

**USAID/CAUCASUS - GEORGIA
STRATEGIC TECHNICAL ASSISTANCE FOR RESULTS WITH TRAINING**

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ENERGY SECTOR ORGANIZATIONAL ASSESSMENT

Final Report

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Abbreviations and Acronyms

AES	Alternative Energy Systems (U.S.-based private power investor)
ERRA	Energy Regulators Regional Association of the Central/Eastern European and NIS Regions
EBRD	European Bank for Reconstruction and Development
Enguri HPP	Enguri Hydroelectric Power Plant
Enguri Dam	Enguri Dam
Enguri HES	Enguri Hydroelectric Station
Enguri PIU	Enguri Restructuring Project Implementation Unit
GIC	Georgian International Gas Corporation
GNERC	The Georgia National Energy Regulatory Commission
GoG	Government of Georgia
GOIC	Georgian International Oil Company
GWEM	Georgian Wholesale Electricity Market
HES	Hydroelectric Station (turbine-generators)
HPP	Hydroelectric Power Plant (dam and turbine-generators)
IOC	International Oil Company
JSC	Joint-Stock Company (form of incorporation)
KWh	Kilowatt-hour
LDC	Local Distribution Company (gas or electricity)
MoF	Ministry of Finance
MoFE	Ministry of Fuel and Energy
MoSP	Ministry of State Properties (or of State-Owned Enterprises)
MW	Megawatt
NIS	Newly Independent States of the former Soviet Union
PSA	Production Sharing Agreement
Saknavtobi	State Oil Company of Georgia
SAROG	The State Agency for Regulation of Oil and Gas Resources of Georgia
State Agency	The State Agency for Regulation of Oil and Gas Resources of Georgia
Sakrussenergo	State High Voltage Transmission Company of Georgia
SOE	State-Owned Enterprise
USAID	United States of Agency for International Development
Tbilgazi	Tbilisi Gas Distribution Company
TPP	Thermal Power Plant
USEA	United States Energy Association

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Executive Summary

This assessment shows a severe and stark situation: the Georgian economy is barely functioning; total energy demand is less than half its level before independence and little of that energy is being spent in production processes.

Few energy consumers, either individual or corporate, have sufficient revenues to pay their bills. Collections are under 30% of energy provided. State-owned institutions simply refuse to pay. Some consumers cannot pay; they must be provided for within a carefully administered set of social subsidies. Those who can pay, however, are often stealing service. One could probably confirm that the average Georgian pays more for cigarettes than for electricity.

Theft of service is rampant, fraud and misappropriation of funds is out of hand, the settlement system is ineffective, and the generating and production companies receive a fraction of the revenues needed to sustain their operations. Plants and systems are falling into disrepair, being retired prematurely, or being plundered for scrap metal. The remaining electrical generating capacity is unable to meet peak seasonal demand. Domestic oil and gas production is one-thirtieth of its former levels, inadequate to sustain even infill drilling in producing fields, insufficient to meet domestic consumption. Georgia turns to neighboring countries for fuel and electricity, accumulating large debts and balance of trade deficits. Approximately 15% of the nation's electricity production is sent to the breakaway republic of Abkhazia without payment. Laws and policies needed to resolve the situation are either not passed or unheeded. Ministries and agencies work toward opposing objectives. The prospect for private investment or for repayment of present debt is extremely adverse. None of the organizations have strategic plans that will move them in a positive direction or mitigate the growing crisis. As the sector continues its decline, energy shortages will have a greater and greater adverse impact on the economy and on the ability of customers to pay their bills. The overall energy situation is essentially a death spiral.

There are, in effect, two ways Georgia's energy plight can be resolved. If fortune smiles on Georgia, one or more foreign developers will find major oil or gas resources, and the fuels and funds obtained through Production Sharing Agreements will relieve the country's financial distress. In this case, Georgia needs to have its energy institutions prepared to use money prudently and accountably.

More practically, Georgia must stabilize its energy situations using only its known and predictable resources, by implementing a rational and enforceable set of coordinated reform programs. This report develops a set of such programs that could be supported by USAID and other assistance programs.

The programs recommended herein build upon work that has already been completed by USAID, but suggest a change of approach. Previous assistance work has centered on top-down legislation and policy initiatives that have radically restructured and reshaped the industry but failed to establish a financial sustainability. When policies cannot be implemented successfully, the root problem is usually that they conflict with the immediate interests of primary stakeholders. Our assessment suggests that this is precisely the case in Georgia.

One set of primary stakeholders is the consuming public. Most Georgian customers are divorced from any sense of responsibility for Georgia's energy situation. This situation is irrational -- the energy sector's assets and resources are the heritage of the people of Georgia; the sector's deterioration affects everyone's future. A successful reform program must involve customers through public education, peer pressure, consumer representation in the decision process, selective tariff design, and strategic programs to enforce metering and collections discipline. This report presents a ***Public Participation Program*** for this set of stakeholders.

A second set of primary stakeholders is the group of controlling agencies (MoFE, MoSP, GNERC, SAROG, and the regulated utility companies). Their efforts must be coordinated into an overall strategic plan for the energy sector. The plan must support public participation while it addresses short-term sustainability and reinvestment, establishment of a set of core assets, and long-term development and investment programs. This report presents a ***Policies and Implementation Program*** addressed at this set of stakeholders.

The third set of primary stakeholders is the group of energy sector managers. They need current management tools and skills. This report presents a ***Training Program*** for this set of stakeholders. It is organized to support the Public Participation Program and the Policies and Implementation Program mentioned above on an urgent basis, and to support longer-term objectives over a longer time frame. Some training should be designed to the specific needs of GNERC, SAROG, Saknavtobi, and Enguri. Other training is general to the energy sector as a whole. This General Utility Management Training should be conducted for mixed groups from all affected agencies. Part of the general training, which emphasizes business skills heavily, could be given in a Master of Business Administration Specialization program.

Each of the recommended programs is assembled from prioritized recommendations that evolved from an extensive assessment of the Georgian energy sector. The assessment team spent five weeks interviewing and questioning senior managers in the Georgian National Energy Regulatory Commission, The State Agency for Regulation of Oil and Gas, the state-owned corporation for oil and gas exploration and production Saknavtobi, and the Enguri Hydroelectric Power Plant, and with other associated agencies and corporations.

As preparers of this report, we wish to observe that, at every meeting and interview, we were met with deep concern for the future of the Georgian economy, indications of personal commitment, and solid professionalism. The success of the program recommended in this report depends on precisely these factors. We are confident that USAID's investment of funds and efforts, channeled into these three programs, will produce steady progress in the right direction.

Scope and Acknowledgement

Many important factors influence the outcome of an energy sector's technical and financial performance. These include macroeconomic conditions, social/cultural factors, climate, governmental policy, procedures for import of electricity and fuels and, most importantly, the political situation. We recognize the importance of these variables, but also recognize that a structured discussion of each of these factors and their inter-relationships would become unwieldy and extend beyond the scope of this paper. Rather, we have focused our discussion of institutional capacity development reform to those specific issues surrounding the four energy sector organizations (GNERC, SAROG, Enguri HPP, and Saknavtobi): their organizational structures, training needs, economic regulation, and respective roles in the reform of the energy sector.

IIE and its consultants, Michael Gembol and Shibu B. Dhar, wish to sincerely thank all of the staff within the four energy sector organizations for their open, objective and frank approach in dealing with this institutional capacity development and training needs evaluation. The employees of all four organizations demonstrated a desire to improve their organizations and their individual skills.

Finally, the role of the World Learning/Tbilisi, in arranging this project assignment--the assistance of Country Director Julie Dargis and of the entire World Learning/Tbilisi staff must be acknowledged. They were gracious with their time, assembled needed background materials, and created an environment within which a constructive evaluation could be accomplished.

Section 1: Introduction

1.1 Background

The Georgia energy sector is unable to deliver adequate and reliable electricity, natural gas, and heating services on a commercial basis, and this steadily undermines the general public's support for reform. The sector has continuing problems of political interventions, free supply of electricity to break-away regions, poor supply and demand balance, rampant theft, and unwillingness to cut off delinquent customers, coupled with many customers' inability to pay. The energy sector in Georgia is the major contributor to an accumulation of foreign debt through its failure to pay for electricity, natural gas, and oil imports from neighboring countries, creating a dangerous geo-political situation.

To respond to this situation, the Government of Georgia (GoG) has taken significant steps to reform the energy sector with the assistance of the United States Agency for International Development (USAID), including:

- a) Privatized Tbilisi Electric Distribution Utility (AES Telasi);
- b) Privatized thermal power plants (TPP) at Gardabani power station (Units 9 and 10 sold to AES);
- c) Established a concession for hydro power plants (HPP) (Khrami Units 1 and 2);
- d) Created a legal and regulatory framework including the implementation of the following two agencies:
 - Georgia National Energy Regulatory Commission (GNERC) with responsibilities for tariff setting, licensing and consumer protections in the electricity and natural gas sectors; and
 - State Agency for the Regulation of Oil and Gas Resources (SAROG) with regulatory responsibilities for upstream oil and gas regulation and investment promotion such as Production Sharing Agreements (PSA).
- e) Implemented a legal framework to support the market reform of the energy sector in the areas of:
 - Law on Electricity, Natural Gas and Regulation;
 - Law on Oil and Gas and Regulation; and
 - Law on Expropriation.
- f) Initiated a privatization process for the Tbilgazi Distribution Company;
- g) Entered several Production Sharing Agreements for the Oil and Gas sectors; and
- h) Entered negotiations on transit pipelines including the Baku-Supsa –early oil pipeline; the Baku-Tbilisi-Ceyhan oil pipeline and the Baku-Tbilisi-Ezerum natural gas pipeline. All transit pipelines will provide significant transit fees in cash or in oil and gas supplied to the GoG.

1.1.1 Major Issues: Non-payments and Debts; Electricity Sector

The Georgian Wholesale Electricity Market Management (GWEM) is not operating as it was designed to operate. It was designed in 1997 as a power market settlement organization under the supervision of GNERC, but it is failing to enforce its own market rules. Because of political interference, the GWEM is unable to exercise its primary tool to compel payment – it is unable to cut off Local Distribution Companies and direct customers for nonpayment or to scale their allocations of electricity to the amount they are able to pay. The direct customers are primarily large state-owned industries.

Failing to collect from customers, GWEM is then unable to pay suppliers the full amount due, resulting in accumulating debts. It is also in danger of collapse because of its own lack of operational funds to run the GWEM organization and to fund any initiatives to improve current business practices.

The GWEM is now funded by a loan from the EBRD. The loan funding is scheduled to taper off over the next several years, replaced by fees paid by participating members. These fees are not being paid, few if any of the customers have funds to pay the fees, and the GWEM is facing a funding crisis.

In the electricity sector, in addition to high technical and non-technical losses, billing lags, and large fuel debts, there is such a scarcity of fuel that the generating plants are dispatched by fuel availability, and rotating load shedding programs are part of routine system operation for the electricity sector. Nearly all of the rules and procedures of the GWEM are bypassed by orders either from the Ministry of Fuel and Energy, which allocates the State Fuel Reserve, or by the Ministry of Tax Revenue, which has the power to freeze GWEM bank accounts and withdraw funds from the accounts to collect disputed VAT debt and past debts of the power sector operators.

1.1.2 Major Issues: Non-payments and Debts; Gas Sector

Tbilgazi's (Gas distribution company in Tbilisi) technical and non-technical losses are over 50%. It is unable to fulfill the payment requirements to gas supplier Sakgazi. The gas sector is also afflicted with catastrophic losses, inability to meter and collect, and accumulating debts. Saknavtobi, the government industry responsible for domestic exploration, drilling, and collection of oil and gas, is critically under-funded. It is unable to continue its primary activities and domestic production has dwindled from a previous 3 million tons/year to about 100,000 tons/year. This is insufficient to supply domestic needs, creating an additional burden on the nation's balance of trade. The upstream industry is sustained by the hope that the new exploration activities of the PSA's will be successful and will unleash large amounts of cash and oil and gas production.

The State Agency, in establishing regulatory control of the upstream oil and gas industry, has no authority over the refineries, the transport and delivery system, and the retail tariffs and customer relations. The downstream industries are in a state of financial collapse, deeply indebted, with extreme losses and inadequate collections, and unaccountable in either their commodities or their funding. The gas distribution companies are sustained by a hope that the new transit pipelines will provide them a large amount of gas in the form of transit fees, if and when the new pipelines enter service.

1.2 USAID's Energy Sector Initiatives

USAID is playing a central role in the energy sector reform process through its technical assistance to the GOG. This assistance includes development of institutional capacity and organizational training for the energy sector under an IQC contract to PA Consulting. The three major components of USAID's energy sector technical assistance programs over the last two years are:

1.2.1 Georgia Electricity and Natural Gas Sector Reform Project

The activities supported by this program:

- Improve the operation of the energy sector entities by increasing private sector involvement and management;
- Enhance energy supply availability and increase efficiency of its use, to help alleviate the present supply crisis and social sufferings;
- Improve the investment environment for the energy sector and Georgian economy in general; and
- Increase public awareness of, and support for, energy sector reform initiatives.

1.2.2 Georgia Oil and Gas Sector Reform Project

The activities supported by this program:

- Strengthen the independence, sovereignty and property of Georgia and encourage political and economic reform;
- Mitigate regional conflicts by building economic linkages between Georgia and the other nations of the Caucasus region;
- Bolster the energy security and energy independence of Georgia by ensuring the free flow of oil and gas to the world market place; and
- Ensure Georgia's fair share of oil and gas transit fees.

1.2.3 Georgia Winter Heating Assistance Project

The Winter Heating Assistance Program alleviates the difficulties of payment for winter season electricity supplies for the country's most vulnerable populations, including socially-critical institutions and internally displaced persons. For the winter season of 2001-2002, the overall amount of subsidy funding was \$10.1 million, including a \$1 million contribution to the program from British Petroleum. The program objectives:

- Alleviate the near-term impact that the market reform process can have on those persons and institutions that are truly vulnerable; and
- Encourage and support the GoG in its efforts to improve energy supply for the country in both the near and longer-terms.

1.3 Purpose of the Assessment

USAID has supported the reform in the energy sector from the beginning through its technical assistance program under a contract to PA Consulting (formerly Hagler Bailey), Nathan Associates, USEA, and Carana Corporation. A key part of this effort is to improve the energy sector (electricity, oil and gas) legal and regulatory framework in order for the energy sector enterprises operate commercially to attract private sector investments. This is in accordance with the overall context of USAID's Strategic Objective – a more economically sustainable and environmentally sound energy sector. Although USAID is an important donor, its resources are limited. All of its energy sector activities are closely coordinated with the work of major multilateral lenders such as the World Bank and EBRD. USAID contracted Nathan Associates to audit the sector -- their subcontractor, Deloitte Touche, performed audits of five energy sector entities requested by the EBRD.

The purpose of this assessment is to identify further technical assistance and training needs for the four energy sector entities: a) the Georgia National Energy Regulatory Commission (GNERC); b) the State Agency for Regulation of Oil and Gas Resources of Georgia (SAROG); c) the State Oil Company (Saknavtobi); and d) the Enguri Hydroelectric facility (Enguri HPP). USAID will use this evaluation as one input to inform USAID as it develops a follow-on contract to the present IQC contract with PA Consulting, which will be ending in September 2002. USAID intends to award a new three-year IQC contract for a three-year period starting on or about October 2002. The primary objective of this study is to identify institutional capacity development needs of the regulatory agencies (GNERC and SAROG) for monitoring the compliance of all enacted legislation and also to assist the two energy production entities (Saknavtobi and Enguri HPP) to develop human resources to operate as commercially viable organizations.

1.4 Assessment Methodology

The assessment of the USAID's energy sector technical assistance and training needs has taken place almost entirely in Georgia; it is a field-oriented review. Focused interviews were held with the GNERC, GWEM, SAROG, Enguri HPP, Saknavtobi, PA Consulting, Tbilgazi, GIC, Sakgazi, Sakrussenergo, Danthesi Institute, and multilateral agencies (the World Bank and EBRD) over the period April 15 to May 20, 2002 (see [Annex F](#) for the list of persons contacted for this evaluation study). Two questionnaires were used to supplement the interview process: a Training Needs Analysis Questionnaire (see [Annex C](#)) and an Organizational Assessment Checklist (see [Annex D](#)). The TNA questionnaire is analyzed in [Section 6](#). The OA checklist was used to identify points of difference in perceptions which were then investigated further.

A final mission briefing on the lessons learned and findings was completed during May 16-20 period, with the Team Leader finalizing the team report and incorporating comments. Entrance and exit briefings with the USAID were used to ensure close USAID local office involvement. The World Learning Country Director attended the initial key meetings.

The assessment team also reviewed project reports, work plans, relevant files and other pertinent documentation provided by PA Consulting and the four energy sector entities. A list of the principal documents consulted is attached in [Annex B](#). The review evaluated the performance of the four energy sector entities and helped consider the context in which that performance occurred. It addressed the institutional development issues, basic training issues, policy conditions for implementation, and the impact of the USAID project to date. The review identified some of the barriers and issues affecting effectiveness of USAID's training efforts, and provided a basis to judge post-project sustainability. The future of Georgia's energy sector will depend greatly on its incorporation into and collaboration with regional technical and organizational capacity outside of USAID. As an example, GNERC is now a member of the ERRA and participating in annual meetings with the assistance of USAID the regulatory capacity development program.

In all, 39 interviews were held with representatives of 14 organizations. The calendar of meetings is shown in Figure 1.1 on the following page.

Georgia Energy Sector Assessment

Figure 1.1 Calendar of Meetings

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
April 14, 2002	April 15, 2002	April 16, 2002	April 17, 2002	April 18, 2002	April 19, 2002	April 20, 2002
		SD arrive from U.S. engaged driver engaged interpreter 1400 World Learning 1530 USAID Herb Emmrich Peter Argo	10000 PA Consulting David Thornton 1200 GWEM Alberto Solis Camba 1400 SAKNAVTOBI Vakhtang Sakvarelidze	1000 SAROG Gia Itonoshvili 1200 GNERC Paata Tsintsadze 1500 Enguri George Chachkiani	1000 GNERC Paata Tsintsadze 1200 GNERC Attend hearing 1400 GNERC Chairman Eristavi	
April 21, 2002	April 22, 2002	April 23, 2002	April 24, 2002	April 25, 2002	April 26, 2002	April 27, 2002
		MG arrive from Jakarta				
	1000 Enguri HPP George Ioseliani 1400 GWEM Alberto Solis Camba	1100 SAROG Head of Agency Gia Itonoshvili 1300 USAID Peter Argo	1100 SAROG Finance, License Abaiadze, Chekurishvili 1300 Enguri Mebonia, Chani 1600 PA Consulting	1100 GNERC Head of Legal Zurab Gabelaye 1300 SAKNAVTOBI Head of Finance Otar Tetvadze	1000 SAKNAVTOBI General Mgmt George Lobjanidze 1200 GNERC General Department Mzia Suknadze	field tour to Kakhetia
April 28, 2002	April 29, 2002	April 30, 2002	May 1, 2002	May 2, 2002	May 3, 2002	May 4, 2002
		1130 SAROG Nick Lortkipanidze Irakli Dadiani 1500 AES Telasi Galim Al Niazov Bill O'Reilly, Ketu Mskhiladze Georgi Gelovani	930 PA Consulting Dean White 1300 GNERC Alex Khetaguri	1000 SAROG Tiniko Dadiani 1200 GNERC Elizbar Eristavi 1400 SAKNAVTOBI Tatiana Rudenko Joni Khokhashvili	1000 TBILGAZI 1200 GNERC Attend hearing 1500 GIC	
May 5, 2002	May 6, 2002	May 7, 2002	May 8, 2002	May 9, 2002	May 10, 2002	May 11, 2002
	Holiday drafting reports	0930 GWEM Lloyd Hickling 1100 SAROG Tornike Gotsiridze Visit to oil spill at Rustavi	0930 Ministry of Fuel and En Nuzgar Ullisashvili, Deputy Min 1100 SAKRUSSENERGO Shota Maisuradze 1400 GNERC Paata Tsintsadze 1500 SAROG Nika Chitadze, PR	0830 travel to Enguri discussions en route George Ioseliani 1530 Enguri Joni Chania, staff	0900 Enguri Dam Tour of facilities 1130 Enguri HES Levan Mebonia, staff 1500 Enguri Dam Joni Chania, staff	
May 12, 2002	May 13, 2002	May 14, 2002	May 15, 2002	May 16, 2002	May 17, 2002	May 18, 2002
	drafting reports	1000 World Learning Julie Dargis	1100 Danthesi Institute Mirian Kalabegishvili Darim Khoperi Zaza Khoperi	1000 Enguri PIU George Ioseliani 1600 USAID Peter Argo		

1.5 Organization of this Report

This report contains an Executive Summary, eight analytical sections, and seven annexes, as follow:

[Section 1](#) is an introduction which contains the report's objectives and study methodology.

[Section 2](#) reviews the GNERC, the Georgia National Energy Regulatory Commission.

[Section 3](#) reviews SAROG, the State Agency for Regulation of Oil and Gas Resources of Georgia.

[Sector 4](#) reviews Saknavtobi, the state-owned company for upstream oil and gas domestic production.

[Section 5](#) reviews Enguri hydroelectric power plant.

[Section 6](#) is an analysis of the training needs for the four energy sector entities.

[Section 7](#) contains recommendations for training and technical assistance for the four energy sector entities. It summarizes and prioritizes the recommendations made in Sections 2-6.

[Section 8](#) presents a set of coordinated programs of training and technical assistance based upon the prioritized recommendations of Section 7.

1.6 Assessment Team Members

The organizational and functional responsibility study was carried out during a trip to Georgia during the period of April 15 to May 20, 2002. The report was prepared by study team members engaged by the Institute for International Education:

- Michael Gembol
- Shibu B. Dhar

Section 2: Assessment of GNERC's Regulatory Functions

2.1 Introduction

Since Georgia became independent in 1991, it has attempted to pursue a policy of economic reform. By and large, despite international attempts to provide technological and financial aid promoting reform agenda, the country has been unable to implement significant market-based policies that might form the basis of a viable economy. Since the early 1990s, USAID's Electricity and Natural Gas Sector reform program has assisted the GoG in the creation of a legal and regulatory framework for the electricity and natural gas sector. Under the USAID's technical assistance program, a number of separate activities were undertaken for the energy sector over the last five-year period, including but not limited to:

- *Legal and Regulatory Framework* – under this activity, USAID contractors assisted the GoG in drafting the Electricity and Natural Gas sector law and enabling legislation for the establishment of the Georgia National Energy Regulatory Commission (GNREC).
- *Establishment of Wholesale Electricity Market* – a USAID contractor prepared the electricity market rules and regulations for the settlement of accounts of electricity Suppliers (generators, exporters and importers) and Distributors.
- *Privatization and Commercialization of Energy Sector Entities* – a USAID contractor assisted in the privatization of Electricity Distribution Utility and provided advisory services for the privatization of a gas distribution company in Tbilisi.

2.2 Main Issues of the Regulated Energy Sector

The main issue faced by the energy consumers in Georgia is the extremely poor and unreliable power supply accompanied by rampant power cuts and prolonged periods of low voltage. The poor physical and financial situation of the sector affects the economic growth of the state and the welfare of its population. Since 1995, Georgia has de-rated total generation capacity to about 1,546 MW (from 5,800 MW) of its generation system due to lack of maintenance of thermal and hydro generating units at power plants at Enguri Cascade (hydro plants) and Gardabani (thermal) facilities. Also, during the last ten years, no new generating capacity has been added to the system, while demand for electricity increased in the domestic sector due to un-restricted heating loads and misguided fuel pricing policies. This has created additional need for imported power and natural gas to meet the increase in demand and has resulted in continuous energy and demand shortages.

The energy sector operators (AES Telasi and Tbilgazi) are in severe financial distress and unable to meet their operating expenditures and working capital needs. Collection efficiency of wholesale and retail market operators has been very poor; at present it is less than 50 percent of sales in 2001. As a result, distribution operators continuously face a liquidity crisis and are unable to pay amounts due to contract suppliers and settlements due to the Georgian Wholesale Electricity Market (GWEM). The GWEM is unable to collect payments from its consuming members (Distribution Companies) on a timely basis and never has enough operational funds to

run the GWEM organization and to fund any initiatives to improve current business. A summary of GWEM's present financial liabilities is provided in [Annex A](#).

Both in electricity and natural gas sectors, deterioration in the financial situation is caused by, among other reasons, high distribution losses (both technical and non-technical), the low tariffs charged to domestic consumers, and non-payment by large direct customers, some of which are GoG-owned JSC enterprises. The Government has been subsidizing the energy sector by providing loans in perpetuity (on which the JSC enterprises have consistently failed to pay interest). Despite its financial condition, the GoG has endorsed a new IPP thermal project at Tkibuli in West Georgia (coal-fired 2x110 MW units). Though there are shortages of power and serious over-dependence on the Enguri hydroelectric power plant, no rational evaluation of alternatives has been done to support this choice as the least-cost alternative. Though the intent is to relieve the balance of trade problem caused by fuel imports and to develop a domestic resource, the financial feasibility of this project is highly questionable. Certainly there are more economical (on a basis of \$/kW capacity) measures that could be undertaken in loss reduction, conservation, and rehabilitation projects, any of which could relieve the present power shortage.

The impact of the financial distress of Georgia's energy sector goes beyond AES Telasi and Tbilgazi, since the direct subsidies for energy import and low tariffs affect the creditworthiness of the government's financial institutions.

The poor financial condition of energy enterprises has set in motion a debilitating cycle of financial problems leading to neglect in maintenance of existing assets, which in turn has led to high technical losses and low plant availability factors, further exacerbating the financial distress. In the natural gas sector, transmission and distribution gas pipelines leakages are estimated at over 30% (technical losses alone). Similarly, in the electricity sector, transmission and distribution technical losses have been reported at about 25 percent of injected energy, though this is widely acknowledged to be a severe underestimate. Generating plants are in poor condition; many have been shut down and cannibalized for parts to sustain the few remaining units.

The widespread LDC practice of allowing domestic and commercial consumers to pay on an un-metered, capacity basis allows distributors to camouflage large portions of their technical and non-technical losses as legitimate consumption. The electricity supplier to Tbilisi, AES Telasi, estimated its sales to un-metered consumers were about 25 percent, whereas in the gas supplier, Tbilgazi, in the absence of proper consumer metering, un-metered numbers can only be approximate. Un-metered supply accounts for significant amounts of revenue leakage for Tbilgazi. Lack of metering leads to poor energy accounting, inappropriate domestic sector tariffs, and inaccurate determination of subsidies to lower-income consumers.

Due to the unreliable energy supply, many commercial and industrial consumers have installed captive plants, mainly running on diesel oil. Thus, the share of industrial and commercial consumption in AES Telasi's system has been declining, even though the domestic consumers' seasonal demand due to heating load has increased.

2.3 Causes

The root causes of these chronic problems are the pervasive interference by the Government in most decisions affecting energy sector operations and expansion, the lack of a commercial

orientation, and the absence of adequate internal controls, accountability and modern utility management practices in energy sector enterprises. Strikingly similar situations have been witnessed in other developing countries, as documented in the various World Bank and USAID reports (Ukraine, Yemen, Jordan, Lebanon, Romania, Bulgaria, Armenia, etc.) This politicized environment has prevented the energy sector's operators from improving its performance. The reform process has been stalled repeatedly by lack of a stable political basis of support for reforms. However, the present Government has taken some very bold steps by implementing an independent energy sector regulatory agency (GNERC), and has launched a major reform program to address the fundamental issues in the energy sector.

2.4 Government Strategy

The USAID, EBRD and World Bank have been involved with Georgia since the early 1990's and have been in dialogue with Georgia on energy sector reforms since 1995. Various initiatives had been started but no substantive progress was made owing to political instability and lack of support for reform. The present Government recognizes that the energy sector has become a major constraint to growth. The Government has therefore broken with the past and taken positive steps to start the implementation of a reform program.

Energy sector reform program involves:

- a) effecting legislative changes to provide for an independent Regulatory Commission, and transfer the regulatory powers of the electricity and natural gas sector distribution to the GNERC.
- b) effecting legislative changes to remove the deemed and privileged licensee status from Sakenergo and Sakgazi, un-bundle the sector, and facilitate the transfer of assets, liabilities and staff from the vertically integrated Joint Stock Companies to the functionally separated entities operating under commercial arrangements in regulated markets;
- c) privatization of distribution companies (AES Telasi and privatization of Tbilgazi is under negotiation); and
- d) implementing a financial restructuring plan to restore the financial health of the sector including balance sheet restructuring and tariff rationalization.

2.5 Regulatory Functions of GNERC

Following Article 3 of the Georgian Law on Electricity and Natural Gas (1997 and amendments of 1999), the Georgia National Energy Regulatory Commission (GNREC) was established. The Commission protects interests of consumers of energy resources and energy, adjusts prices of energy resources proposed by energy suppliers, and prohibits setting them without due process. The Chairman, and 3 members of the Commission are appointed for 5 years and can be removed by the President of Georgia only for corruption and incapacity to perform their duties. The Commission in its activity follows the Constitution of the Republic of Georgia, the Energy Law, other laws, decrees of the GOG, and also by-laws enacted by the GNERC. Funds for the Commission are generated from the licensing fees paid by the electricity and natural gas sector operators or Licensees. The Commission is a legal entity, and has a stamp with the State Emblem and accounts in its name in banks of the Republic of Georgia.

The basic functions of the GNERC are as follows:

Georgia Energy Sector Assessment

- Regulatory oversight of wholesale and retail tariffs of electricity and natural gas;
- Licensing and compliance monitoring of electricity and natural gas sector operators;
- Dispute resolution pertaining to electricity and natural gas sectors;
- Oversight of Georgian Wholesale Electricity Market (GWEM);
- Promotion of competitiveness in the electricity and natural gas markets; and
- Regulation of electricity import and export.

Figure 2.1 shows the present organizational structure of the GNERC.

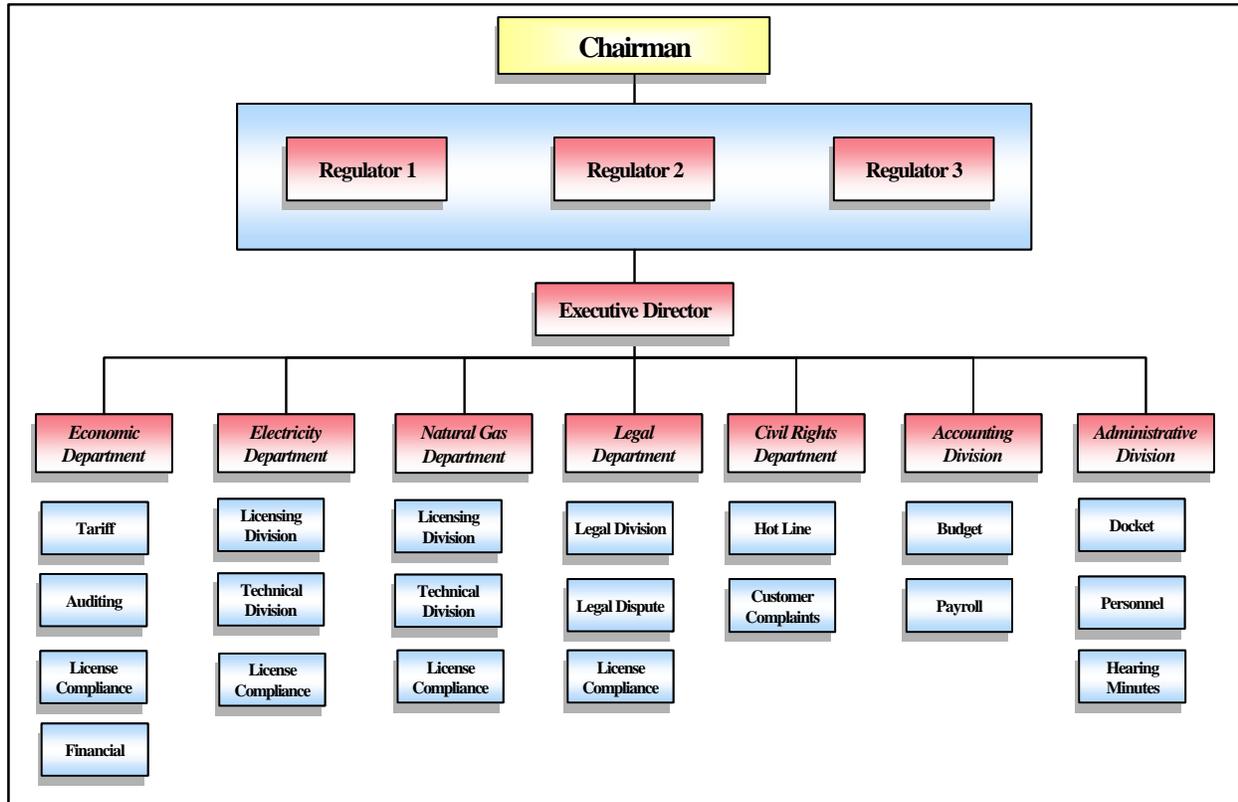
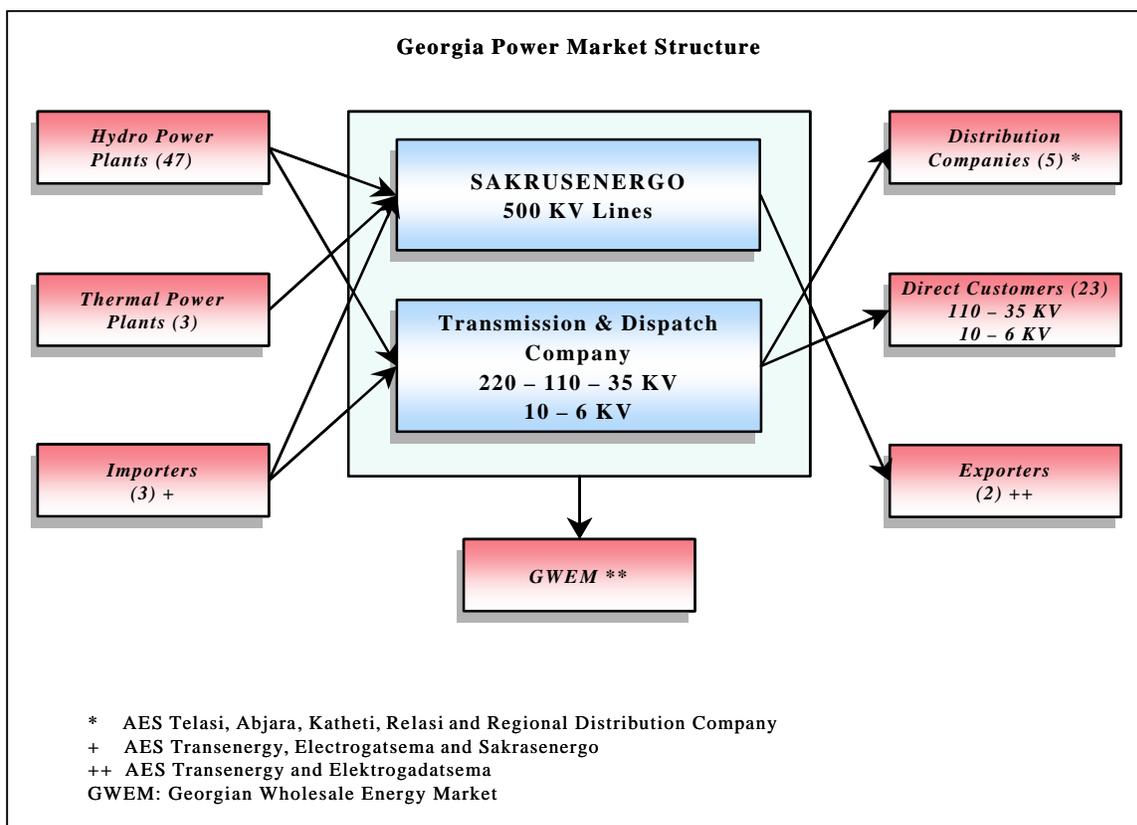


Figure 2.1
Organizational Structure of GNERC

Figure 2.2 shows the relationship of electricity sector operators of GWEM. The GNERC is responsible for the oversight of GWEM market settlement performance.



2.6 Implementing Regulatory Changes

There is a need in Georgia to distinguish between setting policy, which should be handled by the government, and regulation, which should be handled by an independent agency such as GNERC that is able to make important decisions free from interference. The purview of regulation includes tariff setting, oversight of licensees, resolution of disputes, and so on. Appeals of regulatory decisions and orders should be made through the courts, not to the Government. Appropriate regulation will provide opportunities and incentives for both public and private regulated companies to earn returns that correspond to the reliability and quality of service they provide. Combined with the other elements of reform, independent regulation should improve the energy sector's operational efficiency, allow required investments to be properly amortized in tariffs (which will enhance the ability to finance them in a timely manner and at reasonable cost) and encourage the involvement of both domestic and foreign private sector participation, based on enforceable non-political ground rules.

2.7 Regulatory Duties of GNERC

This study involved a situational analysis of the existing regulatory framework, followed by a series of recommendations for institutional capacity development program and training implementation priority classification for GNERC (see Section 6). In this section a review of the

GNERC's regulatory function is undertaken based on current functional duties, for short and long term development options of energy sector entities, international comparisons and best practices. The basic premise underlying the institutional capacity development program of GNERC, as with other countries, is that a financially sustainable energy sector is vital for economic growth and social well-being.

2.7.1 Key Attributes of Regulatory Institutions

Developing sound rules is a necessary but not sufficient condition for efficiency-enhancing regulation. Effective regulatory institutions are required to administer and enforce the rules. International experience demonstrates that effective regulatory institutions should possess four main attributes:

- no conflicts of interest;
- protection from political interference;
- expertise and institutional autonomy; and
- transparency and accountability.

