

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

BRAZIL

NORTHWEST MINAS GERAIS ELECTRIFICATION PROGRAM

(BR-L1028)

LOAN PROPOSAL

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Electronic Links	
REQUIRED	
1.	Safeguard Policy Filter http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=1986342
OPTIONAL	
1.	Economic and financial feasibility study – final report. Luiz Claudio Faria, March 2009 http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=1917043
2.	Socioeconomic framework – final report. Luiz Claudio Faria, March 2009 http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=1917038
3.	Environmental annex. August 2005 http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=570032
4.	<i>Relatório Ambiental de Acompanhamento da Implantação de Subestações e Redes de Distribuição Rural. Belo Horizonte, Julho de 2007</i> [Environmental report on support for implementation of rural distribution grids and substations. Belo Horizonte, July 2007] http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=1931388
5.	<i>Plano Mineiro de Desenvolvimento Integrado 2007-2023</i> . [Minas Gerais comprehensive development plan 2007-2023] http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=1953878
6.	<i>Programa de Aceleração do Crescimento (PAC) – Minas Gerais, Dezembro 2008</i> [Growth Acceleration Program (PAC) – Minas Gerais, December 2008] http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=1954287
7.	<i>Programa de Aceleração do Crescimento (PAC) – Brasil - 2007 - 2010</i> [Growth Acceleration Program (PAC) – Brazil – 2007-2010] http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=1956647

ABBREVIATIONS

CDE	Conta de Desenvolvimento Energético [Energy Development Account]
CEMIG	Companhia Energética de Minas Gerais
CEMIG D	CEMIG Distribuição, S.A.
CESI	Committee on Environment and Social Impact
ELETROBRÁS	Centrais Elétricas Brasileiras
EMG	State of Minas Gerais
GDP	gross domestic product
GPS	global positioning system
IBGE	Instituto Brasileiro de Geografia e Estatística [Brazilian Institute of Geography and Statistics]
ICMS	Imposto sobre Operações Relativas à Circulação de Mercadorias e sobre Serviços de Transporte Interestadual e Intermunicipal e de Comunicação, ainda que as Operações se Iniciem no Exterior [Tax on the Circulation of Goods, Interstate and Intercity Transportation and Communication Services, Even when the Operation is Initiated Abroad]
IEF	Instituto Estadual de Florestas [State Forestry Institute]
KM	kilometers
KV	kilovolts
LIBOR	London Interbank Offered Rate
MWh	megawatt hours
OC	Ordinary Capital
PNPV	private net present value
R\$	Brazilian reais
RGR	Reserva Global de Reversão [Global Reversion Fund]
SECCI	Sustainable Energy and Climate Change Initiative
SEDE	State Economic Development Department

PROJECT SUMMARY
BRAZIL
NORTHWEST MINAS GERAIS ELECTRIFICATION PROGRAM
(BR-L1028)

Financial Terms and Conditions				
Borrower: State of Minas Gerais Guarantor: Federative Republic of Brazil Executing agency: State of Minas Gerais, through the State Economic Development Department (SEDE)			Amortization period:	25 years
			Grace period:	24 months
			Disbursement period:	24 months
Source	Amount	%	Interest rate:	LIBOR
IDB (Ordinary Capital):	US\$10,000,000	58	Inspection and supervision fee:	*
Local:	US\$6,220,000	42	Credit fee:	*
Total:	US\$16,220,000	100	Currency:	US dollars
Project at a glance				
<p>Project objective/description: The goal of the proposed project is to foster the economic development of northwest Minas Gerais and to improve living conditions for the region's periurban and rural population through the incentive to expand coverage of electricity service, thereby contributing to poverty reduction. The specific objective of this project is to finance the expansion of electricity service coverage by awarding incentives or contributions granted by the State of Minas Gerais and the federal government to the state power company, CEMIG Distribuição S. A. (CEMIG-D), to promote investments in transmission, rehabilitation, and expansion of the power distribution grid in northwest Minas Gerais. These investments will raise the efficiency of the distribution system by reducing losses, and are consistent with the Inter-American Development Bank's vision for the energy sector, one of the goals of which is to contribute to energy efficiency and the reduction of greenhouse gas emissions.</p> <p>Performance-driven loan: The financial instrument being proposed is a performance-driven loan, under which the achievement of results can be quantified by following accepted methods as defined by industry practice.</p> <p>Special contractual conditions: <u>Conditions precedent to the first and sole disbursement:</u> (a) that the independent consulting assignment for verification of achievement of targets has verified that the program targets described in the appendix to the sole annex to the loan contract have been achieved (paragraph 3.7); (b) that the environmental review consulting assignment has verified that the environmental impacts resulting from execution of the program investments have been effectively mitigated (paragraph 3.7); (c) that the borrower has presented a satisfactory proposal to the Bank for the project's financial-accounting external audit services (paragraph 3.11); (d) that the terms of the commitment between the borrower and CEMIG-D have been signed and have entered into force (paragraph 3.2); and (e) that the state decree governing the transfer of resources to CEMIG-D, as an incentive to expand electricity service coverage, has entered into force (paragraph 3.2). <u>Exchange rate:</u> The rules applicable to the exchange rate previously in force (prior to document GN-2415) will apply, pursuant to the terms of article 3.06 of the General Conditions of the loan contract.</p> <p>Exceptions to Bank policy: The following exceptions to Bank policies are requested: (i) Recognition of expenditures, retroactive financing, and advance procurement (OP-504): the proposed exception is for recognition of expenditures against the local counterpart incurred prior to the 18 months preceding approval of the project by the Bank's Board of Executive Directors. Such expenditures, totaling US\$6.22 million (100% of the counterpart and 38% of the total amount of the project), consist of incentives granted to CEMIG-D by the State of Minas Gerais¹ and by the federal government² in accordance with the respective legal frameworks, after the project's official entry into the Bank's pipeline (November 2005) (paragraph 3.10); (ii) performance-driven loans (GN-2278-2): the proposed exception is that the selection, contracting, and payment of independent consulting assignments to verify achievement of the targets and conduct the environmental review be done by the Bank using Bank resources rather than proceeds from the loan (paragraph 3.9); and (iii) audit of projects and entities (AF-100): the proposed exception is that the accounting-financial audit of the project be performed by the firm of independent auditors that provides auditing services to CEMIG-D and that payment for such services be made by CEMIG-D rather than with loan proceeds (paragraph 3.11).</p>				

