Table I-2. Georgia: Tests for the Number of Cointegrating Vectors between p, m, e and y 1/

Rank	λ_{max}		λ_{max} using T - nk		λ_{trace}		λ_{trace} using T - nk	
0	39.25	[0.003]**	28.38	[0.003]**	30.53	[0.041]*	22.07	[0.035]*
1	10.87	[0.223]	9.09	[0.285]	8.46	[0.425]	7.07	[0.489]
2	1.78	[0.182]	1.78	[0.182]	1.38	[0.239]	1.38	[0.239]

Source: Fund staff estimates.

Specification of an error-correction equation

16. Since the weak exogeneity of the exchange rate and money is not rejected, it is valid to condition on these two variables in a single-equation inflation model. The "general-to-specific" methodology is followed in searching for the final form of the short-run dynamic inflation equation. The specification search begins from estimation of a relatively unrestricted model. The unrestricted inflation equation includes five lags of inflation; five lagged and current values of changes in the log of money and in the log of the exchange rate; the lagged error-correction term from the long-run price equation; changes in relative prices of fruits and vegetables and of oil prices; and the dummy variables discussed above. In the next steps, restrictions imposed on the model are tested against the unrestricted alternative. Restrictions imposed on the general specification leading to the final equation reported in Table I-2 cannot be statistically rejected, and the final inflation equation easily passes all standard specification and stability tests.

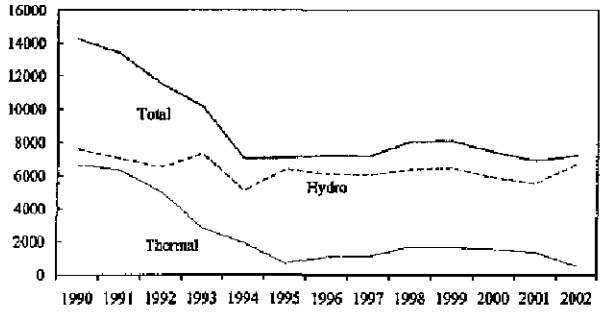
II. Energy Sector Reforms in Georgia[6]

A. Overview of Reforms

17. A review of Georgia's experience with energy sector reform shows that the country has significantly changed the structure of the sector, in line with donor recommendations. Nevertheless, further progress is needed to achieve the ultimate goals of these reforms—reliable energy supply and financial stability. Moreover, the analysis below indicates continued weakness in the areas of governance and transparency stemming from interference by strong vested interests. This has undercut the potential benefits that could be derived from the reform measures already taken, leading to the acute technical and financial difficulties currently plaguing the energy system.

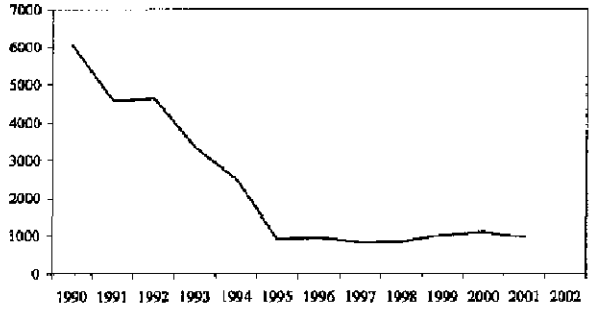
18. Since independence, Georgia has experienced frequent power cuts and limited supply of gas and electricity during the winter. The increase in energy import prices led to a six-fold decrease in gas imports and rendered thermal energy generation uneconomical, causing overall electricity generation to fall by more than half (Figures II-1 and II-2). The country now relies largely on hydro-electric stations for its power supply, but the largest one by far—Enguri—lies in territory partially controlled by the breakaway region of Abkhazia, and more than a third of Enguri's electricity production is consumed by Abkhazia without any payment. Collection rates on electricity that finds its way to domestic consumers have been low, especially outside Tbilisi. Collection rates on gas consumption have been low throughout the country. As a consequence, energy infrastructure has been poorly maintained and the sector has accumulated significant external debts. The recent EBRD and World Bank Business Environment and Enterprise Performance Survey (BEEPS II) shows that firms in Georgia on average lose more than 60 business days per year due to power outages.