2.7.2 No conflict of Interest

To be effective, rules need to be administered by an entity at arm's length from regulated enterprises. No country would expect regulation to be implemented appropriately if the task were entrusted to a private firm subject to those rules; the conflict of interest would be obvious. The same principle should apply to public firms subject to those rules. The Government/public enterprises should not be both service providers and sector regulators, and this becomes especially important as private competitors enter the market. In most countries, efforts are also made to ensure that sector regulators are also at arm's length from ministries that might have a stake in the profitability of the public enterprise. For reasons of this kind, it is increasingly common to see regulators and public enterprises reporting to different ministries, or making the regulator independent of any ministry.

2.7.3 Protection from Political Interference

Economic regulators must often evaluate complex issues in a politically sensitive environment. This is most clearly the case for utility regulators when they are determining tariffs and related issues, for there are often strong pressures to withhold justified tariff increases to advance short-term political goals: there are no votes in increasing utility tariffs. When the regulated enterprise is privately-owned, the risk of such behavior will lead investors to require strong commitments to cost-covering tariffs, including administration of such rules by an entity at arm's length from the political process. Failure to provide such assurances will lead to higher financing costs and hence higher utility prices. Examples of countries adopting this strategy are increasing around the world, with regional examples including Poland, Hungary, Baltic countries, as well as agencies being established in Moldova and Philippines.

International experience provides guidance on what is required to insulate regulators from improper political pressures. Key measures include: giving regulators a mandate free from political direction; expressing that mandate in law, rather than in a subordinate instrument that might be more easily revoked; ensuring appointments are made on the basis of professional criteria; providing for fixed-term appointments that are not co-extensive with the government;

and protecting appointees from removal without just cause during the term of their appointment. The other design attributes help to reinforce this autonomy.

2.7.4 Expertise and Institutional Autonomy

The administration of utility regulation and competition laws requires specialists with high-level skills in economics, law and finance. Many countries find it difficult to recruit and retain staff with the requisite expertise when operating under civil-service salary rules. For this reason, there is a strong trend towards exempting regulatory institutions from such restrictions. This becomes particularly important when private firms enter the market, which can usually pay high salaries to lure away skilled regulatory personnel. In the case of utility regulators, there is also a growing trend to give regulatory institutions access to earmarked funding, whether collected from levies on regulated firms (e.g., Georgia, Latvia, Bolivia, Colombia, Mexico, Venezuela) or directly on consumers of services (e.g., California). This ensures entities have access to a reliable source of funding, and can also help to reduce political interference. The same approach is not feasible for competition or consumer protection regulators, who are potentially involved in regulating all firms in the economy.

2.7.5 Transparency and Accountability

Increasingly, autonomous regulators are required to operate in a very open and transparent way. Affected interests are given an opportunity to present their views to regulators, and regulators must give detailed reasons for their decisions. Accountability is also ensured by providing for appeals against regulatory decisions; having regulators' budgets subject to scrutiny by the legislature; and providing for removal of regulators in cases of proven misconduct or incapacity.

At present, many developing countries have no regulatory institutions that meet these four conditions. All public enterprises are "self regulated" and there is no competition regulator. The only exception so far is the few newly established regulatory agencies in Former Soviet Union countries (Ukraine, Moldova, Lithuania, etc.), Middle East, and Latin America, which lack independence, in most cases, Commission members are only nominated for one or two years; members can be removed at any time; and, despite earmarked funding, they are understaffed. These Regulatory Commissions are a slight improvement but also have significant weaknesses, since the regulators do not have a guarantee of independence - the duration of their tenure is unspecified, their selection process does not follow transparent rules which require skills and impose accountability, and they have no own sources of financing.

2.8 GNERC's Regulatory Capacity Assessment

2.8.1 Overall Assessment

The current situation in Georgia is characterized by the following:

- The overall policy-making process for electricity is shared between the Ministry of Fuel and Energy (MoFE), the Ministry of State Property Management, the Parliament of Georgia, and the Ministry of Environment.
- The tariff adjustment process is initiated by the sector operators and consists of establishing a target level of increase without objectively determining costs or how much of the increase should be borne by individual customer classes and how the adjusted tariff will affect the financial viability of the sector operators. The GNERC approves the tariff increase, which has generally

been constrained by socio-economic considerations and based on some measure of financial need within the context of the overall Government budget for the energy (electricity and gas) import payments to Russia.

Additionally, our assessment of GNERC's existing regulatory capacity for both electricity and gas sectors indicates that:

- GNERC currently uses a simplified tariff structure.
- GNERC does not have any target levels for service quality.
- It does not appear the planning process for the energy sector is conducted on a routine basis but instead is driven by the need to assess projects to secure financing from International Lending Agencies and/or investors.
- The MoFE is responsible for establishing policy on energy subsidies provided by the various ministries to their customers in Georgia. There are two types of subsidies provided: Direct and Indirect.
- Enabling legislation of GNERC does not give any authority to impose sanctions to violators of license provisions. In addition, the enabling legislation does not articulate any provisions for the establishment of a Consumer Council. Therefore, GNERC is playing dual roles as a neutral regulator balancing the needs of sector investors and protecting consumers' rights.
- The GNERC has little institutional capacity for developing a tariff methodology for electricity and gas pricing.
- The GNERC has limited institutional capacity for financial auditing of sector operators.
- The oversight of the performance of the GWEM is GNERC's responsibility, but in the GNERC's organizational structure no one is assigned to oversee compliance with GWEM's Market Rules. So far, GWEM is failing in every aspect of Market Rules due to poor payments by the power purchasers (Local Distribution Companies).
- GNERC does not operate on any Strategic Business Plan that articulates its regulatory functional duties on an annual or bi-annual basis.
- In the natural gas sector, there are no Gas Market Rules that articulate the functions of Local Distribution Companies (LDCs), third party access (TPA) policy, quality of service standards, and safety standards.
- GNERC has little or no technical expertise for the monitoring of safety and environmental standards of licensees.
- There are overlapping jurisdictions with the ministries for the licensing process.

Based on this assessment a number of recommendations were made for the institutional capacity development of GNERC.

2.8.2 Other Barriers of GNERC

The regulatory task facing the GNERC is challenging for a number of reasons, which are summarized in Table 2.1.

Table 2.1 Summary of GNERC's Regulatory Duties	
Aspect	Comments
Legal and Regulatory Framework	<p>Legal and regulatory frameworks are unclear in the following areas:</p> <ul style="list-style-type: none"> • Enabling legislation for the establishment of GNERC (Article 3) needs amendment in several areas to include sanctions, authority to issue a motion to compel, establishment of a Consumer Council, etc. • Several secondary laws need to be enacted by the GNERC for transparency of its regulatory duties. • Overlapping jurisdictions with the Ministries need to be addressed for accountability of GNERC. • GNERC's supervision of the GWEM needs to be articulated in the regulatory law to minimize ministerial interference.
Scope of regulatory regime	<ul style="list-style-type: none"> • Coverage of the electricity and natural gas distribution sectors. • Important social, economic and environmental objectives for the energy sector – political and public interest – have conflicts between objectives; and • Important and complex regulatory policy decisions were not taken at the early stage of development of GNERC.
Resources	<ul style="list-style-type: none"> • Limited pool of regulatory skills and experience. • Limited pool of management skills and experience. • Limited local access to relevant training and development resources. • Restrictions on overall budgets and salary levels in the public sector. • Organizational structure does not reflect all regulatory functional duties. • Lack of resources for new tariff methodology development and licensing compliance monitoring. • No technical resources for safety and standards monitoring.
External Relations	<ul style="list-style-type: none"> • High level of interest from external stakeholders in the outcomes of regulation and the performance of the energy sector operators. • Lack of awareness about the incentive regulation amongst the regulators, media, customers and the general public.

The GNERC's organizational structure, staffing and departmental functions do not reflect its full legislative mandates. Earlier discussion concentrated on the role and function of commissioners, but issues can also be raised regarding the structure of the internal structure of GNERC.

There are essentially two models of how to structure a regulatory agency covering many functions. Both apply to the interim as well as the final solution. These are:

- an agency structured along the lines of sectors/sub-sectors or technical capabilities; and
- an agency structured along the lines of functions.

In the GNERC office the following technical tasks will have to be performed:

- financial modeling;
- energy (electricity and gas) forecasting;
- license compliance monitoring and enforcement;
- technical/ engineering analysis;
- regulatory modeling/comparative competition modeling;
- legal support;
- consumer support and quality of service monitoring; etc.
- some economic analysis and support;
- some engineering (safety and standards monitoring) support;
- financial auditing and analysis; and
- customer services.

Review of GNERC's organizational structure reveals that some of the above technical capacities need to be developed, specifically in the areas of: a) tariff methodology development; b) financial auditing; c) forecasting; d) technical safety and quality of service monitoring; and e) environmental compliance monitoring. It is important to realize that, while highly flexible, the approach to work with a small number of staff and a large contingent of external resources is in most cases significantly more costly. If such a path is taken, it is important to ensure that there is a sufficient budget to buy resources as needed.

2.8.2.1 Resource Requirements

As well as the main regulatory skills (economics, finance, engineering, legal), the GNERC will need to apply management time and staff resources to:

- general management and process, both of which are often underestimated;
- information management; and
- customer complaints management.

2.8.2.2 Regulatory Work

Clearly, the nature of the issues facing the energy sector and the regulator at any time will determine the balance of resources required. Examples from UK experience include the following:

- in the UK water industry where the focus has recently been on capital expenditure to improve water and environmental quality, OFWAT collects more technical information and has many more engineers than the other regulators;
- reliance on comparative rather than real competition has also led OFWAT to deploy more resources into econometrics and benchmarking;
- in the UK gas industry the fact that there has been only one major company meant that OFGAS was able to pay less attention than others to due process; and
- OFTEL, the telecommunications regulatory body, has concentrated on promoting competition in an industry where many services have become contestable because of developments in technology.

Regulatory work tends to fall into one of three categories:

- work focused entirely on delivering regulatory outputs and specified as such in the regulatory plan, e.g. specification and review of the companies' submissions, comparative competition analysis and monitoring performance against company plans;
- work which stands alone, once off or continuing, elements of which are inputs to other deliverables - e.g. competition policy, debt and disconnection case work, complaints work, external relations; and
- supporting functions, without which it would not be possible to deliver the regulatory work of the office on time, within the processes agreed and within budget---e.g. specifying and submitting the GNERC's financial audit reports of energy sector operators, recruiting and managing staff and consultants, etc.

There will be a mixture of line and project activities in which GNERC's regulatory staff will need to be supplemented by external advisers, but with leadership and management from full-time staff.

2.8.2.3 Management and process

There are a number of requirements for the effective functioning of the GNERC office. Experience shows that they are often under-resourced with consequential damaging effects on the office's performance.

The requirements include the following:

- advance planning regulatory work;
- consultation with stakeholders;
- due process of consideration, decision taking, and communication;
- managing relations with other regulatory agencies;

- managing external relations;
- appointing and managing advisers;
- regulatory project management;
- staff appraisals and human resources system development; and
- controlling data quality.

Due process and information management are likely to place significant demands on the resources available to the GNERC.

Independence places a premium on transparency and predictability. This in turn makes due process particularly important. At the same time, there is a need for consistency with cultural, historical, and political realities. These factors together with previous identification of GNERC's institutional barriers suggest a relatively high level of training and institutional capacity development needs.

2.8.2.4 Information Management

Regulators face the problem of information asymmetry. Not only do the regulated businesses know more about their own activities than the regulator, but they have more resources at their disposal.

It will make sense for the GNERC to:

- minimize the information burden, consistent with having the necessary information for effective regulation;
- maximize the contribution made by the companies to carrying the information management workload; and
- deploy an appropriate approach to managing data including: developing definitions, selecting sources and methods, systems development and modification, data collection; data validation, data management, modeling and analysis and interpretation.

The following possibilities for minimizing the information burden should be considered:

- detailed design of the regulatory regimes to minimize information requirements;
- learning from other regimes, but challenging whether some, possibly information-intensive, regimes are relevant to the circumstances in Georgia;
- managing the perceptions of stakeholders, especially politicians and the media, about the scope of regulation;
- clarity with other agencies and ministries about delineation and separation of the oversight responsibilities of other agencies, including who is responsible for which items of information;
- paying particular attention to specifying the information required;
- limiting information demanded to that which can be used;
- using joint working groups with the sector operators and other interested parties;

- making minimal changes to specifications once they have been defined;
- adopting a process for defining requirements and exchanging information which will result in information which can be trusted;
- a systems audit approach to verification rather than detailed technical work; and
- willingness to use existing data and estimates rather than requiring special exercises to generate data.

We have recommended that information provision will feature significantly in the license conditions. This emphasizes the need to establish the information regime and accompanying processes as soon as possible.

2.8.3 Key Regulatory Framework Recommendations

Fundamental to the creation of the independent regulator is the Enabling Law for the establishment of the Regulatory Commission. The Enabling Law should cover the legal aspects to create an independent regulator entity (Article 3 of the Electricity and Natural Gas Law) and define the regulatory philosophy and principles of application. However, in Georgia, Electricity Law, Natural Gas Law and Regulatory Law are all bundled together. As a result some of the major elements of regulation and regulatory power are not articulated effectively in the present law.

The purpose of regulation and ratemaking is to balance considerations of fairness and equity in the provision of an essential public service. Common elements of typical regulatory systems include control of entry, price fixing, prescription of quality and conditions of service, and the imposition of an obligation to serve all applicants under reasonable conditions. When a government decides to reform the energy sector or privatize one or more of its utilities, it must address fundamental questions of industry structure and the types of competitive and regulatory mechanisms that will be put in place.

Clear and effective regulation is characterized by a number of attributes, the most important of which are:

- A clear statement and assignment of functions and powers to regulatory and policy making institutions and the regulated enterprise;
- An open (i.e., "transparent") method of regulation;
- A clearly defined license structure for enterprises;
- An effective and well-defined appeals procedure; and
- A balance between regulation and competition.

Laws establishing the regulatory agency should define matters such as:

- Relationship of the regulatory agency with government, i.e., the degree of independence;
- Organization of the regulatory agency to complement its regulatory functions;

- Sanctions and authority to compel for information and for appearance in the Commission hearing process.
- Financing of the regulatory agency;
- Licensing and enforcement powers of the regulatory agency;
- Monitoring and surveillance of the regulated activities or entities;
- Process for appealing the decisions of the regulatory agency;
- Protection of private sector investment in the assets of the industry; and
- Giving of security or comfort to private sector lenders.

There is no single blueprint for regulation. However, notwithstanding the diversity in the form of regulation, the hallmarks of an effective regulatory system are **transparency**, **consistency** and **predictability**. Transparency ensures the integrity of the regulatory process. Consistency permits market participants to make long-term contractual commitments and investment decisions in an atmosphere of relative certainty. Predictability allows regulated companies, and their investors, to make maximum use of available risk mitigation strategies. These principles should guide the approach in designing the regulatory framework.

Fundamental changes will be required for the current legal framework to accommodate all aspects of an independent regulator for the energy sector. In re-drafting regulatory legislation, it is important to establish a system that reflects principles of clarity, transparency, predictability, and accountability by third parties. The ultimate objective reflected in each of these goals is also the same: equality. If private parties are to participate in the Georgian energy sector, whether as IPPs or private Distributors (investors), they need to be confident that they are being treated in a nondiscriminatory manner. The primary electricity, natural gas and regulatory legislation must be clear and predictable and should require these qualities in the implementing regulations, rules, governmental or ministerial orders, administrative procedures, and the authorizations issued to enterprises.

All regulatory functions of GNERC should be articulated in the Rules, Regulations and Proceedings or in the secondary laws or in the form of decrees.

When legislation and rules are clear and predictable, and when decisions are accountable in court under pre-existing standards, potential participants in the energy sector are given the assurance that they have as good an opportunity to compete in the sector as any other similarly situated interested party. Providing such assurance, in turn, increases the potential pool of participants, which should not only increase the availability of private participation quantitatively but should also qualitatively increase the commercial chances of success of such participation.

Thus, for example, GNERC decisions regarding licensing or concessions need to be standardized to the greatest extent possible. Instead of each application being individually treated and awarded after discretionary ministerial review, for example, any award process

should contain defined standards for obtaining a license or concession, which can then be applied in a nondiscriminatory manner as to each application, and be further subject to judicial review.

Four core legal areas should be addressed for improving the overall energy sector legal framework for GNERC. These are as follows:

- **Primary Legislation:** An Electricity and Natural Gas Law should be adopted which should clearly set forth the authority pursuant to which the structure for the sector operates and should define the general parameters of that structure.
- **Enabling Regulatory Law:** The enabling law for the regulatory agency should provide for an independent regulatory authority whose powers would be phased in and which must follow clearly expressed substantive criteria and function in an open, predictable and accountable manner with proper qualified staffing and funding.
- **Commercial and Investment Structure:** Since private investment is a stated goal of the Government, laws dealing with commercial and investment issues should facilitate such investment.
- **Anti-monopoly Control:** As competition is a stated goal, the law must set up a mechanism by which the Government can deter and stop participants in the sector from obtaining monopoly control and engaging in anti-competitive behavior.

The GNERC should be premised on the provision of adequate and secure supply of electricity and natural gas at least cost within a framework that manages the competing demands and interests of all stakeholders.

2.9 Possible Areas of USAID Technical Assistance

There are several ways in which USAID can assist in improving GNERC's legal and regulatory functions and institutional capacity framework. USAID is already having a comprehensive dialogue with the Georgian government on the policy and institutional reforms in the energy and financial sectors in the context of its operations, economic and sector work. Various institutional and operational options discussed below are to be reviewed by the GoG and USAID; the priorities have to be agreed upon between the two parties.

2.9.1 Amendment of the Electricity and Natural Gas Law [Technical Assistance Recommendation]

Assist GNERC in amending the legislation to address the following key issues (note: some issues are articulated in the present law but many of the following topics are missing in the present law):

- The powers and general duties of the appropriate ministries, including the power to issue special directions to the regulator in relation to policy;
- The powers and general duties of the regulator, such as powers to make rules regulating its practice and procedure, and procedures designed to ensure its independence;

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- The powers of the regulator to regulate tariffs and quality of service (to the extent proposed in the market design) and powers to oversee the energy industry effectively;
- Power of the regulator in relation to anti-competitive behavior, including mergers and acquisitions involving licensed electricity and natural gas companies;
- Institutional and enforcement requirements including imposition of sanctions of the regulatory regime;
- Authority to compel for information and appearance in GNERC's hearings;
- Requirement for licensing by the regulator of any of the following business activities currently not licensed: a) IPPs; b) Oversight responsibility of GWEM – energy market administration and system operation; c) Transmission service and Third Party access to natural gas pipelines; d) Electricity and gas distribution services; and e) Sales to end-use consumers;
- The legislative authority to include special conditions in licenses relating to:
 - a) Recovery of any stranded costs which result from the new market operation;
 - b) Protection of bondholders, lenders, etc.; and
 - c) Subsidies for various classes of customer.
- Provisions relating to public policy interests (with particular consideration of the role of the ministry and the regulator) in relation to:
 - a) Fuel security;
 - b) Approval for generating stations;
 - c) Approval for overhead lines, etc.
 - d) Preservation of amenities;
 - e) Environmental laws/energy conservation/management of scarce natural resources;
 - f) Promotion of energy efficiency;
 - g) Roles of regulator and competition authorities (generally);
 - h) Promotion of forms of renewable energy;
 - i) Publication of reports and statistics by sector operators;
 - j) Performance/efficiency objectives;
 - k) Rates and tariffs;
 - l) Standards for service and performance;
 - m) Quality of services; and
 - n) Service coverage requirements.
- Provisions contemplating the establishment of a fund for expansion of the power and natural gas systems and electrification of rural areas;
- Providing a legal basis with necessary enabling provisions for establishing, changing, enforcing and regulating Technical Rules, Market Regulations, Norms and Standards:
 - a) Role of regulator in making, amending and enforcing technical rules and market regulations, norms and standards;

- b) Scope and contents of technical rules and market regulations, norms and standards;
and
 - c) Mechanism for evolution and change.
- Establish relevant legislative basis for transfer of assets and liabilities by ministerial or executive action from the existing government owned utility to successor companies and, if required, divestment of, or private sector participation in, successor companies;
 - Consequential amendments that will be needed to existing statutes and secondary legislation; and
 - Any necessary transitional provisions.

2.9.2 Consumer Advocacy

[Technical Assistance Recommendation]

The fundamental role of the regulatory commission is to balance the needs of the energy industry with the general public needs and welfare. However, deriving its authority from the government and working directly on a daily, professional basis with the regulated industry, a regulatory commission can easily be perceived to be imbalanced toward the side of the industry.

Consumer advocacy derives from the principle that a fair decision process requires that both sides be represented competently. Large industrial and commercial customers can represent themselves before the commission, but residential customers seldom have the qualifications and finances to provide themselves competent representation.

In a situation where the public is unaccustomed to democratic process, where there are serious corruption problems, and where the government has been the absolute authority on energy issues, and where the public demonstrates its alienation from the energy situation through rampant theft, it is crucial to restore the balance. The commission must guard against even the perception that it is biased or imbalanced toward the industry.

To provide customers with a voice and to ensure that there is a body of sufficient weight to counter-balance the companies, some countries have established a office of consumer advocacy.

It is important to distinguish consumer advocacy from consumer protection:

Consumer protection implies a legal process through which customer complaints can be processed, i.e. billing problems, safety issues, quality of service violations, service access and termination, etc. These individual issues can usually be brought before the commission by affected individuals. The GNERC has established a consumer protection function which is functioning well and properly.

Consumer advocacy provides representation to customers on major utility issues such as resource planning, tariff hearings, social subsidization issues, utility transparency and accountability, and utility financial planning. These major issues profoundly affect the consumer tariffs, but competent representation requires resources beyond the individual

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customer: access to utility data and records, social and economic research, current technical information, sophisticated computer models, and competent legal representation. Georgia does not now have consumer advocacy.

Consumer advocacy, then, is partly inclusive of the overlapping concepts of consumer representation, consumer councils, consumer affairs, and some aspects of consumer protection.

Proper consumer advocacy must have adequate staffing and funding and legal standing. The office of the consumer advocate must be able to fund studies, engage consultants, perform research, communicate with and educate the public on energy issues, and develop strong cases in behalf of the customer.

Consumer advocacy does not automatically mean opposition to any tariff increases. When a properly educated public can look ahead and see that their infrastructure and economy are in danger of collapse, a prudent advocate will recommend appropriate tariff levels (with strong safeguards to prevent abuse.)

This issue raises a number of questions.

- Should consumer representative bodies be established in Georgia? If yes,
- What structure should they take? Should there be a national energy body, mirroring the regulatory body, or separate bodies for various utility services (electricity, water, sanitation, telecommunications, etc.) bodies?
- What functions should the body undertake? They can act as a point for the settlement of disputes, a legal representative, a national voice, an intervenor, an environmental watchdog, etc.; and
- How should they be funded? Either the regulatory office could fund them through the consumer levy or those customers using the services could fund the body.

For Georgia we would recommend the following answers to these questions:

- Yes, consumer representation should definitely be established. It is vital to solving the most urgent problem before the commission – collection for service.
- There should be a national electricity and natural gas body that has local branches corresponding to the distribution companies.
- The local branches should be primarily involved with ensuring that customers receive information and acting as dispute resolution points. The national body should be more involved with the regulatory process, ensuring that utility representations are examined and challenged where appropriate, that financial decisions of the utility are examined for impact on tariffs and service; and

- The bodies should be funded through an additional levy on consumers, collected at the same time as the levy for the regulatory commission. This will necessarily be a long-term goal once tariff rebalancing and cost of service analyses are undertaken.

2.9.2.1 Position With Respect To The Regulatory Commission

The consumer advocate can be set up as an independent organization or as an integral part of the regulatory agency. In the situation of Georgia, where the public has little alternative representation, and where the commission is definitely perceived to be part of the government and the energy industry, an independent organization is strongly preferable.

A trade-off exists between the degree of independence, on the one hand, and the right of access which forces the regulator to acknowledge and consider its suggestions, on the other hand.

2.9.2.2 Legal Status

The basis on which the consumer representation is established is also very important, especially in relation to the perceived legitimacy of the body. The available options are:

- establishment through the law establishing the regulatory commission; or
- establishment by the regulatory commission.

In many countries the consumer bodies were established at the same time as the regulatory agencies and their status was enshrined in the same laws that established the agencies.

2.9.2.3 Funding

Meetings with GNERC show that the question of funding a Consumer Advocate has already been discussed; there is consensus that the tariff revenues cannot bear any more levies. This is contrary to the logic of consumer representation. First, the cost of competent representation is generally less than 1/10 of 1% of the total tariff cost, even for a fully functional, well equipped and well staffed operation. Second, competent representation can actually increase collections. This is especially probable in Georgia's situation, in which rampant theft of power and willful refusal to pay bills are huge factors. These are signals of public intolerance and misunderstanding of the long-term needs of the electricity infrastructure.

Energy economists usually speak of price elasticity of demand. At a certain point, raising tariffs does not increase revenues because consumers use less electricity in response to its high price. In Georgia, one could also speak of theft elasticity and collections elasticity. Evidently, Georgia is past the point where tariff increases produce added revenues. Instead, they produce civic unrest, blatant theft, and flagrant refusal to pay.

Good representation could easily produce documented reductions in theft and non-collections greatly in excess of the cost of the Consumer Advocate. For example, a program that successfully challenged utility rate increases and managed to cut a proposed rate increase from 20% down to 15%, while at the same time decreasing non-technical losses and non-collectibles from 30% down to 20%, would create a net increase of 5% in revenues.

We suggest that USAID support an experiment by funding the initial operation for a period of 2 years for a Consumer Advocate. This would require consultant support in creating enabling legislation, coordination with existing entities, selection of a qualified and established NGO or

group of NGO's to assume the role, office space, computers, software, and communications equipment, staffing, and office expenses. The consultant would also provide sufficient example and guidance to ensure the effectiveness of the Consumer Advocate. During the two-year period, if the Consumer Advocate managed to demonstrate its value through reduced theft and non-collectibles from its constituents, the project would be transferred to funding through a tariff levy. If it failed to make a clear and documented demonstration of its value, the office would be terminated or left to funding through existing NGO's.

2.9.3 Tariff Methodology Development **[Technical Assistance Recommendation]**

Present tariff structures for electricity and natural gas sectors are simplistic and the tariff methodologies are not based on any incentive parameters. The GNERC's staff should receive extensive training and external consultant assistance in developing and introducing modern tariff structures for electricity and gas sectors in the areas of wholesale and retail tariff formulations. The new tariff structures should be developed with public participation and sector operator inputs in a public hearing process.

Since the greatest problem facing the energy sector in Georgia is collections, it is crucial that tariffs be utilized to address these problems. Social subsidization and lifeline rates must be incorporated into the tariffs before enforcement and prosecution for theft or non-payment are feasible. Tariff classes must be segmented into interruptible and non-interruptible categories, each with its legal definitions and qualifying criteria, before curtailment policies are feasible.

Experience demonstrates that it is very difficult for regulators to set prices at economically "correct" levels over time. Regulators are hard-pressed to respond to changing circumstances quickly enough to prevent distortions from creeping into the price structure of a given market. They are also at a significant informational disadvantage. Competitive markets, by contrast, "process" all the relevant information instantly and automatically. Prices in a competitive market reflect this information.

USAID's technical assistance should be provided for the activities:

2.9.3.1 Determining The Tariff Levels

There are two overall processes in determining tariff level:

- The determination of maximum allowable revenues, implemented either through rate-of-return, price-cap, or performance-based ratemaking, or through performance contracts.
- The determination of relative prices across groups of customers, either through embedded cost or marginal cost methods.

Maximum allowable revenues are determined on an annual cycle or less frequently - every three to five years - once the utility reaches financial health. More frequent adjustments can be made under less formal circumstances for a portion of the revenues that are related to specific costs. Generally, these types of adjustments are confined to fuel and purchased power. The frequent adjustments are generally made in connection with special surcharges or with fuel and purchased power adjustment clauses. Relative prices can be adjusted at any time, but usually are addressed in the context of a major decision on maximum allowable revenues.

2.9.3.2 Pricing And Tariff-Setting Mechanisms

The following matters in respect of tariffs and the tariff-setting mechanism should be addressed:

- Components of idealized tariff structure;
- Idealized approaches to tariff-setting mechanisms; and
- Effect of social objectives on tariffs

The USAID's Tariff Advisor should assist GNERC in establishing different classes of consumers for the electricity and gas sectors according to metering and billing capabilities of the energy sector operators. For example, in the electricity supply industry, there are some generally accepted approaches for tariff structures. In general, most providers and their regulators accept that there are five major categories of retail customers:

- Domestic (or residential);
- Small commercial and industrial (or general service);
- Large commercial and industrial (or large general service);
- Public authorities (schools, governmental buildings and facilities, government-owned water and wastewater providers); and
- Street lighting.

For each category, the general structure of tariffs is nearly universal, but the tariff levels vary considerably among utilities. The tariff structure usually contains three elements:

1. Connection (or customer) charge
2. Demand (or capacity) charge
3. Energy (or commodity) charge

The GNERC will need expert consultants services for:

2.9.3.3 Designing Bulk Power Tariffs

The Consultant should assess the disparity between the economic cost-based tariffs, and tariffs required to meet financial requirements, design a bulk power electricity tariff and provide a timetable for the full application of bulk tariffs that would assure economic efficiency and financial viability of electricity sector operators. The consultant will also assist GNERC to propose an appropriate methodological framework for developing tariff for international power sale as well as examining the impact of interconnections with Georgia's neighbors on marginal cost calculations.

2.9.3.4 Bulk Tariff Implications for the Retail Tariffs

The Consultant should assist GNERC on the implications of the proposed transmission and generation bulk tariffs for the distribution level tariffs, and to propose adjustments in retail tariffs required to enable the distribution companies to maintain financial viability.

The GNERC will also require expert consultant's services for updating natural gas sector tariffs at: Well Head and City Gate.

2.9.4 Gas Sector Market Rules

[Technical Assistance Recommendation]

The gas sector in Georgia has recently undergone structural reform as a result of debt restructuring of Sakgazi (50-50 Georgian and Russian) to 100% ITERA ownership of Russia. Also, in the near future there will be gas and oil transit pipelines from Azerbaijan to Turkey and Supsa on the Black Sea. Georgia also has potential for associated and natural gas discovery within its geographical territory. Therefore, it is important for the GNERC to develop proper natural gas market rules and regulations.

The gas sector rules and regulations will establish common rules for the transmission, distribution, supply, and storage of natural gas. Gas sector market rules will articulate all rules relating to the organization and functioning of the natural gas sector participants in areas of: wholesale, retail, and third-party access to pipelines.

Objectives of these Rules and Regulations for the gas sector:

- To provide guidelines for the upstream and downstream gas sector participants;
- Diversification of gas sector players through the removal of exclusive rights and the sale to competitors or gas marketers;
- Effective separation (unbundling) of the gas transmission and transit business from gas supply and trading, which ensures non-discriminatory third-party access to the transmission and distribution systems;
- Efficient regulation of tariffs;
- Transparency in the non-price terms and conditions of access to pipelines;
- Clear definition of regulatory responsibilities;
- Stimulating competition of gas supply;
- Improving the effectiveness and consistency of downstream regulation; and
- Promoting regional market integration.

The USAID's technical assistance will help GNERC to draft the Rules and Regulations that will allow the development, maintenance and operation of an efficient, coordinated and economical natural gas supply system in Georgia. The Rules and Regulations should seek to avoid any undue discrimination between Users and categories of Users.

2.9.4.1 Market Structure

In the context of natural gas utility regulation, the term "market structure" describes the way gas and related services are provided to customers. It refers to the mixture of services that are provided exclusively by utilities, those that are provided only by competitors other than the utilities, and those that are provided by both. It is the objective of GNERC to regulate this industry in a manner that enhances the influence of competitive market forces.

2.9.4.2 Functional Unbundling of Costs, Rates and Services

In the market structure decision, in the future, GNERC will identify the services for which customers should be able to choose a provider other than the utility. In order to facilitate such choice, a utility must provide its customers with bills that separately state the charges related to its various services. This price information is part of what a consumer or energy provider needs in order to make an informed choice and provides a basis for charging only for those services purchased from the utility.

The unbundling process will require three activities: separately identifying costs (cost separation), presenting bills that contain separate rates for each function (rate separation), and providing the option for customers to pay the utility for a particular service at the separate rate, or purchase the service elsewhere (competitive service).

At present in Georgia none of the gas Distributors (utilities) own or control natural gas storage facilities. In the future, the GNERC should be responsible for oversight of the following four principal storage functions:

- 1) Providing seasonal “economic” storage for core service – storage capacity used to hedge against price fluctuations.
- 2) Ensuring reliability of service for core customers – storage capacity used by the utility to supplement flowing supplies to meet its own procurement customers’ requirements during peak periods, typically during winter months.
- 3) Balancing-related storage – storage capacity used to compensate for an aggregator’s failure to supply the full quantity of gas that it is committed to provide.
- 4) Non-core firm storage – storage capacity for which, currently, the utilities are partly or wholly at-risk.

In the future, if any local gas storage facilities are constructed, GNERC will require operators to publish appropriate Rules and Regulations for the gas storage supply and retail marketing of gas from the storage facilities.

The USAID’s technical assistance program would be useful for developing the following type of comprehensive list of rules and procedures for Georgia:

- a) Regulatory Powers of GNERC
- b) Access to Transmission and Distribution System
- c) Scheduling and Dispatch of Natural Gas
- d) Balancing and Reconciliation of Volumes
- e) Quality of Supply
- f) Customer Switching Rules
- g) Licensing and Creditworthiness of Participants
- h) Transmission and LDC Rates
- i) Billing and Collections
- j) Metering Requirements
- k) Customer Protection
- l) Dispute Resolution
- m) Emergency Rules
- n) Curtailment Rules
1. Force Majeure Events

2.9.5 Assistance in Drafting Secondary Laws

[Technical Assistance Recommendation]

GNERC needs expert regulatory consultant assistance in identifying all secondary laws or by-laws for its transparent and predictable regulatory functions. GNERC has adopted a License Issuance Regulation and a Tariff Methodology Regulation with the advice and assistance of USAID's Contractor. GNERC also elaborated a procedural outline for conducting the public hearing and Administration Council meeting at which the Licenses and Tariff Methodology were considered and adopted. These were developed and implemented as short-term measures necessary to support the privatization plan.

However, for the future effectiveness of regulatory duties, GNERC needs to develop comprehensive rules and regulations that specify, govern, and control meetings of the IPP licensing procedures, tariff adjustment procedures, hearings procedures, dispute resolution and consumer complaints procedures and other formal activities of the commission. This is a significant undertaking but critical to achieving transparency, fairness and objectivity, and consumer confidence.

For purposes of this technical assistance it is sufficient to note that elaboration and adoption of comprehensive but realistic Rules and Regulations is a critical step to achieving a properly functioning regulatory body. An expert Regulatory Consultant should assist in drafting all by-laws or rules and procedures for its regulatory functional duties.

2.9.5.1 Tariff Adjustment Rules and Procedures

GNERC's current tariff adjustment rules and procedures should re-drafted to incorporate the following topics:

Procedure

- Rule 1: Filing of Petitions and Communications
- Rule 2: Admission of petition
- Rule 3: Publication and Service of Notices
- Rule 4: Intervention
- Rule 5: Reply and Rejoinder
- Rule 6: Comments and Participation
- Rule 7: Hearings by the Commission
- Rule 8: Discovery
- Rule 9: Interrogatories
- Rule 10: Rulings
- Rule 11: Transcripts
- Rule 12: Tentative Opinions
- Rule 13: Evidence
- Rule 14: Decisions by the Commission

Tariffs, Schedules and Contracts

- Rule 15: Filing of Tariffs
- Rule 16: Format of Tariffs
- Rule 17: Posting of Tariffs
- Rule 18: Notice to General Rate Changes to Customers of Licensee

Standards and Guidelines

Financial Reporting Standards

Miscellaneous

Seal of the Regulatory Commission

Inspection by Public

Confidentiality

Extension of Time

Penalty

2.9.5.2 *IPP Project Rules*

Similarly, GNERC needs to draft Rules and Procedures for IPPs.

Independent Power Producers (IPPs) are privately owned power generators that sell all or a portion of their capacity and energy to others, usually under a long-term Power Purchase Agreement (PPA). When the power purchaser serves the public, current practice is to solicit the IPP using international bidding designed to promote transparency and competition.

GNERC's rules and procedures should articulate, at a minimum, the following items:

- Request For Proposal/RFP Procedure
- Bid Evaluation Procedure
- Contract Negotiations Procedure

Because transparency is critical to the solicitation of quality bids, a fair process will need to be established in the RFP for requests for clarifications and additional information. The RFP should also outline government's plan to restructure the power sector, and any planned new regulatory framework, as well as incentives, if any, that will be offered to IPPs.

2.9.5.3 *Dispute Resolution Procedures*

According to the regulatory legislation, the GNERC has the responsibility for all energy sector related dispute resolution. We recommend the adoption of the rules and procedures for dispute resolution, including:

- *Complaints Filing Procedures*
- *Who Can File Complaints*
- *Complaints Filing Forms*

A complaint may be filed by any corporation or person, chamber of commerce, board of trade, labor organization, or any civic, commercial, mercantile, traffic, agricultural or manufacturing association or organization, or provincial government, or any body politic or municipal corporation, setting forth any act or thing done or omitted to be done by any regulated entity including any rule or charge heretofore established or fixed by or for any regulated entity, in violation, or claimed to be in violation, of any provision of law or of any order or rule of the Licensee.

Similarly, the regulatory Consultant should assist GNERC to draft all necessary by-laws and/or rules and procedures for all other functional duties.