¹ Exempted from ICMS [state value-added tax on services and circulation of goods].

² Energy Development Account (CDE) and Global Reversion Fund (RGR).

Project consistent with country strategy:	Yes [X]	No []			
Project qualifies as:	SEQ []	PTI [X]	Sector []	Geographic []	Headcount []
Verified by CESI on: 21 October 2005					

* The credit fee and inspection and supervision fee will be established periodically by the Board of Executive Directors as part of its review of the Bank's lending charges, in accordance with the applicable provisions of the Bank's policy on lending rate methodology for Ordinary Capital loans. In no case will the credit fee exceed 0.75% or the inspection and supervision fee exceed, in a given six-month period, the amount that would result from applying 1% to the loan amount divided by the number of six-month periods included in the original disbursement period.

I. DESCRIPTION AND RESULTS MONITORING

A. Background, problem addressed, and rationale

- 1.1 **Background.** The northwestern region of Minas Gerais consists of 19 municípios, covers 65,800 square kilometers (11% of the state), and has a population of 328,000.³ Northwest Minas Gerais has tremendous potential for agroindustrial development, with 480 large-scale agricultural producers, 13,000 medium-sized agricultural producers, and 1,000 small ones. The main agricultural activity is grain production, which uses diesel-powered irrigation systems owing to the power system's limited capacity and coverage in the region.⁴
- 1.2 The lack of infrastructure in northwest Minas Gerais is a major hindrance to the region's economic, financial, and social development as well as its competitiveness. As a result, the State of Minas Gerais developed a multiyear government action plan (*Plano Plurianual de Ação Governamental*) in 2004 that called for development of power infrastructure through investments in transmission, rehabilitation, and expansion of the power distribution grid in northwest Minas Gerais to improve living conditions and reduce social inequality for population groups with less purchasing power. These investments were to be made by the state's power distribution company, Companhia Energética de Minas Gerais Distribuição S.A. (CEMIG-D).
- 1.3 The basic infrastructure to be implemented by the local electricity distributor will serve to connect not only large-scale rural producers, but also rural homes and small-scale rural producers under the *Luz para Todos* program and periurban homes under the *Clarear* program. These two programs are also being executed by CEMIG-D. The former, aimed at broadening the coverage of rural electrification, is part of a national program launched by the federal government with Decree 4,873 of November 2003, coordinated by the Ministry of Mines and Energy, and supervised by Centrais Elétricas Brasileiras (Eletrobrás). The latter is one of CEMIG-D's own programs, aimed specifically at expanding urban electrification.
- 1.4 The State of Minas Gerais has a potential market of some 176,000 rural consumers who could be electrified under *Luz para Todos*. Nearly 100% of rural areas in northwest Minas Gerais were electrified by the end of 2008, including 3,069 rural homes and 2,767 typical rural producers. *Luz para Todos* is a social program, as evidenced by the fact that all hook-ups have included the service connection, the electricity meter, and in-home installation of up to three lights and two power outlets.
- 1.5 The State has a potential market of some 476,000 periurban consumers who could be electrified under *Clarear*. All regions will be covered, but priority is being given

³ 2000 Census by the Brazilian Institute of Geography and Statistics (IBGE).