Figure II-1. Georgia: Electricity Production
(In million kWh)



Source: Ministry of Fuel and Energy.

Table II-2. Georgia: Natural Gas Consumption
(In million m3)



Source: Georgia International Gas Corporation.

[6] Prepared by Wojciech Maliszewski and Bert van Selm. Thanks are due to Richard Podpiera, whose work on Georgia's energy sector contributed to this text.

19. **This situation persists despite the fact that reforms have largely followed World Bank advice to demonopolize and privatize the electricity sector.** In 1996 the government separated Sakenergo—a vertically integrated power company—into generation, transmission and dispatch, and distribution companies. Attempts to improve performance through better state management failed, leading the government to privatize the main segments of the sector. In December 1998 AES, a major international utility, acquired a 75 percent stake in Tbilisi's electricity distribution network for US$25.5 million. In addition AES bought two thermal power generating units at Tbilsresi, the country's largest thermal power plant, for US$5 million in April 2000.[7] Finding buyers interested in other parts of the country's energy system proved much more difficult. As an alternative to privatization, financial assistance from international donors was used to put in place private management contracts for the Georgian Wholesale Electricity Market (GWEM) in February 2002, for transmission and dispatch company (Georgian State Electric System, GSE) in December 2002 and for distribution outside Tbilisi (Georgian United Distribution Company, GUDC) in May 2003.

20. **Reforms in the gas sector have followed a similar path, although they have been slower than in the power sector and—because domestic production of natural gas is very small—confined to the transmission and distribution system.** In 1997, Georgian Gas International Corporation (GGIC) was established to manage the high-pressure transmission network, ensure supplies and promote supply diversification and foreign investments in the sector. Due to its strategic importance, there have been no privatization plans for the high-pressure network, although the Russian utility Gazprom appears to have acquired significant control over the network through a recent cooperation agreement. Privatization of gas distribution started in 1998; almost the entire system was bought by the private Russian trading company Itera (through its subsidiary Sakgas), with the exception of the distribution company in Tbilisi, Tbilgazi.

Tariffs, collection rates, and quasi-fiscal subsidies

21. **Energy tariffs have been gradually increased to cost recovery levels since 1997, but a significant reversal took place in early 2003 with a considerable reduction in electricity prices, which was, in turn, reversed in September 2003**. The 1997 Law on Electricity established the independent Georgian National Energy Regulatory Commission (GNERC), a body responsible for setting wholesale and retail electricity tariffs and issuing licenses for electricity generation. GNERC was able to raise prices for electricity to cost recovery levels in a series of price increases from 1997 to 2002. At end-2002, retail electricity tariffs stood at 6.4 U.S. cents per kWh in Tbilisi and 4.0 U.S. cents per kWh in the rest of the country. However, in February 2003, GNERC reduced electricity sector tariffs across the board following a Constitutional Court ruling. The reduction was deeper for the Enguri