2.9.6 Financial Auditing Capacity Development

[Technical Assistance Recommendation]

For the financial auditing of all licensees, the GNERC will require implementation procedures, instructions and forms for collection of regulated entities (Licensees) performance and operating data in the areas of: a) tariff information and related supporting financial data; b) demand forecasts; c) consumer impact data; d) license and permits data; e) compliance deviation information; f) technical and financial performance data; and g) others as required. These data reporting instructions will provide a mechanism for the collection of numeric and narrative data elements for use by the staff of the GNERC for their regulatory auditing studies and decisions by the GNERC. This section discusses technical assistance needed for developing GNERC's financial auditing capacity including identifying all data reporting requirements and the procedures for their uniform collection in an auditing process. These data reporting procedures are the essential ingredient for advancing the capabilities of the GNERC's regulatory functions. Their use will aid the regulatory program towards achieving its overall objective of providing the public with effective, accurate, dependable, comprehensive, and timely information on regulated entities. In the technical assistance implementation phase of the GNERC, the specific data reporting procedures and instructions should be developed based on the delegated regulatory functions of the GNERC.

Some of the major areas of data reporting and information submittals are outlined in the following subsections for the energy sector.

2.9.6.1 Financial Auditing

A financial audit should be done every two or three years. Often it can be done as part of the review for an application to change tariffs.

Actual on-site auditing of utility records is a very small portion of the regulatory financial review. The purpose of the regulatory audit is to provide a "spot check" to assure that financial statements provided by utilities are accurate and to furthermore ensure accuracy and reasonableness of utility practices. The audit will likely represent a very small percentage of utility transactions and records (usually less than 10 percent).

GNERC's auditors should have access to all utility (Licensees) records. This includes all financial records, financial statements, tax documents, contracts, work orders, letters, memos, etc. Utilities (Licensees) may be subject to financial review and/or audits by other sections of the government such as for taxes, financial prospectus, etc. Regulators should have access to this information and make a review of such findings as part of their examination.

USAID's technical assistance should provide guidance to GNERC in evaluating the appropriate approaches to a regulatory financial audit in Georgian country environment. Listed below are some techniques:

- 1) Review of minutes from utility board or other meetings where significant financial decisions are made. This information is useful to regulators to ensure that utilities are telling regulators the same information discussed internally. It could be useful in determining areas for further examination, e. g: cross- subsidization of a non-regulated

entity, to review records of a major financial project, or to review records in some area of the business that has had problems.

- 2) Review financial accounts for significant changes in trends. This could start with a review of all major accounts for a specified time period.
- 3) Review some records at random. A spot check of a financial record could include all aspects of a signal record. For example, start with a work order, pay-out, verification of completion, payment, etc.
- 4) Spot check utility records to review source material for material sent to regulators. Review utility records in support of a financial report or data supplied to regulators.
- 5) A regulatory financial audit can be modified if independent Certified Public Accountants, internal auditors, or other government auditors have previously audited the utility records. The regulatory auditor may examine information from such audits.
- 6) Review records to assure compliance with regulatory orders.
- 7) Review correspondence between the utility and other parties. The regulatory auditor may focus on a particular area of concern and ask to see all correspondence concerning this area.

2.9.7 GNERC HR Development Program and Staff Evaluation [Technical Assistance Recommendation]

In order for GNERC to succeed in the effective regulation of energy sector entities, its organization should be restructured to accommodate regulatory changes. It is important to develop a Human Resources program that is capable of assisting and preparing staff for the required change. Re-engineering the staffing of GNERC within the framework of its legislative mandates will enhance regulatory capacity in Georgia.

During our meetings with the GNERC, the management requested assistance to develop a methodology to assess personnel and skills for promotion and career path development. Accordingly, we recommend that during the next phase of USAID's training program for GNERC, a HR Development Consultant should be provided to develop the methodology to assess personnel and skills. Moreover, in order to facilitate the basis of success of the HR development program, HR advisory services should be provided for establishing the Human Resources Database in addition to the methodology set forth to evaluate employee performance. This will enable GNERC to carry out the employee assessments and the subsequent tasks and to develop a healthy basis of Human Resources Strategic Planning.

In order to determine the resources (staff, skills) that are presently available in existing functional units, a thorough and accurate employee database for employees, down to the 3rd level, is to be prepared and completed by GNERC Administration. The employee database is deemed indispensable to be able to obtain data and information regarding present manager-level-employees' academic background, years of experience, skills and traits, and other related information necessary to obtain a complete and accurate picture of the GNERC human resources status.

Accordingly, GNERC Administration will be required to rebuild their current employee database to include all necessary information. To rebuild the employee database, GNERC Administration will be obliged to develop, update, and complete employee files for all GNERC employees. The employee file must be supported with evidences for all included data and information. GNERC typical employee file must contain, but not be limited to, the following supported employee information:

2.9.7.1 Employee Evaluation Methodology and Criteria

The USAID's HR expert will assist GNERC in developing the basic evaluation criteria, as an example, in the following areas:

- Academic Background
- Minimum Experience - Eligibility Clause
- Relevant Work Experience

2.9.7.2 General Training Program

The following is a list of various general training programs which can be provided under the USAID's technical assistance to GNERC and other three energy sector entities:

2.9.7.3 Negotiating Energy Sector-Related Contracts

- Improvement of negotiating skills

2.9.7.4 Financial Management Training

- Energy and Power Sector Financing Strategies;
- Financial spreadsheet modeling principles;
- Cost calculations and tariff rate-setting methods in the energy sector;
- Accounting and reporting in energy sector companies.

2.9.7.5 Analytical Team Training

- Energy sector research methodology
- Global Energy Market Monitoring

2.9.7.6 Training on Environmental Issues

- EIA and SIA methodology
- Energy, environment and sustainable development strategy analysis

2.9.7.7 Training for Lawyers

- Energy Sector Procurements
- Legal framework for oil and gas operations
- Construction law with the application on energy sector.

2.9.7.8 Training for IT

- Development of presentations for the speeches delivered on the international conferences, including 3D presentations
- Data Access Resources – development and modification
- New Technologies in Network Administration

2.9.8 GNERC's Administrative Procedures **[Technical Assistance Recommendation]**

Until now there have been no special published rules governing the meeting of the Administration Council of GNERC.

Of course all interested parties involved in a public hearing process must know in advance about the time and place of GNERC's public hearing meetings.

There are no special procedures stating the term when the public hearing related to any subject should be held. The time of all public hearings held until now was established by the Administration Division of GNERC, whenever it was necessary to hold the respective public hearings.

Public notices should be used to promulgate the decisions of GNERC Administration Division regarding the tariffs, licenses, license amendments, and other matters. They should be deemed to be in force after they are published in the public notice.

Complaints are registered in the same record as other entry letters and documents. There is not an established term to respond for a complaint. The responses to complaints are prepared by the staff, checked by one of the lawyers, and sent out after they are signed by one of the Directors.

For purposes of GNERC's institutional credibility it is sufficient to note that elaboration and adoption of comprehensive but realistic Administrative Rules and Regulations is a critical step to achieving a properly functioning regulatory body.

GNERC will require expert advice in developing the following Administrative Procedures:

- General Procedures of the Commission for:
 - Code of Ethics;
 - Notice of Agenda to Public and Regulated entities;
 - Procedures for Commission Meetings;
 - Procedures for Initiation of Regulatory Proceedings;
 - Petition for Modification of Regulatory Decisions;
 - Extension of Time limits;
 - Publication of Decision;
- Interventions Procedures:
 - Petitions;
 - Objections / answers;
 - Grant or denial;
 - Participation without intervention; etc.
- Hearings or Commission's Proceedings
 - General Provisions;
 - Simplified procedure;
 - Initial notice for hearing;

- Participation by staff;
 - Pre-hearing Conferences;
 - Adjournments;
 - Discovery;
 - Subpoenas; service; failure to comply with subpoenas;
 - Summary Depositions;
 - Evidence; documents and exhibits;
 - Evidence; testimony in written form;
 - Settlement Procedures;
 - Oral argument and briefs; etc.
- Complaints
 - Complaints; limited matters; initial complaint;
 - Informal complaints;
 - Formal Complaints; content;
 - Formal complaints; examination; rejection;
 - Formal complaints; service; offers of relief; answers;
 - Formal complaints; burden of proof.
 - Dispute Resolution Procedures;
 - Sanctions and Enforcement Procedures;
 - Information and Data Submittal Procedures
 - Other Internal Procedures such as Internal Auditing; Annual Report; Records
 - Files and Public Document Center (Docket).
 - Procedures for processing and resolving regulatory matters;
 - Types of Dockets and Cases;
 - General Administrative Procedures;
 - Procedures for meeting of the Consumer Council (if one is established)
 - Procedures of conducting Public Hearings
 - Procedures for License applications;
 - Procedures for Motion to Compel
 - Code of Conduct
 - Financial Conflicts
 - *Ex parte* Communication
 - Reporting requirements
 - Types of Dockets and Cases – Rule making dockets; complaint dockets, etc.

2.9.9 Performance Monitoring of GWEM

[Technical Assistance Recommendation]

The Georgian Wholesale Electricity Market (GWEM) was established by statute of the Electricity and Natural Gas Law of 1997 to ensure settlement of accounts between the wholesalers and buyers. The specific responsibilities of GWEM under the Market Rules are:

- purchase all electricity pursuant to the arrangements set out in the Market Rules.
- sell electric energy according to the mechanism described in the Market Rules to Suppliers at the Supplier Delivery Point, incorporating the costs of Ancillary and High Voltage Network Service.

The premises of the main principles of the Wholesale Market in Georgia are:

- Independence;
- Economic reasonableness and fairness;
- Guaranteed and timely settlement of accounts;
- Equality of Market members; and
- Transparency.

GWEM is not operating the way it was designed. It was designed as a market in which the generating plants would bid into a pool, and they would be dispatched according to economic dispatch. Because of the lack of cash and the resulting large fuel and delinquent billing and collection debts, there is such a scarcity of fuel that the generating plants are dispatched by fuel availability, with no competing bids for operation. The Enguri HPP management informed us that their collection from the GWEM is less than 20% of delivered energy. Nearly all of the rules and procedures of the Wholesale Market settlement are bypassed by orders from the Ministry of Fuel and Energy and the Ministry of Finance for past debts repayment to Russian suppliers (for fuel and electricity imports).

There is no independence of the GWEM operation. Out of 12 Board Members, 9 are voting members; 6 of them are from the state-owned Joint Stock Companies and tend to vote as a block. Accordingly, there have been no Board decisions to improve transparency or proper function of the GWEM. We were unable to identify anybody in the GNERC responsible for the oversight of GWEM Board decisions. GNERC is the ultimate authority to approve or disapprove Board's decisions, but appears that the GNERC is not exercising its legal rights in the operation GWEM.

The retail tariffs now in use have almost no relation to the methodology necessary to support individual unbundled prices for each component of service and to properly incorporate wholesale market prices. Wholesale prices are often negotiated based on a desire for minimizing tax payments by the generators. To support the financial performance of GWEM, tariff reform will be required so that the tariff methodology is transparent and the levels of tariffs are such that they recover the costs of doing business. Otherwise, the present strategic investor, AES Telasi, will not be able to continue its operation, which in turn will discourage other potential strategic investors in the sector.

GNERC has oversight responsibility of GWEM performance. All orders of GWEM's Board of Directors must be approved by GNERC.

At present, barriers to GWEM Management contract Performance are:

- failure of the Government (or GNERC) to create a "re-establishment Period" for the present GWEM Management Contract consortium;
- non-transparent operation of the GWEM banking system: In March, the VAT Department took 1,326,835 GEL (about \$600,000) from GWEM bank accounts, which represented 96.6% of all revenue received in March, when the USAID Winter Heat Program Funds were received. We were informed that most of these funds were used to

pay old Russian debts for energy imports. It should be noted that the VAT Department also took 802,804 GEL in January and 546,548 GEL in February.

- Independence of the GWEM Management Contract consortium: The independence of the consortium is under challenge every day from current actions taken by others or because of previous decisions or actions. Some of the influences are:
 - a) numerous Presidential Decrees involving GWEM, which in many cases create deviations from the Market Rules and GWEM's mandate;
 - b) special agreements for specific customers or suppliers to circumvent rules regarding the equitable treatment of members;
 - c) GNERC's non-approval of the "grid code" technical standards has resulted in a significant lack of direction for the Settlement Department and others;
 - d) GWEM's Board decisions which are not within the current Market Rules; and
 - e) general support from the Ministry of Fuel and Energy, GNERC, etc. for contracts and agreements that compromise GWEM's ability to treat members equitably and that are outside their mandate and the Market Rules.

One very critical example of the independence compromise is the Tkibuli Power Project contract signed by the previous GWEM General Director(s), which could have a potentially devastating impact on the future of the organization. Some of the conditions in this contract include a 4.5 cent per kWh rate, a capacity charge of \$30 per KW, and a requirement for GWEM to purchase the plant under certain adverse conditions. These are only three of many conditions which make this contract something the GWEM cannot be a party to under the Market Rules. Also, under the Market Rules, GWEM cannot have exclusivity agreements with individual generators. The only way this project could be financed is with some agreement to give it priority over payments, which would have a devastating effect on other generators. The logic behind the plant is that Georgia needs thermal capacity in winter when hydro capacity is reduced, and using domestic coal as a fuel supply would reduce dependence on imported thermal fuel. Georgia must have an Integrated Resource Plan to evaluate its options and make provisions for the recovery of their costs through the tariffs and market system. The GWEM's structure and rules and fiduciary responsibilities cannot be overridden by whim for individual projects.

The Energy Sector has suffered financial losses in almost every city and district of Georgia. A disorganized, weak, unsupervised settlement system does not allow receiving funds from local budgets. In fact, funds actually allocated from cities and districts, which belong to the generators and big energy companies, have been retained locally rather than risk being lost during their handling within the market.

The USAID should provide technical assistance to GNERC to improve its regulatory oversight capacity of GWEM and also resolve some of the issues discussed above. The GNERC should insulate GWEM from direct interventions by the State-owned corporations.

2.9.10 Safety and Quality of Service Monitoring [Technical Assistance Recommendation]

All utilities' overall tariffs include not only the rates (price structure), but also the rules and regulations for the quality of service. Within these rules and regulations, approved and adopted by the Regulatory Commission (GNERC), specific instructions are provided regarding the quality of electrical and gas services that should be supplied by the utilities. However, at present,

GNERC does not have staff capability for monitoring and enforcing the quality of service for electricity and gas use. Additionally, present legislation does not require GNERC to provide any safety guidelines or regulatory approval for major construction of generating stations, electrical and gas transmission lines, fire safety, hazardous substances, or environmental emissions.

All regulated entities must abide by certain safety codes and standards. Public safety is a significant concern – improper connections can cause fires and electrocutions. This is a particular concern in Georgia, where piping and electrical installations have been done in an often ramshackle and improvised fashion without regard to safety or durability. The huge number of illegal gas taps and illegal electric connections compound the public risk. Correcting all the existing problems will take time and resources, but the problem cannot be allowed to become worse through failure to make new installations to a rigid standard. GNERC should provide standards that apply to all types of electrical and gas works for specific applications.

In Georgia, for both the electricity and gas sectors, GNERD should develop safety codes comparable to European and North American standards. As an example, the Gas Code establishes minimum regulations for fuel gas systems and gas-fired appliances using prescriptive and performance-related provisions. This code should apply to the installation of fuel gas piping systems, fuel gas utilization equipment, and related accessories. At a minimum, GNERC's Gas Code should address the following topics:

- Regulatory Authority;
- Structural Safety;
- Appliance Location;
- Combustion, Ventilation and Dilution Air;
- Installation;
- Condensate Disposal;
- Access and Service Space;
- Clearance Reduction;
- Gas Piping Installations Safety Standards;
- Chimneys and Vents Standards; and
- Specific Appliances Standards.

Similarly, in the electrical sector, GNERC needs to adopt Standards for various functions. As an example, GNERC should publish Rules for Overhead Electric Line Construction. These rules will apply to all overhead electrical supply lines that come within the jurisdiction of GNERC for permits or licensing. At a minimum, such standards should establish the regulatory compliance requirements for:

- Construction and re-construction of power lines for: a) service drops; b) conductor size; etc.; and
- Maintenance of lines – all lines and portions of lines should be maintained in such condition as to provide public safety.

For both the gas and electric sector, regulatory safety standards are not intended as complete construction specifications, but embody only the requirements that are most important from the standpoint of safety and service.

USAID's technical assistance can be provided to develop Safety Standards for both the electricity and gas sectors. However, this will also require amendment of the Electricity and Gas Law to give GNERC authority to enforce Safety Standards.

2.9.11 Training and Professional Development Program [Technical Assistance Recommendation]

GNERC needs help to develop its own professional training program and maintain training and career development plans for its staff. Spot training programs provided by USAID and other assistance programs could fill gaps in the training resources and help round out a comprehensive plan. In the future, outside agencies should not have to analyze GNERC's needs – they should be shown the needs and the gaps to be filled in GNERC's own program.

During the review of GNERC's regulatory activities, the assessment team also focused on the high priority issues of training and professional development needs for effective regulatory performance. On the basis of discussions with the GNERC, we conclude that GNERC presently does not have a policy that governs a staff training and professional development program to ensure the availability of a sufficient number of qualified persons to fill all the vacancies in key managerial and professional positions. GNERC has not had the budgetary capability to fund its own training activities. Any GNERC institutional capacity development program must address the overall financial position in such a manner that funds can be dedicated to training.

The interviews also indicated that GNERC has not adopted any formal process or procedure to address succession and replacement in its career planning objectives. Due to the budgetary constraints, GNERC appears to be assuming that the regulatory functions that are essential today will continue to be essential although its jurisdiction is expanding.

A systematic and comprehensive approach to training will benefit GNERC's regulatory functions in two ways. First, a training program will enable GNERC to provide more effective regulatory services in the short run. Second, the GNERC staff will be able to adapt its own training program to changing needs and to changing staffing levels. A formal staff training or human resource development program will benefit GNERC in the following ways:

Most of the GNERC senior staff agreed that the regulatory functions under their jurisdiction should operate at higher performance levels. They could improve performance by incorporating proper training programs, but may not be able to do so for the following reasons:

Physical Factors:

- Staff members do not have adequate computing tools (i.e., computer hardware and software), and consequently the processing of regulatory filings is slow and takes more man-hours.
- The GNERC lacks adequate measuring instruments and other tools for the enforcement of safety standards.

Institutional and Human Factors:

- Staff does not have adequate academic backgrounds or training.
- There are not enough staff members to enforce all regulations effectively.

- Regulatory functional duties are not well defined.
- Utilities are technically and politically stronger. Enforcement of a regulatory compliance plan will inevitably bring GNERC staff into conflict with the staff of regulated entities.

This recommendation deals with GNERC's need for a training and professional development program, not with the topics and substance of training activities within the program. These are presented in subsections 2.9.14 and 2.9.15 below.

2.9.12 Consumers' Bill of Rights

[Technical Assistance Recommendation]

USAID's Regulatory Advisor should assist either the GNERC or the Consumer Council, if it is established in Georgia, in drafting a Consumers' Bill of Rights. This Bill of Rights may include only electricity and gas supplies or it may incorporate all utility services, including telecommunication, water, solid waste and sanitation. The regulatory oversight of the GNERC will cover the following topics:

- 1) Connection to the Electricity, Gas, Water Supply, and Sanitation Services
 - Application for connection for utility service;
 - Connection to utility supply;
 - Extension to end at boundary of property;
 - Cost of extension;
 - Payment of deposits;
 - Consequence of failure to complete payment;
 - Bank guarantee required in certain cases;
 - Liability for cost of extension in the event of change of the ownership of property;
 - Authority of owner required for connection of other persons within 5 years of extension.
- 2) Regulation of the Supply of Utility services
 - Interpretation;
 - Utility (electricity, gas, water, etc.) Charges;
 - Meter Readings;
 - Objections to Accounts;
 - Disconnection of Utility Supply in cases of Non-payment of Account;
 - Ownership and responsibility for maintenance of apparatus;
 - Offences;
 - Conditions for which the Utility is not liable for failure to supply;
 - Disconnection of supply from premises vacated without notice;
 - Examination of installation;
 - Regulations by Regulatory Agency

2.9.13 National Integrated Resource Plan [Technical Assistance Recommendation]

Stakeholders in the energy sector are not involved in a cooperative planning process. Various parties are initiating their own projects and policies at each other's expense. Georgia desperately needs an Integrated Resource Plan to determine its consensual need for new capacity, foreign investment, private power, rehabilitation and modernization, conservation, energy service companies, reserve margins, fuel diversity, and many other considerations. This process should be hosted and supervised by GNERC, with participation by the MoFE, MoSP, and MoF, along with all other energy sector companies.

The National Integrated Resource Plan for electric power should consist of

- sets of demand projections based on econometric and end-use forecasting;
- various load-growth scenarios dependent on internal and external factors;
- determination of cross-correlation and elasticity factors;
- guidelines for selection of new generating and transmission facilities, including
 - current and projected technology
 - fuel, technology, locational, and size diversity
 - externality factors for domestic fuel, equipment, and financing
 - externality factors for environmental protection
 - system protection
 - reserve margin
 - reactive load and frequency support
 - reliability and quality of service
 - contingency planning and black start capability
 - effect on tariffs
 - renewable resources
 - rehabilitation and renovation of existing units
 - repowering and capacity augmentation
 - national security
- least-cost generation supply scenarios
- unit retirement and replacement schedules
- alternatives to generation
 - Demand-Side Management
 - conservation
 - energy efficiency and utilization programs
- tariff forecasts for each scenario

Due to Georgia's extreme financial situation, the National Integrated Resource Plan should also include consensual plans to preserve existing resources, make prudent judgments on cost-cutting measures, and maximize the value of national assets that may be privatized.

2.9.14 Computer Equipment Assistance [Technical Assistance Recommendation]

Many GNERC workgroups do not have computers needed to perform their functions properly, and only two computers now have Internet access. GNERC needs a file server, UPS system, and approximately 12 current-generation desktop workstations, and 3 laptop computers for field work, all within the short term. Over a longer term, every management professional needs to

have or be able to share readily a computer with Internet access, requiring an additional 32 desktop units.

2.9.15 Audio-visual and recording equipment for public hearings **[Technical Assistance Recommendation]**

GNERC needs to be able to record its public hearings and public information releases. This is considered medium-priority now, but will increase in priority if GNERC is able to establish a Consumer Advocacy program, and should be coupled to progress toward consumer representation.

2.9.16 Specific Training Programs for GNERC **[Training Recommendation]**

GNERC needs training specific to its functions in the following areas:

- a) International practice in rate designs for electricity and natural gas services;
- b) Energy planning and policy;
- c) Georgian energy law, economics, and management;
- d) The impact of energy conservation, standards and codes;
- e) Environmental laws and regulations;
- f) Establishing a consumer advocacy program;
- g) Renewable energy options available to Georgia;
- h) Project financing options;
- i) How to conduct utility management audits; and
- j) How to supervise the GWEM.

These specific training needs are summarized in [Section 7](#). These training events should be designed specifically for GNERC, and participation in these training events should be primarily for GNERC staff, though some cross-training is recommended with the regulated utilities and GWEM.

2.9.17 General Utility Management Training Program for GNERC **[Training Recommendation]**

GNERC staff should participate with other energy sector institutions in a General Utility Management Training Program as outlined in the Training Needs Analysis in [Section 6](#). These needs are also summarized in [Section 7](#).

Section 3: Assessment of SAROG's Regulatory Functions

3.1 Introduction

3.1.1 Background

The State Oil Company, Saknavtobi – Georgian Oil Company (GOC), was established in 1929 for the production and exploration of oil and gas resources in Georgia. During the 1930-1973 period, oil production in Georgia was at very modest levels. Because of the early discovery of oil resources, Georgia has a somewhat higher level of oil and gas sector development infrastructure than many NIS countries in region. In 1974, the first oil and gas fields were discovered near Tbilisi. During the Soviet era (1970s and 1980s), development of these oil fields rapidly increased and oil production reached 3.3 million tons annually by 1984. However, average annual output declined to about 180 thousand tons during the 1985-1991 period. Since 1995, Georgian oil production declined further due to internal conflicts; overall production capacity further deteriorated due to the lack of adequate funds for investment and maintenance.

On October 9th, 1995, it was announced that Georgia, along with Russia, would be one of two transit countries for the first phase of crude oil transportation from the Caspian Sea by the Azerbaijan International Operating Company (AIOC), a consortium of 12 oil companies. The Georgian International Oil Company (GOIC) was created on November 11, 1995 as a state-owned enterprise to act as AIOC's counterpart in Georgia. Both state enterprises, GOC and GOIC have gained some experience in managing oil and gas sector issues through the implementation of the Baku-Supsa pipeline which transports crude oil from Azerbaijan to the Georgian terminal at Supsa and through the transit of gas from Russia to Armenia.

There are 14 oil fields; one gas field and one condensate field have been discovered thus far in Georgia. The initial total estimate of gas resources in Georgia is 98 billion cubic meters. Natural gas production started in Georgia in the late 1980s and so far only 0.3 billion cubic meters of natural gas have been produced. At present, the GoG or Saknavtobi is a member of the following four joint-venture projects for various different blocks:

1. Georgia – British Oil Company
2. Georgia – Swiss JV – Ioris Veli
3. Georgia – British JV – Kakheti Oil
4. Georgia – American JV- Frontiera Eastern Georgia.

The GOG is also in the process of tendering two off-shore blocks for exploration and development to foreign companies.

3.1.2 Role of SAROG

As in many developed and developing countries, particularly those that are energy supply constrained, setting production levels without government influence or quick payout considerations has proved difficult. Rules and regulations governing the oil and gas sector in general, and field operating practices in particular, are especially poorly defined and inadequately implemented by state-owned companies. This is a major obstacle to sound field

management. The GoG has successfully addressed this problem by establishing an independent agency whose main role is to regulate the oil and gas sector independent of any political interference and separate from any government ministry or other politically oriented organization. SAROG's main function is to be an efficient tool for separating resource ownership from regulation. Some countries entrust both ownership and regulations to their state companies, which has proved to be a problem for those countries as they open up their petroleum sector to private-sector participation.

In the case of the oil and gas sector of Georgia, the regulatory role of SAROG is approving, monitoring and regulating the physical aspects of exploration, development and production of oil and gas. SAROG also deals with gas conservation issues, ensures the integrity of oil and gas field development plans, ensures that hydrocarbon resources are maximized using sound technical and economic principles, and takes into account safety and environmental practices established by the international industry. Monitoring oil and gas production volumes is one of the first tasks of SAROG. In this regard, SAROG is expected to evaluate each field separately and to set an appropriate production rate by taking into account the available reserves, the ultimate recovery potential, the reservoir depletion plan, the presence of an active water drive, the potential for reservoir damage, the production capability of the wells and other reservoir characteristics and gas volumetric displacement parameters. A maximum well rate limitation (MWRL) is established for fields where SAROG believes that reservoir damage or gas losses into the reservoir may result from excessive production flow rates. MWRL are usually set annually with the view of achieving a maximum oil and gas recovery from the reservoirs taking into account specific reservoir parameters such as formation pressure, temperature, compressibility, porosity, permeability, recovery life, and other relevant characteristics derived from well production tests. SAROG could also specify maximum gas flaring limits to accommodate genuine mechanical breakdowns in gas processing plants, field power failures, and production testing of offset wells. To encourage field preventive maintenance, penalties should be applied for flaring gas beyond the set limits.

Other Roles for SAROG: At present, SAROG also acts as an instrument of GoG policy in issuing petroleum exploration, development and production licenses. It prepares petroleum licensing promotional material and data packages, determines bidding documents, and conditions and administers access to technical data, receives and evaluates proposals, negotiates and executes agreements, and checks that the licensee conforms to the license conditions. With regard to monitoring and regulating the petroleum operations, while the operational decision-making is the responsibility of the operating companies, SAROG needs to develop rules and regulations establishing minimum standards for well drilling operations, production, gas processing and transmission, water disposal operations and other technical field practices. Furthermore, SAROG also intends to develop and enforce oil and gas field operating safety codes covering all aspects of petroleum exploration, development, production, processing, transmission and marketing. Another important role for SAROG is monitoring, auditing production, oil and gas revenues, royalties, taxes, and other Government's financial interests in both Georgian and foreign operating companies. SAROG also deals with oil- and gas-related pricing and costing, including review of operating companies' investment programs for economic regulation.

3.2 USAID's Technical Assistance

USAID has been providing extensive institutional development support services to the GOG. The USAID contractor has assisted in the implementation of a modern Georgian Law on Oil and

Gas in 1997. The enabling Articles for the establishment of the State Agency for Regulation of Oil and Gas Resources are included in Chapter II of the oil and gas law. The primary regulatory responsibility of SAROG is for regulating upstream activities of oil and gas sectors. During the last two years, SAROG's organization, management and staffing has gone through significant institutional capacity development activities. The USAID institutional capacity building support has included the following areas:

- a) Legal/regulatory reform and development – Draft and final legislation/regulations on Refining, LPG and Internal Pipelines
- b) Implementation of Law on Oil and Gas
- c) SAROG's institutional capacity building program in the following areas:
 - Training Programs/Seminars on Implementation of the Oil and Gas Regulations (OGR);
 - Draft/Final Internal Guidelines for SAROG for Implementation of the OGR;
 - Final Application and Report Templates;
 - Efficient Use of Internet Tools for Regulatory Research;
 - Development and Adoption of SAROG Strategic Plan;
 - Periodic Contract Negotiation Support and Reporting;
 - Draft Pro-forma Oil and Gas Agreements;
 - Procurement of Office Equipment for SAROG;
 - Final Internal Guidelines for Tender Procedures - Training on Tender Process, and Summary Report on Tender Results;
 - Training Support for GIC in Management Techniques;
 - Training of GIOC Employees in Pipeline Operations and Monitoring;
 - English Language Training, Data Acquisition and Improved Administration;
 - Financial Audit Training;
 - Final Oilfield Inspection Procedures, Prioritized Inspection Plan, Environmental, Health, and Safety Oil and Gas Training; and
 - Database Training
- d) Advisory services in areas of Restructuring and Policy Reform in areas of:
 - Memoranda on Specific Matters as Required and Other Analysis, such as Tariff/Financial Modeling
 - Recommendations for the Restructuring of Saknavtobi
 - Support to GIOC for the Main Export Pipeline (MEP) and the Shah-Deniz Pipeline and to GIC for the North-South Pipeline

3.3 Oil and Gas Sector Issues

Large investments in the oil and gas sector exploration, oil and gas field development and transit pipelines by the private sector give rise to many complex fiscal, environmental, social, political, legal and institutional issues for the host government. Georgia has gained some experience in managing such issues through six years of implementation of the Baku-Supsa early oil pipeline (which transports crude oil from Azerbaijan to the Georgian terminal of Supsa) and through the transit of gas from Russia to Armenia. However, the new agreements coming into place impose greater obligations on the Government than the existing arrangements, and do so within a more complex environment than prevailed in the past. New framework legislation has been adopted but is untested in application, geopolitical competition over Caspian resources has intensified, synergies between oil and gas transit has emerged, land ownership has become more dispersed through privatization, and civil society's awareness of pipeline issues has developed. These

challenges and opportunities are testing the State's ability to coordinate its agencies in fulfilling its responsibilities to investors and to its citizens.

The main regulatory issues to be addressed by SAROG are how to enhance the institutional capacity of its regulatory oversight of upstream and to extend down-stream activities in the areas of:

a) Institutional and Structural Reform

Many other countries (such as Argentina, Peru, and Bolivia) have considered a wide range of objectives for restructuring their hydrocarbon sub-sectors, including attracting capital, technology, and management skills; considerably reducing the role of the state as an entrepreneur in the sector while strengthening its role as policymaker and regulator; maintaining government revenues from the sector; and providing access to capital markets.

b) The Upstream Sub-sector

The upstream initiatives proposed by the GoG policy are strongly pro-privatization, with the role of the Government limited to monitoring and regulating. The GoG's Oil and Gas enterprises must take advantage of the financial and technological strengths of the international oil industry in order to increase its oil and gas reserves. While these policies are sound, GoG must have institutional capability for regulating all upstream activities.

c) Production Sharing Agreements (PSA)

Georgia's production sharing contracts are among the best in the world, but recent withdrawal by a few international oil companies needs to be re-examined by the GoG and SAROG. If the terms offered to international companies were indeed attractive, many more international firms would be exploring and producing in Georgia. The problem may lie with the choice of blocks offered to international oil companies, with poor data, and with the process of negotiations and rectification - all issues that are need to be addressed by SAROG. Given the concerns and the lack of success in exploration, to date, Georgia should seriously consider reevaluating the quality of acreage it offers to international oil companies.

d) The Downstream Sub-sector

The downstream refining and marketing sub-sector is not properly regulated by the Government. If the new amendments of Oil and Gas on Oil Refinery regulation are passed by the Parliament, SAROG will have full regulatory oversight of oil refining and oil products pricing activities. At present there are over 25 small refineries in Georgia, evidently processing black market or illegally imported crude oil not regulated (or taxed) by the Government.

e) Gas Transmission and Distribution

Gas transmission and distribution in Georgia is dominated by four major, interrelated, problems: outmoded design and operation techniques, poor conditions of the networks, inefficient use of gas, and inappropriate tariff policy.

Georgian gas transmission and distribution networks observe four major aspects: i) gas in the residential and commercial sector is mostly limited to cooking; ii) households and most commercial consumers are not metered; iii) network architecture includes three levels of

pressure, which means that most consumers are supplied through low pressure networks; and (iv) steel is by far the predominant material used for pipes.

All four aspects have their roots in the economic and social organization that ruled every activity in the former Soviet society over decades. When the network was designed, the gas network architecture was well suited for then available technology and for the gas needs in Soviet cities. Steel was the leading material and, because gas was meant to be used mainly for cooking, the capacity of the low pressure (LP) networks was sufficient; higher capacity, medium-pressure networks were not deemed necessary. The Georgian gas industry should now embark on modern design and operation technologies that will enable it to: a) enhance overall gas transmission and distribution safety; b) decrease the cost of both the construction and operation of gas networks, and c) improve the overall efficiency of the gas networks. To fulfill these objectives implies that medium-pressure should be substituted progressively for low-pressure, and that polyethylene should be substituted for steel through the tubing of old LP pipes as well as network extensions.

f) Pipeline corrosion and network rehabilitation: Steel pipe corrosion is the cause of almost all gas leakages in the transmission and distribution networks. It threatens the life of people and gas workers and disrupts gas supply to the consumers. Electric stray currents that pierce the pipe coating cause corrosion over years. In Georgia, gas transmission and distribution networks suffer from both lack of comprehensive pipe protection and poor efficiency of FSU-made protection devices, where installed. Network rehabilitation should be done through two sets of measures that include: a) replacement of faulty steel pipe sections by polyethylene pipes, either by internal tubing or by polyethylene-for-steel substitution, and b) replacement of current protection devices by effective devices.

g) Oil and Gas Sector Activities – Coordinating Issues

The GoG needs assistance to coordinate the activities of SAROG, GIOC, GGIC, Saknavtobi, the Ministry of Fuel and Energy, the Ministry of State Properties, and the Ministry of Environment most effectively, and to ensure those agencies collaborate efficiently with multiple other state agencies. SAROG has responsibilities to oversee the objective of interagency coordination. The increasingly close relationship between oil and gas transit and exploration issues means that coordination between GIOC and GGIC is of paramount importance, as well as with the Ministry of Environment.

3.4 Government Strategy

The Government's strategy for dealing with the above challenges has centered on clearly designating key agencies responsible for coordination, and strengthening their capacity. The GOG has implemented SAROG for all upstream regulatory oversights of the oil and gas sector. For oil pipeline coordination, the key agency is the Georgian International Oil Corporation (GIOC), and for gas pipelines, the Georgian Gas International Corporation (GGIC). Multiple government agencies are involved in transit pipelines, most notably the Ministries of Environment and of Finance. The Government has undertaken a major donor mobilization effort to support institution building for interfacing with private investors in pipelines, and with the public over pipeline-related issues.

Refinery Strategy – the Strategy Agency has yet to develop a Government policy and strategy on oil refinery activities in Georgia. However, the government officials interviewed believe that the private sector should be permitted to build new refineries that compete with both existing

refineries and with imports of petroleum products by independent third parties. Analysis of the marine terminal and storage facilities for crude oil and refined products is necessary to ensure that their ownership (and the ownership of new facilities) does not constrain the development of an open and competitive market. It is possible that some of these facilities may need to be operated as common carriers or common storage to facilitate third-party access. The serious constraints on available port facilities are likely to be a source of future problems as the import requirement increases. It should be a long-term priority for the Government to take steps to remove these constraints before they result in massive supply bottlenecks.

3.5 Regulatory Functions of SAROG

In the Georgian Law on Oil and Gas, regulatory functions of SAROG are articulated as follows:

- a) Selection of areas to be offered to Investors for the conduct of Oil and Gas Operations, following consultations with relevant state bodies; making decisions regarding form of offering (tender or auction) of areas and form of agreement.*
- b) Development of rules and terms for tenders and auctions for awarding to the winner the Areas offered for Oil and Gas Operations to an Investor.*
- c) Organization, of tenders and auctions, and awarding of winners in respect of Areas offered to an Investor for Oil and Gas Operations.*
- d) Preparation, of all agreements, conduct of negotiations, and signing of agreements on behalf of the State. In the process of negotiations and preparation of an Agreement, the Agency has a right to request, and receive, assistance from any governmental body, state organization and enterprise.*
- e) Issuance of an appropriate licenses to an Investors to conduct Oil and Gas Operations, on behalf of the State; approval and the issuance or guaranteeing the issuance of all other authorizations, allotments, permits and, certificates. Upon receipt of a notice from SAROG for Regulation of Oil and Gas Resources, every State bodies of Georgia, within the scope of its competence, is obliged to prepare and transfer to the Agency the requested documents.*
- f) Supervision and control of implementation of provisions and activities provided for in Agreements and License for the Usage of Oil & Gas Resources issued under the Law. Ensuring of conditions for an Investor to carry out responsibilities created under the Agreement and License.*
- g) Creation and management of a centralized data bank for all data and information regarding Oil and Gas Resources and Operations in Georgia (collection, systematization, analysis and storage of information and data).*
- h) The issuing of normative acts, required to establish a non-discriminatory, legal environment for the purpose of efficient implementation of Oil and Gas Operations in consideration of the market principles and the State interests.*
- i) The delegation of all operational and commercial responsibilities defined by Agreements (except delegation of regulatory functions) to the National Oil*

Company, until the State is the holder of this company or holds more than 75% of its shares; the supervision and control of implementation of all operational and commercial responsibilities, defined by agreements, and delegated to the National Oil Company.