⁴ Because agroindustry is one of the largest consumers of power in the region, the lack of electricity has forced farms to use diesel engines for their irrigation systems. Northwest Minas Gerais has some 476 medium-voltage consumers classified as irrigators, showing how widespread irrigation is in the region.

to those with the lowest Human Development Index. As of December 2008, the program had brought electric power to 3,075 new consumers in the urban periphery in northwest Minas Gerais: 2,761 residential, 286 commercial, and 28 industrial consumers. The beneficiaries are small and medium-sized consumers.

- 1.6 Starting with an identification mission in late 2004, the Inter-American Development Bank began preparation of the Northwest Minas Gerais Electrification Project to support development of the power sector in the state of Minas Gerais. The Bank reviewed the studies that had been done, along with the institutional and conceptual aspects of the operation. The project could not be processed for approval at the time owing to certain borrowing constraints on the State.⁵ So, considering the program's strategic importance to the development of northwest Minas Gerais, the program was implemented according to the agreed works schedule. CEMIG-D used its own resources in lieu of the Bank resources, but with a commitment from the State of Minas Gerais, enshrined in Law 15,522 of 2005, to give CEMIG-D the US\$10 million under negotiation with the Bank. During this period, the Bank, through its Energy Division (INE/ENE), maintained an ongoing dialogue with the State of Minas Gerais (EMG) regarding the status of the operation. In late 2008, the state government requested that the operation (BR-L1028) be reactivated and the negotiation and approval process move forward.
- 1.7 The goal of the proposed project is to foster the economic development of northwest Minas Gerais and to improve living conditions for the periurban and rural population through the incentive to expand coverage of electric service, thereby contributing to poverty reduction. The project's specific objective is to finance part of the incentives (contributions) given by the State to the local distribution company, CEMIG-D, for investments in transmission, rehabilitation, and expansion of the power distribution grid in northwest Minas Gerais, in keeping with the Sustainable Energy and Climate Change Initiative (SECCI). These investments, by reducing losses, will result in a more energy efficient distribution system and are consistent with the Bank's vision for the energy sector.
- 1.8 **Problem addressed.** Despite the progress made by the state of Minas Gerais in recent years, driven by the Minas Gerais Comprehensive Development Plan, the northwestern part of the state remains fairly underdeveloped. The state as a whole, with a population of 19.2 million, has a gross domestic product⁶ of R\$208.7 billion (US\$89.1 billion), making its economy the third largest in Brazil, while growth in investment has made Minas Gerais the second largest industrial hub.

⁵ The constraints resulted from the National Treasury Department's interpretation of the *Máquinas para o Desenvolvimento* (Fundomaq) program, according to which Fundomaq transactions could be considered to constitute commercial leasing between the State of Minas Gerais and the municípios, which was not allowed under the Fiscal Responsibility Act (LRF). The State of Minas Gerais ended the Fundomaq program in December 2007, thereby coming back into line with the LRF, which enabled it to resume preparation of this operation with the Bank in late 2008.

⁶ Preliminary 2006 data.

Comparatively, northwest Minas Gerais has a GDP of R\$3.2 billion (US\$1.4 billion), which represents about 1.5% of statewide GDP.

- 1.9 Insufficient infrastructure, particularly in the energy sector, has held back growth in northwest Minas Gerais. For instance, the situation has forced farms to use diesel engines (which produce greenhouse gases) for their irrigation systems, resulting in high costs that directly undermine the region's competitiveness.
- 1.10 In northwest Minas Gerais, electric power is supplied by CEMIG, whose concession covers 96.7% of the state. Within its concession area as a whole, CEMIG averages one substation every 1,600 km² and one feeder every 400 km², while in northwest Minas Gerais, it has a substation every 4,111 km² and a feeder every 1,315 km². In general terms, the region's power system is run down, with low voltage levels at various points and loads near nominal capacity. The long distances between load centers and bottlenecks in the electrical system make supplying power challenging. The region's power system entered a new cycle when the Queimado hydroelectric plant came online in 2004.⁷ It will have to be expanded, however, which will entail building or expanding substations, transmission lines, and distribution feeders.
- 1.11 **Rationale.** Against this backdrop, the EMG requested support from the Bank to finance the northwest Minas Gerais power infrastructure development component of a larger set of projects. The EMG is seeking—via incentives transferred to CEMIG-D—investments in transmission, rehabilitation, and expansion of the power distribution grid in northwest Minas Gerais, which will result in a more efficient system and a reduction in greenhouse gases.
- 1.12 The program will not only support the electrification of large rural farms, but will also facilitate implementation of the *Luz para Todos* and *Clarear* programs, which are helping to expand coverage of electricity service in northwest Minas Gerais.
- 1.13 The low financial returns on rural electrification investments generally do not provide sufficient incentives for the private sector to expand its systems and provide electricity services to the poorest users, many of whom are in rural areas. The Bank therefore recognizes the need for efficient intervention by the State of Minas Gerais, stressing the importance of providing support in this area in a way that takes into account users' ability to pay and the sustainability of the rural electrification systems without compromising efficient long-term service delivery.
- 1.14 **Brazil's power sector.** After a period of rationing in 2001, the power sector underwent a transition as new concepts were introduced to lay the groundwork for greater sector operationalization and to guarantee the availability of electric power. In March 2004, the National Congress made substantial changes to the sector through Law 10,848, which, among other things, made it mandatory to unbundle

