house training for designing transmission lines and substations according to the Technical Improvement Plan.

Training for Core Engineers

4-14. Chose core engineers who will conduct in-house training for other engineers.

4-15. Prepare manuals for core engineers and further train core engineers for in-house training that will be conducted by the core engineers.

5. Activities for introducing and utilizing total Quality Management (TQM)

TQM Secretariat attached to Top Management

5-1. Organize and conduct introductory workshops of TQM for TANESCO top management.

5-2. Assist TANESCO Human Resource Division to create TQM secretariat attached to the top management, and prepare TOR for the secretariat.

Introduction and Utilization Plan of TQM

5-3. Organize internal consultative workshops for discussing Introduction and Utilization Plan of TQM .

5-4. Prepare Introduction and Utilization Plan of TQM

TQM Workshops and Activities

5-4. Select sections or units for TQM activities according to Introduction and Utilization Plan of TQM.

5-5. Conduct TQM workshops for the managers from selected sections or units.

5-6. Plan and conduct TQM activities in selected sections or units.

5-7. Assist the trained managers in planning and conducting TQM activities in selected sections or units.

5-8. Periodically organize workshops for discussing, evaluating and planning TQM activities between top managers and middle managers organized by TQM Secretariat.
5-9. Choose core managers who will be the facilitators for TQM workshops.
5-10. Prepare curriculum, syllabus and training materials for training the facilitators for TQM workshops.
5-11. Train the facilitators for TQM workshops.
5-12. Conduct TQM workshops for managers from selected divisions or units facilitated by the trained facilitators.
5-13. Evaluate the outcomes of TQM activities.

ANNEX V

LIST OF PARTICIPANTS AT THE DISCUSSIONS

Ministry of Energy and Minerals

Mr. Prosper A.M. Victus	Assistant Commissioner for Energy (Petroleum& Gas)
Mr. Theophilo Bwakea	Assistant Commissioner
Mr. Deogratias Kabado	Energy Economist

TANESCO Head Office

Mr.Mosha Izahaki	Manager, Transmission
Mr.Mwingizi Aidawo	Manager, Manpower Development &Training
Mr.Peter Tarimo	Senior Training officer
Mr.Simon Kihiyo	Manager, Operations
Mr.Nsajigwa Mwaisaka	Manager, Large Power users
Mr.Felchesmi Mramba	Senior Manager, Marketing & CS
Mr.Majige Mabulla	Principal Safety & Claims Engineer
Mr.Harun Matambo	Principal Marketing officer
Ms.Genes Kaicore	Principal Meter w/shop Engineer
Mr.Christian Msyani	Principal Engineer (Grid Operation)
Mr.Masanyiwa Mallale	Manager, System control
Mr.Gerald Amatta	Principal SCADA Engineer
Mr.Samuel Tungaraza	Principal L/C Engineer
Mr.Emmanuel Manirabona	Senior Electrification Engineer (Projects)
Ms.Sana Idindili	Senior System Control Engineer (GCC)
Ms.Rukia Mpako	Senior Planning Engineer (System Control)
Mr.Simon M, Jilima	Senior Mechanical Engineer (Projects)
Mr.Francis Maze	Principal Engineer (Revenue Beneficiaries)
Mr.Brown Foi	Principal Transmission Engineer
Mr.Tumaini Senbuche	Principal Engineer (H/C), Switchgear & Transformers
Ms.Victoria Mwanri	Senior Manager, HR
Mr.Norbert Ntimba	Manager, Projects
Mr.Kato Kabaka	Senior Mechanical Engineer and Geologist, Planning
Mr.Saib B.Chilima	Principal Planning Engineer
Mr.Roman R.Akaro	Principal Construction Engineer
Mr.Robert Mabeve	Principal Training Officer
Mr.Johnson Mwigune	Manager, Call Center
Mr.Benedict V. Lyaruu	Prime Distribution Engineer

TANESCO Morogoro Office

Mr.Bengiel H. Msofe	Regional Manager, Morogoro Region
Mr.Dotto S. Kambi	Ag. HR Resource officer
Mr.Martin M. Kabokole	Principal Electrical workshop Engineer
Mr.Theodorg F. Bonjons	Senior Engineer, Morogoro Region
Mr.Zwahiri S. Mshanga	Planning Engineer
Mr.Selemani A. Ibwe	Ag. System Control Superintendent, Morogoro
Mr.Kahitwa M. Bishaya	Transmission Line Engineer, Morogoro

KAUDA (TANESCO)

Mr.Jafari Mpina	Manager, Engineer & Trainer, KAUDA
Mr.Stephen Kibowa	Engineer & Trainer, KAUDA

VETA Morogoro Center

Mr. Anaumingi O. Maro	Tutor & Coordinator Entrepreneur & Education Training
Ms. Twiganile Nbunguru	Human Resource and Admin. Manager
Mr. Alphnonle S. Kanky	Head of Education

The World Bank

Mr.Ralph Karhammar	Sr. Energy Specialist

Embassy of Sweden

Ms.Annelie Gabrielson	Counsellor, Regional Energy and Infrastructure
Ms.Anne-Lie Engvall Embassy of Sweden	First Secretary, Programme Officer Infrastructure,

Norwegian Embassy

Ms.Inger Anette Sandvand Dahlen	Programme Officer, Energy and Petroleum

The Preparatory Study Team

Mr.Toshiyuki Hayashi	Team Leader
Ms.Chiyoko Miyata	Project Planning

Mr.Tadashi Shimizu	Evaluation Analysis
Mr.Mitsuhiro Omori	Distribution Technology

JICA Tanzania Office

Ms.Asuka Tsuboike