- J) Defining and managing regulation fees that will equal to the marginal amount in accordance with the legislation of Georgia in order to prepare all necessary permits for investor to conduct oil & gas operations, conduct necessary expertise, develop the material-technical base of the Agency, financially encourage the employees;*
- k) During the performance of the functions defined by the Art.8.1, the Agency shall observe the principle of transparency in the process of the development of auction and tender terms and conditions the Agency shall conduct public hearings, approve the terms and conditions after the public hearings; publish an annual report on performed activities, etc. “*

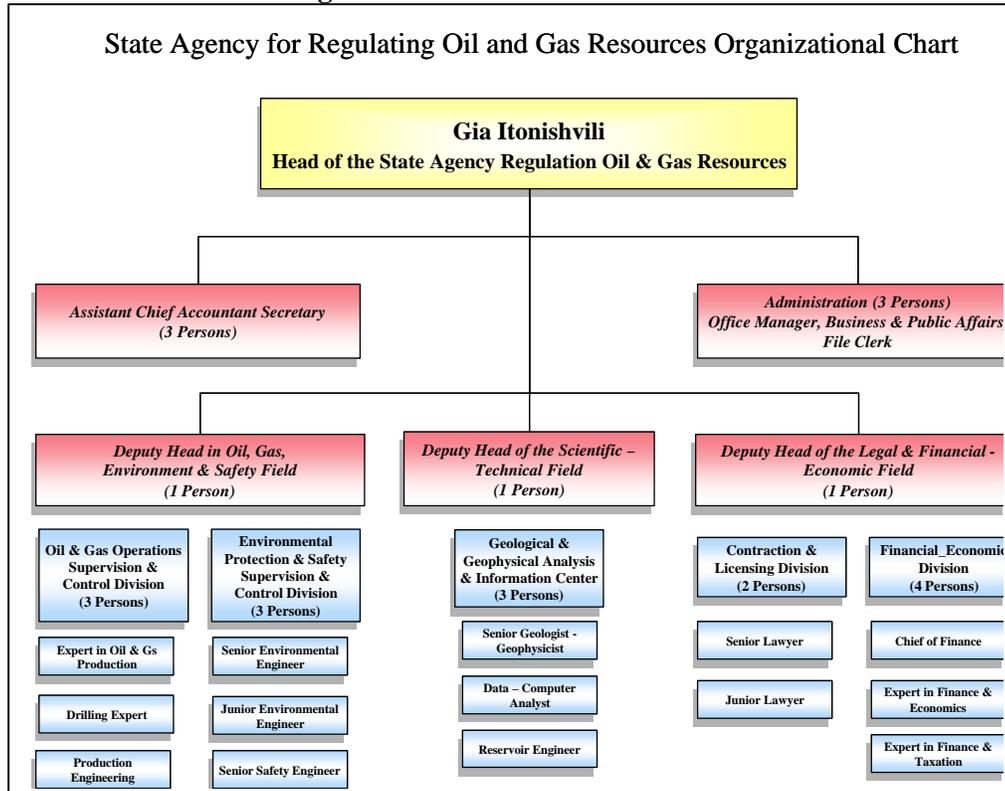
Inspection and Enforcement

In order to identify compatibility of the conducted activities with the license terms, SAROG is authorized to check the Plant in the working process and impose administrative sanctions over the license holder for violation of license terms, according to the legal acts of SAROG and amendments of Oil and Gas law. Additionally, if the Oil Refinery law is approved by the Parliament, SAROG will have full regulatory oversight of all oil refineries in Georgia.

3.6 Regulatory Capacity Assessment

SAROG's organizational chart is shown in **Figure 3.1**. The key staff needed to regulate the oil and gas sector, except oil refinery regulation, are already in position. However, two issues will require proper attention: a) specific allocation of in-line regulatory positions in the re-organized organizational structure based on the new legislative mandates; and b) readjustment /addition of current number of personnel to a level compatible with operational requirements.

Figure 3.1
Organizational Structure of SAROG



SAROG has limited capacity to support Saknavtobi and GIOC in the implementation of each HGA and PSA and to support negotiations for future oil and gas transit agreements. In the environmental advisory service area, SAROG is limited to providing support "as needed" to the Government's agencies GIOC and GGIC for negotiations pertaining to the HGAs for Oil and Gas PSA and Transit or to other related agreements. SAROG needs greater staffing and regulatory capacity in the following areas:

a) Interpretation of Seismic Survey Data

The seismic surveys to be carried out under the various PSAs delineate the extent of the oil and gas fields and minimize the risks of drilling dry development wells. The process requires advanced data acquisition, processing, and interpretation equipment and technology. SAROG's technical staff should have the technical knowledge to interpret concessionaires' seismic data.

2. Well Rehabilitation

In Georgia, there are over 4,000 oil wells, but only 72 of them are functional, producing small amounts of crude oil. One of SAROG's near-term responsibilities consists of restoring production in wells that have ceased producing or have had their flow rates decline due to mechanical problems or changes in reservoir characteristics. SAROG

should require Saknavtobi to initiate well rehabilitation by reinvestment where payback is sufficient and through private sector development.

3. *Upstream Components' Impact on Ultimate Oil and Gas Recovery and Conservation*

To achieve optimum oil and gas recovery and adequate oil and gas conservation at the field level, SAROG staff should have the technical knowledge to evaluate PSA concessionaires' development programs through proposed upstream components, appropriate techniques in well spacing, well completion design, surface facility configuration and operation and maintenance programs. Well spacing is based on reservoir characteristics and oil/gas volumetric displacement parameters, which are derived from conclusive production testing of appraisal and delineation wells and from other reliable bottom-hole data, thus ensuring uniform reservoir drainage.

4. *Gas Transmission and Distribution Rehabilitation*

The gas transmission and distribution system of Georgia comprises a pipeline grid and a number of spurs, totaling more than 2,500 km in length. This system is about 30-40 years old. Its maintenance and expansion plans have been under-funded, mainly due to financial constraints. In order to tackle this major issue, SAROG should develop institutional capacity for enforcing a strategy of:

- Systematic inspection of all pipe over 15 years, and partial inspection of trouble-causing pipe sections. Inspection should be done using state-of-the-art NDT (non-destructive testing) and leak detection devices that are missing in most gas utilities in Georgia.
- Replacement of those pipes considered as a major potential source of danger for the population nearby.
- Replacement of aging, electricity-consuming protection devices, and installation of modern efficient equipment.

5. *Petroleum Development and Promotion*

SAROG should have the institutional capacity to promote private sector investment in the oil and gas sector by: a) bringing to the attention of the International Oil Companies (IOC) the hydrocarbon potential of the various basins of Georgia; b) development of appropriate contractual mechanisms to initiate and increase foreign partner willingness to invest; c) development of SAROG's technical capability to deal with the international industry; d) establishment of effective procedures for mobilization required financial resources; e) development of recommendations to the government on a legislative and fiscal framework within which SAROG can negotiate contracts; and f) negotiations with the international investors.

6. *International Procurement and Contract Negotiation*

As experienced in other multilateral bank-financed petroleum projects in developing countries, procurement could be a major cause of project implementation delays in Georgia. To minimize this risk, the SAROG should develop the technical capability to effectively monitor its international procurement. For this purpose, SAROG should organize a Procurement Unit to process necessary documentation for international procurement. In order for the Unit to operate effectively, SAROG would need to develop adequate internal procedures. The role of the Unit would be to: a) finalize the technical specifications, clear them with SAROG's management, send them to Ministry for final

review and approval and then send them to the lenders/ PSA Contractors for review and concurrence before officially publishing them; c) evaluate proposals received; and c) monitor and ensure the delivery of goods to end users, including preparation of necessary customs clearance and inland transportation documentation.

7. Safety Regulations

Oil and gas safety regulations should be prepared by SAROG and adopted as its by-law, with sector operators' participation. SAROG, in its capacity as a regulatory authority, is responsible for the enforcement of these standards and safety regulations. However, as a regulatory agency, SAROG does not now have adequate staffing, funding, training, procedures, or facilities to enforce these standards, particularly to support and assist GoG agencies in environmental and safety issues.

8. PSA Contract Negotiation

SAROG's capacity is limited to supporting and assisting the GoG's agencies as well as other departments (technical, legal, economic and financial) in continuing negotiations with the PSA and pipeline investors/sponsors concerning additional issues that may arise during the implementation phase.

9. Environmental Management

There are ranges of environmental issues that are part of SAROG's regulatory oversight responsibility. These tend to be site-specific, confined to areas where the oil/gas is being developed, collected, compressed and purified. There are also ranges of environmental issues that affect the system as a whole. These include the accumulation of water in some of the old fields, and the presence of hydrogen sulfide, which causes corrosion and personnel safety hazards. SAROG should have the institutional capacity to support and assist the GoG and its agencies in acquiring and preparing all social and environmental information and data necessary for the PSA investors/sponsors to carry out the route selection process in accordance with the Environmental Law.

3.7 Possible Areas of USAID's Technical Assistance

3.7.1 Legal and Regulatory Capacity Building [Technical Assistance Recommendation]

Legal Advice for PSA negotiations and Pipeline Implementation will include specialized oil and gas sector (pipeline) lawyers to advise SAROG on legal issues arising from implementation of the various PSAs and transit agreements and negotiations, including the revision of Georgian legislation where necessary.

USAID's technical assistance could be used to harmonize all legal and regulatory frameworks for the oil and gas sector. The main issues that need to be addressed by this technical assistance program are how to separate overlapping functional jurisdictions of the Ministry of Environment and Finance, the Ministry of State Property, the Georgian International Oil Company (GIOG), the Georgian Gas International Corporation (GGIC), and SAROG. The major activities for USAID technical assistance program should include the following items:

- a) Identify all overlapping legal and regulatory jurisdictions and drafting of decrees /by-laws to harmonize all oil and gas related primary laws.

- b) Examine existing laws, regulations and decrees, in Georgia and neighboring countries or other countries, which directly affect private sector investments and construction of oil and exploration and transportation facilities.
- c) Consider the need for, and essential provisions of, international bilateral or multilateral state agreements amongst the transit states for the harmonization of such laws, regulations; etc., to enable the construction and operation of such an export pipeline.
- d) Determine what land easement/rights of way/permits are necessary and how they could be granted in Georgia for the construction and operation of oil and gas production and transportation facilities.
- e) Examine, in investor countries, any exonerations and exemptions, either available or to be recommended, with respect to taxes or other charges associated with the construction and operation of the oil and gas sector's associated infrastructure.

3.7.2 By-Laws/ Secondary Laws

[Technical Assistance Recommendation]

New rules and regulations are required for the efficient and transparent regulation of oil and gas operations conducted by Saknavtobi. Many regulations in the oil sector were developed during the seventies and eighties under the former Soviet Union and are no longer proper for existing legislation and internationally accepted oil and gas practice. Old rules and regulations were pushing companies like "Anadarco", "Frontiera", "Ramco" and "Canargo" to operate in accordance with the rules and regulations adopted during the Soviet period that were technically impossible as these companies operate in Georgia using modern technologies and standards.

In November 2000, with the assistance of the USAID contractor, SAROG started working on a set of new rules and regulations. Various state entities were involved in the working process: Ministry of Environment, State Technical Safety Inspection, National Oil Company "Saknavtobi" and oil companies operating in Georgia: "Anadarco", "Ramco", "Ioris Valley", etc.

On January 16, 2002, after intense work, "National Regulations for Oil and Gas Operations" were submitted and registered at the Ministry of Justice of Georgia. The regulations cover the following:

- a) Conservation of oil and gas resources and requirements for oil and gas operations;
- b) Oil and gas exploration, field development, production plan presentation and approval procedures, well drilling, production, major work-over and well abandonment rules and requirements;
- c) Environmental and safety issues relating to oil and gas operations;
- d) A completely new issue for Georgia: Requirements for conducting oil and gas operations on the Black Sea shelf;

- e) Reporting procedures and forms of operator companies;
- f) Dispute resolution mechanisms between the parties;
- g) Public procedures for license permit issues; and
- h) Tender procedures for new license blocks.

All the above rules and procedures are essential for SAROG's transparent regulatory functions. USAID could support preparation of other by-laws or secondary laws to enhance SAROG's regulatory oversights. The following by-laws should be adopted by SAROG for the oil and gas sector:

- a) Rules governing design, construction, testing, maintenance and operation of gas gathering, transmission and distribution piping systems;

The overall scope of this law should be to address gas pipeline safety standards in the areas of: materials, inspections, requirements for corrosion control, operations, minimum standards for pipeline design, and maintenance procedures.

- b) Standards for calorimetry for gaseous fuels.
- c) Procedures for obtaining information and records in the possession of SAROG and its employees.
- d) Easements on property of public utilities.
- e) Rules governing the construction and maintenance of crossings at railroads and public streets and highways by oil and gas pipelines.
- f) Rules governing the design, construction, operation, maintenance and inspection of oil terminals, gas storage tanks, and transportation vehicles.
- g) Rules for oil and gas pipelines right-of-way use for telecommunications.
- h) Rules governing the form and filing of tariffs; etc.

3.7.3 Oil Refinery Development Strategy **[Technical Assistance Recommendation]**

Encouraging the expansion of domestic refineries is an economically sensible proposition (as long as the new refineries are as efficient as the major international refineries; if they are not, it may be cheaper to import petroleum products from large export refineries abroad rather than invest in new domestic refineries). However, restricting retail sales to refineries that produce the products does not make sense. Many domestic and international marketing companies could very efficiently purchase, import, transport, and retail fuels in Georgia.

USAID should provide technical assistance to SAROG to prepare an Oil Refinery Development Strategy for Georgia.

3.7.4 Environmental Training Program **[Training Recommendation]**

Environmental and Technical Advice for PSA and Pipeline Implementation will include consultancy services to assist SAROG in fulfilling its regulatory obligations under oil and gas pipeline transit agreements and oil and gas law on a timely basis. SAROG's environmental regulatory oversight services will focus on reviewing environmental/social impact assessments, permitting, compliance monitoring, and public outreach. The institutional capacity building activity in this area will thus go beyond environmental impact assessment, and will strengthen long-term environmental management capacity. This will involve environmental, social, technical, and public communications consultants (international and local) to address oil and gas transit issues jointly. It will also include technical/environmental advisors for negotiations of transit of gas from (or through) Russia.

3.7.5 Gas Market Rules **[Technical Assistance Recommendation]**

The USAID's technical assistance for this activity should be provided to both SAROG and the GNERC. The detailed scope of this task activity is given in [Section 2](#), under GNERC's Technical Assistance Program.

3.7.6 Financial Auditing Capacity Development **[Technical Assistance Recommendation]**

Financial or fiscal skills of SAROG's accountants and financial analysts may also be needed to complement legal advisory skills. SAROG should have in-house and/or financial resources for contracting outside auditing firms for financial audits (according to internationally-accepted standards) to be conducted annually for GIOC and GGIC to enhance transparency of company operations (audits are to be published in the Georgian press). The USAID's technical assistance should be directed toward developing in-house financial auditing capacity of SAROG.

The topics would include, accounting principles and practices of international oil and gas companies; corporate financial management, notably cost control and management, as well as modern financing techniques; pricing policy and tariff setting, taxation policy, and gas marketing. The mode of training would include a combination of training seminars at SAROG, overseas training and study tours.

USAID could also sponsor training by local institutes with the assistance of foreign instructors. Topics would include financial and managerial accounting, auditing, statistic principles, financial management and computer applications.

3.7.7 PSA Oversight Training **[Training Recommendation]**

With major on-shore and off-shore PSAs, regulatory oversight responsibility of Saknavtobi, more than 4,000 oil wells in country, two major transit pipelines becoming operational, a large gas transmission and distribution network and a total workforce of about 25 people; SAROG's training needs are profound. To bridge the gap and in order for SAROG to reach its regulatory objective, the USAID can provide a comprehensive training program for SAROG staff. In addition, workshops and on-the-job training by twinning would also be helpful if they can be

arranged by major equipment suppliers and contractors as part of their sales and field operations service contracts in Georgia.

The objectives of the proposed training program for SAROG staff would be to:

- a) ensure the regulatory staff has the foundation skills to absorb and effectively utilize the technology being imported for various oil and gas projects implementation;
- b) support SAROG's efforts to strengthen its institutional capabilities in enterprise reform, policy formulation, and sector management; and
- c) provide the basis for continuous development of regulatory skills to enhance the sector's overall performance.

Specifically, the USAID training program could provide for short- and medium-term training in finance, administration, and field operations. It could develop and strengthen collaborative relationships between SAROG and the international oil and gas industry, training institutions, and energy agencies to ensure effective transfer of technology. The program would be relevant to SAROG's overall objective of enhancing its human resources and achieving regulatory efficiency. It could cover a broad spectrum of activities in oil and gas production, transmission, and distribution, along with enterprise reform and environmental protection. This would include in-house training, overseas training, and overseas study tours.

In-Country Training. In-country training would be specially prepared to meet SAROG's needs. Classes would be attended by SAROG staff and by their counterparts in Saknavtobi and other affected agencies. Experts from internationally recognized petroleum institutes and commercial developers and producers would conduct the classes in Georgia. Foreign experts would develop tailor-made courses covering all aspects of natural oil and gas development at a level appropriate to regulatory staff (geophysics, geology, drilling, reservoir testing and depletion, surface facility construction, purification, transmission and distribution, SCADA, environmental protection, finance, planning, administration, and enterprise restructuring). The courses would be delivered in classroom sessions of about a two-week duration each. They would be designed for professional personnel and engineers at all levels as well as for managers. They would be based on the most recent technological and regulatory developments and focused on specifically designed problem areas of Georgia.

Overseas Training. The proposed overseas training would be a major component of SAROG's regulatory manpower development program. This type of training is generally organized for the international petroleum industry on a regular basis by international training firms and well known petroleum institutes. Shorter, 1- and 2- month programs would cover the same disciplines as the in-house training. One of the major aspects of these courses would be focusing on international "best practices" regulatory and technological developments and emphasizing the practical "how to" approach, for which participants would be provided with course materials for practical application. The courses would be for engineers and managers at all levels and especially for those in charge of specific programs. Longer, 6-month training programs would consist of a combination of university-based oil and gas technology studies and natural gas development management courses. These programs could be made up of three modules: (a) basic refresher courses in all aspects of oil and gas development; (b) current technological developments in oil and gas in terms of exploration, development, utilization and

overall management; and (c) specific regulations related to oil and gas as needed by specific participants. Some of the courses could be jointly organized by universities and petroleum institutes. The program would help specialize postgraduate professionals in their areas of activity provide middle managers a firm basis for progression to senior management.

Overseas Study Tour Training. Overseas study tours could be specifically organized on the basis of agreements with the parties to be visited, international seminars, conferences and workshops organized by the international petroleum industry and other institutions. SAROG's study tours would be developed with other oil and gas companies as well as energy institutions, with the objective of drawing lessons from others' experience. These tours, which could last up to one month, would be for middle- and high-level management. Study tours could be organized around oil and gas industry conferences, seminars, and workshops selected on the basis of their relevance to Georgia's overall regulatory capacity development objectives. These training opportunities would be for selected staff consisting of managers and engineers at all levels.

3.7.8 Production and PSA Oversight Assistance

[Technical Assistance Recommendation]

USAID's sponsored studies and consultancy services would include technical assistance in oil and gas sector project implementation and in addressing specific regulatory functional difficulties. The studies would address upstream activities to review problem areas such as seismic data acquisition, processing and interpretation adequacy, geology and particularly petrophysical aspects of relevant fields, drilling engineering to improve rig fleet performance, and new techniques. Consultancy services would cover SAROG's procurement, promotion of petroleum development to international investors, environmental protection and construction of oil and gas treatment plants, pipeline and SCADA. Both the studies and consultancy services should be designed to ensure effective transfer of technology in all aspects of oil and gas development, transmission, and distribution.

Rehabilitation and Deterioration Monitoring of the Gas Transmission and Distribution System

The USAID technical assistance plan could take the form of a Diagnostic Study and have the dual purposes of:

- a) Upgrading the reliability and capability of the system; and
- b) Monitoring and evaluating deterioration so that the best rehabilitation and system integrity decisions can be made.

In system upgrading, emphasis should be given on (a) improvement of control, communication and maintenance capability; and (b) rehabilitation through replacement of parts/components rather than outright substitution of whole plants/sections, avoiding large-scale investments. Monitoring and evaluation of system deterioration will be an ongoing process. Once set in motion, this process will also provide early warning of any trouble brewing in the system and will enable appropriate, timely, and cost effective remedial measures to be undertaken. Successful implementation of this technical assistance program would however, depend on the development of high quality expertise within the gas industry in Georgia (Tbilgazi, SAROG), for which the services of an appropriate consultant would be required over about a six-month period. The consultant would assist in: (a) review of detailed high pressure and low pressure gas pipelines, specifications of materials and equipment, procurement documents and evaluation; (b)

rehabilitation management; (c) capacity expansion, upgrading of operational and construction manuals; and (d) on-the-job training of SAROG's and/or Tbilgazi's staff.

It has been estimated that about 30% losses occur in the natural gas transmission and distribution pipelines of Georgia. USAID's technical assistance can help gas sector operators in examining control options for reducing methane emissions from fugitive equipment leaks. There are three basic types of leaks: random, chronic, and normal operational. Random leaks are those that may be expected to occur due to normal wear and certain irregular effects (improper installation or equipment defects), but that provide little or no trouble once repaired. Chronic leaks are those that require frequent or continuous maintenance due to more persistent and difficult to correct causes such as poor or inadequate designs, demanding process conditions, high usage, or abusive environments. Normal operational leaks, on the other hand, are inherent to the design of some components such as certain pump seals and compressor seals.

Oil Spill Contingency Planning

USAID's technical assistance can help SAROG to develop rules and regulations for oil sector operators to implement an Oil Spill Contingency Planning program. Non-transit pipeline Oil Spill Prevention and Mitigation Component will address oil spill risks related to marine and rail transportation of oil, through (i) the provision of essential equipment to facilitate spill response, monitoring and enforcement by the Ministry of Environment; (ii) SAROG's Rules and Regulations; and (iii) training.

Under the Oil Spill Contingency Planning program, all oil sector operators would report to SAROG on their Oil Spill Contingency Planning for:

- Natural Resources Damage Assessment - spill response at the first opportunity to minimize natural resource injuries by ensuring that spill response actions are implemented in an environmentally sound manner.
- Scientific support of Oil Spill Response.
- Restoration / Reinstatement – following an incident that injures a natural resource, many state regulations require compensation for the loss of the injured resources.
- Plan Development and Implementation Training – response personnel are presented with objectives and strategies for developing spill contingency plans that address regulatory requirements and provide a sound basis for actual emergency response.
- Technical Training – for Georgia, a spill management and response training course should include cold climate and icy conditions.
- Aerial Video Tape Surveys and mapping capability.
- Oil Spill Response Exercises.

SAROG's regulatory responsibility includes review and approval of sector operators' Oil Spill Contingency Plans.

3.7.9 Upstream Sub-sector Reform **[Technical Assistance Recommendation]**

A major task of the ongoing enterprise reform in Georgia is to define and separate the functions of the various groups concerned with the supervision and operation of the State-Owned Enterprises (SOEs). The process of reform has lagged in the designated strategic oil and gas sectors of the economy. These are dominated by large state-owned enterprises (Saknavtobi, GGIC, GIOC, Tbilgazi), many of which are inefficient and high-cost operations. They are also

burdened by social obligations and government policies, which are inconsistent with efficient and competitive company performance in a market-based economy.

For the SOEs to achieve financial viability and efficiency, a consensus appears to be emerging that most oil and gas sector SOEs will require greater independence from the state than is now the case; that they will need to undertake extensive restructuring/re-engineering of their operations, focusing on their core business activities; and that they will need to emphasize productivity enhancement, including change of management, financial and information systems. Furthermore, these actions will need to progress in parallel with reform of the policy framework governing their sectors, including further liberalization of sector markets and prices.

USAID's technical assistance could be provided to SAROG to carry-out upstream oil and gas sector SOEs re-engineering studies. International consultants would work closely with a SAROG study task force on the following subject matters:

- Sector reform strategy and policy reform framework;
- Legal and regulatory framework for the sector, including:
 - a) separation of government (policy, taxation and regulation) and enterprise (operational) functions,
 - b) the government oversight function and petroleum industry regulation;
 - c) petroleum law and sector taxation;
 - d) competition policy and market development;
 - e) SOEs institutional restructuring (including development of a model of Saknavtobi's organization and management) toward commercialization and corporatization of oil and gas sector entities; and
 - f) detailed implementation plan of the reform program.

The USAID-funded reform study would proceed in two main phases. The *first phase* would include:

- a) critical assessment of the present institutional, legal, regulatory, and financial framework; identification of the principal issues and factors hampering SOE's efficient operation and development and the major areas that will need to be addressed in the restructuring/re-engineering program;
- b) assessment of different, potentially promising organizational models for SOEs, taking into account relevant international experience and practices; and
- c) development of pilot programs for the restructuring/re-engineering SOE's subsidiaries to explore options, and then adapting lessons learned from the pilot results prior to company-wide implementation.

The *second phase* would include:

- a) implementation of pilot programs for restructuring/re-engineering of SOE subsidiaries with the assistance of an international consultant; and

- b) analysis in considerable depth of the scope and pace of implementing these measures with a view to ensuring a smooth transition toward achieving the full reform agenda over the longer term. The output of the second phase of the study would include an evaluation of the results of the pilot programs.

3.7.10 Petroleum Development Promotion and Contract Negotiation Assistance

[Technical Assistance Recommendation]

With the goal of accelerating the development of the oil and gas sector in the region, the GoG is considering opening up further petroleum blocks to international oil companies (IOCs). The GoG is considering offering existing oil fields, which are under Saknavtobi's jurisdiction, to private companies for the enhanced oil recovery process. To manage this program effectively, SAROG needs to build up its capability to develop and strengthen its ties to potential international petroleum development companies.

To develop this capability, SAROG requires technical assistance from experienced and qualified consultant(s). The consultant would act primarily as an advisor and assist SAROG in carrying out the following tasks:

- assess the potential attractiveness of the various Georgian basins to the IOCs, taking into account (i) current petroleum resource potential; (ii) fiscal (pricing and taxation) terms; and (iii) thorough economic analyses of the areas to be promoted under alternative financing arrangements;
- examine existing legal and regulatory framework, evaluate the economic implications of existing tax laws on foreign investment and recommend to the government amendments, if any, to ensure that the petroleum agreements to be negotiated would be in line with the country's legal and regulatory framework and goals;
- evaluate different types of petroleum contractual arrangements, including but not limited to joint ventures, production-sharing and service contracts, and recommend, after consultation with SAROG, the most appropriate form of agreements for GoG;
- assess SOE's financial resources, personnel skills, and available field logistic support as well as any risk factors associated with the exploration and/or development contract being offered in order to determine the appropriate levels of participation and control of the SOE and its partners;
- determine the obligations of foreign partners in terms of minimum work commitment and implementation timing in order to minimize the risk of delaying economic benefits to be derived from the agreement. With regard to field production rates, which have been subject to frequent controversies between host countries and foreign operators, the agreement should be subject to regulatory oversight of SAROG;
- establish a petroleum data bank where existing geological, geophysical and drilling data of relevant exploration areas and/or development fields, is collated, translated and interpreted into formats and packages commonly used by the international petroleum industry and which should also demonstrate the geological potential of the Georgian

basins and priorities licensing areas, taking into account the petroleum potential and associated risks;

- organize a promotional campaign to present to the international petroleum industry, including the aforementioned data synthesis, a legislative framework and model contract; and
- organize a core cadre of technical, financial and legal staff of SAROG or SOEs that can be trained to effectively negotiate petroleum agreements, coordinate with the private sector, deal with the complexities of petroleum exploration and development promotion, identify priority areas, develop adequate approximate cost estimation using published data in order to properly evaluate the financial commitments of investors, and respond to any level of interest in GoG's petroleum development by the international industry.

3.7.11 Upstream Gas Pricing Reform

[Technical Assistance Recommendation]

To achieve rapid growth in the gas sector, a great deal more foreign investment will be needed to a) help finance upstream and downstream natural gas projects; b) introduce advanced technology and management, and c) catalyze competition that will improve the overall efficiency of State oil and gas companies.

Without additional initiatives, however, Georgia's gas sector may not attract the necessary foreign investment. Gas pricing has been one of the main barriers preventing greater investment in Georgia's gas sector. Other factors include:

- Artificially low well-head prices provide little incentive for upstream companies to find and develop new resources;
- Poor data availability prevents investors from making informed decisions; and
- The current pricing methodology is not easily understood by western producers. This lack of understanding can discourage investors from making large-scale capital investments.

Uncertainty about pricing troubles potential developers in the Georgian Gas Basin where pricing formulas have been slow to emerge despite a relatively well-established gas sector. Wellhead prices for natural gas are currently set artificially low. "Out of plan" prices are far higher due to market distortions, inefficiencies and, to some extent, difficult geology.

The aim of USAID's technical assistance would be to: (1) develop accurate information about the current pricing mechanisms; (2) survey market trends for natural gas utilization in the region; and (3) outline alternative gas pricing options.

USAID would engage a technical assistance contractor to work with SAROG experts to recommend pricing methodologies that would provide greater incentives for long-term investment in Georgia's upstream gas sector, while ensuring affordability for end users.

The contractor should develop at least three pricing approaches that might be used by various parties in negotiating Gas Purchase Agreements. Among the pricing strategies to be considered, (but not limited to):

- a. Pricing indexed to a market basket of bench mark crude oil(s) or fuel oil (s);
- b. Parity with an international bench mark for natural gas; and
- c. Weighted average pricing paid by all consumers along with adjustment mechanisms.

The contractor should clearly illustrate how each recommended pricing approach is practiced in other countries to establish pricing in Gas Purchase Agreements between parties.

3.7.12 Transit Fee and Benefits Evaluation

[Technical Assistance Recommendation]

This technical assistance would enhance the capacity of SAROG (Georgia) to negotiate and implement oil and gas transit agreements in a manner that maximizes economic benefits, and minimizes social and environmental costs. Georgia has considerable potential for transit of hydrocarbons, particularly by comparison to its other economic assets. However, realizing positive net benefits from large transit investments (in a very complex geopolitical context) requires very careful management by the GoG and substantial institution building.

USAID, in collaboration with the World Bank, should consider supporting a consultancy to maximize the Government's pipeline revenues and minimize its liabilities and ensure that transit agreements are negotiated and implemented in a manner that balances the interests of investors and of Georgia, thereby reducing the long-term political risk faced by private investors in infrastructure in Georgia. This assistance should include technical assistance in review of other regional countries transit fee collection formulae and practices to maximize benefits to the GOG.

3.7.13 Energy Contingency Planning

[Technical Assistance Recommendation]

In Georgia, supply interruptions (gas, electricity and oil) were a signal of the uncertainties associated with heavy reliance on foreign sources and the inability to shift rapidly between different energy resources. This long-term energy "crisis" is distinct from short- and medium-term energy shortages in the sense that, over the long term, usage patterns will change and may not return to the present "normal" patterns. To meet the long-term problem, permanent adjustments are needed in the usage patterns and new energy sources are expected to be developed.

Another level of uncertainty is temporary loss of energy supply due to an operational emergency. This very short-term energy "crisis" is distinct from short- and medium-term energy shortages: effective operational procedures by energy suppliers exist to deal with such emergencies. For example, electric utilities should have automatic load shedding plans, agreements amongst themselves to transfer or interchange power, formal and informal dispatching communications, and other procedures to meet a sudden emergency loss of an energy resource. Gas utilities have similar plans. Petroleum suppliers generally have operational alternate logistical supply procedures to deal with day-to-day sudden emergencies.

USAID could provide technical assistance to SAROG to develop an Energy Shortage Contingency Plan to address the short- to medium-term energy shortages (weeks, months, a year

or so, but not hours, days or years). This Energy Contingency Plan would provide measures which may be initiated to bring demand for energy into balance with supply in a manner which imposes the least burden on society by reducing the use of energy first for those functions where it provides convenience, second for those functions where it provides comfort, and lastly for those functions directly associated with production of goods and services. The sacrifices required by the Plan are temporary and necessary to provide a smooth bridge between periods of normal supply. The Plan does not attempt to resolve the long-term energy shortage problem, it is not a long-term energy resource allocation scheme, and it is not intended to substitute for or interfere with the capability of energy suppliers to deal with operational day-to-day emergency shortages.

A Contingency Plan consists of many individual measures, in various degrees of severity. These measures can be assembled into "packages" to meet specific shortage levels for specific energy sources. The individual contingency measures may be classified by type of measures, affected use-sector, and fuel type. Types of measures are fuel switching, efficiency improvement, use restriction, space conditioning curtailment, and operations curtailment. The affected sectors are agriculture, mining, construction, manufacturing, commercial, residential, and utilities. The fuels that may be considered for Georgia are gasoline, distillate, kerosene, residual fuel oil, LPG, natural gas and electricity.

3.7.14 SAROG's Organizational Structure Study **[Technical Assistance Recommendation]**

SAROG's regulatory functional duties are evolving with new refinery regulations, international transit pipelines, and various on-shore/off-shore blocks for PSA contracts. The USAID can provide expert advisory services for the review of SAROG's organizational structure. The overall objectives of the evaluation of SAROG's organizational structure are to address the following issues:

- a) Is SAROG's organizational structure logical and is it conducive to meeting legislatively mandated goals? Are the missions and functions clearly defined and understood?
- b) Are interfaces logical and well defined? Are there overlapping or duplicate responsibilities between the departments?
- c) Are staff levels, both in numbers and expertise, appropriate and do they support the achievement of regulatory goals?
- d) What are the major operating improvements in terms of staff training and equipment? Can they be quantified?
- e) Are there major increases in the scope of existing regulatory functions in the proposed amendments of Oil and Gas Law? Are there adequately trained professionals to implement these additional regulatory functions?

The best interests of consumers, government, and employees of SAROG will be served only if the organizational structure satisfies the above criteria. Assistance should review the following:

- Lines of reporting – are lines of authority clear and unambiguous? Is accountability for each organizational unit unambiguously understood?

- Span of Control – Do the managers of organizational units operate with an appropriate span of control? Is the span of control aligned with responsibility?
- Management Layers;
- Consistency with the regulatory strategy;
- Clear communication; and
- Strategic Planning Practices.

3.7.15 Strategic Business Planning

[Technical Assistance Recommendation]

At present, SAROG does not have a Strategic Business Plan for its regulatory functional duties. It also needs to require and supervise the development of Strategic Business Plans by its regulated utilities. There are basically three major reasons for preparing a business plan: a) benefits that are derived from the planning activity itself; b) the plan provides a basis for measuring actual performance against expected performance; and c) the plan acts as a vehicle for communicating to others what it is that SAROG is trying to regulate or accomplish.

USAID technical assistance could be provided to both SAROG and GNERC to develop their Regulatory Strategic Business Plan.

A USAID consultant would work with the regulatory staff in developing the strategic business plan for SAROG/GNERC, for example, for the next five years, helping plan the evolution of the regulatory institution. This activity is of utmost importance for the following reasons:

- It will force to arrange all institutional capacity development needs in a logical order;
- It will help to create an organizational structure by defining activities and regulatory responsibilities;
- It will force the institutions to confront reality (for example: budget shortage vs. regulatory responsibilities) and anticipate pitfalls before they occur;
- It will help to identify objectives and develop strategies to meet those objectives; and
- It will serve as a working action plan or guideline for the development of SAROG / GNERC.

Assistance is needed to develop a five-year Strategic Business Plan, focusing on the following three major areas:

- Resource Requirements;
- Funding Mechanisms; and
- Budget Forecast.

3.7.15.1 Resource Requirements

When reviewing SAROG's current situation against the key areas of focus previously defined, the consultant will need to assess what resources are currently deployed to suggest whether a greater quantity or quality of resource might be required. The main resources requirements of SAROG/GNERC, to include in the Business Plan are:

- **Financial resources** - including operational and capital budgets. This will include both "Physical Resources" for computer hardware and software, tools and testing equipment, and transportation vehicles for regulatory inspectors; and "Human Factors Resources" which include financial resources for adequate regulatory training and salary structure of the regulatory staff.
- **Human Resources** – this is one of the main areas of focus and must include consideration of the following:
 - Training needs.
 - Staff structures.
 - Staffing levels.
 - Lines of reporting.
 - Job roles and specifications.
 - Recruiting policy.
 - Dependence on consultancy

Note that SAROG is limited by its implementing legislation to 25 employees. Given its present scope, that may be adequate if supplemented for certain peak activities with expert consultants. On the other hand, if the PSA prospects develop into a major upstream oil and gas industry, and if the Oil and Gas Law amendment is passed, giving SAROG control of the refinery and wholesale distribution industries, the 25 employees will have to be supplemented continuously and extensively by consultants. There are three points of prudence to be considered in staffing SAROG:

1. Consultants are vastly more expensive than permanent staff. Restricting staff size to save money may actually increase expenses.
2. A small staff is not able to properly supervise a large number of consultants. Without careful specification and supervision of the consultant's role, poor performance can result in problems and losses far in excess of payroll savings.
3. Consultants present an opportunity for institutional development through expertise and knowledge transfer. Failure to institutionalize this knowledge because of lack of staff will cost more in future training needs and organizational weakness in the meantime. Worse, failure to institutionalize knowledge extends dependence on expensive consultants.

SAROG needs assistance to optimize its staff levels versus consulting needs.