⁷ The plant improved the 138-kV Coromandel–Vazante–Paracatú–Unaí trunk line by returning voltage to normal levels, relieving line loads, reducing technical losses, and enhancing system reliability. There are still limits on new loads, however, on the 69-kV line between Brasilândia and Buritis.

- distribution activities from generation and transmission activities. Moreover, distributors may not hold shares in other companies.
- 1.15 The power distribution market is currently served by 64 State-owned and private utility concessionaires, covering the entire country. The State-owned enterprises are controlled by the federal, state, or municipal governments; the private concessionaires are owned by both Brazilian and foreign companies. Over the past two decades, growth in power consumption has far outpaced GDP growth, owing to urban sprawl, efforts to expand the energy supply, and modernization of the economy.
- 1.16 **The power sector in Minas Gerais.** CEMIG-D was established in 2004 on the basis of the corporate restructuring of Companhia Energética de Minas Gerais S.A.-CEMIG,⁸ a public-private company created in 1952, which in December 2004 stopped being an integrated company and was divided into two subsidiaries: CEMIG-D and CEMIG Geração e Transmissão S.A. This change took place pursuant to Law 10,848 of March 2004, which established the new model for Brazil's electric power sector, under which integrated companies were forced to restructure by separating their activities—a process known as vertical unbundling.
- 1.17 CEMIG-D is tasked with distributing electric power to 774 municípios in the state of Minas Gerais. CEMIG-D's concession area covers about 96.7% of the state, which lies in Brazil's Southeast, and spans 560,000 km²—an area about the size of France. CEMIG Geração e Transmissão S.A. has 52 generation plants, most of them hydropower plants, with an operating capacity of 5,842 megawatt-hours, which produce power for over 10 million consumers. In 2008, CEMIG-D supplied 58,550 gigawatt-hours of power to its market, representing an increase in sold power of 1.4% over 2007.
- 1.18 CEMIG, a public power utility, is considered to be a global leader in the sector, and was selected by the Dow Jones World Sustainability Index for the eighth year in 2008. Selection is based on financial performance, quality, consistent improvements in corporate management, which incorporates environmental and social actions with a view to ensuring long-term sustainability.
- 1.19 **The Bank's strategy with the country.** The program is consistent with the Bank's country strategy with Brazil, as it supports infrastructure development, particularly the electrification of rural, low-income localities, in accordance with plans for universal access to electricity by the end of the decade.
- 1.20 The program is consistent with the SECCI. The investments envisaged by the program will help to: (i) reduce greenhouse gas emissions by expanding the power distribution grid in northwest Minas Gerais, where large-scale agricultural

⁸ The State of Minas Gerais holds 22% of total equity and 51% of common shares, giving it a controlling interest in CEMIG; *Southern Electric Brasil Part. Ltda.* holds 14% of total equity and 33% of common shares; 30% of total equity is held by domestic private shareholders, 31% by shareholders from outside Brazil, and the remaining 3% by other shareholders.

producers will switch from diesel-powered to electrically powered irrigation systems, and (ii) promote energy efficiency in the transmission and distribution subsector by reducing losses.

- 1.21 The Bank's experience in rural electrification includes approval of the following loans: (i) Guatemala: Rural Electrification Program – Phase I (2033/OC-GU) for US\$55 million (2008); (ii) Panama: Rural Electrification Program (1790/OC-PN) for US\$30 million (2006); (iii) Bolivia: Rural Electrification Program (1635/SF-BO) for US\$20 million (2005); (iv) Brazil: CEMAT Investment Program for US\$75 million (2005); (v) Honduras: Puebla-Panama Plan – Support for Rural Electrification and the Energy Sector (1584/SF-HO) for US\$35 million (2004); (vi) Chile: Rural Electrification Program (1475/OC-CH) for US\$40 million (2003); (vii) Guyana: Unserved Areas Electrification Program (1103/SF-GY) for US\$27.4 million (2002); and (viii) Nicaragua: Hybrid Program for Support to the Electric Sector (1017/SF-NI) for US\$46 million (1998).
- 1.22 One of the lessons learned from the above-mentioned rural electrification programs is that the approach should be to provide incentives for investment rather than to finance works. This new approach seeks to: (i) optimize the allocation and use of public resources; (ii) increase the number of beneficiaries; and (iii) simplify the process of designing and building facilities by having this be the responsibility of the very companies in charge of operating and maintaining them in the future.