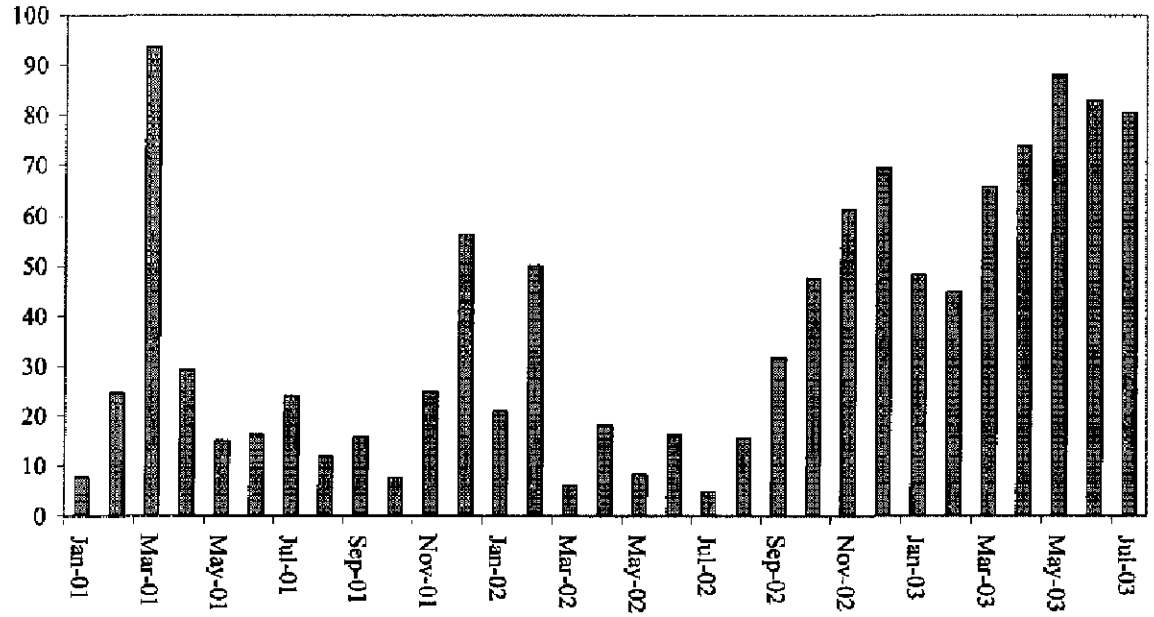
[7] AES's assets in Georgia were sold to the Russian electricity distributor UES in July 2003.

hydropower plant (30 percent) and the company filed a case against the tariff decision in a district court. Following another court ruling, GNERC issued a resolution increasing the tariffs to their previous level effective December 1, 2003.

22. **Gas tariffs have been gradually increased to import cost levels since 1999, when GNERC took over responsibility for regulating the gas sector.** Prices currently stand at GEL 0.27 per m^3 for residential customers in Tbilisi and GEL 0.30 per m^3 in other cities. The tariffs cover the cost of importing gas from Russia (approximately US$60 per 1000 m^3), transmission and distribution charges.

23. **Reforms in the wholesale electricity market have led to a gradual, but slower than expected increase in collection rates.** An April 1999 amendment to the Law on Electricity of Georgia established GWEM to replace Sakenergo as the buyer of electricity from domestic and foreign generators and supplier to distribution companies and large enterprises. GWEM was tasked to improve payment discipline by issuing orders to disconnect nonpaying customers, and to allocate the cash it received among generators equitably and transparently. However, technical problems, political pressures, social concerns, and corruption have often outweighed the market operator's legal right to issue disconnection orders, limiting any improvement in payment discipline. Nevertheless, GWEM has raised collection rates considerably since late 2002, with an average collection rate of 69 percent in the first seven months of 2003 (Figure II-3).

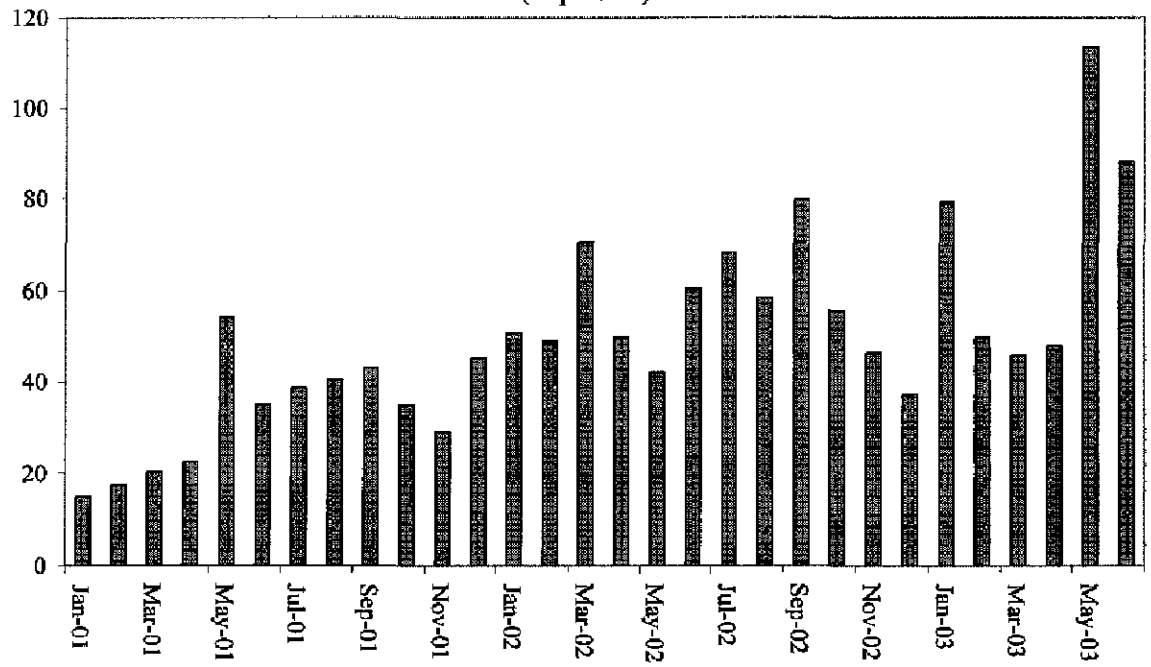
Figure II-3. Georgia: Collection Rates from Direct Customers of the Wholesale Electricity Market
(In percent)