- **Information resources** – Information is the ‘life-blood’ of a regulator. If there is no means to effectively gather, store and process technical and financial information, regulation will have little chance of achieving its objectives.
- **Equipment resources** – Information technology (hardware and software) and other support equipment for setting up a Library for the regulatory agency.

3.7.15.2 Budget Forecast

Based on its regulatory duties, SAROG needs assistance to prepare an indicative budget covering a five-year period. The budget will cover staff, operating and capital costs as they evolve over time. Much additional work will remain to refine this budget, as the estimates will be based on a series of broad assumptions at the time of preparation.

While SAROG’s budget may look like an expensive luxury, the budgetary expenses will be relatively minor compared to the costs of a major regulatory mistake, or compared to the enormous losses being incurred by the sector now due in part to dysfunctional regulation. An appropriately staffed and funded Regulatory Agency will reduce the likelihood of poor decisions and will help to promote consumer interests.

3.7.16 Human Resources Computer Equipment Assistance [Technical Assistance Recommendation]

USAID has provided assistance to SAROG in furnishing and equipping its offices. Though technical applications have, and should have, high priority, SAROG’s personnel department does not have a computer, making it essentially impossible to maintain adequate personnel records or set up training and career development programs. This investment is a precursor to providing training assistance to SAROG.

3.7.17 Procurement Improvement [Technical Assistance Recommendation]

To develop the necessary procurement capability, SAROG and/or Saknavtobi would require an individual consultant with adequate experience in procurement for petroleum projects and capable of introducing new skills. The consultant would advise SAROG/Saknavtobi in all matters related to procurement, including assistance in:

- a) Organizing the procurement unit with definition and description of responsibilities of the subunits;
- b) Adapting SAROG’s international procurement requirements - through International Competitive Bidding (ICB) and Limited International Bidding (LIB) and, where appropriate, to local procurement requirements - through Local Competitive Bidding (LCB), and Model Bidding Documents in accordance with the World Bank’s and /or EBRD’s Procurement Guidelines;
- c) Developing, where necessary for use with the adapted Model Bidding Documents, bid evaluation criteria specific to oil and gas field project activities;
- d) Preparing annual procurement plans and related budgets;

- e) Developing adequate decision-making procedures and delegation of authority by which the number of approval levels is reduced to the minimum possible within SAROG and the other agencies;
- f) Preparing equipment technical specifications based on relevant performance and characteristics rather than on supplier catalogs in order to attract a maximum of competition;
- g) Selecting appropriate methods of procurement to be used for each package (ICB and LIB) and identifying potential bidders for LIB;
- h) Establishing quality control criteria and procedures for monitoring standards; and
- i) Preparing annual procurement training plans, including organization of training courses, seminars and short (1 to 2 days) presentations covering but not limited to multilateral Banks' procurement policies, international petroleum equipment markets and their related developments, and sources of information about international market prices and trends.

3.7.18 Specific Training Programs for SAROG [Training Recommendation]

SAROG needs training specific to its functions in the following areas:

- a) PSA oversight training;
- b) Field inspection of oil and gas production equipment;
- c) Contract negotiation;
- d) Georgian energy law, economics, and management;
- e) International best practice for environmental laws and regulations;
- f) Oil Spill Contingency planning; and
- g) How to conduct utility management audits.

These specific training needs are summarized in [Section 7](#). These training events should be designed specifically for SAROG, and participation in these training events should be primarily for SAROG staff, though some cross-training is recommended with MoFE, MoSP, and Saknavtobi staffs.

3.7.19 General Utility Management Training Program for SAROG [Training Recommendation]

SAROG staff should participate with other energy sector institutions in a General Utility Management Training Program as outlined in the Training Needs Analysis in [Section 6](#). These needs are also summarized in [Section 7](#).

Section 4: Assessment of Saknavtobi

4.1 Introduction

Saknavtobi is the State Oil Company of Georgia. It is responsible for domestic geology, exploration, drilling, production, gathering, and delivery to wholesale outlets for both oil and gas. It does not operate transportation pipelines, international transit pipelines, refineries, or product distribution systems. Very significantly, it administers the Production Sharing Agreements (PSA's) that give concessions to foreign developers in return for agreed shares of production or earnings.

As a state monopoly, Saknavtobi is little affected by reform initiatives that have reshaped the electricity sector. It is operated as a state corporation by the Ministry of Fuel and Energy. Its assets are owned by the Ministry of State Properties.

Prior to Georgia's independence, Saknavtobi produced approximately 3 million tons of oil yearly. Since then, production has declined thirty-fold, to about 100,000 tons yearly. This is inadequate to sustain Saknavtobi and insufficient to provide Georgia's domestic demand for oil and gas. At this rate of production, Saknavtobi is financially unsustainable. It is unable to maintain a reasonable domestic petroleum exploration program, unable to sustain in-fill drilling programs in proven reserves, and unable to maintain or upgrade its equipment.

Figure 4.1 shows the Organization of Saknavtobi, its subsidiaries, and its joint ventures.

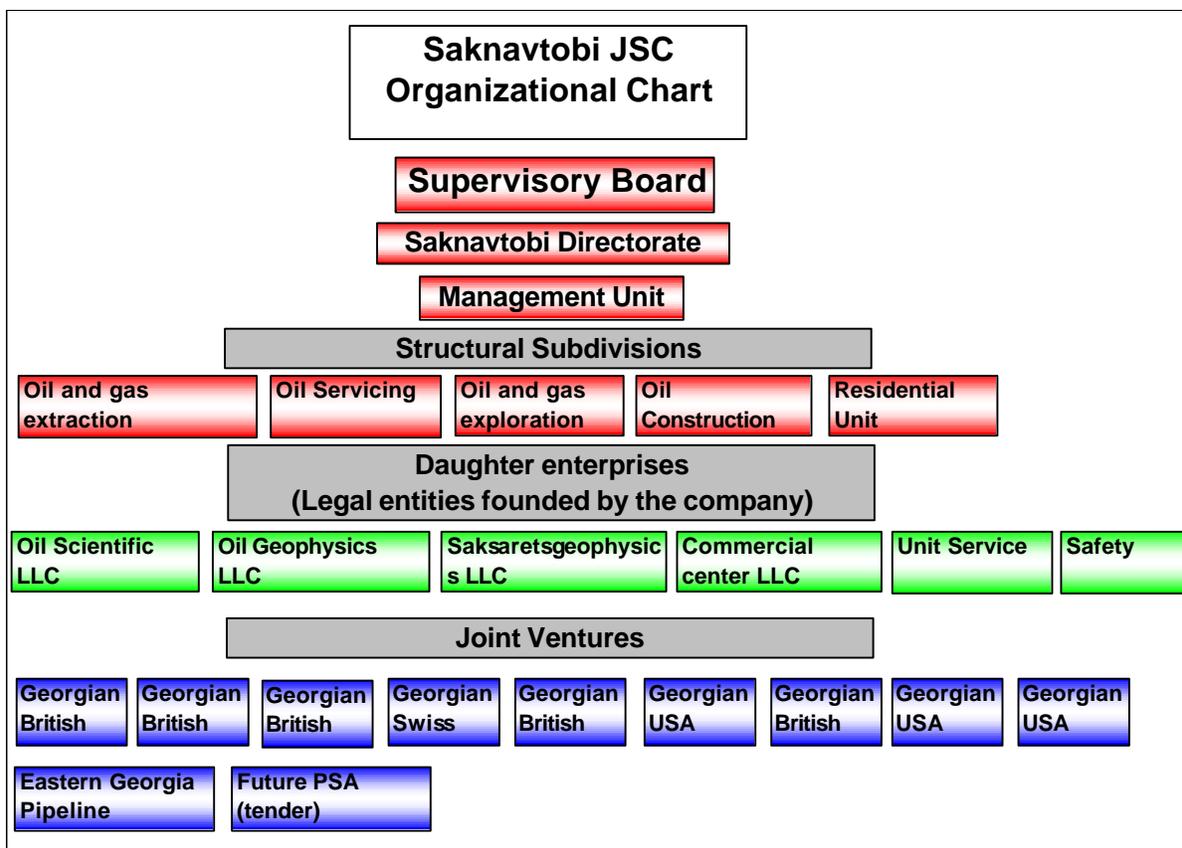


Figure 4.1

The Joint Ventures are primarily Production Sharing Agreements for oil and gas exploration and production. Major leases have been given to for large territories onshore and offshore. Figure 4.2 shows the pattern of PSA territories.

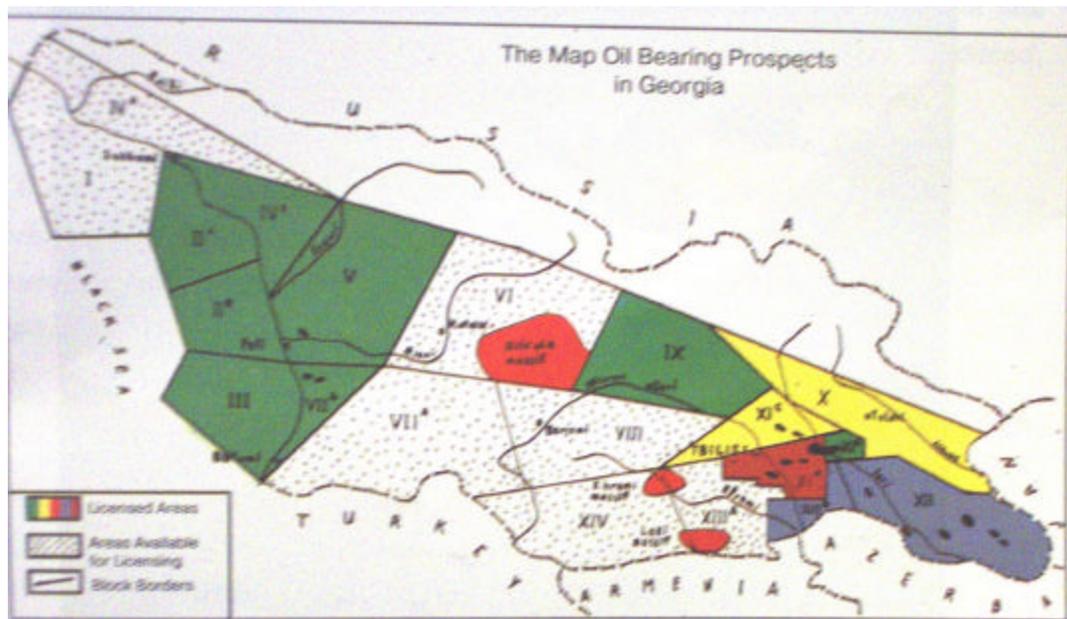


Figure 4.2

4.2 Major Issues

4.2.1 Accounting

There are reports that Saknavtobi actually produces much more oil than the reported 100,000 tons, and that this bootleg production is sold on a black market to dozens of small refineries, which bypass the less profitable state-owned refineries and provide a significant share of the fuels sold in Georgia. Evidently another large source of fuel is oil smuggled over the border from Azerbaijan.

The Saknavtobi accounting system acknowledges receipt of production when it is metered into gathering pipelines. Wellhead meters are not entered, allowing possible large discrepancies between actual production and accounted production.

4.2.2 Drilling.

Saknavtobi now has only two operable drilling rigs, and only one is in use. Since they cannot afford the cost of drilling, only one rig is in use. At this rate, the annual production by Saknavtobi will inevitably decline as producing wells are depleted, forcing Saknavtobi into a worse financial condition.

4.2.3 Environmental responsibilities

Saknavtobi is responsible for environmental protection in its operating wells and in its exploration operations. It complies with licensing and permitting regulations of the SAROG and of the Ministry of Environment. Since production is so low, it may be assumed they are capable of performing this task properly. They also have an Oil Spill Recovery Plan, but do not have the staffing, chemicals, equipment, procedures, and funding to execute it.

[Ensure provisions are made for PSA developers to provide emergency spill recovery services.

Saknavtobi is also responsible for those old wells that have not been leased to PSA's. When granted a lease to an area, the PSA developer is allowed to research the production of old wells in the leasehold. Those with production potential are retained; those considered not economically viable are returned to the custody of Saknavtobi. Since there are thousands of such wells around Georgia, this is a continuing problem. The old wellheads are generally in a state of deterioration. Most were never plugged, only capped. Many are leaking. Thieves recently uncapped a well near Rustavi, unleashing a large spill that contaminated many acres. We visited the site and found strong evidence that the Recovery Plan approved by SAROG was being implemented superficially. At least a portion of the oil and the ground was simply being covered over with a layer of soil, though some of the contaminated soil had been piled up and was reportedly to be burned in a cement kiln in nearby Rustavi. This would be adequate treatment if actually performed, but there are grounds for suspicion the contaminated soil will just be buried elsewhere.

[A rational decision could be to allow Saknavtobi's domestic programs to be privatized entirely into the PSA joint ventures. However, some financially competent entity must remain to hold custody of dormant or retired wells.]

4.2.4 Strategic Business Planning

Saknavtobi's managers appear to have lapsed into a fatalistic resignation – "If things continue the way they have, we will just hang on. If some of the PSA's are successful, there will be enough revenue to support Saknavtobi. These are such large variables that there is no use making any plans."

The main point being missed is that strategic business planning is even more necessary in a highly uncertain situation. Saknavtobi has to be prepared to minimize its losses in a downside scenario and find ways back to profitability. It also has to be prepared to administer producing PSA's competently, meaning that it must develop beforehand the ability to monitor PSA activities and account for large transactions properly. Saknavtobi cannot just remain a drain on the State Budget, defaulting on significant responsibilities such as environmental protection.

4.2.5 Regulatory interface with SAROG

Saknavtobi is regulated by SAROG for Regulation of Oil and Gas (SAROG). This new relationship is working well, but is evidently structured as a combination of opportunism and response to problems rather than a traditional regulatory process.

For example, Saknavtobi negotiated 7 PSA's prior to SAROG's existence. SAROG has taken over responsibility for negotiating the PSA's. SAROG has completed negotiation of two PSA's and is preparing the tender for a third PSA. In a conventional regulatory relationship, one would expect to find the regulated corporation, Saknavtobi, negotiating its own contracts subject to standards, review, and approval by the regulator, SAROG. If the regulator chose to simply take over every aspect of the operation that had problems, it would soon be drilling wells itself. The present system does reduce possible conflicts of interest in an area that could soon many millions of dollars in revenues. On the other hand, it introduces an unbalancing factor into the regulatory balance. How can a regulator hold a corporation responsible for execution of a contract that was negotiated by a third party, especially if that party was the regulator itself?

As a second example, SAROG evidently has elected not to involve itself in the overall financial operations of Saknavtobi, turning a blind eye to evident unaccounted production and possible large unaccounted financial transactions.

A third example is that SAROG is building a GPS database for the entire oil production infrastructure of Georgia using a GPS computer system provided by foreign assistance. It is inconceivable that the

regulatory body, with its extremely limited staff and data on hand, would be performing this task itself when SAROG has hundreds of long-term professional staff who have been performing the task by hand for decades. SAROG should be requiring Saknavtobi to produce the database and perhaps specifying standards for the product.

4.2.6 Asset valuation

At present production levels, domestic oil and gas facilities have minimal valuation. Foreign investors in PSA's are possibly acquiring leaseholds at fire-sale valuations. If production is being diverted from the wellhead, before being recorded on the gathering system meters, this further reduces valuation.

Finally, oil and gas reserves can be used to supply and collateralize other vitally needed capital investment, particularly private power projects. This application should be a consideration in Saknavtobi's asset valuation and strategic planning processes.

4.3 Causes

Having defined a set of problems, it is not sufficient to proceed directly to suggesting corrective actions. Too often in the energy sector the wrong solution gets applied for lack of deeper insight. The immediate cause of most of Saknavtobi's troubles is, of course, inadequate revenue from oil and gas production. The root causes, however, may be different. Several are proposed:

4.3.1 Failure in corporate business management

At a production level of 3 million tons of oil per year, Saknavtobi was once a highly profitable state company. Evidently its earnings were passed entirely to the state while allowing the company's exploration and development operations to collapse to 100,000 tons per year. Saknavtobi absolutely must develop the financial management skills to make strategic reinvestment of profits. This may seem irrelevant at a time when Saknavtobi has a severe revenue deficit, but it is all the more important at a time when there is prospect of strong revenues from the PSA ventures. It is critical that Saknavtobi have a strategy to retain and reinvest these earnings prepared and approved *before* they appear.

Reinvestment is critical. Saknavtobi has control of huge numbers of physical and resource assets. Some of these would have very high short-term payback ratios for investment in production or reduced deterioration. Saknavtobi cannot allow a piece of expensive and essential production equipment to fail because of lack of maintenance. It cannot allow system losses to continue which drain revenue from the corporation.

4.3.2 Lack of understanding of the regulatory concept

Interviews with Saknavtobi give the impression that the process of regulation consists of filling out forms to be submitted to the regulator. Part of the problem may be that SAROG regulates only upstream domestic oil and gas production, so there is no direct retail consumer involvement in policy or pricing issues. The industry/consumer balance is preponderantly on the side of the industry, resulting in a loss of accountability and transparency.

If Saknavtobi had a full awareness of the regulatory concept, it would have had powerful arguments to prevent transfer of the negotiating role for PSA's to SAROG. As the proprietors of the nation's data on exploration and production, they are certainly in the best position to judge the value of leases and negotiate the most favorable terms.

4.4 Possible Areas for USAID Technical Assistance

4.4.1 Regulatory training

[Training Recommendation]

Saknavtobi needs to build a functional regulatory relationship with SAROG, and should not wait for SAROG to take the initiative. A distorted regulatory relationship at early stages will lead to problems in the future. While Saknavtobi is now a minor part of the Georgian economy, it has potential through the PSA's to quickly become the largest single input to the economy. At that time, past mistakes will be hard to remedy.

4.4.2 Strategic equipment investment

[Technical Assistance Recommendation]

Saknavtobi has an extremely strong body of professionals who until recently had world-class skills in geology and exploration. This is a valuable national asset which should not be allowed to dwindle. When it is lost, Georgia will be entirely dependent on the technology and judgment of their foreign counterparts. Saknavtobi desperately needs investment in computers, exploration equipment, current-generation software, and GPS systems.

4.4.3 Current Exploration and Drilling Techniques

[Training Recommendation]

At a time when foreign companies are using the most modern techniques to explore for and produce hydrocarbons in Georgia, there is not enough opportunity for Saknavtobi professionals to update their skills by training or observation. As a consequence, Saknavtobi is unable to take full advantage of its exposure to state-of-the-art technologies being used within their own oilfields, and will be less and less able to correctly monitor the PSA contractors for license compliance and performance. The PSA's should have provisions for training Saknavtobi in return for other services, such as logistics support and prior production database information.

4.4.4 Oil Spill Contingency Planning

[Technical Assistance Recommendation]

The PSA's should have provision for PSA oil spill equipment, manpower, and procedures to be made available for emergency service.

4.4.5 Business Management

[Training Recommendation]

The Saknavtobi staff has never existed in an independent business environment and lack the skills to manage the company like a commercial business. Even in a revenue-deficit condition, these skills need to be developed to improve corporate responsibility. More important, if the PSA's are successful, Saknavtobi will need to be able to make prudent decisions on handling and accounting for product and funds from the PSA's, prudent retention of earnings, and strategic reinvestment to rebuild the domestic oil production sector and correct accumulated asset deterioration and environmental damage.

4.4.6 Strategic Business Planning

[Technical Assistance Recommendation]

In its current state, with minimal exploration and production activity, operating below financial sustainability, Saknavtobi's existence is justified largely as custodian (and environmental manager) of its assets. Business Management Training to recover the domestic production capacity and financial sustainability is perhaps worthwhile, but not a high priority.

However, there is a serious possibility that any of the Production Sharing Agreements could begin to produce many millions of dollars of revenues. In that case, Saknavtobi will suddenly become either a major financial entity or a hollow shell passing funds through to the national budget. At a bare minimum, Saknavtobi must have the financial competence and plans in place to provide for its own function and responsibilities. Ideally, it would be prepared to justify strategic reinvestment of portions of the PSA revenues into recovery of the domestic hydrocarbon business.

4.4.7 Human Resources and Training Program Development

[Technical Assistance Recommendation]

Saknavtobi is a distressed organization. Its personnel are underpaid and faced with dead-end career possibilities in many cases, as domestic production is being turned over to Production Sharing Agreements. Saknavtobi needs a performance evaluation system, career development program, and training program.

4.4.8 Reinvestment Program

[Technical Assistance Recommendation]

The Saknavtobi facilities have many examples of high-payback projects which are not being implemented for lack of short-term capital. These include both lost production and deterioration of vital equipment, including drilling rigs and wellhead equipment. One cannot let a problem costing \$1,000 per day continue for years because one does not have \$10,000 needed to fix the problem. The Enguri staff should receive training under the General Utility Management Training program to support financial analysis of projects, time value of money, and financing methods. They also need technical assistance to set up a system to keep track of known problems and opportunities for investment, perform screening analyses, identify high-return investment candidates, and develop policies for isolating these investments from the general revenue deficit problems.

4.4.9 Specific Training Programs for Saknavtobi

[Training Recommendation]

Saknavtobi needs training specific to its functions in the following areas:

- a) Management of PSA contracts;
- b) Contract negotiation;
- c) Georgian energy law, economics, and management;
- d) International best practice for environmental laws and regulations;
- e) Oil Spill Contingency planning;
- f) Current exploration and drilling technology; and
- g) Geographic Information Systems database management;

These specific training needs are summarized in [Section 7](#). These training events should be designed specifically for Saknavtobi, and participation in these training events should be primarily for Saknavtobi staff, though some cross-training is recommended with MoFE, MoSP, and SAROG staffs.

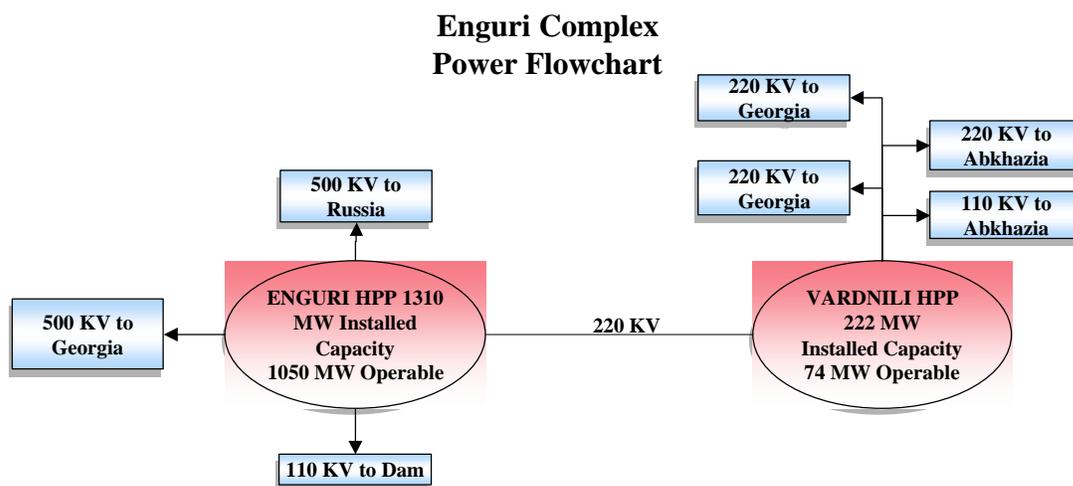
**4.4.10 General Utility Management Training Program for Saknavtobi
[Training Recommendation]**

Saknavtobi staff should participate with other energy sector institutions in a General Utility Management Training Program as outlined in the Training Needs Analysis in [Section 6](#). These needs are also summarized in [Section 7](#).

Section 5: Assessment of Enguri HPP

5.1 Introduction to Enguri Hydroelectric Power Plant

The Enguri Hydroelectric Power Plant (Enguri HPP) is located in West Georgia in an area rich with hydroelectric potential. Enguri Dam is situated in a narrow gorge on the Enguri Rivers. The dam provides 226 meters of hydraulic head. A 15-kilometer tunnel cut through solid rock carries water from the dam to the Enguri Hydroelectric Station (Enguri HES), gaining another 184 meters of head *en route*, for a total of 410 meters of head. Five Francis turbines power 260-MW generators, for a total of 1,310 MW of capacity. The HES discharges into the Eristskali River, which flows into the Black Sea. Power is evacuated by the main 500-MW transmission line, which runs from Russia, through Abkhazia, and on to the Tbilisi area.

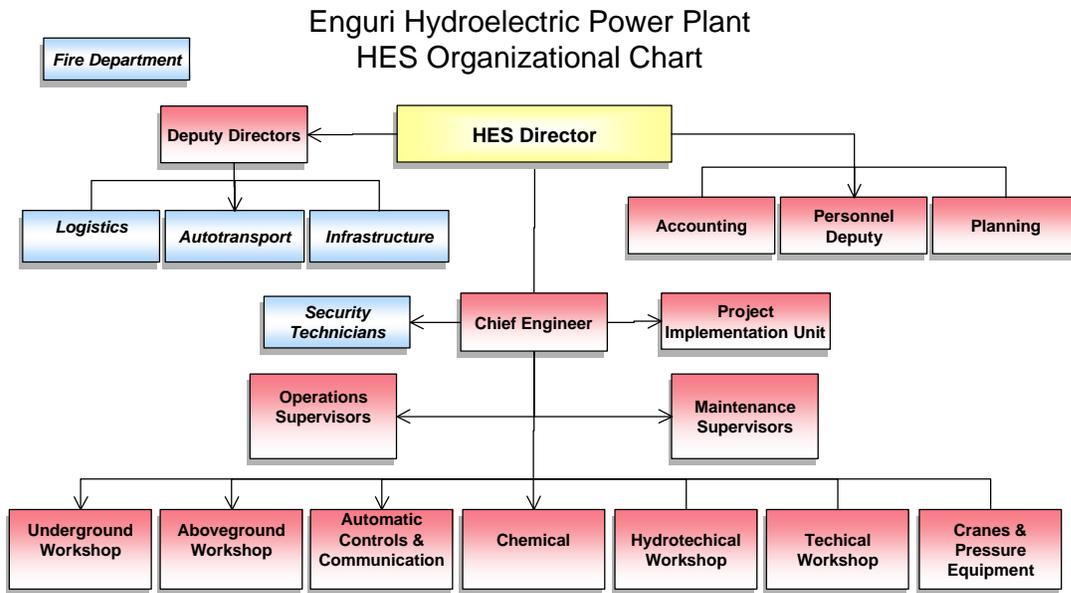


The Enguri and Eristskali Rivers are fed by snowmelt and glacier runoff. The reservoir reaches full capacity in June and, depending on usage and leakage, output must be curtailed in the early springtime.

During the civil war, the province of Abkhazia ceded from Georgia and returned to the Russian sphere of influence. In the war, many kilometers of the 500-MW transmission line were torn down and the hydropower plants were stripped of metals and light equipment. Relative stability has returned to the border area, and the 500-MW transmission line has been repaired, but the Enguri and Vardnili (formerly Perepadnaya) generating stations are both inside Abkhazia and vulnerable to any unrest.

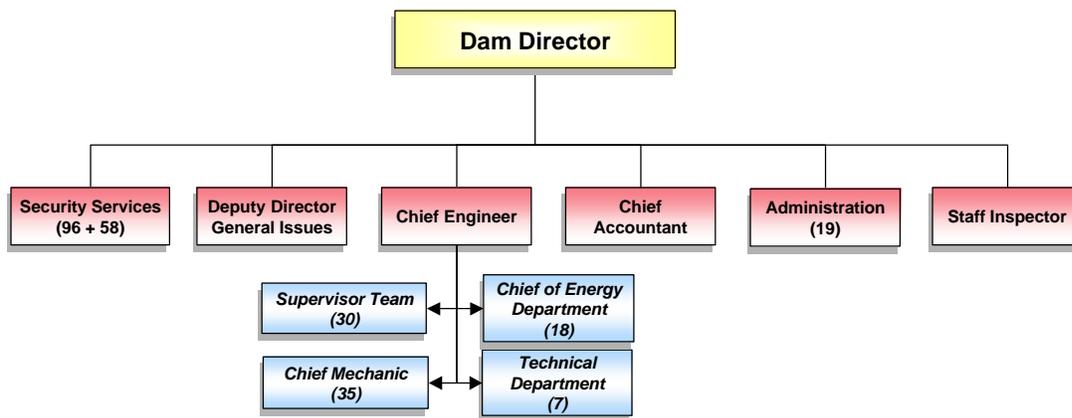
The EBRD has extended a \$200 million loan for urgent repairs to the Enguri dam. Work is to begin in 2003. A condition precedent of the loan is that Enguri receive 70% collections in 2001, 80% in 2002, 90% in 2003, and 95% thereafter. EBRD has also provided temporary funding for the Iberdrola management contract in an attempt to ensure proper function of the GWEM. The loan provides full funding the first year, decreasing each year as member fees increase and take over the entire funding by the fourth year. Most of the member fees are not being paid, the GWEM is not functioning as intended, and Enguri's revenues have collapsed as a result.

The EBRD rehabilitation loan will provide sufficient funds to repair the outlet gates at the Enguri Dam and restore one turbine-generator to service at Enguri HES. These problems are described below.



Professional Staff 300

Enguri Hydro Facilities Dam's Organizational Chart



Professional Staff Approximately 85

5.2 Main Issues

5.2.1 Payments

Enguri HPP is not receiving payment for power produced. It sells power to the GWEM and to certain LDCs through direct contracts. GWEM payments have been a fraction of the authorized tariff. In April, GWEM paid for only 3% of the power it purchased from Enguri. The Enguri Dam and HES staffs have not been paid for 8 months. Vital maintenance is not being conducted, major repairs are deferred, and essentially no preventive maintenance is being done. Tools, spare parts, and materials are depleted. The complex is in a state of physical decline and beginning to experience progressive failure (one failure leading to another and compounding). It is only a matter of time until the whole complex is shut down and or damaged irreparably.

During 2001, Enguri received permission from the GNERC to sell power directly to AES Telasi, and received 100% payment. During 2002, Enguri has been selling power directly to the Adjara regional LDC, receiving approximately 25% payment.

The amount of collections for power sold does not come close to the conditions precedent for the EBRD loan, and there is no indication of a positive trend. Evidently EBRD has tacitly acknowledged this and confirmed that the loan will proceed. Under present financial conditions, the prospects for repayment of this loan look extremely bleak. It must be noted that this critical set of repairs offers an opportunity to impose borrowing discipline on Georgia – acquiescing in the failure of the GWEM to settle market accounts will not address the root problems.

5.2.2 Accounting

Enguri is in the process of transition to International Accounting Standards (IAS). Computers and software were installed and a new chart of accounts developed. A subsequent audit by Deloitte and Touche shows that the transition is far from complete. The Enguri staff state that PA Consulting will finish the work before the end of the existing contract in September. Considering the great number of audit discrepancies and the scale of the transition, it is very doubtful the work will be done.

Other aspects of the transition are apparently not addressed. Enguri has little incentive to adapt IAS for its corporate financial needs (budgeting, share administration, taxes, etc.). The primary driver for this transition should be the GNERC, which should demand corporate reports in order to assess the tariffs and judge participation in the GWEM. Evidently GNERC has been silent on this front. This is a golden opportunity to make sure the chart of accounts is consistent with the tariff methodology.

Finally, the accounting system must provide management guidance in business decisions. Although a hydroelectric plant has no fuel costs, it should make very careful judgments of the component of maintenance costs that should be attributed to variable costs. Our interviews suggested that this is a very confused topic and that the accounting decision is not a contributor to the decision process. For example, in selling power to an LDC at 25% of the wholesale tariff, one should be certain that variable costs are recovered, otherwise the sale deepens the financial crisis. The IAS should also be a primary input in determining acceptable wholesale tariffs – the plant complains that the tariff was set subjectively by the GWEM with no input from the plant. If the GWEM ever converts to a competitively bid market, the Enguri staff should have a basis

upon which to bid prudently. When selling at a loss, one cannot “make it up in volume,” and the accounting system has to support that determination.

5.2.3 Geopolitical

The Enguri HES is physically located inside Abkhazia. Workers are allowed to come and go and to operate the plant under an agreement by which Abkhazia receives approximately 20% of the plant’s generation without payment. Since this amount of power greatly exceeds the reasonable demands of Abkhazia’s mostly agricultural population of 300,000, one must assume that a great portion of the excess flows into Russia. Presumably some of it is bartered for fuel or other commodities. Some of it may be sold back into Georgia. The station personnel were adamant that this does not happen, but this probably indicates they are content with the status quo and do not want to risk rocking the boat.

5.2.4 HES Generators

When war broke out between Georgia and Abkhazia, Abkhazian forces occupied the HES. One of the turbine-generator sets was disassembled for repairs. All parts small enough to be carried were removed, including many that can only be provided by the original Russian vendor.

[This turbine-generator set will be renovated under the EBRD rehabilitation loan.]

5.2.5 HES Discharge

The HES discharge flows through a narrow gorge that is in danger of collapse. Collapse would block the gorge and flood the surrounding countryside, forcing shutdown of the Enguri Dam until the collapsed area was repaired or until the dam’s reservoir overflowed. The discharge is in Abkhazia, so work to repair the narrow gorge would require cooperation.

[The possibility and consequences of a collapse should be assessed and repairs undertaken, if necessary. This work is not covered under the EBRD rehabilitation project.]

5.2.6 Structural Risk

Enguri Dam is an arched dam, meaning that it is curved in both the horizontal and the vertical sections. It is the largest arched dam in the world, and represents a major technological accomplishment, having been designed before computers were available to optimize the structure. As with anything that was built to be the “world’s largest,” especially at a time when development was a political objective, it is possible the technology was overextended. Though its base is 70 meters thick, the reinforced concrete structure is surprisingly mobile – the center moves back and forth 15 centimeters. Stresses in the dam are affected by the reservoir level and by its rate of change, by changes in temperature, by the reaction forces from discharges, and by changes in the hydraulic seepage rates and pressures in the bedrock.

To control stresses, there are restrictions on the rate of change in reservoir levels. The current operating limit is 1 meter per day, filling or draining. A sophisticated system of 5,000 monitoring points collects data on physical position, temperatures, water levels, and seismic information both in and around the dam and in the surrounding countryside up to 20 kilometers distant. Collecting this data manually is a major function of the plant staff. The data is provided to a geological research institute located in Tbilisi, the Danthesi Institute, where it is analyzed with computers and an extremely detailed report is provided to the plant. Unfortunately, this analysis takes approximately one month. By that time, the conditions that produced any

significant problems are long past. As often happens, the process of analyzing the data seems to have become divorced from the reasons for doing so. Also, from discussions with the dam's manager, Mr. Joni Chania, the analysis has never provided any feedback to alter the permissible operating envelope.

The bedrock is evidently permeable, consisting of fissured limestone and dolomite. To prevent seepage, a concrete apron was extended 120 meters below the foundation of the dam. There is one known leak in the foundations of the dam, on the right side. It is underwater. The dam discharge must be stopped and the outlet channel pumped down to inspect the leak. This has not been done for several years because the discharge valves are leaking and the pumping station located in the downstream foundations below water level is not operable. The leak was identified by monitoring piezoelectric transmitter readings buried beneath the dam foundations during construction – they indicated pressure surges in 1995 and again in 1998. Evidently a crack opens up during some operating conditions and closes again under normal conditions. Any continued flow through such a crack could be extremely serious.

Other cracks have appeared on the downstream face of the dam and in stress concentrations around access galleries within the dam. The dam, which was completed in 1972, has a design life of 150 years. Without further study, it is not known whether this original estimate should be modified or whether any corrective actions are needed.

Another detail, possibly related, is that the dam was originally intended to stand another 40 meters in height. The construction crews greatly exceeded the authorized limits for blasting charges, shattering windows in a village 5 kilometers away. Evidently the upper strata were damaged, requiring the dam's design to be shortened.

5.2.7 Dam Outlet Valves

The dam has 4 sets of outlet valves (originally intended to be 7) that control release of water. Each set has two valves, with the downstream valve used to regulate flow and the upstream valve cycled on rarely as needed for inspection and repair of the downstream valve. One of the valve sets is jammed part way open, resulting in uncontrolled flow.

The procedure to repair the leak is to lower a stop block structure over the inlet to the inlet port on the face of the dam. The stop block was dropped and lost several years ago.

The flow lost through this outlet is sufficient to provide approximately 400 million kWh of generation over a year. Since the Enguri dam is restricted by low water level during part of the year, this is a significant problem. At the retail tariff, this is roughly \$40 million of loss, though only about \$7 million at the hydroelectric wholesale tariff of 1.8 cents/kWh, and even that amount is not being collected.

[Both the stop block replacement and the discharge valve repairs will be covered by the EBRD rehabilitation project. The cost of the repair is partly justified by the need to operate all outlet valves to prevent possible catastrophic overflow of the dam.]

5.2.8 Enguri Auxiliary Power

The Enguri Dam, having no transmission of its own, depends on auxiliary power transmitted back to the dam from the HES, 15 km away and in Abkhazia. Since the dam requires power to

operate, and the safety of the entire structure depends on being able to operate the dam, the present arrangement is imprudent. The management proposed to install a 10-MW auxiliary turbine-generator in one of the non-operating outlet valves. This project would be funded, presumably, in EBRD Phase 2 rehabilitation.

The dam is required to maintain a minimum flow downstream in the Enguri River which approximately matches the flow required to generate 10-MW.

5.2.9 Undeveloped Potential

The Enguri River and nearby Eristkali River have a potential for over 2,940 MW of capacity. Some of it was built but has now fallen into disrepair. One turbine out of 3 is still operable at the 225-MW Vardnili Hydroelectric Plant. Construction of the 700-MW Khudoni plant 32 km upstream of Enguri Dam was terminated before completion. The 600-MW Tobar plant farther upstream was also abandoned before completion. Other units under construction downstream have been flooded and are beyond economical repair. Other sites were planned but never developed. Interestingly, Enguri Dam includes provisions for future conversion to a pumped-storage plant, intended to work in tandem with a nuclear plant envisioned in the region by the Soviet Union.