B. Objectives

- 1.23 The goal of the program is to foster the economic development of northwest Minas Gerais and to improve living conditions for the region's periurban and rural population by providing basic power infrastructure. The direct beneficiaries of this basic power infrastructure are large-scale rural agricultural producers, low-income periurban homes in the complementary program *Clarear*, and rural homes and small-scale rural producers in the complementary program *Luz para Todos*. The investments will also make the distribution system more efficient by reducing losses and are consistent with the Bank's vision for the energy sector, one of the goals of which is to contribute to energy efficiency and the reduction of greenhouse gas emissions.
- 1.24 The specific objective of this operation is to contribute to the incentives (contributions) given by the EMG and the federal government to promote rural electrification. The program builds on lessons learned (see paragraph 1.22), with the state government seeking to transfer funds to the local power distributor, CEMIG-D, as an incentive to invest in transmission, rehabilitation, and expansion of the power distribution grid in northwest Minas Gerais. Incentives need to be offered because the rates paid by rural and low-income periurban consumers fall short of covering the cost of basic infrastructure.

C. Components

- 1.25 The proposed project includes incentives for the following components:

1. Component 1: Expansion of the power system in northwest Minas Gerais

- 1.26 This component finances the incentives for high- and medium-voltage transmission works, including: (i) construction of three new substations; (ii) expansion of three existing substations; (iii) construction of 162 km of 138kV transmission lines; and (iv) construction of 1,367 km of medium-voltage feeders. Through 2008, with the execution of these works, CEMIG-D was able to increase available power from 150 MW to 300 MW.

2. Component 2: Connection of large-scale rural producers in northwest Minas Gerais

- 1.27 This component consists of financing the incentives in the provision of electricity services to 186 large-scale rural producers (who used diesel for irrigation), which will have a significant impact on the reduction of greenhouse gas emissions. Through 2009, the total number of large-scale rural producers is estimated at 228.

3. Component 3: Connection of consumers in the periurban areas of localities in northwest Minas Gerais – *Clarear* program

- 1.28 This component finances the incentives for works to provide electricity services to periurban homes, including: (i) an increase in the capacity of existing grids; (ii) grid expansion; and (iii) installation of distribution lines and meters.

4. Component 4: Connection of consumers in the rural areas of northwest Minas Gerais – *Luz para Todos* program

- 1.29 This component consists of financing the incentives for works that will be providing electricity services to rural homes and small-scale farmers, including: (i) expansion of rural grids; (ii) service lines and meters; and (iii) in-home hookups (installation for three lights and a power outlet). Through 2008, the investments made served to bring 5,836 new rural consumers online, 3,069 of them small-scale farmers and 2,767 regular consumers. Through 2009, a total of 5,920 new consumers are expected to be incorporated.

D. Results indicators

- 1.30 The results matrix (Annex II) presents indicators of outcomes associated with the project components. The indicators, which were formulated so as to help evaluate the program's impact, have been analyzed and agreed to by the various agencies involved in the program, which will play a part in the verification of the indicators.

E. Cost and financing

- 1.31 The total cost of the incentives for the program is US\$16.2 million—US\$10 million from the Bank and US\$6.2 million from the local counterpart. The sources of the local counterpart funds are: (i) the federal government, with resources from the *Conta de Desenvolvimento Energético* [Energy Development Account] (CDE) and

the *Reserva Global de Reversão* [Global Reversion Fund] (RGR);⁹ and (ii) the State of Minas Gerais, through a special tax-exempt status for purchases of materials and equipment for program implementation (ICMS).

Table 1. Costs and Financing (US\$ thousands equivalent)*			
CATEGORY	IDB	LOCAL	TOTAL
Component 1: Expansion of the power system in northwest Minas Gerais	7,100	4,391	11,491
Component 2: Connection of large-scale rural producers in northwest Minas Gerais	100	150	250
Component 3: Connection of consumers in the periurban areas of localities in northwest Minas Gerais – <i>Clarear</i> program	300	124	424
Component 4: Connection of consumers in rural areas of northwest Minas Gerais – <i>Luz para Todos</i> program	2,500	1,555	4,055
Finance charges	0	0	0
Total	10,000	6,220	16,220
%	61.6	38.4	100

* Finance charges, interest, and the credit fee will be paid by the EMG outside the program.

- 1.32 Other eligible expenses. No other expenses are eligible under the project. The costs associated with hiring independent consultants will be covered by the Bank (paragraph 3.7).