Sources: GWEM; Ministry of Fuel and Energy; and Fund staff estimates.

24. **On the retail level, collection rates in Tbilisi improved following the sale of Tbilisi's distribution network to AES, but non-payment outside the capital remains pervasive.** The increase in collection rates in Tbilisi has been fast, but AES Telasi managed to reduce its commercial losses (theft of electricity) only in 2003. Figure II-4 shows that—taking into account the commercial losses—the improvement in payment discipline has been gradual. The government has been slow to bring distribution outside Tbilisi under private ownership or management. Initially, distribution outside Tbilisi was handed over to municipalities, which did little to improve payment discipline. Municipal distribution companies were subsequently merged into the Georgia United Distribution Company (GUDC), but collection rates have remained weak, hovering around 25 percent. The authorities expect a recent drive to cut off non-paying customers—initiated in June 2003 under the new private management—to improve collection rates.

Figure II-4. Georgia: AES Collection Rates
(In percent)



Sources: AES Telasi; and Fund staff estimates.

25. **Collection rates for gas consumption in Tbilisi have remained low.** In 2002 the municipally-owned Tbilgazi collected only 28 percent of billings, prompting the local government to finance gas imports using commercial bank credits. Plans for the privatization of gas distribution in Tbilisi have failed, due to lack of interest from foreign investors. In March 2003, a tender for the management contract for Tbilgazi was won by a company formed by GIGC employees ("New Management"), but the contract has not been signed yet.

26. **Poor payment discipline is reflected in large quasi-fiscal losses in the energy sector, which amounted to 5.9 percent of GDP in 2002.** Table II-1 below presents the underlying calculation, conducted under the assumption that actual tariffs set by the regulatory commission correctly reflect costs of electricity production. Quasi-fiscal losses in the power sector declined in 2002, as payments from direct wholesale customers (large enterprises) and payments collected by AES increased. A considerable improvement is expected in 2003 on the basis of higher collection rates outside Tbilisi and budgetary subsidies to cover the unpaid consumption by Abkhazia. Quasi-fiscal losses in 2003 could have been reduced by additional 0.5 percent of GDP if the electricity tariffs in 2003 had not been affected by the Constitutional Court ruling.

Table II-1. Georgia: Energy Sector Quasi-Fiscal Losses

	2001	2002	2003 forecast
Power sector			
Quantity delivered (million kWh) 1/	6443.4	6942.7	6942.7
Cost price (US cents)	4.1	4.0	4.3
Tariff (US cents)	4.1	4.0	3.9
Collection rate (percent) 2/	22.6	30.7	51.5
Generation cost (US$ million)	262.2	280.4	300.7
Billed amount (US$ million)	262.2	280.4	271.3
Collected amount (US$ million)	60.2	96.6	145.2
Total losses (US$ million)	202.0	183.8	155.5
Of which: price effect (US$ million)	0.0	0.0	29.4
Of which: non payment effect (US$ million)	202.0	183.8	126.1
Total losses (percent of GDP)	6.3	5.4	4.2
Thilgazi			
Total losses (US$ million)	...	15.6	15.6
Total losses (percent of GDP)	...	0.5	0.4
Energy sector (power sector + Thilgazi)			
Total losses (US$ million)	...	199.4	171.1
Total losses (percent of GDP)	...	5.9	4.7
GDP (US$ million)	3200.9	3395.9	3677.0

Source: Fund staff calculations, based on data provided by the GWEM and the AES.