Considering the geopolitical instability area and the current record of non-payment, private development would be extremely unlikely. A nation-wide Integrated Resource Plan would probably weigh against further development in the area to avoid over-concentration in technology, location, and resource. However, the area does have potential and could provide an export capacity some time in the future.

Note that the Vardnili plants have been committed for additional collateralization of the EBRD loan.

5.2.10 Excessive Manpower

Enguri HES has roughly 300 professional staff; the plant manager estimates that the plant could be operated prudently by 170 professional staff. The Enguri Dam has approximately 85 professional staff and could probably be reduced by a similar ratio. This is a complex issue, with many social considerations and implications in the local communities. Employees who work for 8 months without pay perhaps deserve extra consideration. There are also individual safety and national security concerns; the facilities are in a strife-torn area and vulnerable in many ways.

There is an issue of timing: the extensive work involved with the coming EBRD rehabilitation project will require temporary staffing; that work may be followed with a Phase 2. Training for alternative employment is not likely to be valuable in most cases – there is no other paying employment. The HES manager, Mr. Levan Mebonia, suggested that the Enguri complex is capable of providing construction, fabrication, and technical services.

Given local wage rates, the total payroll of the Enguri complex is probably microscopic on the scale of the value of the electric power it produces.

Considering everything together, it would be imprudent to act to compel staff reductions at the present. No action is recommended beyond pointing out the staffing ratios and organizational structures common in other parts of the world.

[If Enguri should decide to provide commercial services, it will require approval by the EBRD under the rehabilitation loan agreement. Provide a financially feasible opportunity can be found, this would be an excellent demonstration project, promoting entrepreneurship, developing management skills, stimulating the local economy, and mitigating the excess manpower problem. Enguri would need assistance to establish financially independent subsidiary organizations with proper separation of their accounts and finances from the parent corporation.]

5.3 Causes

Having defined a set of problems, it is not sufficient to proceed directly to suggesting corrective actions. Too often in the energy sector the wrong solution gets applied for lack of deeper insight. The immediate cause of most of Enguri's problems is, of course, inadequate collection from electricity sales. The root causes, however, may be different. Several are proposed:

5.3.1 Lack of a National Integrated Resource Plan

The Enguri staff have not been involved in the formulation of decisions that affect them deeply. Their input has been subjective and *ex post facto*. The proper host of this planning process is the GNERC. However, if licensing and tariff and new capacity decisions are being made without the input of affected parties, it is the responsibility of those parties, including Enguri HPP, to insist on a seat in the decision process. Enguri has the burden to show where it fits in the national energy picture and to evaluate the possible outcomes of policies in that respect.

5.3.2 Inadequate concept of corporatization

Providing a management structure, a license, and an accounting system do not make a corporation. In this case, where the shares in Enguri dam are held entirely by the Ministry of State Property, there seems to be an abrupt gap between the expectations of the ministry and the performance of Enguri. As the owner, MoSP should have an overwhelming concern for the performance of the corporation and for maximizing the valuation of the assets. MoSP is allowing the asset value of the entire Enguri complex to be eroded, squandering a national inheritance. If the complex is ever to be privatized or to host private investment, the owners must take an active role to sustain Enguri financially. Within the Enguri management structure, there is an apparent lack of corporate governance deriving from a lack of accountability to owners and regulators.

5.3.3 Lack of representation

Enguri has been partly protected from abusive policies by the hand of the Minister of Fuel and Energy, who is a PhD structural engineer intimately concerned about the future of the dam. Until recently, he visited the plant weekly. While this support is valuable, it blurs a corporate responsibility for public and political relations that must be borne by the Enguri HPP management. They should be making the lack of revenues, the erosion of the asset, and the threat of failure into public issues, gaining public support to balance some of the misuse of political power. The public has to aware that its future is being sold short and Enguri HPP must be proactive in spreading that awareness. Enguri needs full-time professional representation, including both lobbying and public relations expertise.

5.3.4 Lack of an overall business strategic plan

A plan should be developed to evaluate scenarios for Enguri's future. Optimistic scenarios could assume restoration to full operating condition, development of commercial business

subsidiaries, and measures to attract investment to develop the rest of the Enguri complex to full capacity. Pessimistic scenarios should examine ways to minimize the rate of deterioration and identify absolutely indispensable measures to protect the integrity and safety of the complex.

5.4 Possible Areas of USAID Technical Assistance

5.4.1 Dam Operations Model

[Technical Assistance Recommendation]

Support the development of a simplified operating model that would compile sensor data, indicate proximity to critical stress levels, and suggest operating modifications. The model would presumably consist of a finite-element analysis of the dam structure. Commercial models may be adaptable to the Enguri situation, and the station has adequate technical competence to build the model with minimal training, especially if Danthesi Institute provided technical assistance. A modern-generation desktop PC has sufficient computing power to perform the analysis and to drive indicators in the control room. The large volume of compiled reports from Danthesi Institute provide a means to validate the model.

For the present, the system could use manually compiled readings. The compiled data could be sent to Danthesi Institute to speed data entry processing time for the formal analysis and give formal backup to the model outputs. If the model proved valuable, it could form the basis for a recommendation to automate essential sensor input and provide real-time operating support.

5.4.2 Dam Analysis

[Technical Assistance Recommendation]

Danthesi Institute, a private research institute, provides data analysis services to Enguri Dam under contract. The Institute is critically short of funding, especially as some of its customers, such as Enguri, are also in critical financial condition. The Institute uses a low-resolution finite-element analysis to make theoretical projections of the dynamics of Enguri Dam, then compares the real data against projections to recognize any emergent problems. A high-resolution finite element analysis model is needed to determine the most likely points of failure, the mechanisms which affect them, and means to mitigate them. The analysis and all graphics and reports are processed on an outdated Pentium-1 computer. The Institute desperately needs funding for three critical investments:

- 1) Two current-generation desktop computers and one file server
- 2) High-resolution finite element analysis software
- 3) Current generation software to support field surveying of Enguri benchmarks

Given the extraordinary dependence of Georgia on the single resource at Enguri Dam, the complexity of the problem, and the uncertainties exposed by present levels of analysis, this is an important and perhaps urgent investment.

5.4.3 National Integrated Resource Plan

[Technical Assistance Recommendation]

Assist Enguri staff in taking a leading role in developing a National Integrated Resource Plan, working through GNERC to involve other energy sector entities.

5.4.4 Enguri Strategic Business Plan

[Technical Assistance Recommendation]

Assist Enguri staff in developing a continuing strategic business plan, including training in the concept, examples from similar businesses, and support in using the business plan to support the decision process.

5.4.5 Management using International Accounting Standards

[Training Recommendation]

The Enguri staff is implementing International Accounting Standards. This work will probably not be completed under the present technical assistance program. When the system is fully operational, the management will need training to obtain the full benefit of the accounting system. Training is needed to help them envision their decision process integrated with accounting support. Classroom training could be supplemented by exercises to walk through examples of contract decisions, budgeting decisions, capital investment decisions, strategic planning decisions, corporate finance scenarios, and other meaningful examples.

5.4.6 Representation

[Technical Assistance Recommendation]

The Enguri plant managers need assistance in developing corporate representation at the Ministries, at the GNERC, and in the media through lobbying and public relations. If the Enguri management is willing to create a staff position or engage a consultant, that person will need advice on ethical conduct, utilization of public media, and effective lobbying procedures.

5.4.7 Enguri Auxiliary Power Supply

[Technical Assistance Recommendation]

Provide capital to support installation of a 10-MW turbine-generator to provide power to operate Enguri Dam independent of power supplied from Enguri HES.

5.4.8 Commercial business subsidiaries

[Technical Assistance Recommendation]

Provide assistance to evaluate the financial feasibility of using excess Enguri staff and unused workshop facilities and equipment to establish commercial business subsidiaries. If warranted, further assistance in establishing, licensing, and staffing the new entities. Assistance could include an advisory role in responding to business opportunities such as construction contracts.

5.4.9 Business management training

[Training Recommendation]

Business management skills would be highly valuable to Enguri management and a strategic investment for Georgia. Despite excellent technical skills, the Enguri management has not yet developed a full range of business management skills. If their primary interfaces with GNERC and MoSP and MoFE and the GWEM were functioning, they would perhaps be held accountable and be provided with direction in developing their financial management skills. As it is, however, the Enguri staff is largely left to its own resources. The Enguri complex, representing over 40% of the nation's generating capacity, is too great an asset to be left to develop its own concept of corporate management – it needs to be exposed to the full structure of modern business management methods. The course of study exceeds field training capability. An academic MBA program is needed.

5.4.10 Project management

[Training Recommendation]

It is presumed that the EBRD project will provide field assistance to ensure full compliance with the accounting and project management aspects of the rehabilitation project. Further assistance may be unnecessary, but a program of technical assistance should include liaison with EBRD to determine any further areas of cooperative support.

5.4.11 Arched dam technology exchange

[Training Recommendation]

There is no problem with the level of technical proficiency at the Enguri facilities; the staff is highly trained, with excellent professional credentials, and masters of a technology that compares well with the best examples in the West. However, some high level exchange would be valuable to Enguri and to their Western counterparts. The arched dam design has unique civil engineering, monitoring, and operating developments that need to be shared globally. There are new techniques in data collection, laser interferometry finite-element analysis, measurement techniques, life extension, optimization of operating regimes, predictive and preventive maintenance, and other topics that should be exchanged.

5.4.12 Human Resources Development and Training Management Program

[Technical Assistance Recommendation]

Due to extreme circumstances, including warfare, financial distress, and extraordinary production challenges, the staff of Enguri HPP are stressed. The Enguri complex is such an extraordinary asset that its staff should be selected and developed with more than usual care. Enguri requires assistance in developing a formal system of training and qualifications documentation, career development and accessions planning, and a financially feasible continuing training program.

5.4.13 Reinvestment Program

[Technical Assistance Recommendation]

The Enguri facilities have many examples of high-payback projects that are not being implemented for lack of short-term capital. These include lost production and deterioration of vital equipment, including entire generating stations. One cannot let a problem costing \$1,000 per day continue for years because one does not have \$10,000 needed to fix the problem. Enguri staff should receive training under the General Utility Management Training program to support financial analysis of projects, time value of money, and financing methods. They also need technical assistance to set up a system to keep track of known problems and opportunities for investment, perform screening analyses, identify high-return investment candidates, and develop policies for isolating these investments from the general revenue deficit problems.

5.4.14 Specific Training Programs for Enguri HPP

[Training Recommendation]

SAROG needs training specific to its functions in the following areas:

- a) Arched dam technology exchange;
- b) Commercial subsidiaries;
- c) Project management;
- d) Management using International Accounting Standards;

- e) Project financing options; and

These specific training needs are summarized in [Section 7](#). These training events should be designed specifically for Enguri HPP, and participation in these training events should be primarily for Enguri staff, though some cross-training is recommended with MoFE, MoSP, GWEM, and GNERC staffs.

5.4.15 General Utility Management Training Program for Enguri HPP [Training Recommendation]

Enguri staff should participate with other energy sector institutions in a General Utility Management Training Program as outlined in the Training Needs Analysis in [Section 6](#). These needs are also summarized in [Section 7](#)

Section 6: Training Needs Analysis

6.1 Methodology

Specific training needs of the four energy sector entities were pointed out in their assessments in Sections 2-5. To provide another viewpoint, we used a questionnaire to solicit the participants' view of their own training needs. The results of this analysis are included in the Summary and Prioritization of Recommendations ([Section 7](#)) along with other recommendations for training that were derived from the organization assessments in Sections 2-5.

6.1.1 Questionnaire description

Each entity was given a set of 25 questionnaires ([Annex C](#)) to be filled out by professional management personnel. The questionnaires collect information on the participant's position, education, and previous training. They also ask the participant to make a judgment about his existing level of knowledge:

1. No understanding
2. Understand basics
3. Understand fully
4. Experienced
5. Able to teach

and the level of knowledge needed to perform the job:

- | | |
|----------|---|
| Level 1. | Not needed |
| Level 2. | Need introduction |
| Level 3. | Need to be able to perform (practitioner) |
| Level 4. | Need to be able to supervise |
| Level 5. | Need to set high-level policy |

for each of 27 skills considered representative for the energy industry. These level definitions are convenient because they correlate roughly with the levels of knowledge, but also because they correlate with the modes and venues appropriate to each type of training. The level definitions are important for determining the shape of a training program. Each level is defined and discussed briefly:

Level 1 Not needed

No training or skills needed except normal awareness of parties, roles, and relationships within the industry.

Level 2 Introductory

Adequate for two major purposes:

1. To standardize a basic level of knowledge as a pre-requisite for higher level training
2. To allow the participant to support and interact with other workgroups performing the skill

Level 3 Practitioner Level

Adequate to actually perform the tasks and use the tools and methodologies of a position. For example, a tariff specialist must be able to perform all the computations and analyses needed to make a cost-of-service tariff analysis and design a corresponding set of tariff allocations.

Level 4 Supervisory Level

Adequate to organize functions within a workgroup, impose quality control standards, train subordinates, and interact with other workgroups. For example, the supervisor of the tariff workgroup must be able to recognize when standard methodologies are not working because of subordinate performance problems, bad information being provided from sources, or misapplication of the methods to a situation.

Level 5 Policy-setting Level

Adequate to examine organizational functions from a broad, international perspective, enabling the participant to choose methods and policies appropriate to the situation and guide their evolution according to international Best Practices and experience.

6.1.2 Replies

Response was good. The following replies were received:

Agency	Replies
GNERC	22
Enguri HPP	not yet received
SAROG	23
Saknavtobi	17

The staffs at both Enguri and at Saknavtobi were so kind as to translate the questionnaires into Georgian (without being asked).

6.1.3 Validity

The replies gave evidence that they were considered, not just thrown together. Everyone, without exception, answered the text blanks fully and conscientiously. The numerical skill boxes were also completed fully. More importantly, they were varied and showed a rough correlation with job descriptions and backgrounds. There were only a few inconsistent answers or “outlying data points”, e.g. a senior executive who answered he didn’t need skills in performance evaluation, or an economist who didn’t need to know how a utility worked.

The ideal way to complete this type of questionnaire consists of several steps:

- Assemble participants in small groups
- Brief the group on the purpose of the questionnaire
- Provide a printout of each person’s job description
- Answer questions about the meaning of each skill
- The assessor should evaluate the skills required for each job description independently and compare these with the answers given for skills needed.

- The assessor should interview each person, asking questions to confirm existing levels of knowledge.

Due to time limits, the questionnaires were given out to be answered individually, without further support or confirmation. The results showed that a few people misunderstood the questions and methods, possibly due to language problems. Some participants showed they needed a large number of skills at the highest level (setting policy). That could be an indication that they are consulted when policy is being set by senior executives, but more likely not. Others showed large numbers of skills that they did not need at all. One thinks that professionals in the energy sector need at least introductory understanding of all disciplines and positions to be able to support and interact with each other. A very few responses showed an uncharacteristic pattern that they had a gap in virtually every skill; a few showed that their existing skills matched their needs almost exactly. These could be interpreted that the individual is willing to attend either any type of training, or none.

There are two general difficulties with this questionnaire:

First, there are language problems. Even standard terms have different meanings in the two languages; complex management and financial ideas can mean different things, or have different scopes of meanings between languages, the countries, and even the academic backgrounds of the participants. An engineer might mean something quite different from an economist when describing spreadsheet skills.

Second, people who are unfamiliar with a concept are poor judges of whether they need training in that concept. For example, many people gave themselves fairly high existing skill levels for project finance. Very few, if any, energy sector projects have been done in Georgia under the discipline known as project finance. It is probable that some participants have participated in some way in the funding of projects from state or international assistance funding (which is in some aspects the opposite of project finance) and are unaware of the distinctions.

While significant factors, these general difficulties do not appear to have overwhelmed the value of the results. Program design should include either a more detailed spot check of training needs, supported by interviews to reduce the effect of these difficulties, or more current “mini-TNA’s should be conducted before individual training events to ensure the best match between curriculum and participant’s needs.

In all, one would conclude that most participants in the study gave reasoned and substantial answers and that the data has value. While the data is not fully consistent, it is deemed sufficient to give an approximate assessment of training needs which can be extrapolated to the overall professional cadres to provide a rough quantitative indication of training needs. It should be sufficient to make an estimate of the numbers of people that need training in each category and to support training program development.

6.2 Analysis of results

6.2.1 Gap Analysis

The graphs in Figures 6.2 through 6.5 show that in all four organizations, the most prevalent gap is a one-step gap, i.e. from Level 2 to Level 3. The number of 3- and 4-step gaps is very small. This is logical, as most people would not be in their present positions if they were badly lacking in needed skills.

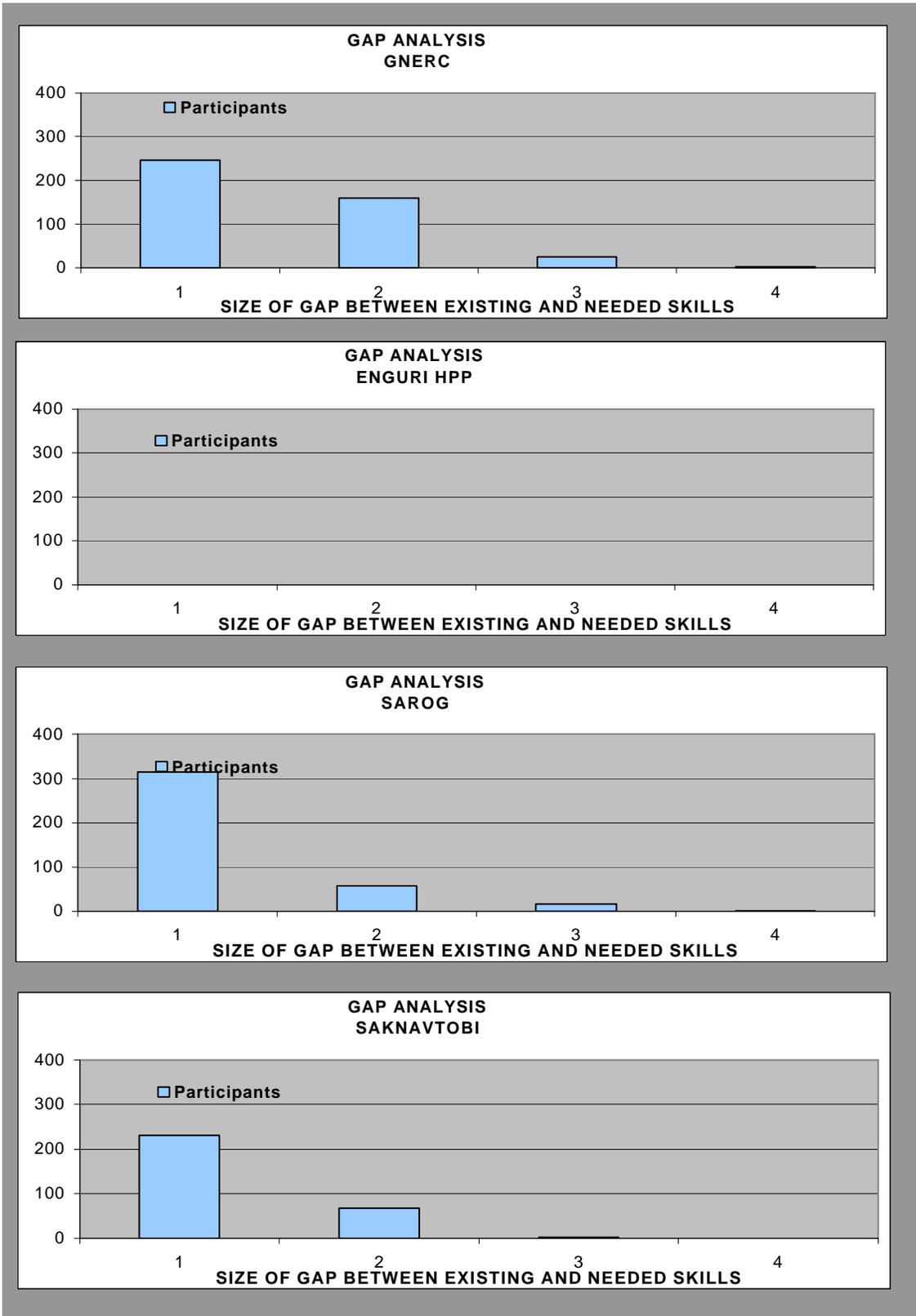
The gap analysis shows that not all participants need two-step training. That is, most of the participants that need practitioner skills or supervisory skills (Level 3) do not need an introductory level course. This means a training program can be designed with fewer introductory level courses, though some should be available where needed and some should be given for public and media audiences and for cross-training between workgroups. For example, regulated corporations need introduction to regulation, and regulators need introduction to the utility business.

6.2.2 Level Analysis

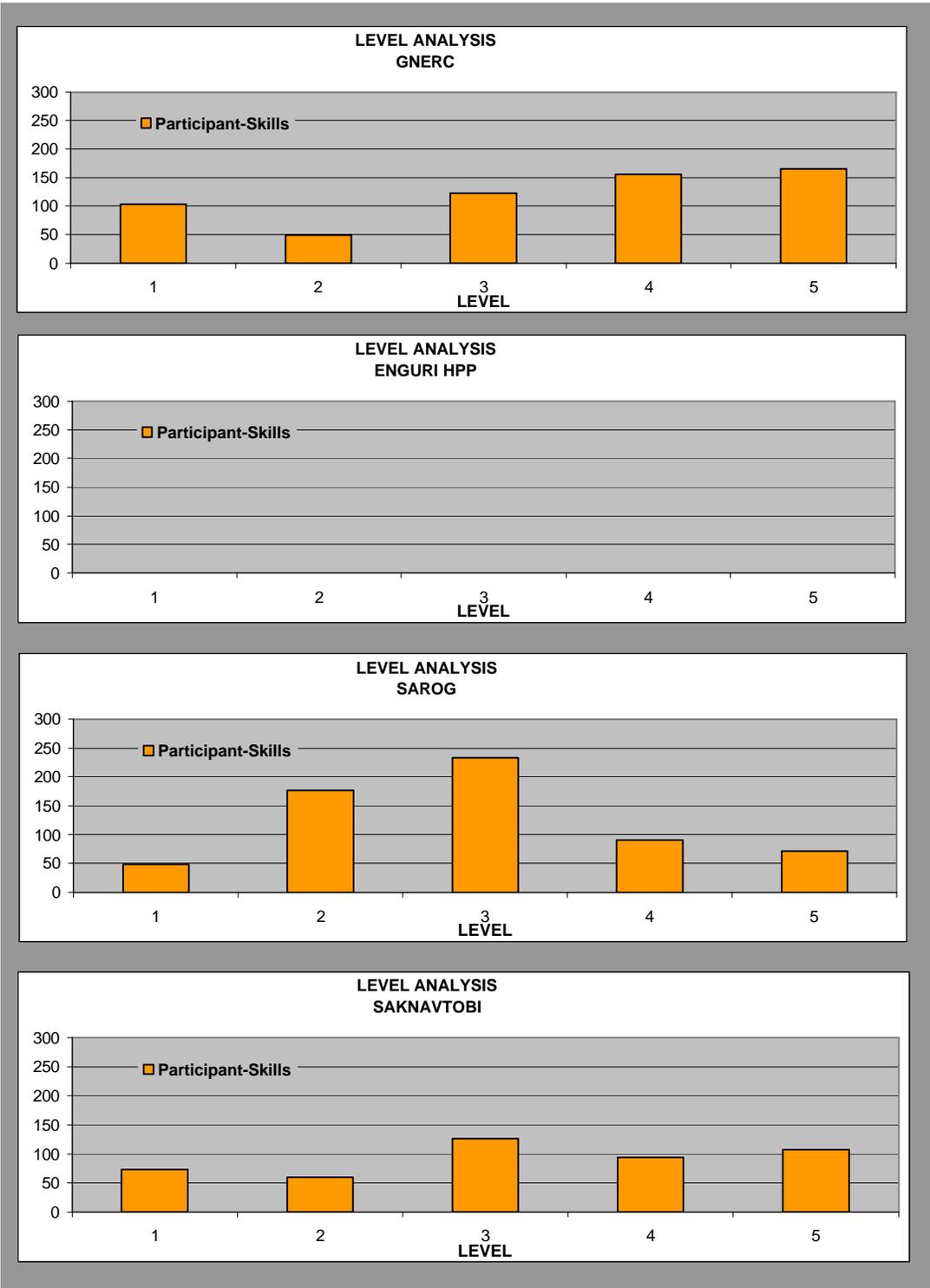
Figures 6.6 through 6.9 show interesting differences in the distribution of Skills Needed. GNERC, for example, shows a high proportion of skills needed at the policy setting level, which is appropriate for a regulatory commission, especially one still in the process of establishing its own regulatory policies and procedures. SAROG, on the other hand, shows that it needs a stronger emphasis on practitioner-level skills. Perhaps this indicates a difference in the culture or decision process of the two organizations (do SAROG managers get left out of the policy-setting decision process?) Or perhaps it reflects the observation made in Section 5 that many SAROG managers are involved not in regulatory activities, but in actually performing some of the functions of the regulated corporation, such as building a GPS system, writing environmental remediation procedures, and negotiating business contracts.

The level analysis shows the expected overall distribution, weighted toward practitioner and supervisory skills, but with a larger percentage of policy-setting skills. This has important implications for designing a training program, particularly on the venues and modes of training.

Figures 6.2 to 6.5



Figures 6.6 to 6.9



6.2.3 Skill Level Analysis

Questionnaire data was analyzed to show the level of training needed for each skill for which there was an individual gap. (Where existing skills meet the level needed, there is no gap and no need for training). The analysis showed that 33% of required skills are already met at the level needed with existing skills. The remaining skills with gaps are shown in Figure 6.10. If a clear pattern emerged at this stage, either by individual skills or by logical groupings, it should be addressed in the training recommendations. However, various sorting and grading methods showed no clear pattern.

Figure 6.10
Skills Needed at Each Level

SKILL LEVEL ANALYSIS (SORTED)	SKILL LEVEL					
	1	2	3	4	5	
database	0	5	24	15	5	49
career planning	0	3	19	10	15	47
license compliance monitoring	0	2	17	14	14	47
consumer impact analysis	0	2	19	16	8	45
training	0	1	19	8	17	45
consumer representation	0	2	17	14	11	44
organizational development	0	1	16	10	17	44
tariff analysis	0	1	19	8	16	44
compliance with license terms	0	4	13	9	17	43
financial analysis	0	8	14	5	15	42
accounting	0	8	13	13	8	42
political relations	0	6	9	15	12	42
tariff design	0	2	17	11	12	42
project finance	0	9	13	7	12	41
public information systems	0	4	15	12	10	41
resource planning	0	3	13	11	14	41
returns on investment	0	9	15	5	11	40
how utility companies work	0	1	15	11	13	40
hearing procedures	0	0	17	11	12	40
mitigation of damage	0	5	12	13	9	39
spreadsheet	0	3	20	8	8	39
time value of money	0	9	10	10	9	38
strategic business planning	0	5	12	9	12	38
internet	0	2	21	11	4	38
performance evaluation	0	0	13	11	14	38
environmental regulations and standards	0	4	14	10	8	36
word processing	0	1	16	12	7	36
Total Person-Skills						1,121

6.3 Extrapolation to Determine Amount of Training Required

Training must involve enough participants to create a “critical mass” of graduates who can implement change by interacting with each other.

A training program should deliberately involve a cross-section of concerned stakeholders in each activity except for a few topics specific to special agencies. For example, it does little good to train a regulatory staff in setting cost-of-service tariffs if the other concerned parties do not

understand the process. A mixed-group tariff workshop should include the staff, the regulated utilities who must prepare tariff filings, customer representatives who must challenge and balance the sector’s arguments, and even representatives from the ministry who must relinquish the tariff-setting responsibility and who need to understand the new tariff-setting process to be able to support it. (This example is particularly relevant in Georgia’s case. The public now has essentially no competent representation in the tariff process, and there is serious confusion about the independence of the tariff-setting process.) Training in mixed groups will ensure not only that needed skills are distributed across the energy sector, but that individuals will form working relationships. Training should include many working group activities to strengthen this effect.

In the interest of institutional development, training events should also attempt to involve local training institutions and their faculties in several ways: as monitors and evaluators, as participants, or as supporting instructors for delivery of the training.

The questionnaire survey covered only 25 persons from each of 4 organizations.

Figure 6.3 estimates of the numbers of senior managers that should be involved in the USAID-sponsored training programs.

**Figure 6.3
Extrapolation of Survey Results**

	Number of Responses	App. Number Participating Positions	Person-Skills
GNERC	22	40	723
SAROG	23	25	452
Saknavtobi	17	150	2,712
Enguri	-	80	1,446
Consumer Advoc	-	10	181
Host Institutions		30	542
LDCs	-	70	1,266
TransCo	-	20	362
Other Agencies	-	250	4,520
TOTALS	62	425	7,684

Survey participation ratio	14.59% of participants
Survey skills needed	1,121 person-skills
Survey maximum skills needed	1,674 person-skills
Percentage existing skill coverage	33.03%
Average skills needed	18.08 per person
Average activity attendance	30 persons per class
Delivery	4 skills per class week
Delivery per class	120 person-skills
Total training needed to deliver skills	64 weeks of training
Adjustment for effectiveness of matching	1.3 at 85% coverage
Total training program required	83 weeks of training

Figure 6.3 shows that the program should be designed for 425 participants. Each will need approximately 18 skills at various levels, so about 7,700 person-skills must be delivered. The skills are broadly defined – about 4 such skills can be delivered, on average, in a week-long training activity, such as a course or workshop. Note that a more detailed survey would use more narrowly defined skills, resulting in larger numbers of person-skills required, but more skills delivered per week of training.

The analysis shows that 64 weeks of training would be needed if every skill could be packaged into a course at the right skill levels and if every participant could attend exactly those courses (or parts of courses) that met his needs. In practice, with attendees nominated on a “best fit” basis, coverage would be only about 50%. Increasing the number of weeks of training by a factor of 1.3 will increase the coverage to about 85%. The final estimate is that 83 weeks of training are required to cover the surveyed skills adequately.

There are no distinct patterns or clusters of needs in the TNA survey results. Since all listed skills have significant gaps and needs, the best way to administer this program is to design a set of training activities courses that cover all the skills, then to nominate participants from the target groups on the basis of best fits of their individual needs.

This method requires that the program administrator keep track of the attendance (and successful completion) of each participant, essentially keeping a list of the remaining skills needed for each individual. This can be done readily in a training database. As the program progresses, the remaining needs lists get shorter, giving a good method to track and monitor the program. Near the end of the program, if some persons or skills or levels have not been adequately covered, training activities can be custom designed to meet the requirement.

6.4 General Utility Management Training Program [Training Recommendation]

Although the Training Needs Analysis in this section is based on a quick, informal questionnaire, it provides a good starting point that can be refined under the administration of the new program. A set of 74 courses has been designed directly from the database of skills needed by grouping sets of related skills, specifying faculty able to deliver at the needed levels, and suggesting appropriate modes and venues for the training. This set of recommended courses is shown in Figure 7.5.

Section 7: Summary and Prioritization of Recommendations

This section assembles the various recommendations from Sections 2-5 (the organizational assessments) and from [Section 6](#) (the Training Needs Analysis). The section consists of the prioritization criteria, summary tables for each of the four organizations and the TNA, and a master prioritized list.

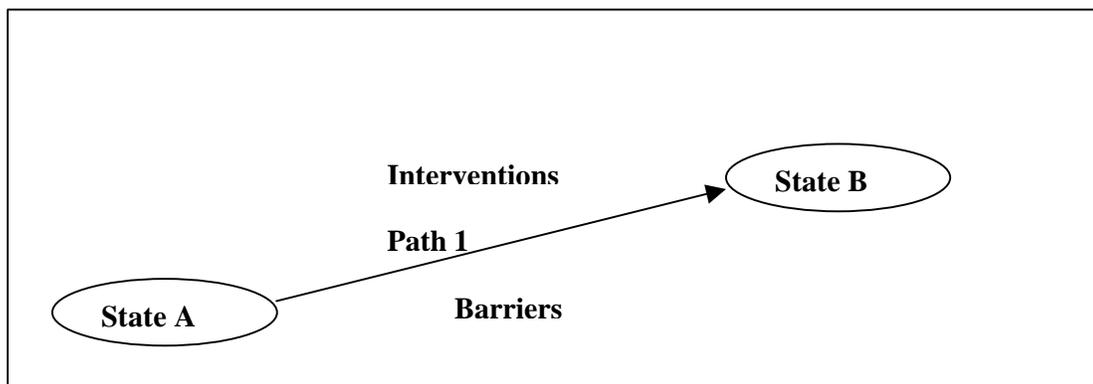
7.1 Prioritization Criteria

Following guidance supplied by USAID on May 16, 200, we established criteria to prioritize recommendations.

Due to the extraordinary situation in Georgia, with most institutions near financial collapse, with many differing sets of interests (or disinterests) obstructing legislative paths, normal prioritization (legislate, educate, and implement) has been tried and proved ineffective.

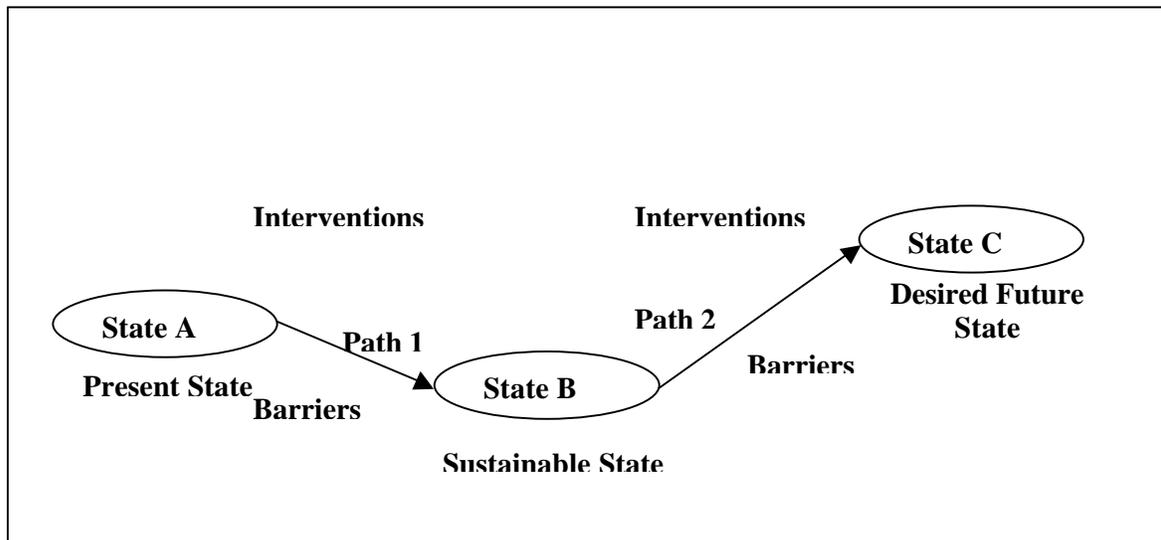
The approach deemed most sensible here is to set State-Path diagrams for each institution, identifying the present state, a desired future state, and the path(s) to get there, as in Figure 7.1. The State-Path diagrams can then be annotated to show the barriers and the interventions that can be assembled to overcome them.

Figure 7.1 General State Path Diagram



State-Path analysis is particularly useful in Georgia because the affected institutions have to look at an interim, sustainable state during which they will depend on existing, known, and predictable resources to meet infrastructure needs. The State-Path analysis for Georgia, then, consists of Present State (A), Sustainable State (B), and Desired Future State (C), as in Figure 7.2. For example, Saknavtobi would use its present revenue-deficit condition as the Present State, assume that no PSA's produced revenues for an extended period as the Sustainable State, and assume large PSA revenues for the Desired Future State. State-Path Diagrams are shown for GNERC, SAROG, Saknavtobi, and Enguri HPP in [Annex E](#).

Figure 7.2
State-Path Diagram for Georgia



USAID’s programs should be designed to both build a Sustainable State and progress toward the Desired Future State. Using this logic, we have used the following system of prioritization:

- Criterion 1:** Within the established USAID sphere of activities.
- Criterion 2:** Urgent. Has an immediate effect to improve the Present State.
- Criterion 3:** Sustainable State. Helps establish a Sustainable State within the short term, primarily by cutting physical and financial losses.
- Criterion 4:** Desired Future State. Supports development toward a Desired Future State over the long term.
- Criterion 5:** Definable Stages. Has measurable, definable stages that could be used to end or restrict support in event of weak counterpart support.
- Criterion 6:** Has synergistic relationships with other recommended measures.

This prioritization system is objective and quantifiable and lends itself readily to the categories of recommendations which emerged from the organizational assessments in Sections 2-5 and the Training Needs Analysis in [Section 6](#).

7.2 Technical Assistance Recommendations

The following Tables 7.1 through 7.4 list the Technical Assistance recommendations made in Sections 2-5 and show a quantitative score for each recommendation. The scores are totaled to provide a basis for prioritization.