II. FINANCING STRUCTURE AND MAIN RISKS

A. Financing structure

- 2.1 The project consists of a loan in the amount of US\$10 million to the EMG, which in turn has a sovereign guarantee from the federal government on the borrower's financial obligations. The proposed financing instrument is a performance-driven loan, under which the achievement of results can be quantified by following accepted methods as defined by industry practice. As a condition for the first and sole disbursement of the loan, an independent consultant will verify performance and the achievement of targets for the four indicators. The IDB resources will be disbursed directly to the Finance Department, which will in turn transfer them to the State Economic Development Department (SEDE).

⁹ The CDE is a fund managed by Eletrobrás, which transfers funds to power distributors for implementation of the *Luz Para Todos* program. The RGR provides loans through Eletrobrás to distributors at an 8% interest rate, with a 10-year repayment term and a four-year grace period.

- 2.2 The program's incentives are structured around achieving final outcomes associated with the program objectives, which in turn are associated with four indicators: (i) one indicator that depends on the willingness of existing and new consumers to increase their power consumption; and (ii) three indicators directly related to the physical connection of consumers (number of electrical connections), which depend exclusively on the local electric power distributor. The outcome indicators, baseline values, and targets associated with the program objectives are set out in the results matrix (see Annex II). The targets were calculated based on starting values taken from the studies conducted in 2005 and historical trends for the consumption indicator, factoring in the size of the investment called for under the project.
- 2.3 The loan has been structured according to an incentive scheme (or supports) that consists of the payment of a government subsidy to CEMIG-D in the amount needed to provide a sufficient financial return on the northwest Minas Gerais electrification project. The subsidy amount of R\$37 million (US\$16 million) was set by the Minas Gerais state government prior to program execution, after determining the revenues and costs involved.¹⁰
- 2.4 The operation and maintenance of the electric power transmission and distribution systems will be done by CEMIG-D pursuant to the legislation applicable to electric power distribution service concessions.

B. Main risks

1. Institutional risk

- 2.5 SEDE was able to effectively meet the demands of program execution with its existing staff and equipment. CEMIG-D, with its extensive experience in the Brazilian power sector, contributed its institutional expertise, skilled staff, and information systems toward the planning and control of complex projects to support SEDE in the control of program activities. Moreover, since the investments under the program of incentives to be financed have already been made, institutional risk has been mitigated.

2. Fiduciary risk

- 2.6 Given that the investments under the incentive program to be financed have already been made, fiduciary risk is not relevant.

3. Environmental and social risks

- 2.7 The project was approved by CESI on 21 October 2005. By improving living conditions for lower-income groups and raising the productivity of rural and periurban communities, the program has significant, positive environmental and social impacts that specifically include: (i) greater use of household appliances; (ii) better health care and communications; (iii) improved agricultural productivity and productive processes; (iv) higher income for farmers and the local population;

¹⁰ Law 15,522 passed by the State Legislative Assembly authorized the state government to contract an IDB loan for up to US\$10 million. All the investments initially envisaged were executed.

- (v) industrial development; (vi) increased tax receipts; (vii) reduction of greenhouse gases, through the substitution of diesel engines; and (x) prevention of rural depopulation.
- 2.8 No significant direct or indirect negative impacts on the conservation units in northwest Minas Gerais are anticipated. The paths of transmission lines and the locations of transformer stations were selected based on environmental criteria, thereby avoiding any disturbance to conservation units or suppression of vegetation. Distribution grids causing such a disturbance are not eligible. No indigenous groups have been identified in northwest Minas Gerais, and there are no adverse impacts of program implementation on low-income groups.
- 2.9 The Fundação Estadual do Meio Ambiente [State Environment Foundation] (FEAM),¹¹ the Instituto Estadual de Florestas [State Forestry Institute] (IEF), and the Instituto Mineiro de Gestão das Águas [Minas Gerais Water Management Institute] (IGAM) were evaluated and considered to be capable of inspecting and monitoring pressure on the natural resources of northwest Minas Gerais, including its conservation units. CEMIG-D was evaluated and deemed capable of implementing program investments from an environmental standpoint. CEMIG-D has an environmental policy and applies it in all its projects, ensuring that contractors and employees adhere to it and to environmental legislation. In addition, CEMIG-D signed an agreement with the IEF that sets out rules and procedures allowing for the suppression of vegetation in certain areas for implementing new projects throughout the state of Minas Gerais.
- 2.10 **Socioenvironmental review.** As a condition precedent to disbursement, a socioenvironmental review is required to ensure that the program's environmental impacts were effectively mitigated.
- C. Economic and financial viability**
- 2.11 **Economic viability.** A cost-benefit methodology was used to evaluate the socioeconomic viability of the component of incentives for investment in rural power distribution and transmission in terms of its cash value and based on welfare theory. The following measures were used to quantify economic benefits: (i) the willingness to pay of users under the *Clarear* and *Luz para Todos* programs and of large farms; (ii) the resources saved by switching from diesel to electric power for irrigation and reducing losses through investments in improving transmission and expanding the distribution grid; and (iii) the increase in power consumption by existing users, since the program will not only provide for new connections, but will also improve the quality of electricity service, in addition to allowing for street lighting.
- 2.12 Given the above premises, a 25-year cash flow horizon and a 12% annual discount rate result in an economic rate of return of 18% and a cost-benefit ratio of 1.23.