1/ Quantity produced and imported minus 10 percent normative losses.

2/ GUDC collection rates are based on Fund staff estimates.

B. Energy Sector External Debt and Payment Arrears

27. **Poor payment discipline in the energy sector has led to significant accumulation of external debt.** A large part of the external debt accumulated by the energy sector is related to natural gas imports used primarily to supply the Tbilsresi plant with fuel and for distribution to households in Tbilisi. The total stock of external debt accumulated by the energy and gas sector at end-2002 is estimated at US$693.7 million, or 20.4 percent of GDP (Table II-2).

Table II-2. Georgia: External Debt of the Energy System, end-2002

	US$ Million	Percent of GDP
Electricity and fuel oil deliveries		
Azerbeijan	1.6	0.0
Russia	46.0	1.4
Turkey	52.7	1.6
Anglo Oil	28.5	0.8
Gas deliveries		
Turkmenistan	324.0	9.5
Itera	56.6	1.7
Other	1.8	0.1
International institutions and donors		
World Bank	77.4	2.3
EBRD	56.7	1.7
KfW	48.5	1.4
Total	693.7	20.4

Source: Fund staff estimates based on data from the Ministry of Fuel and Energy, and the Ministry of Finance.

28. **Low collection rates have also led to the accumulation of cross-agency debts in the power sector** (Table II-3). Sakenergo's debt to generation companies amounts to 3.1 percent of GDP. Although the private management contract for GWEM has led to a gradual improvement in collection rates, GWEM's debt to generation companies reached 7.2 percent of GDP at the end of 2002. Distribution companies owe Sakenergo and GWEM an equivalent of 19.5 percent of GDP.[8] Trade in these debts reduces the transparency of payments in the sector, since payments are partially made in debt rather than cash.

[8] The difference between receivables and payables of Sakenergo and GWEM covers debts to suppliers outside the energy sector, and gas and electricity import.

Table II-3. Georgia: Cross-Agency Debt of the Electricity System, end-2002

	US$ Million	Percent of GDP
Sakenergo		
Receivables from distribution companies	93.7	6.1
Payables to generation companies	48.6	3.1
GWEM		
Receivables from distribution companies	207.1	13.4
Payables to generation companies	111.9	7.2

Source: Fund staff estimates based on data from the Ministry of Fuel and Energy.

29. **International donors active in the power sector agree that there is an urgent need to create a debt resolution agency that would take over all cross-agency debts of the electricity sector accumulated before a certain date.** Despite support from the Ministry of Fuel and Energy, no steps have been taken so far to make the proposed agency operational.