Table 7.1 Recommendations for GNERC Technical Assistance

(For detailed description of Issues, Causes, and Recommendations, refer to [Section 2.](#)) ([TOC](#))

Technical Assistance and Training Needs	Recommendations and Remarks	Criterion 1 USAID Sphere YES/?/NO	Criterion 2 Present State 1-5	Criterion 3 Sustainable State 1-5	Criterion 4 Future State 1-5	Criterion 5 Definable Stages 1-5	Criterion 6 Synergy 1-5	Total Score 5-25
Legal and Regulatory Framework								
2.9.1 Amendment of Energy and Natural Gas Laws	To incorporate some of the missing Articles such as Sanctions and Consumer Advocacy	YES	5	4	4	4	4	21
2.9.3 Tariff Methodology Development	To establish transparent tariff structure and tariff adjustment procedures	YES	4	4	4	4	4	20
2.9.4 Gas Sector Market Rules	To promote competition in the gas market.	NO	2	3	3	3	3	14
2.9.5 Assistance in Drafting Secondary Laws	Needed for the transparent operation of GNERC	YES	3	4	4	4	4	19
2.9.8 GNERC Administration procedures	Needed to improve GNERC's regulatory duties.	YES	2	3	3	3	3	14
Regulatory Regime								
2.9.2 Consumer Advocacy	To make GNERC unbiased and enlist customer support.	YES	5	4	4	4	4	21
2.9.6 Financial Auditing Capacity Development	To improve GNERC's regulatory functions.	YES	5	3	3	3	3	17

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2.9.9 Performance monitoring of GWEM	To deliver GNERC's legislatively mandated duty.	YES	5	4	4	3	3	19
2.9.10 Safety and Quality of Service Monitoring	To improve consumers protection and to avoid utility's abuse	YES	3	3	3	3	2	14
2.9.12 Consumers Bill of Rights	To protect Consumers and enlist customer support	YES	5	3	3	3	3	17
2.9.13 National Integrated Resource Planning	Needed for least-cost resource addition, which has impact on future tariff, and to build cooperation.	YES	4	4	5	4	4	21
HR Development and Training								
2.9.7 HR Development and Staff Evaluation Program	To improve GNERC's regulatory functions	YES	2	3	3	3	3	14
2.9.8 Financial Auditing Capacity Development	To help stop sector losses and build accountability	YES	5	3	3	3	3	17
2.9.11 Training and Professional Development Program	To improve GNERC's regulatory functions.	YES	3	4	4	4	4	19
Technical								
2.9.14 Computer Equipment Assistance	To enable basic productivity measures	NO	3	2	2	2	2	11
2.9.15 Audio-visual Recording Equipment	To document hearings and support public access	YES	4	4	4	4	3	19

Table 7.2 Recommendations for SAROG Technical Assistance

(For detailed description of Issues, Causes, and Recommendations, refer to [Section 3.](#)) ([TOC](#))

Technical Assistance and Training Needs	Recommendations and Remarks	Criterion 1 USAID Sphere YES/NO	Criterion 2 Present State 1-5	Criterion 3 Sustainable State 1-5	Criterion 4 Future State 1-5	Criterion 5 Definable Stages 1-5	Criterion 6 Synergy 1-5	Total Score 5-25
Legal and Regulatory Framework								
3.7.2 By-laws/Secondary Laws	To promote transparent operation of SAROG	YES	3	4	4	4	4	19
3.7.3 Oil Refinery Development Strategy	To evaluate options for refinery sector development in Georgia.	YES	2	3	3	3	3	14
3.7.5 Gas Market Rules	To promote Gas market competition	YES	3	3	3	3	3	15
Regulatory Regime								
3.7.1 Legal and Regulatory Capacity Building	To improve SAROG's regulatory capacity	YES	3	4	4	4	4	19
3.7.9 Upstream sub-sector reform	To promote private sector investment and to improve SOE performance	YES	4	4	4	4	4	20
3.7.10 Petroleum Development Promotion and Contract Negotiation Assistance	To promote private sector investment	NO	2	3	3	3	3	14
3.7.11 Upstream gas pricing reform	For transparent gas sector tariff structure.	YES	2	3	3	3	3	14

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Technical Assistance and Training Needs	Recommendations and Remarks	Criterion 1 USAID Sphere YES/NO	Criterion 2 Present State 1-5	Criterion 3 Sustainable State 1-5	Criterion 4 Future State 1-5	Criterion 5 Definable Stages 1-5	Criterion 6 Synergy 1-5	Total Score 5-25
HR Development and Training								
3.7.6 Financial Auditing Capacity Development	To reduce losses and ensure proper PSA contract monitoring	YES	5	4	4	4	4	21
3.7.14 SAROG Organizational Development Study	To ensure SAROG is able to meet growing functions.	YES	2	3	3	3	3	14
3.7.15 Strategic Business Planning	To build coordination with Saknavtobi.	YES	4	3	3	3	3	16
3.7.16 Human Resources Computer Equipment Assistance	To improve SAROG's functional duties and regulatory efficiency.	YES	3	4	4	4	4	19
Technical Areas								
3.7.8 Production and PSA Oversight Assistance	To improve SAROG's regulatory functions.	NO	4	3	3	3	3	16
3.7.13 Energy Contingency Planning	To minimize impact of energy fuel shortages.	YES	4	4	4	4	4	20
3.7.12 Transit Fee and Benefits Evaluation	To protect GOG's revenue collections.	NO	3	3	3	3	3	15
3.7.17 Procurement Improvement	To promote transparent procurement and ICB.	NO	2	2	2	2	2	10

Table 7.3 Recommendations for Saknavtobi Technical Assistance

(For detailed description of Issues, Causes, and Recommendation, refer to [Section 4.](#)) (TOC)

Technical Assistance and Training Needs	Recommendations and Remarks	Criterion 1 USAID Sphere YES/NO	Criterion 2 Present State 1-5	Criterion 3 Sustainable State 1-5	Criterion 4 Future State 1-5	Criterion 5 Definable Stages 1-5	Criterion 6 Synergy 1-5	Total Score 5-25
Corporate Development								
4.4.6 Strategic Business Planning	To ensure survival if PSA revenues do not occur, prudent use of revenues if they do occur	YES	1	4	5	4	5	19
Regulatory Regime								
	No recommendation							0
HR Development								
4.4.7 Human Resources and Training Program Development	To deal with overstaffing, productivity, and lagging training problems	YES	1	3	3	4	3	14
Technical								
4.4.2 Strategic Equipment Investment	To support domestic industry and improve experience transfer	NO	1	2	3	2	3	11
4.4.4 Oil Spill Contingency Planning	To build awareness and reduce damage	YES	1	2	2	2	1	8
4.4.8 Reinvestment Program	To reduce losses and produce revenues in high payback situations.	YES	4	5	5	5	5	24

Table 7.4 Recommendations for Enguri HPP Technical Assistance

(For detailed description of Issues, Causes, and Recommendation, refer to [Section 5.](#)) ([TOC](#))

Technical Assistance and Training Needs	Recommendations and Remarks	Criterion 1 USAID Sphere YES/NO	Criterion 2 Present State 1-5	Criterion 3 Sustainable State 1-5	Criterion 4 Future State 1-5	Criterion 5 Definable Stages 1-5	Criterion 6 Synergy 1-5	Total Score 5-25
Corporate Development								
5.4.4 Enguri Strategic Business Plan	To ensure financial survivability	YES	3	4	4	5	5	21
5.4.6 Representation	To build political and public relations	YES	3	3	3	2	2	13
5.4.8 Commercial Subsidiary Development	To build revenue base and deal with overstaffing	YES	1	3	3	3	2	12
Regulatory Regime								
5.4.3 National Integrated Resource Plan	To put the Enguri resources into planning perspective	YES	3	5	5	4	5	22
HR Development								
5.4.12 Human Resource Development and Training Program	To reduce losses and produce revenues in high payback situations.	YES	1	3	3	4	4	15

Table 7.4 Recommendations for Enguri HPP Technical Assistance (continued)

Technical Assistance and Training Needs	Recommendations and Remarks	Criterion 1 USAID Sphere YES/NO	Criterion 2 Present State 1-5	Criterion 3 Sustainable State 1-5	Criterion 4 Future State 1-5	Criterion 5 Definable Stages 1-5	Criterion 6 Synergy 1-5	Total Score 5-25
Technical								
5.4.1 Dam Operations Model	To provide operating guidance to reduce risks and damage.	YES	1	3	3	4	1	12
5.4.2 Dam Structural Analysis	To review safety margins	YES	1	4	3	4	1	13
5.4.7 Auxiliary Generator	To provide emergency operating power for dam.	NO	1	3	3	4	1	12
5.4.13 Reinvestment Program	To reduce losses and produce revenues in high payback situations.	YES	4	5	5	5	5	24

7.3 Training Recommendations

The assessment team performed a questionnaire-based analysis of the General Utility Management Training Needs of the energy sector. The analysis results are shown in [Section 6](#). The training activities needed to address these general needs are shown in [Table 7.6](#).

The assessment team also identified various training needs specific to GNERC, SAROG, Saknavtobi, and Enguri HPP. These specific needs are described in Sections 2-5 and the training activities needed to address them are shown in [Table 7.7](#).

7.3.1 Training Strategy

Some of the considerations for designing a program suitable to Georgia are discussed below:

Venue

General utility management training should be delivered to the extent possible at a suitably equipped and furnished training institute with the potential to conduct such training in the future with its own faculty. Specific training should be delivered at training facilities within the organization or at a training institute.

Qualifications

Each participating organization must have a training program managed by its Personnel Department, with suitable computer equipment and software.

Training Needs Assessment

An overall training needs assessment should be done early in the program to confirm the analysis shown in [Section 6](#).

During preparation for each training activity, a “mini-TNA” should be performed to ensure the training curriculum is focused on the current situation and needs.

Instruction

The skills needed are predominantly practitioner skills, the hands-on performance of tasks. These should use experienced practitioners with international experience.

Some topics, especially those based in Georgian law and regulations, should use Georgian faculty.

Language barrier

The language barrier should not be underestimated. It is especially daunting when dealing with difficult management, financial, and technical concepts, and even more daunting when many of the concepts have no parallels in Georgia’s energy sector before independence. Provision should be made for sequential translation for each classroom training activity and for a translator to accompany every study tour and field activity.

Every course should include a glossary of key words and phrases in Georgian, and English, and Russian where necessary in certain technical concepts with no direct Georgian counterparts. Although full translation of all course materials is impractical, every course should include a primer or introductory-level overview of the course and important points in Georgian. Wherever feasible, Georgian instructors should be used to supplement presentations by foreign instructors, conduct exercises requiring close interaction, and help field questions.

Phases

Training which is urgently required to correct present problems, or which is required to support technical assistance programs, should be conducted in a Phase I, intended to be completed within 18 months of program initiation. Training needed to support longer-term objectives should be conducted Phase II.

Training should also be sequenced logically by topics and by levels. (See [Section 6](#) for a definition of training levels.) Level 2 Introductory training should precede Level 3 Practitioner training where feasible, both to standardize understanding before the more advanced training and to ensure a larger support community for implementation of skills.

Level 4 Supervisory training should generally be done after associated Practitioner training.

Level 5 Policy-Setting training may be done early in sequence to build executive support, or it may be done late in the sequence to build on earlier training.

Critical Mass

Every training topic has to build a critical mass within the energy sector, building teams across corporate boundaries and across the government/private-sector divide. This should be considered paramount during nomination and selection of participants. Another important aspect is to sustain contact between participants in the training. Program features to support this include newsletters, alumni associations, web pages, photographic rosters and databases, email contact with instructors and provider organizations, and continuing recognition of former graduates at new courses.

The most important factor toward building critical mass is to ensure the qualifications gained through training are built into the career development and performance evaluation systems.

Categories of Training and Professional Development Programs

The following eight modes of training should be considered in the systematic training plan development. The distinctions among them are rather arbitrary and in some respects they overlap. The underlying principles are that interaction is paramount and that all of these modes are experience transfer vehicles, so actual experience is the primary qualification of the instructors.

a) On-The-Job Training

The purpose of this type of training program is intended to develop staff skills at given levels of proficiency. It may be deemed short-term, routine, continuing, in-house, or on-the-job training for existing or new staff members. The objective of this type of training is to strengthen the technical skills of staff when they join the department or are to be upgraded. This type of training program may be used to certify continuing or increased staff proficiency within the same career path.

b) Supervised In-Service Training

This type of training is the most effective means of upgrading the skill levels of individual staff. To attain maximum success, organizations must identify appropriate supervisors to provide the training, and convey to supervisors and participants, alike, the importance the department attaches to on-the-job training.

c) On-Site Courses

Formal on-site courses are often appropriate mechanisms to strengthen individual skills. This mode and venue is particularly appropriate when the training is based on workplace facilities or when it involves support from other groups in the workplace.

d) Workshops

As the name implies, participants in workshop are expecting to perform exercises or produce some kind of workproduct to enhance their learning experience. Typically, a workshop progresses from theoretical knowledge to practical applications and exercises to demonstrate those applications. The sequence usually takes several days at a minimum, so workshops are usually schedule for 5 to 10 weekdays.

e) Study Tours

Study tours have real value in two general modes: 1) as follow-up to practitioner-level training so participants can see a concept in its successful application; this can be an extremely valuable supplement to training in NIS countries, where Western practices were discredited by propaganda for decades and participant truly have to see it with their own eyes to believe it, or 2) as policy-level training where experienced practitioners need to be able to compare practices and results in many settings to be able to set policy in their own country.

Study tours are a method of experience transfer, and have to be optimized for that. Both parties should know the interests and professional level of the other before meetings. Study tours should be escorted by an experienced professional who can brief participants on the key information at each point of the tour, encourage fruitful lines of questioning, and help relate findings to the participants' situation.

f) Internship /Twinning Program

Internships/Twinning, in effect, provide extended in-service training within another organization. Georgian organizations should consider nominating junior staff that are not in critical positions as interns in other regulatory institutions in the U.S. or Europe. Internships/ Twinning can also be effective ways to train staff in new disciplines such as

regulating environmental emissions. USAID should develop a program for a limited number of interns who can bring new ideas and skills, and interact productively with other national or international organizations concerned with utility regulations.

g) Forums

Introductory level skills can be delivered effectively to large numbers of people, up to several hundred, in a short one- or two-day forum.

h) Train-the-trainers courses

When a set of skills must be spread to large numbers of participants, beyond the practical limits of any assistance program, every effort should be made to build local faculty to deliver the training again. Where called for and where financially feasible, a set of local trainers from a participating organization or from a technical institution should be sent on modified study tour to work with the foreign faculty during the course preparation. They should be briefed on the subject, given as much exposure to the application as possible through demonstrations and visits, and invited to prepare parts of the curriculum. They should also provide briefings to the instructors on the local situation, needs, and culture. During delivery of the training, they should be part of the faculty and should have the special role of sounding out the participants for feedback.

Figure 7.5 shows guidelines on the types of training appropriate for each level of training needs.

Figure 7.5 Modes and Venues for Training

LEVEL	DESCRIPTION	APPROPRIATE MODES AND VENUES
Level 1	Not needed	
Level 2	Introductory	Large groups (30-100), 1-2 days, staff or local instructors public forums, seminars, auditoriums, large classrooms, primers and self-study programs, academic courses of study
Level 3	Practitioner	Medium groups (15-30), 3-14 days, practitioner instructors classrooms, computer laboratories, interactive workshops, practitioner instructors, technical assistance in workplace
Level 4	Supervisory	Medium groups (15-30), 3-14 days, practitioner instructors classrooms, computer laboratories, interactive workshops, practitioner instructors, twinning programs
Level 5	Policy-setting	Small groups (1-12), 10-30 days, senior practitioner instructors interactive discussion groups, one-on-one technical assistance, planned and guided study tours, peer group international training programs, twinning programs

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Figure 7.6 General Utility Management Training

Activity Title and Skills Covered	Delivery Plan													
	No.	Level	Mode	Class Size	Days	Venue	Faculty	Sector	Person-skills	Weeks	Days	PD	%	CUM %
Fundamental business skills Word processing Database management Email Internet and web site design Spreadsheets	5	3	Practitioner Course	40	5	Local college	Host Inst	Both	1,000	5	25	1000	8%	8%
Basic Analytical Skills Financial analysis Time value of money Returns on investment	5	3	Practitioner Workshop	30	5	Local college	Host Inst	Both	750	5	25	750	6%	14%
Advanced Analytical Skills Project finance Resource planning	2	3	Practitioner Workshop	25	5	Training Inst	Foreign	Oil & Gas	250	2	10	250	2%	16%
	2	3	Practitioner Workshop	25	5	Training Inst	Foreign	Electricity	250	2	10	250	2%	18%
	1	4	Supervisory Workshop	20	5	Training Inst	Foreign	Oil & Gas	100	1	5	100	1%	19%
	1	4	Supervisory Workshop	20	5	Training Inst	Foreign	Electricity	100	1	5	100	1%	20%
Basic Corporate Management The utility business Corporate governance Organizational development Compliance with license terms	3	2	Introductory Forum	60	2	Training Inst	Foreign	Both	900	1.2	6	360	3%	23%
	2	3	Practitioner Workshop	30	3	Training Inst	Foreign	Oil & Gas	300	1.2	6	180	1%	24%
	2	3	Practitioner Workshop	30	3	Training Inst	Foreign	Electricity	300	1.2	6	180	1%	25%
														25%
														25%
Intermediate Corporate Management Strategic business planning Utility corporate and regulatory accounting Project finance Organizational development Corporate governance	2	3	Practitioner Workshop	30	10	Training Inst	Foreign	Oil & Gas	300	4	20	600	5%	30%
	2	3	Practitioner Workshop	30	10	Training Inst	Foreign	Electricity	300	4	20	600	5%	35%
														35%
														35%
														35%
Advanced Corporate Management Political relations Contract negotiation	2	3	Practitioner Workshop	20	5	Training Inst	Foreign	Oil & Gas	200	2	10	200	2%	37%
	2	3	Practitioner Workshop	20	5	Training Inst	Foreign	Electricity	200	2	10	200	2%	38%
														38%
Planning Project Finance Strategic Business Planning Resource Planning	4	3	Practitioner Workshop	30	10	Training Inst	Foreign	Oil & Gas	600	8	40	1200	10%	48%
	4	3	Practitioner Workshop	30	10	Training Inst	Foreign	Electricity	600	8	40	1200	10%	58%
	2	4	Supervisory Workshop	20	5	Training Inst	Foreign	Both	200	2	10	200	2%	59%
	1	5	Policy Study Tour	12	10	U.S. Corporate	Foreign	Oil & Gas	60	2	10	120	1%	60%
	1	5	Policy Study Tour	12	10	U.S. Corporate	Foreign	Electricity	60	2	10	120	1%	61%

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Figure 7.6 General Utility Management Training (continued)

Activity Title and Skills Covered	Delivery Plan														
	No.	Level	Mode	Class Size	Days	Venue	Faculty	Sector	Person-skills	Weeks	Days	PD	%	CUM %	
HRD	3	2	Introductory	Forum	100	2	Training Inst	Staff	Both	1500	1.2	6	600	5%	66%
Career planning	2	3	Practitioner	Workshop	30	5	Training Inst	Foreign	Both	300	2	10	300	2%	68%
Training	2	4	Supervisory	Workshop	20	5	Training Inst	Foreign	Both	200	2	10	200	2%	70%
Performance evaluation															70%
Organizational development															70%
Basic Regulation	3	3	Practitioner	Workshop	30	5	Training Inst	Foreign	Oil & Gas	450	3	15	450	4%	74%
Economics of supply and demand	3	3	Practitioner	Workshop	30	5	Training Inst	Foreign	Electricity	450	3	15	450	4%	77%
Tariff analysis and rate design	1	4	Supervisory	Workshop	20	5	Training Inst	Foreign	Oil & Gas	100	1	5	100	1%	78%
	1	4	Supervisory	Workshop	20	5	Training Inst	Foreign	Electricity	100	1	5	100	1%	79%
Intermediate Regulation	2	3	Practitioner	Workshop	30	5	Training Inst	Foreign	Oil & Gas	300	2	10	300	2%	81%
Public information systems	2	3	Practitioner	Workshop	30	5	Training Inst	Foreign	Electricity	300	2	10	300	2%	84%
License compliance monitoring															84%
Internet and web site design															84%
Advanced Regulation	2	3	Practitioner	Workshop	30	5	Training Inst	Foreign	Oil & Gas	300	2	10	300	2%	86%
Hearing procedures	2	3	Practitioner	Workshop	30	5	Training Inst	Foreign	Electricity	300	2	10	300	2%	88%
Consumer representation	1	5	Policy	Study Tour	12	10	U.S. Corporate	Foreign	Oil & Gas	60	2	10	120	1%	89%
Resource planning	1	5	Policy	Study Tour	12	10	U.S. Corporate	Foreign	Electricity	60	2	10	120	1%	90%
Consumer impact analysis															90%
Political relations															90%
Environmental Management	1	2	Introductory	Forum	100	3	Training Inst	Foreign	Oil & Gas	500	0.6	3	300	2%	93%
Environmental regulations and standards	1	2	Introductory	Forum	100	3	Training Inst	Foreign	Electricity	500	0.6	3	300	2%	95%
Mitigation of damage	2	3	Practitioner	Workshop	30	5	Training Inst	Foreign	Oil & Gas	300	2	10	300	2%	98%
Compliance with license terms	2	3	Practitioner	Workshop	30	5	Training Inst	Foreign	Electricity	300	2	10	300	2%	100%
TOTALS	Activities	74		Participants	1,138		Weeks	84	Skills	12,490					

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Figure 7.7a

GNERC SPECIFIC TRAINING RECOMMENDATIONS

Activity Title and Skills Covered	Delivery Plan									
	No	Level	Mode	Class		Venue	Faculty	Sector	Priority	
				Size	Days					
International Practice in Rate Design	1	5	Policy	Study Tour	12	10	US Corporate	Foreign	Both	Phase II
Electricity and Gas Tariff Design	1	3	Practitioner	Workshop	25	10	Training Inst	Foreign	Oil & Gas	Phase II
Cost-of-Service Tariffs	1	3	Practitioner	Workshop	25	10	Training Inst	Foreign	Electricity	Phase II
Market Economics	1	3	Practitioner	Twining	6	60	US Corporate	Foreign	Electricity	Phase II
Marginal Cost Tariff Design										
Performance-Based and Incentive Ratemaking										
Hearings, process, and enforcement										
Energy Planning and Policy	2	3	Practitioner	Workshop	25	5	Training Inst	Foreign	Electricity	Phase I
The regulator's role in IRP										
Macroeconomic effects of utility infrastructure										
Long-range planning										
Georgian Energy Law, Economics, and Management	1	3	Practitioner	Course	30	5	Local college	Host	Both	Phase II
Current situation										
Economic forecasts										
Role of infrastructure in the economy										
Energy Conservation, Standards, and Codes	1	2	Introductory	Forum	60	2	Training Inst	Foreign	Electricity	Phase I
Conservation and incentive programs	1	3	Practitioner	Workshop	30	5	Training Inst	Foreign	Electricity	Phase I
ESCO development										
Demand-side management programs										
Financing energy efficiency projects										
Environmental Laws and Regulations	1	3	Practitioner	Workshop	30	5	Training Inst	Foreign	Oil & Gas	Phase II
International best practice	1	3	Practitioner	Workshop	30	5	Training Inst	Foreign	Electricity	Phase II
Human health and the ecosystem										
Rational basis for standards										
Specific Georgian issues and laws										
The role of the regulator in enforcement										
Renewable Energy options in Georgia	2	3	Practitioner	Workshop	20	5	Training Inst	Foreign	Electricity	Phase II
Technologies and developments	1	4	Supervisory	Study Tour	12	10	U.S. Corporate	Foreign	Electricity	Phase II
Externality factors										
Incentive programs										

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Figure 7.7a (cont) GNERC SPECIFIC TRAINING RECOMMENDATIONS (continued)

Activity Title and Skills Covered	Delivery Plan									
	No	Level	Mode	Class Size	Days	Venue	Faculty	Sector	Priority	
How to conduct utility management audits Legal basis for access to information Sources of information Analysis and problem detection	1	3 Practitioner	Workshop	30	5	Training Inst	Foreign	Both	Phase I	
Project Financing Options Risk management Credit ratings Sources of capital Project Finance Current practices in financing energy projects	1	3 Practitioner	Workshop	30	5	Training Inst	Foreign	Electricity	Phase II	
Establishing a Consumer Advocacy Program Public role and democratic process Objectives	3	3 Practitioner	Workshop	30	5	Training Inst	Foreign	Both	Phase I	
How to supervise the Wholesale Market Market function Financial accountability Potential abuses	1	3 Practitioner	Workshop	30	5	Training Inst	Foreign	Electricity	Phase I	
TOTALS	Activities	20	Participants	425	Weeks	34.4				

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Figure 7.7b SAROG SPECIFIC TRAINING RECOMMENDATIONS

Activity Title and Skills Covered	Delivery Plan									
	No	Level	Mode	Class Size	Days	Venue	Faculty	Sector	Priority	
PSA Oversight Contract management Audits and monitoring Problem areas	2	3	Practitioner Workshop	25	10	Training Inst	Foreign	Oil & Gas	Phase II	
Field Inspection of Oil and Gas Equipment NDT and other inspection techniques Common problems Standards and enforcement	2	3	Practitioner Workshop	25	5	Training Inst	Foreign	Electricity	Phase I	
Contract Negotiation Negotiating team concept Current international PSA issues Modeling and decision processes	1	4	Supervisory Workshop	30	5	Training Inst	Foreign	Both	Phase II	
Georgian Energy Law, Economics, and Management Current situation Economic forecasts Role of infrastructure in the economy	1	3	Practitioner Course	30	5	Local college	Host	Both	Phase II	
Environmental Laws and Regulations International best practice Human health and the ecosystem Rational basis for standards Specific Georgian issues and laws The role of the regulator in enforcement	1	3	Practitioner Workshop	30	5	Training Inst	Foreign	Oil & Gas	Phase II	
	1	3	Practitioner Workshop	30	5	Training Inst	Foreign	Electricity	Phase II	
Oil Spill Contingency Planning Technologies and developments Externality factors Incentive programs	2	3	Practitioner Workshop	20	5	Training Inst	Foreign	Electricity	Phase II	
How to conduct utility management audits Legal basis for access to information Sources of information Analysis and problem detection	1	3	Practitioner Workshop	30	5	Training Inst	Foreign	Both	Phase I	
TOTALS	Activities	11	Participants	220						

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Figure 7.7c SAKNAVTOBI SPECIFIC TRAINING RECOMMENDATIONS

Activity Title and Skills Covered	Delivery Plan									
	No	Level	Mode	Class Size	Days	Venue	Faculty	Sector	Priority	
PSA Oversight Contract management Audits and monitoring Problem areas	2	3	Practitioner Workshop	25	10	Training Inst	Foreign	Oil & Gas	Phase I	
Field Inspection of Oil and Gas Equipment NDT and other inspection techniques Common problems Standards and enforcement	2	3	Practitioner Workshop	25	5	Training Inst	Foreign	Oil & Gas	Phase I	
	1	3	Practitioner Twinning	6	60	US/Europe	Foreign	Oil & Gas	Phase I	
Contract Negotiation Negotiating team concept Current international PSA issues Modeling and decision processes	1	4	Supervisory Workshop	30	5	Training Inst	Foreign	Oil & Gas	Phase II	
Georgian Energy Law, Economics, and Management Current situation Economic forecasts Role of infrastructure in the economy	1	3	Practitioner Course	30	5	Local college	Host	Oil & Gas	Phase II	
Environmental Laws and Regulations International best practice Human health and the ecosystem Rational basis for standards Specific Georgian issues and laws The role of the regulator in enforcement	4	3	Practitioner Workshop	30	5	Training Inst	Foreign	Oil & Gas	Phase II	
Oil Spill Contingency Planning Technologies and developments Externality factors Incentive programs	2	3	Practitioner Workshop	30	5	Training Inst	Foreign	Electricity	Phase I	
Current exploration and drilling technology Geology Data collection and management systems Current instrumentation and equipment	2	3	Practitioner Workshop	30	5	Training Inst	Foreign	Both	Phase II	
	2	3	Practitioner Twinning	6		US/Europe	Foreign	Both	Phase II	
TOTALS	Activities		17	Participants		212				

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Figure 7.7d **ENGURI HPP SPECIFIC TRAINING RECOMMENDATIONS**

Activity Title and Skills Covered	Delivery Plan									
	No	Level	Mode	Class Size	Days	Venue	Faculty	Sector	Priority	
Arched Dam Technology Exchange	2	3	Practitioner	Workshop	25	10	Training Inst	Foreign	Electricity	Phase II
	1	4	Supervisory	Study Tour	10	10	US./Europe	Foreign	Electricity	Phase II
	1	3	Practitioner	Twinning	6	60	US./Europe	Foreign	Electricity	Phase II
Commercial Subsidiaries Contractual and legal basis Entrepreneurial business Startup financing	1	5	Policy	Workshop	3	5	Training Inst	Foreign	Electricity	Phase II
	1	3	Practitioner	Workshop	30	10	Training Inst	Foreign	Electricity	Phase II
Project Management Critical path management Tracking and monitoring progress Contractor supervision Quality control and inspections Current problems and practices	2	3	Practitioner	Workshop	20	5	Training Inst	Foreign	Electricity	Phase I
Management using IAS Management accounting Negotiating teams Rating agency presentations Valuation of assets	1	3	Practitioner	Workshop	30	5	Training Inst	Foreign	Electricity	Phase II
Project Financing Options Risk management Credit ratings Sources of capital Project Finance Current practices in financing energy projects	1	3	Practitioner	Workshop	30	5	Training Inst	Foreign	Electricity	Phase II
TOTALS		Activities	10	Participants	154					

Section 8: Program Design

In designing programs to be effective and capable of implementation, we must be certain we are addressing the real problem, the root problem, and that the proposed solutions do not run counter to the practical interests of the stakeholders. When policies cannot be implemented successfully, the root problem is usually that they conflict with the immediate interests of primary stakeholders. The assessment suggests that this is precisely the case in Georgia.

The State-Path Diagrams, [Annex E](#), developed in support of the prioritization method for [Section 7](#), show clearly that the primary barriers to achieving energy sector sustainability must be addressed by public participation and by successful implementation of the policies governing the sector.

The following three sub-sections describe programs designed to deal with the three groups of primary stakeholders: a ***Public Participation Program*** addresses the consuming public, a ***Policies and Implementation Program*** addresses the agencies that make up the energy sector, and a ***Training Program*** addresses managers who must implement the programs.

The three programs are drawn from the prioritized recommendations that were summarized in Section 7.

Figure 8.1 shows which recommendations are included in each of the three programs.

Figure 8.1

Georgia Energy Sector Assessment

Description	Recommendations and Remarks	Implementing Agency	Priority Score	Public Participation Program	Policies and Implementation Program	Training Program
2.9.1 Amendment of Energy and Natural Gas Laws	To incorporate some of the missing Articles such as Sanctions and	GNERC	21		YES	
2.9.3 Tariff Methodology Development	To establish transparent tariff structure and tariff adjustment procedures	GNERC	20	YES		
2.9.4 Gas Sector Market Rules	To promote competition in the gas market	GNERC	14			
2.9.5 Assistance in Drafting Secondary Laws	Needed for the transparent operation of GNERC	GNERC	19		YES	
2.9.8 GNERC Administration procedures	Needed to improve GNERC's regulatory duties.	GNERC	14			
2.9.2 Consumer Advocacy	To make GNERC unbiased and enlist customer support	GNERC	21	YES		
2.9.6 Financial Auditing Capacity Development	To help stop sector losses and build accountability	GNERC	17	YES		
2.9.9 Performance monitoring of GWEM	To deliver GNERC's legislatively mandated duty.	GNERC	19		YES	
2.9.10 Safety and Quality of Service Monitoring	To improve consumers protection and to avoid utility's abuse	GNERC	14	YES		
2.9.12 Consumers Bill of Rights	To protect Consumers and enlist customer support	GNERC	17	YES		
2.9.13 National Integrated Resource Planning	Needed for least-cost resource addition, and to build cooperation.	GNERC	21		YES	
2.9.7 HR Development and Staff Evaluation Program	To improve GNERC's regulatory functions	GNERC	14			
2.9.11 Training and Professional Development Program	To improve GNERC's regulatory functions.	GNERC	19			YES
2.9.14 Computer Equipment Assistance	To enable basic productivity measures	GNERC	11			
2.9.15 Audio-visual Recording Equipment	To document hearings and support public access.	GNERC	19	YES		
3.7.2 By-laws/Secondary Laws	To promote transparent operation of SAROG	SAROG	19		YES	
3.7.3 Oil Refinery Development Strategy	To evaluate options for refinery sector development in Georgia.	SAROG	14			
3.7.5 Gas Market Rules	To promote gas market competition and prevent market abuse	SAROG	15			
3.7.1 Legal and Regulatory Capacity Building	To improve SAROG's regulatory capacity	SAROG	19		YES	
3.7.9 Upstream sub-sector reform	To promote private sector investment and to improve SOE performance	SAROG	20			
3.7.10 Petroleum Development Promotion and Negotiation Assistance	To promote private sector investment	SAROG	14			
3.7.11 Upstream gas pricing reform	For transparent gas sector tariff structure.	SAROG	14			
3.7.6 Financial Auditing Capacity Development	To reduce losses and ensure proper PSA contract monitoring	SAROG	21			
3.7.14 SAROG Organizational Development Study	To ensure SAROG is able to meet growing functions.	SAROG	14			
3.7.15 Strategic Business Planning	To build coordination between Saknavori and SAROG	SAROG	16		YES	
3.7.16 Human Resources Computer Equipment Assistance	To improve SAROG's functional duties and regulatory efficiency.	SAROG	19			YES
3.7.8 Production and PSA Oversight Assistance	To improve SAROG's regulatory functions.	SAROG	16			
3.7.13 Energy Contingency Planning	To minimize impact of energy fuel shortages.	SAROG	20			
3.7.12 Transit Fee and Benefits Evaluation	To protect GOB's revenue collections.	SAROG	15			
3.7.17 Procurement Improvement	To promote transparent procurement and ICB.	SAROG	10			
4.4.6 Strategic Business Planning	To provide options around the amount of PSA revenues	Saknavori	19			
4.4.7 Human Resources and Training Program Development	To deal with overstaffing, productivity, and lagging training problems	Saknavori	14			YES
4.4.2 Strategic Equipment Investment	To support domestic industry and improve experience transfer	Saknavori	11			
4.4.4 Oil Spill Contingency Planning	To build awareness and reduce damage	Saknavori	8			
4.4.8 Reinvestment Program	To reduce losses and produce revenues in high payback situations.	Saknavori	24		YES	
5.4.4 Enguri Strategic Business Plan	To ensure financial survivability of the Enguri organization	Enguri HPP	21			
5.4.6 Representation	To build political and public relations capability	Enguri HPP	13			
5.4.8 Commercial Subsidiary Development	To build revenue base and deal with overstaffing	Enguri HPP	12			
5.4.3 National Integrated Resource Plan	To put the Enguri resources into planning perspective	Enguri HPP	22		YES	
5.4.1 Dam Operations Model	To provide operating guidance to reduce risks and damage.	Enguri HPP	12			
5.4.2 Dam Structural Analysis	To provide continuing review of safety margins for the dam structure	Enguri HPP	13			
5.4.7 Auxiliary Generator	To provide emergency operating power for dam.	Enguri HPP	12			
5.4.13 Reinvestment Program	To reduce losses and produce revenues in high payback situations.	Enguri HPP	24		YES	
5.4.12 Human Resource Development and Training Program	To reduce losses and produce revenues in high payback situations.	Enguri HPP	15			YES
General Training Program	For all energy sector entities and consumer representatives	ALL	22	YES	YES	YES
Specific Training for GNERC	For GNERC with limited participation from other agencies	GNERC	24	YES	YES	YES
Specific Training for SAROG	For SAROG with limited participation from other agencies	SAROG	24	YES	YES	YES
Specific Training for Saknavori	For Saknavori with limited participation from other agencies	Saknavori	22		YES	YES
Specific Training for Enguri	For Enguri with limited participation from other agencies	Enguri HPP	22		YES	YES

8.1 Public Participation Program

The overwhelming problem of the Georgian energy sector is collection failure. This lies within not within the sector's institutions themselves, but in the general public. The energy consumers of Georgia are divorced from a sense of responsibility for the financial situation of the energy sector. This is irrational. Surely no consumer wants to suffer blackouts, or see the nation's economy collapse because of a failure of infrastructure, or pay much higher prices in the future to recover from the neglect and lack of prudent investment today.

In a nation where the institutions have not yet gained the confidence of the public, support cannot be dictated or legislated. No amount of restructuring or changes in ownership or policy promulgation will improve collections. Enforcement, prosecution, and midnight patrols of meter police will not prevent theft. The solution has to start with the consumers themselves. In essence, the public has to be persuaded to decrease theft, increase billing collections, and accommodate fair and transparent tariffs.

Although the problem is external to the industry, the industry cannot allow itself to collapse just because the problem is outside its boundaries. It must initiate the pro-active measures needed to build public awareness and public confidence. Fortunately, there are many tools available to the energy sector, including public education, peer pressure, the influence of foreign example, consumer representation in the decision process, selective tariff design, and strategic programs to enforce metering and collections discipline.

The **Public Participation Program** should be a pro-active program that reflects the experience of the United States, which has seen a shift toward consumer awareness and involvement, both in the utilities' day-to-day contact with its customers, and through highly successful consumer advocacy, public awareness, and conservation programs.

As shown in Figure 8.1 above, the Public Participation Program would incorporate selected recommendations from Section 7:

Consumer Advocacy would involve consumers in the regulatory decision process at a level far beyond the capabilities of individual consumers, establish a balance between industry and consumer interests, restore the GNERC to an unbiased position, instill transparency, and develop public information channels. This recommendation is seen as pivotal – democratic involvement is the first step in building trust in public institutions. Without that, collections are not likely to improve. Without collections, none of the other measures and programs are likely to rescue the industry.

Tariff Methodology Development would provide tools to distinguish between the truly indigent and those able to pay fair tariff rates: rational and accountable social subsidies, special rates for curtailable and interruptible service, and unbundled adjustments for uncollected revenues.

Safety and Quality of Service Monitoring would provide visible consumer relations improvements, undermining the incentives to engage in theft and fraud.

A Consumers' Bill of Rights would provide an opportunity for public involvement in setting service and performance standards.

Financial Auditing Capacity would provide tools to track down and identify losses, improving accountability and transparency, and helping to reduce the degree of fraudulent metering by utility staff. It would also provide the regulators and consumer advocates with methods to measure and motivate improvements.

Audio-visual Recording Equipment for the GNERC's public hearings is a small component, but representative of an effort to involve the public and provide transparent access to proceedings.