¹¹ <http://www.feam.br/>.

- 2.13 **Financial viability.** The private net present value (PNPV) was calculated taking into account the initial investments, the incremental revenues generated by the program, as well as the costs of operation and maintenance, purchase of electric power, and the taxes and fees levied on the power sector. With a 25-year horizon, cash flow discounted at an annual rate of 18% yielded a negative PNPV of R\$94.7 million (US\$40 million), a gap coverable by existing cross-subsidies in CEMIG-D's rate structure. A simulation indicated that for the PNPV to equal zero, the electric power rates paid by large rural producers for irrigation would have to be raised by 30%.
- 2.14 In addition to analyzing the program's financial sustainability, the project team also looked at the financial condition of the State of Minas Gerais. A review of the State's revenues and expenditures over the 2002–2007 period showed that the State obtained a primary surplus that ranged from R\$449 million in 2002 to R\$2.309 billion in 2007 (US\$154 million and US\$1.186 billion, respectively). A further analysis of the 2008 budget and budget projections through 2017 found that the State has sufficient resources to cover anticipated needs. The financial analysis concluded that the State of Minas Gerais is creditworthy and able to take on the financial commitments deriving from the loan.

III. EXECUTION AND ADMINISTRATION PLAN

A. Execution arrangements

- 3.1 The borrower will be the State of Minas Gerais (EMG) and the guarantor will be the federal government. The executing agency will be the EMG, through the State Economic Development Department (SEDE).¹²
- 3.2 The Bank will make a first and sole disbursement when the special conditions have been met, including achievement of the targets set out in the Results Matrix reflected in Annex II. The borrower in turn will transfer the proceeds of the loan to the local distributor, CEMIG-D. **The following special conditions precedent to the first and sole disbursement of the project will apply: entry into force of the state degree regulating the transfer of resources to CEMIG-D, as an incentive to expand electricity service coverage; and signing and entry into force of the respective instrument of commitment between the borrower and CEMIG-D.**
- 3.3 During implementation of the investments, the program was managed by SEDE with its existing staff and equipment and with assistance from CEMIG-D.
- 3.4 CEMIG-D executed the construction and assembly works of the transmission lines, substations, and distribution grids needed to connect new consumers in northwest Minas Gerais. It contributed the resources to cover the costs of the profitable part of the program, and helped SEDE prepare the timetable of program activities. With

¹² SEDE's organizational structure consists of the Office of the Secretary, administrative support staff, technical support staff, a sector auditor, and three subdepartments: Industry, Commerce, and Services; Mineral and Metallurgical Development and Energy Policy; and International Affairs.

assistance from CEMIG-D, SEDE coordinated actions to see that the large agricultural producers in the program area carried out the works for which they were responsible so they would be ready to receive electricity services as soon as the system was up and running.

B. Administration

- 3.5 **Procurement.** The portion of the operation to be financed by the Bank (US\$10 million) will be used for the financing of the incentives determined a priori to encourage the local distributor to invest in rural electrification in priority areas. Program execution and administration will therefore not involve provisions regarding bidding for the construction, operation, or maintenance of works. Nevertheless, the consulting assignments to verify achievement of the program targets and conduct the socioenvironmental review (see paragraph 2.9) will be selected and hired by the Bank in accordance with its policies and procedures.
- 3.6 **Disbursements.** Given that the investments have already been made, there will be one single disbursement once the independent consultant verifies that the targets given in the results matrix (Annex II) have been met and performs the socioenvironmental review.¹³ The borrower will be responsible for submitting to the Bank the target achievement report that will be prepared or coordinated with CEMIG-D, which has systems enabling it to identify each customer by an exclusive number, by physical location using the Global Positioning System (GPS), as well as by other data that identify the consumer¹⁴ and the type of connection.
- 3.7 **Verification of fulfillment of program targets and socioenvironmental review.** The following conditions precedent to the disbursement of the Bank resources are envisaged: (i) verification by a contracted independent consultant that program targets have been met, and (ii) the socioenvironmental review to ensure that the program's environmental impacts were effectively mitigated. **As conditions precedent to the first and sole disbursement of the loan proceeds, the independent consulting assignment for verification of achievement of targets will have verified achievement of the program targets and that the environmental review consulting assignment has verified that the environmental impacts resulting from execution of the program investments have been effectively mitigated.**
- 3.8 The consultants will analyze and present a report on the achievement of targets and prepare a socioenvironmental report for review by the Bank. Both consulting assignments will be performed by an institution or firm of independent consultants that conducts performance evaluations and is acceptable to the Bank, consistent with the terms of reference approved in advance by the Bank.