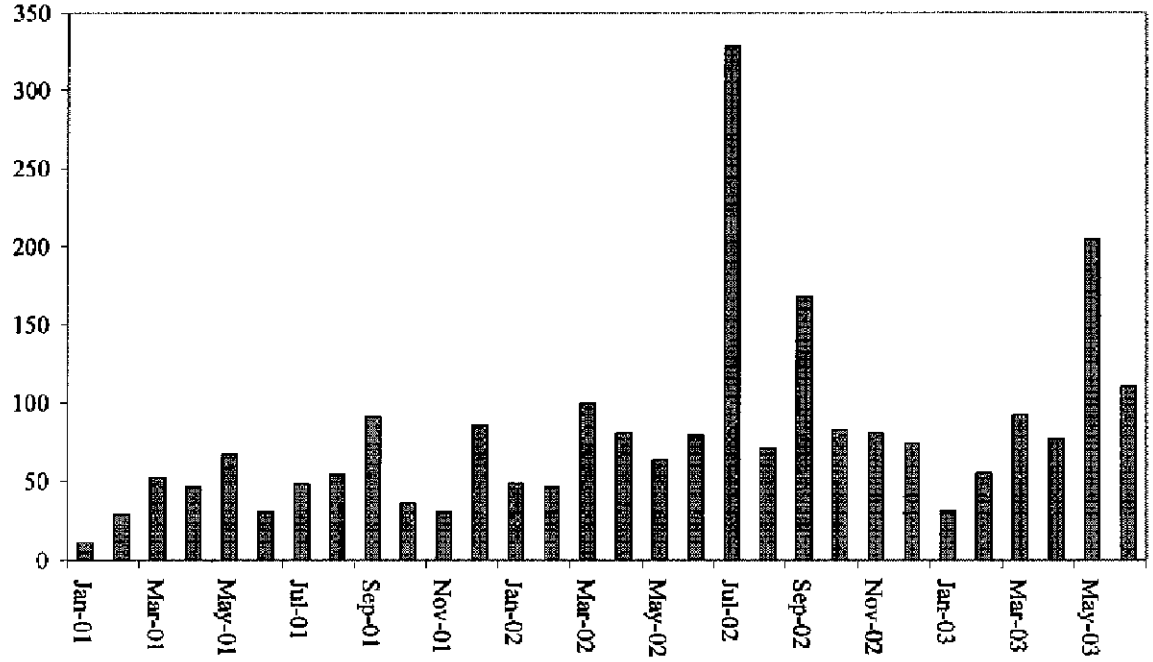
C. Taxation and Budgetary Allocations for the Power Sector

30. **Taxes paid by energy sector companies are an important source of revenue for the general government, but—due to widespread non-payment for energy consumption—calculation of taxes on an accrual basis has created a heavy burden for the sector.** Under pressure from AES, the tax code was modified in October 2001 to levy VAT for all distribution companies on final cash billings to consumers, rather than on an accruals basis. At that time, the tax code was also modified so that VAT would not be charged on electricity sold to distribution companies but stolen before final delivery. This latter decision was reversed in June 2002. Thus, VAT obligations are currently calculated based on all electricity delivered to distribution companies, i.e., the tax is paid also on technical and commercial losses. Similarly, profit taxes and dividends (in the case of state-owned companies) are computed on an accruals basis without provision for write-offs, creating a burden especially for generation and for transmission and dispatch activities, due to low payments from downstream companies. Rapidly accruing penalties on overdue taxes exacerbate these problems. The difficulties faced by electricity companies stemming from the payment of taxes on an accruals basis, without any provision for accruing and writing off losses, as well as from payment of taxes on technical and commercial losses, provide substantial justification for modifying the tax code to address these problems consistently.

31. **On the expenditure side, the 2003 budget includes GEL 96 million (1.2 percent of GDP) for various energy sector commitments**, including GEL 22.7 million to pay for Abkhazia's current use of electricity and clearance of GWEM claims for unpaid electricity

use in previous years.[9] While this amount has been agreed between the Ministry of Finance and the Ministry of Fuel and Energy, there is currently a disagreement between the two ministries on the actual subsidies needed to cover the consumption of the breakaway region and some other subsidies granted by parliament in 2002. The 2003 budget includes GEL 30 million for electricity consumed by budgetary organizations. Payments by budgetary organizations for their electricity use met the 70 percent target set under the PRGF program in the first six months of 2003 (Figure II-5).

Figure II-5. Georgia: Collection Rates from Budgetary Organizations
(In percent)



Sources: AES Telasi; Ministry of Fuel and Energy; and Fund staff estimates.

D. Experience of Other Transition Countries

32. **While most transition countries have deregulated their energy sectors, the speed of reforms has varied even among countries starting from similar initial conditions.**[10]

[9] The energy sector debt strategy that the authorities prepared in June 2002 put the stock of debt related to previous unpaid energy consumption by Abkhazia at GEL 87 million; it proposed to clear this debt over a ten-year period.

[10] A useful overview is provided in *Central and Eastern Europe: Power Sector Reforms in Selected Countries*, Report No 196/97, July 1997, Joint WB-UNIDO Energy Sector

(continued)