General Utility Management Training Programs would include training for consumer representation and overall improved and transparent business methods for the utilities and regulatory commissions.

Specific Training for GNERC and for SAROG would emphasize public involvement in the regulatory process and customer-oriented performance standards for the regulated utilities. Saknavtobi and Enguri, being wholesale producers, have less direct interaction with customers.

The selected recommendations form a core of activities that would be effective in increasing consumer support and improving collections. The Public Participation Program might, by itself, enable the energy sector to achieve a sustainable state. However, it could not be implemented without enabling policies, and it would have poor chance of success in the present environment of uncoordinated activities and conflicting policies. This requires a program to deal with policy and implementation.

8.2 Policies and Implementation Program

A second set of primary stakeholders is the group of controlling agencies that constitute the energy sector (MoFE, MoSP, GNERC, SAROG, and the regulated utility companies). Their efforts must be coordinated. The present laws and policies of the energy sector are incomplete and laced with contradictions. Many of these problems are discussed in the assessments of GNERC and SAROG, Sections 2-3.

However, as has been pointed out, having a set of perfectly drafted and coordinated policies will not solve any problems if no one observes them. For instance, GNERC has oversight responsibility for GWEM, but has no specific workgroup assigned to that function, seems to have no real awareness of how to perform the function, and has acquiesced in decisions that have interrupted settlements to the entire electricity sector. Such problems indicate that stakeholders have incomplete understanding of the overall policy regime, but also that they feel disenfranchised in the process of its development. For example, Enguri HPP managers think that "someone at GWEM" set their wholesale electricity tariff "subjectively". That may or may not be true, but it indicates that Enguri managers *perceive* that they are not part of the planning process.

One absolutely essential part of refining the policy regime of Georgia is provision for funded consumer representation, preferably through a staffed office consumer advocacy as recommended in the Public Participation Program of Sub-Section 8.1.

In the judgment of the assessment team, the entire planning process of the Georgian energy sector is weak. This may be the result of disbanding central planning and decentralizing the industry before it was prepared to adopt distributed, interactive planning processes. In a very broad perspective, U.S. utilities have had the benefit of many decades of an interactive planning decision process, organized and driven by the regulatory commissions, and involving the public, professional associations, regional dispatch pools, and others along with the utilities themselves. This kind of planning and decision-making environment cannot spring up overnight, but it cannot be assumed that it will begin at all without some outside example and assistance.

Planning assistance should start with individual strategic business plans for the utility companies, each submitted for review by the concerned regulatory body. The process will require technical assistance and training support, and should be initiated by GNERC and SAROG.

The planning process should also produce a National Integrated Resource Plan for electricity and an Energy Contingency Plan for thermal fuels. Again, both plans would require technical assistance and training support and should be initiated by GNERC and SAROG. National-level planning under regulatory supervision will strengthen the regulatory relationship, extend understanding of the constraints and barriers, and develop consensual efforts to minimize the adverse effects of underfunding and neglect. The National Integrated Resource Plan must support public participation while it addresses short-term sustainability and reinvestment, establishment of a set of core assets, and long-term infrastructure development and investment programs. Since one of the stated long-term objectives of the restructuring initiative is to privatize state-owned assets, a significant feature of the ***Policies and Implementation Program*** should be to maximize the value of energy sector assets to ensure they produce acceptable market prices when divested.

As shown in Figure 8.1 above, the ***Policies and Implementation Program*** would incorporate selected recommendations from Section 7:

National Level Integrated Resource Planning would coordinate the efforts of all energy sector entities, instill support through ownership of the concepts, and help distribute information.

Amendment of Energy and Natural Gas Laws; establishment of GNERC's role in Monitoring the Performance of GWEM; Assistance in Drafting Secondary Laws for the electricity sector; and drafting By-laws and Secondary Laws for the gas sector would help coordinate and unify the policy regime.

Strategic Business Planning for the regulated utilities would help them deal with the adverse business climate and cope with risk and variability, and provide a basis for their business oversight by the regulatory bodies.

Reinvestment Programs at the regulated utilities would help them establish special programs to deal with extreme losses and with high payback investment opportunities on a specially financed and evaluated basis.

General Utility Management Training Programs would include strategic business planning and overall improved and transparent business methods for the utilities and regulatory commissions.

Specific Training for GNERC, SAROG, Saknavtobi, and Enguri HPP would emphasize financial analysis and planning.

The *Policy and Implementation Plan* is essential to establishing a coordinated effort to prevent the collapse of the Georgian energy sector. In the event transit pipeline fees or PSA revenues provide financial relief, the plan will provide a basis for proper management of funds flowing through the sector and for strategic reinvestment to recover the sector and build infrastructure for future growth.

8.3 Training Program

The third set of primary stakeholders is the group of energy sector managers. They need current management tools and skills to perform their functions properly, to support the Public Participation Program (Sub-Section 8.2) and the Policies and Implementation Program (Sub-Section 8.2), and to support longer-term objectives.

The training recommendations summarized in [Section 7](#) call for 58 training activities designed specifically to the needs of GNERC, SAROG, Saknavtobi, or Enguri HPP, and 74 General Utility Management training activities.

In effect, most of the managers in the four entities have been thrust into a new and complex business environment without adequate preparation and without even a real perspective into the intended result of their restructured, corporatized new industry. They have had to deal, too, with complications and barriers beyond anyone's original expectations. There is a looming possibility of failure that would impair the working relationship between these organizations and the international assistance programs.

The training recommended provides crucial support to the Public Participation Program and the Policies and Implementation Program described earlier.

For these reasons, ALL of the training is considered critical and urgent. More training would be justified and appropriate, but the amount recommended is suitable to the scope of a coordinated technical assistance and training program. A larger training agenda would overburden both the contractor and the participants, all of whom have full-time management jobs in a troubled industry.

MBA Specialization Program

Most of the training activities recommended in the General Utility Management Training Program could be structured into a formal program granting a Master's degree in Business Administration with special electives in utility management. This concept has been highly

successful in Egypt and Ukraine, where USAID has sponsored groups of utility managers at local universities accredited to grant business degrees. The enrollment helps support the universities and develop their faculties, equipment, libraries, and facilities. The host faculty teaches academic subjects in business administration, economics, business English, and human resources development. For utility-specific courses, foreign expert instructors use the classroom facilities. The arrangement lends itself to train-the-trainer programs.

The most important keys to success for this type of program are:

- Separation of academic and professional topics. Academics in general are not practitioners and should not be allowed to overextend themselves into professional areas. Expert instructors should respect the pedagogical skills of the university faculty and share roles as appropriate to the subject matter.
- Selection of applicants. Selection must be based entirely on merit and career path planning, using independent boards to select participants without influence of nepotism or favoritism.
- Organizational commitment. The parent organizations must make binding commitment to support and implement graduate thesis projects, to use the degreed graduates according to appropriate career path plans, and to provide temporary management support during extended absences for training. In return, the participant must make commitments to remain within the organization for an agreed period of time.

If a university were chosen to support an MBA specialization program for the General Utility Management Training Program, not all energy sector managers could be selected for MBA training, but the existence of facilities, trained host faculty, and continuing programs could support training for other participants, both in the General Utility Management Training Program and in the Specific Training Programs.

ANNEX A GWEM Financials**Summary of GWEM Financial Liabilities**
As of April 19, 2002, Received from GWEM

Engurhesi Ltd - Power Generation by Customers, Revenue Billed
and Actual Collection for FY 2001

Amounts are shown in Georgian Lari (GEL at approximately 2.2 GEL/USD)

Year 2002	Tariff	Total Generation Min kWh	Total Billed (10000 GEL)
Balance 2001			
Unpaid from 2001			41,046,582.00
January	2.13	170.85	3,639,141.34
February	2.13	55.81	1,188,777.79
March	2.13	148.41	3,161,174.41
April	2.13	-	-
May	2.13	-	-
June	2.13	-	-
July	2.13	-	-
August	2.13	-	-
September	2.13	-	-
October	2.13	-	-
November	2.13	-	-
December	2.13	-	-
TOTALS		375.07	7,989,094

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AES Telasi

Mln kWh	Revenue Billed	Actual Collection	Accumulated Outstanding
Unpaid in 2001			2,312,351
0	-	391,835	1,920,516
0	-	311,000	1,609,516
0	-	204,200	1,405,316
	-	-	-
Outstanding			1,405,316
0	-	907,035	1,405,316

ADJARA

Mln kWh	Revenue Billed	Actual Collection	Collection Ratio	Accumulated Outstanding
Unpaid in 2001				2,152,690
35.158175	748,869.13	135,000	0.18	613,869
30.369307	646,866.24	50,000	0.08	1,210,735
32.8954	700,672.02	110,000	0.16	1,801,407
98.422882	2,096,407	295,000	0.14	1,801,407

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GWEM

Mln kWh	Revenue Billed	Actual Collection	Collection Ratio	Accumulated Outstanding
				36,581,541
135.69	2,890,272.21	30,000	0.01	2,860,272
25.44	541,911.55	265,000	0.49	3,137,184
115.52	2,460,502.39	70,000	0.03	5,527,686
276.65	5,892,686	365,000	0.06	5,527,686

- 1) Direct Purchase Contract with Adjara was signed early in September.
- 2) Generation figures are net of transmission loss.
- 3) AES Telasi stopped purchasing Enguri HPP hydro power in December 2001. The amounts still not received are old indebtedness.

Total Generation	375,074,814
Total Revenue Billed	7,989,094
Total Actual Collection	1,567,035
Total Due Amount	8,734,410

ANNEX B List of Documents Reviewed

1. Georgia Energy Sector Evaluation, October 2001
2. Georgia Oil and Gas Law
3. Georgia Electricity and Natural Gas Law
4. Annual Report of the State Agency for Regulation of Oil and Gas Resources of Georgia
5. Annual Work plan of PA Consultants for the Electricity Sector in Georgia
6. Annual Work plan of PA Consultants for the Oil and Gas Sector in Georgia
7. Terms of Reference for the Georgia Wholesale Electricity Market – Five-year Management Contract
8. Enguri Dam Audit for 2000 Conducted by Deloitte and Touche
9. GEF Report for Protected Areas Development Projects in Georgia
10. World Bank Project Appraisal Report on Energy Transit Institution Building
11. Attachment 5: Market Rules for Electricity Sector
12. Memo on GWEM management Contract Issues –Dated April 3, 2002
13. Overview of the Energy Situation and Status of Reform in Georgia by PA Consulting Group – August 30,2001
14. PA Consulting Group’s Brochures on:
 - USAID’s Georgia Electricity and Natural Gas Sector Reform Project
 - USAID’s Georgia Oil and Gas Sector Reform Project
 - USAID’s Georgia Winter Heating Assistance Project
15. Tenth Quarterly Report of Enguri HPP Rehabilitation Project
16. Law of Georgia on Making Amendments to the Law of Georgia on Oil and Gas
17. Information Memorandum – Tbilgazi Gas Distribution Company- June 2001
18. Report on Activities of the State Agency for Regulation of Oil and Gas Resources of Georgia for the Period of 1999-2001
19. Production Sharing Contract for Anadarko and JKX (Naftobi) Ltd.
20. Enguri Hpp, Ltd. And Subsidiaries -Letter Of Recommendations For The Year Ended 31 December 2000.
21. Decision # 20: On Principles for Setting Long Term Electricity Tariffs and Rule for Their Indexing
22. Resolution # 3: On Approval of the Electricity Tariff Methodology, Setting Rules and Procedures.

ANNEX C Training Needs Questionnaire

Please print carefully

Full Name: _____
Organization: Georgia National Energy Regulatory Commission
Year of employment: _____ **Position:** _____
Department: _____
Education (degree): _____ **Year:** _____ **Institute:** _____

Previous work experience:

Training received while at Georgia National Energy Regulatory Commission

Training programs in other countries:

Rate all the following skills on a scale of 1:5	EXISTING ABILITY	TRAINING LEVEL NEEDED
	1 No understanding 2 Understand basics 3 Understand fully 4 Experienced 5 Able to teach	1 Not needed 2 Need introduction 3 Need to be able to perform 4 Need to be able to supervise 5 Need to set high-level policy
GENERAL SKILLS word processing spreadsheet database internet	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
BUSINESS MANAGEMENT SKILLS strategic business planning time value of money financial analysis returns on investment accounting project finance	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
HRD SKILLS career planning organizational development training performance evaluation	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
REGULATORY SPECIALTY SKILLS how utility companies work tariff analysis tariff design consumer impact analysis consumer representation hearing procedures resource planning license compliance monitoring	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Environmental Skills environmental regulations and standards mitigation of damage compliance with license terms	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
PUBLIC RELATIONS SKILLS political relations public information systems	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>

ANNEX D Organization Assessment Checklists

Checklists for Improving the Performance of
Four Energy Sector Entities in the Republic of Georgia

(Energy sector four entities surveyed are: GNERC, Enguri HPP, SAROG, and Saknovtobi)

Contents:

Instructions for use of the Checklists

Checklist 1: Governance and Autonomy

Checklist 2: Management System

Checklist 3: Human Resources: Manpower Planning and Incentive Measures

Checklist 4: Commercial Operation and Accounting

Checklist 5: Financial Performance

Checklist 6: Service Delivery: Technical Performance and Maintenance

Checklist 7: External Relations and Advocacy

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Checklist for Improving the Performance of Four Energy Sector Entities in Georgia

For each checklist question, please mark the box that is the best estimate for your organization. Some of the boxes require a number. Please provide an estimate for these boxes. ***This is not a formal data report. Provide rough estimates if exact information is not available quickly.***

The checklist summarizes some of the most crucial factors that could be used to fate the past performance of an energy sector entity in Georgia. These factors fall into two categories:

- Qualitative factors to which no numerical values can be assigned
- Quantitative factors that are measured on a numerical scale and for which a target value can be given.

For qualitative factors, performance can be rated on an ordinal scale of five categories ranging from "good" to "bad" (respectively from "yes" via "partly" to "no" in the case of dichotomous criteria).

For quantitative factors, insert a numerical estimate on this same scale and, in some cases, in comparison to the target values provided.

The purpose of the checklist is to allow the overall performance can be conveniently visualized. This approach does not provide an unambiguous rating of the entity's performance, but it conveys a general overview of the areas where the organization fares well and where it may require improvements. The factors to be assessed in this checklist are those that refer to the electricity, oil and gas businesses and related regulatory agencies.

Note:

The numerical target values given are designed to be applicable in any country. They do not present "best practice" values, but rather minimum acceptable conditions applicable in most circumstances.

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Checklist 1
 For Improving the Performance of Four Energy Sector Organizations
 (GNERC, Enguri HPP, SAROG and Saknovtobi)

Autonomy and Governance	Performance Rating Scale				
	Good (Yes)	<<<<	Medium (Partly)	>>>>	Bad (No)
1. Does the energy sector four entities have clear and consistent objectives?					
Are the long-term corporate objectives clearly established?					
Are they likely to ensure adequate operational and financial performance?					
c) Has management sufficient autonomy to operate the entity according to corporate objectives?					
2. Are daily operations of the entity insulated from external political pressure?					
3. Has management the right to hire and fire employees and to negotiate conditions of employment?					
4. Does the entity control its employees' salaries?					
5. Has the utility sector entity the right to adjust tariffs according to costs to produce sufficient revenues? Or, is tariff adjustment process transparently regulated?					
Is the utility sector entity subject to effective and independent regulation?					
7. Are there internal audits and controls for embezzlement, improper financial dealing, nepotism, collusion, and other abuses?					

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Checklist 2
 For Improving the Performance of Four Energy Sector Organizations
 (GNERC, Enguri HPP, SAROG and Saknovtobi)

Management System	Performance Rating Scale				
	Good (Yes)	<<<<	Medium (Partly)	>>>>	Bad (No)
1. Is there a department in charge of corporate planning?					
2. Are there appropriate and consistent annual operating objectives?					
3. Is there an appropriate management information and reporting system?					
4. Is there a system of appropriate performance indicators to measure achievement of objectives?					
5. Are operational and performance reports processed and analyzed properly?					
6. Are there clear communication channels between upper and lower management levels?					
7. Do lower management levels participate in decisions where appropriate?					
8. Are budgetary procedures and corporate planning coordinated properly?					
9. Is there continuous and adequate monitoring of ongoing projects?					
10. Are there action plans to remedy shortcomings?					
11. Is management held accountable for its performance?					

Checklist 3
 For Improving the Performance of Four Energy Sector Organizations
 (GNERC, Enguri HPP, SAROG and Saknovtobi)

Human Resources: Manpower Planning and Incentive Measures	Performance Rating Scale				
	Good (Yes)	<<<<	Medium (Partly)	>>>>	Bad (No)

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Human Resources: Manpower Planning and Incentive Measures	Performance Rating Scale				
	Good (Yes)	<<<<	Medium (Partly)	>>>>	Bad (No)
1. Is there a system of performance-based incentives in place?					
a. Is this system in line with the social environment?					
b. Is it being executed properly?					
c. Is there a career planning and accession system in place?					
2. Is the remuneration commensurate with that in other sectors of the economy?					
a. Do the fringe benefits (housing, family contributions, etc.) make up for the difference?					
b. Are lifestyles beyond visible means of support?					
3. Is there an Organizational Development plan with structural diagrams, departmental functional descriptions, and individual job descriptions?					
4. Is the utility's training program judged to be adequate?					
The assessment could be based on the following factors:					
Are sufficient resources devoted to training?					
Is the time spent on training measures adequate?					
Is the training structured?					
Are there qualified and motivated trainers?					
Are there adequate incentives for staff to participate in training measures?					

Georgia Energy Sector Assessment

Human Resources: Manpower Planning and Incentive Measures	Performance Rating Scale					
	Good (Yes)	<<<<	Medium (Partly)	>>>>	Bad (No)	Target Value
Quantitative Indicators						
1. Turnover of manpower per year as a percentage of average work force.						<10%
2. Rate of absenteeism.						
3. Staff vacancies by employee classification (in particular with regard to skilled jobs).						
4. Comparative salary and compensation levels.						
5. Share of unskilled workers in the total work force.						≤ 30%
6. Training costs by employees and by qualification level.						
7. Number of employees per megawatt-hour sold. .						

Georgia Energy Sector Assessment

Checklist 4
For Improving the Performance of Four Energy Sector Organizations
(GNERC, Enguri HPP, SAROG and Saknovtobi)

Commercial Operation and Accounting	Performance Rating Scale					
	Good (Yes)	<<<<	Medium (Partly)	>>>>	Bad (No)	Target Value
Qualitative Indicators						
1. Overdue accounts:						
a. Are surcharges applied for overdue accounts?						
b. Is there a firm and enforced disconnection policy in place for nonpayment?						
c. Are there extra fees for reconnection?						
Quantitative Indicators						
1. Outstanding accounts receivable (in months of billing):						
a. Private customers						≤ 3 mos
b. Government and government-owned customers						< 2 mos
2. Accounts receivable older than three months of total accounts receivable						≤ 20%
3. Bad debts (unpaid energy) as a percentage of accounts receivable						≤ 10%
4. Billing lag						≤30 days
5. Variance between planned budget and actual expenditures						
6. Number of customers per utility employee						
7. Salaries per utility employee						
8. Lags in providing services connection						

Georgia Energy Sector Assessment

Checklist 5
 For Improving the Performance of Energy Sector Four Organizations
 (Energy Sector Four Entities: GNERC, Enguri HPP, SAROG and Saknovtobi)

Financial Performance	Performance Rating Scale					
	Good (Yes)	<<<<	Medium (Partly)	>>>>	Bad (No)	Target Value
Quantitative Indicators						
1. Rate of return on revalued net fixed assets (after consideration of exchange rate fluctuations)						≥ 8%
2. Average revenues from electricity/gas sales						≥LRMC
3. Debt service coverage of net revenues						≥ 1.5
4. Cash generation as percentage of investment expenditures (self-funding ratio)						≥ 30%
5. Debt-equity ratio						≤ 2.5

Georgia Energy Sector Assessment

Checklist 6
 For Improving the Performance of Four Energy Sector Organizations
 (GNERC, Enguri HPP, SAROG and Saknovtobi)

Service Delivery: Technical Performance and Maintenance	Performance Rating Scale					
	Good (Yes)	<<<<	Medium (Partly)	>>>>	Bad (No)	Target Value
Qualitative Indicators ⁷						
1. Are there appropriate procedures to check the quality of fuel and lubricants? Or, quality of electricity service (interruptions, frequency, and voltages, etc.?)						
2. Is maintenance performed according to set schedules?						
3. Is dispatch performance optimized?						
Quantitative Indicators						
1. Reliability of power system:						
a. equivalent forced outage rate						
b. spinning reserve						
2. System unserved energy						≤ 1%
3. Reserve margin (available capacity/peak demand)						≤ 1.25
4. Planned outage rate						
5. Time availability of plant per year (hours per year/8760)						≥75%
6. Fuel and lube oil consumption of thermal plants compared to manufacturer's standard						≤100%
7. System fuel cost						
8. System cost of energy delivered						
9. Staff years per MWh generated						
10. System load factor						.45-.75
11. System losses (transmission, distribution)						≤ 20%
12. Technical system losses (if grid configuration allows)						≤ 15%
13. Station service and own use (kilowatt-hours used per kilowatt-hour generated)						≤ 5%

Georgia Energy Sector Assessment

Service Delivery: Technical Performance and Maintenance	Performance Rating Scale					
	Good (Yes)	<<<<	Medium (Partly)	>>>>	Bad (No)	Target Value
14. Non-technical losses						
15. Thermal generation cost in US\$ per kilowatt-hour						

Georgia Energy Sector Assessment

Checklist 7
 For Improving the Performance of Four Energy Sector Organizations
 (GNERC, Enguri HPP, SAROG and Saknovtobi)

External Relations and Advocacy	Performance Rating Scale					
	Good (Yes)	<<<<	Medium (Partly)	>>>>	Bad (No)	Target Value
Qualitative Indicators						
1. Is the public actively interested in the entity's business?						
Is there a formal organization representing consumers?						
Do the company's policies and procedures formally recognize advocacy as an input to its decision process?						
Is there a need to educate the public through advocacy?						
Quantitative Indicators						
1. Number of NGO's with activity in the area.						
2. Amount of internal support and understanding of concept of advocacy.						
3. Potential for savings, cost recovery, loss reduction, etc.						

ANNEX E State-Path Diagrams

Figure E.1 GNERC State-Path Diagram

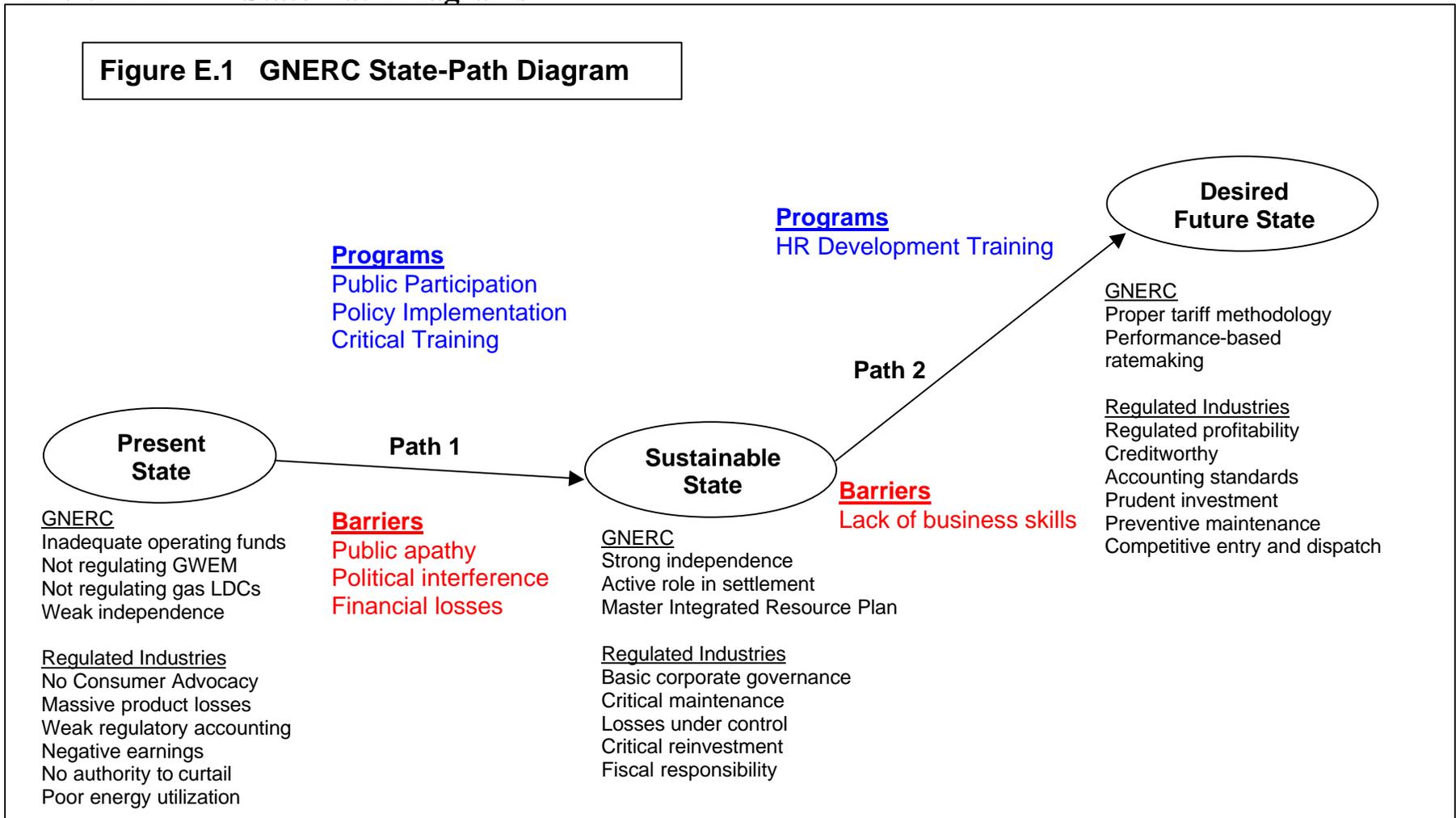


Figure E.1 SAROG State-Path Diagram

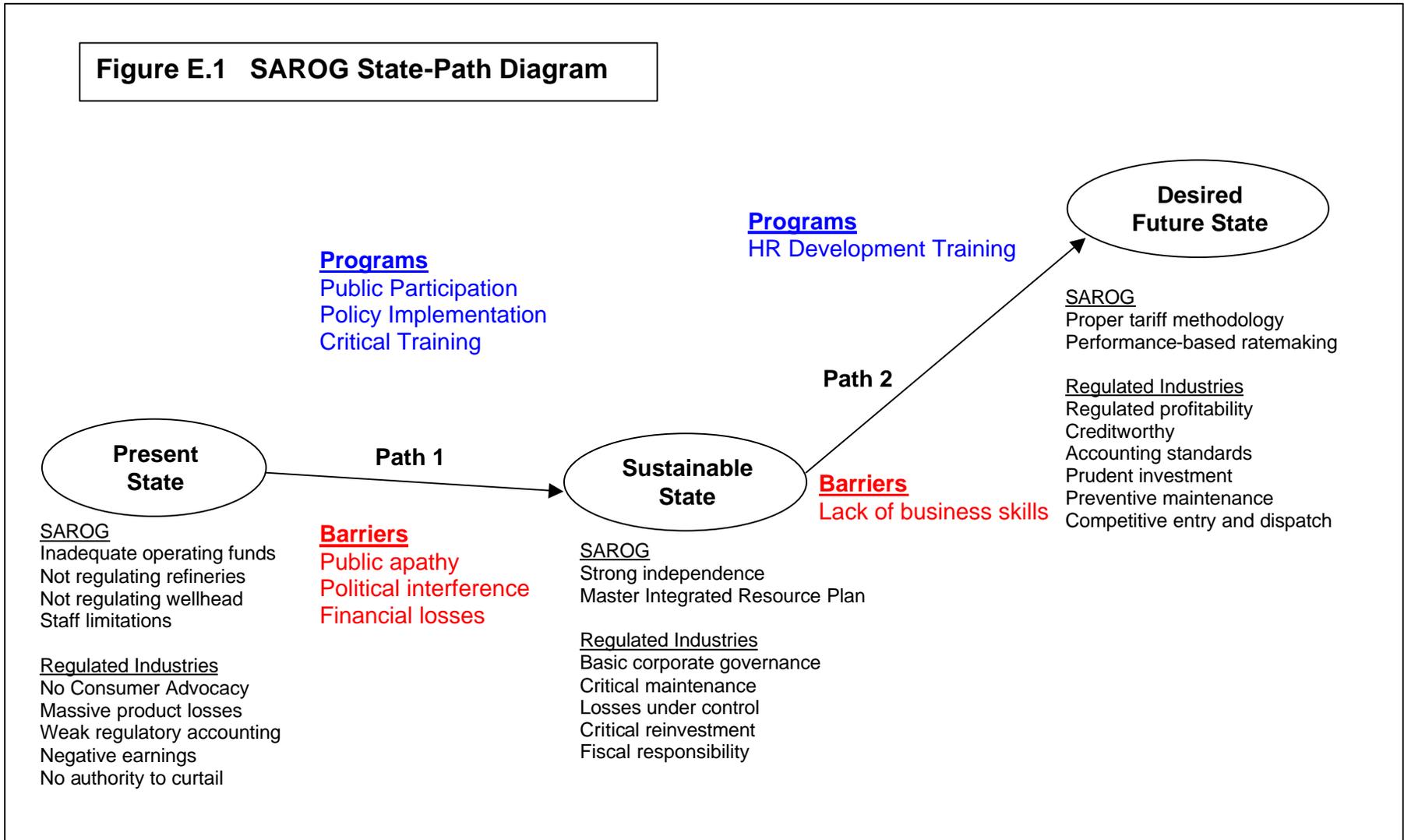


Figure E.1 Saknavtobi State-Path Diagram

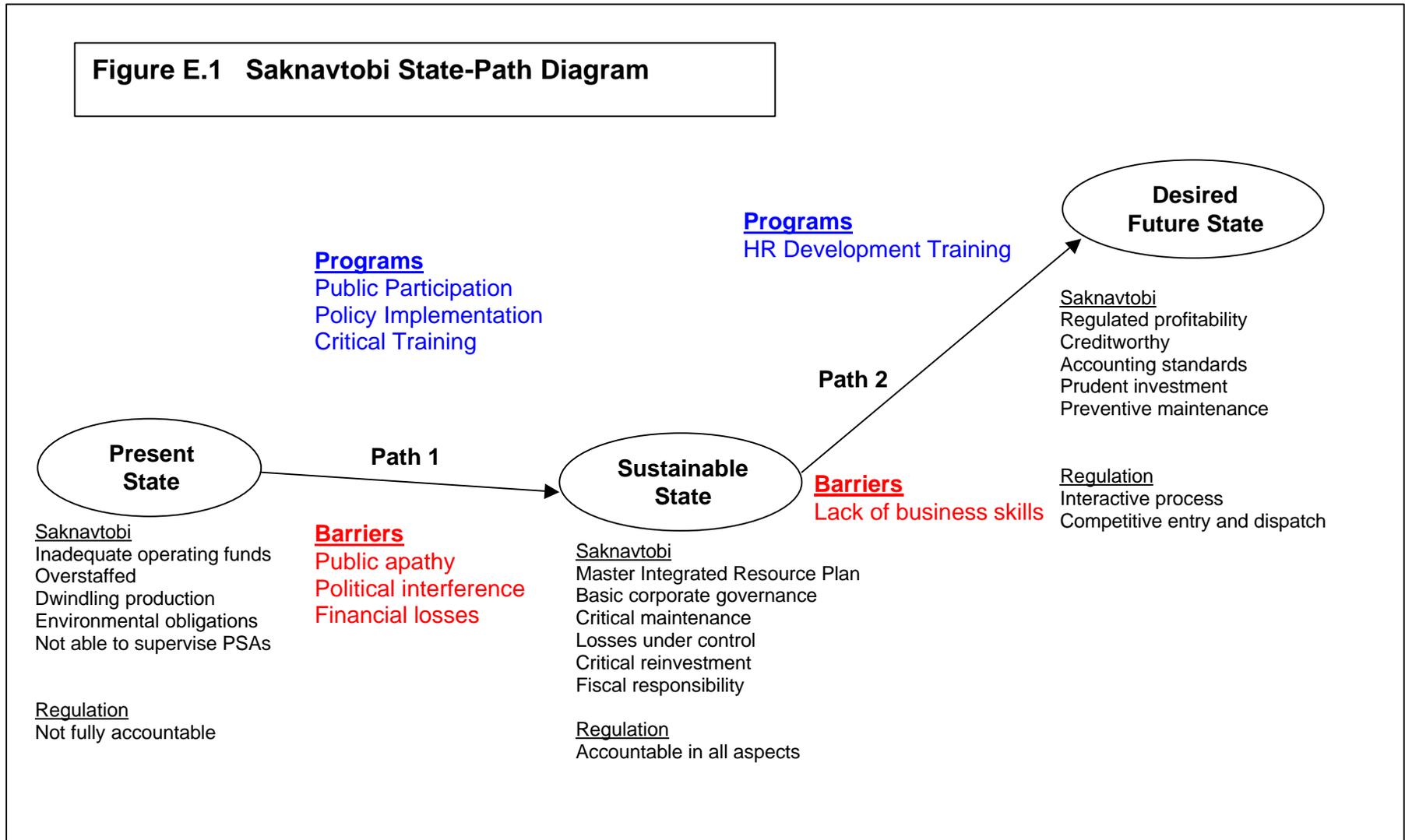
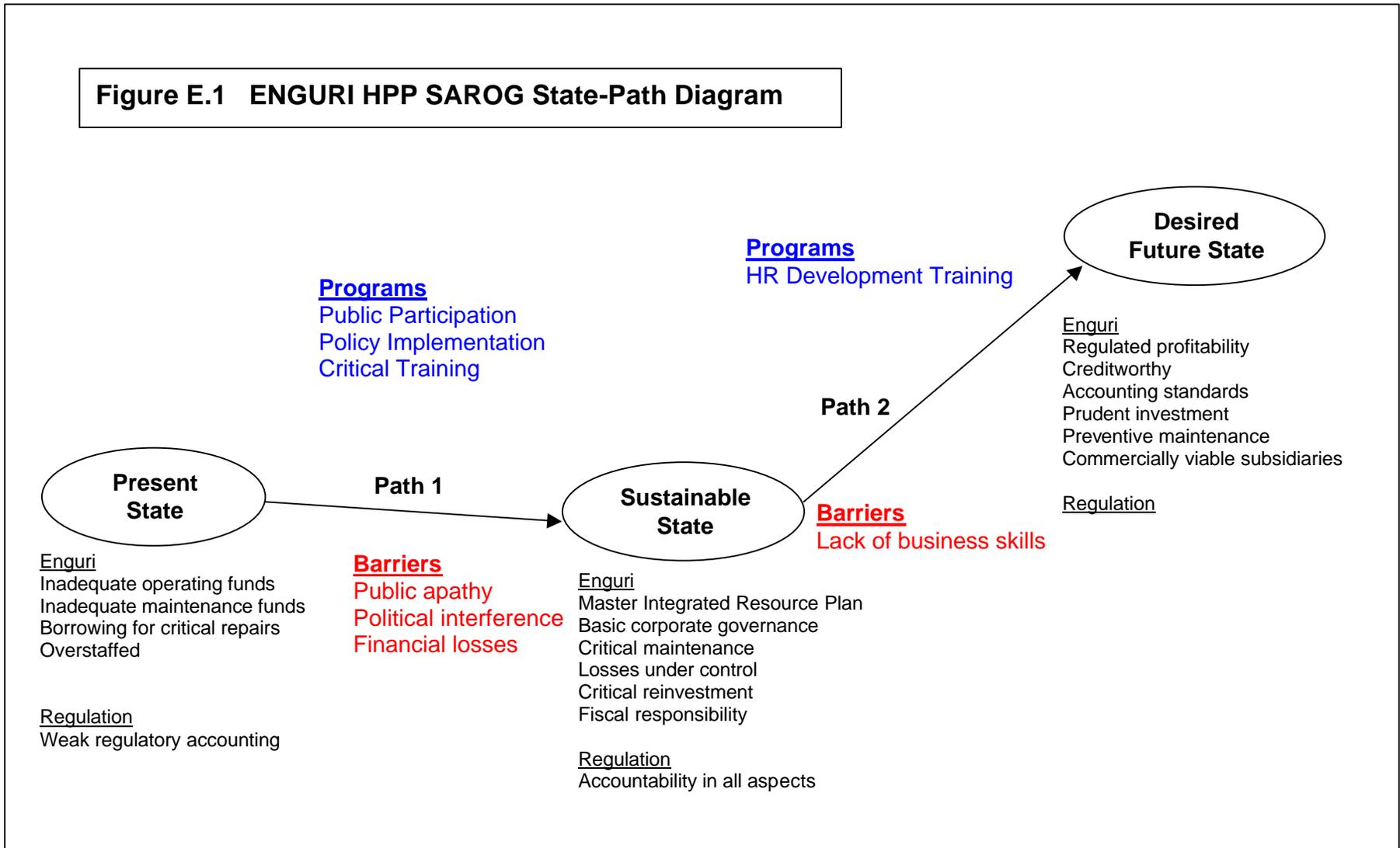


Figure E.1 ENGURI HPP SAROG State-Path Diagram



ANNEX F Directory of Participants

(Attached Microsoft Access Database report)

ANNEX G Energy Sector Participants Database

(Enclosed Microsoft Access Database on CD)

ANNEX H **Hyperlink Directory**

This directory is for the convenience of users of the electronic version of the document. It is located on the last page of the document so it can be accessed quickly from anywhere in the document by pressing the [Control] and [End] keys together.

To use, click on any of the hyperlinked (colored and underlined) titles below:

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Table 7.5 [General Utility Management Training Program](#)

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The Table of Contents is also hyperlinked; users will find it more convenient to jump to sub-sections from the Table of Contents.