¹³ An advance disbursement as permitted by Bank policy is not anticipated.

¹⁴ Registration number in the Registry of Individuals (CPF) or in the National Registry of Corporations (CNPJ), the company, address, type of property receiving service, and statistical data on consumption.

- 3.9 Given the difficulties anticipated by the EMG with regard to such contracting within the timetable estimated for project disbursement, the consultants will be hired and paid for by the Bank. As such, the corresponding exception to the performance-based loans policy (GN-2278-2) is requested.
- 3.10 **Retroactivity of expenditures.** An exception to the Bank's policy regarding recognition of expenditures, retroactive financing, and advance procurement (OP-504) is being requested for recognition of expenditures against the local counterpart incurred prior to the 18 months preceding approval of the project by the Bank's Board of Executive Directors. Such expenditures, totaling US\$6.22 million (100% of the counterpart and 38% of the total project costs), consist of incentives granted to the local operator by the EMG through a special tax arrangement that granted a tax exemption for materials and equipment acquired for program implementation (ICMS) and by the federal government with resources from the Energy Development Account (CDE) and the Global Reversion Fund (RGR),¹⁵ in accordance with the respective legal frameworks, after the project's official entry into the Bank's pipeline (November 2005).
- 3.11 **Contracting of audits and related costs.** The EMG and the Bank agreed that the auditing firm KPMG would conduct the accounting-financial audit of the project. KPMG is the independent auditing firm that already provides auditing services to CEMIG-D, the project's end beneficiary. KPMG is a firm acceptable to the Bank. CEMIG-D would pay for the audit. An exception to the audit of projects and entities policy (AF-100) is requested because the audit will be paid for by the project's end beneficiary with its own funds. The borrower will submit to the Bank documentation on the commitment between CEMIG-D and KPMG. **Presentation by the borrower of a satisfactory proposal to the Bank regarding the independent financial-accounting audit of the project will be a special condition of the first and sole disbursement of the project.**

¹⁵ The CDE is a fund administered by Eletrobrás, which transfers funds to the electric power distributors for them to carry out the *Luz Para Todos* Program. The RGR is financing that Eletrobrás onlends to the electric power distributors at an interest rate of 8%, with a 10-year repayment period and a four-year grace period.

ANEXX I
Summary of the Development Effectiveness Matrix (DEM)

Confidential Document

BRAZIL: NORTHWEST MINAS GERAIS ELECTRIFICATION PROGRAM (BR-L1028)
RESULTS MATRIX

Project Objective	The goal of the proposed project is to foster the economic development of northwest Minas Gerais and to improve living conditions for the region's periurban and rural population by expanding coverage of electricity service, thereby contributing to poverty reduction. The specific objective of the project is to finance the expansion of electricity service coverage through the granting of incentives or contributions that the State of Minas Gerais and the federal government provide to the State electric company, Companhia Energética de Minas Gerais S.A., to encourage investments in transmission, rehabilitation, and expansion of the power distribution grid in northwest Minas Gerais. These investments will raise the efficiency of the distribution system by reducing losses, and are consistent with the Inter-American Development Bank's vision for the energy sector, one of the goals of which is to contribute to energy efficiency and the reduction of greenhouse gas emissions.			
Outcome Indicators	Baseline (2005)	Incremental targets 2009	Unit of measure	Date of verification
<u>Outcome # 1</u> Increase in medium- and low-voltage power consumption in MWh per year	416,000	107,600	MWh	Prior to the first disbursement
<u>Outcome # 2</u> Number of new large agricultural producers to receive electricity service	0	228	Agricultural producers	Prior to the first disbursement
<u>Outcome # 3</u> Number of periurban homes in the <i>Clarear</i> program to receive electricity service	0	3,660	homes	Prior to the first disbursement
<u>Outcome # 4</u> Number of rural homes and small-scale rural producers from the <i>Luz para Todos</i> program to receive electricity service	0	5,920	homes	Prior to the first disbursement

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

PROPOSED RESOLUTION DE-___/09

Brazil. Loan ____/OC-BR to the State of Minas Gerais
Northwest Minas Gerais Electrification Program

The Board of Executive Directors

RESOLVES:

That the President of the Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, to enter into such contract or contracts as may be necessary with the State of Minas Gerais, as Borrower, and with Federative Republic of Brazil, as Guarantor, for the purpose of granting the former a financing to cooperate in the execution of the Northwest Minas Gerais Electrification Program. Such financing will be for an amount of up to US\$10,000,000 from the Single Currency Facility of the Ordinary Capital resources of the Bank, and will be subject to the Financial Terms and Conditions and the Special Contractual Conditions of the Project Summary of the Loan Proposal.