A Melhor Energia do Brasil

COMPANHIA ENERGÉTICA DE MINAS GERAIS - CEMIG

1 Climate Change Risks, Opportunities and Strategy

For each question please state the time period and where possible the associated financial implications.

a Risks: What commercial risks does climate change present to your company including, but not limited to, those listed below?

i) Regulatory risks associated with current and/or expected government policy on climate change e.g. emissions limits or energy efficiency standards.

Brazil ratified the Kyoto Protocol on April 23rd, 2002 and is an integral part of Non-Annex 1, and therefore has no carbon emission reduction goals.

Cemig adheres to the National Policy and Planning Program Related to Climate Change, conducted by the Global Change Research Coordination Office of the Ministry of Science and Technology. The Brazilian Ministry of Science and Technology recommends the IPCC Third Assessment Report – Climate Change 2001, with regard to direct GHG emissions. Cemig is part of in the Brazilian GHG Inventory in which the Electrical Sector has been taken into consideration. The scope regards only energy businesses and accounts solely for direct GHG emissions. Brazil was one of the first countries to sign the United Nations Framework Convention on Climate Change in June, 1992 and the National Congress ratified it in February, 1994. The Convention entered into force in Brazil in May, 1994. After that, Brazil created the Climate Change Program, whose objective is to support the development of scientific information concerning greenhouse gases emissions to foster the definition of the policy guiding climate change initiatives. The strategy for the program was established by the Brazilian Government, especially by the Ministry of Science and Technology and the Ministry of Foreign Relations, aiming at the fulfillment of the Country's initial commitments under the Convention. Currently, Brazil's main commitments as a developing country are not only to develop, update and periodically publish national inventories both on anthropic emissions as per sources and on the removal by sinks of greenhouse gases not controlled by the Montreal Protocol (article 4 of the Convention text), but also to provide information on the measures taken or planned for the implementation of the Convention (article 12 of the Convention text). The dissemination efforts made for all work developed as part of the program have been made via electronic publishing, which has served as a model for the establishment of the Convention Secretariat's own website and for other developing countries.

ii Physical risks to your business operations from scenarios identified by the Intergovernmental Panel on Climate Change or other expert bodies, such as sea level rise, extreme weather events and resource shortages.

Cemig undertakes a series of activities that are directly related to those risk situations to which the Company is exposed due to climate events such as storms, floods, atmospheric discharges, reservoir overflowing, etc.

As water is a basic raw material for the production of energy by Cemig (it represents 97% of total raw materials) and, also, considering the whole infrastructure of the Electric System that is required to transport the energy produced by the hydroelectric plants to the final consumer (transmission and distribution lines, towers, substations, plants, etc.), any alterations in climate patterns could affect the business. This is the reason why it is of the utmost importance that Cemig be aware of these risk situations.

To help in dealing with floods due to excess rainfall close to hydroelectric plants, Cemig works to publicize information on control of flooding, involving the Civil Defense organizations, local prefectures and populations of the areas surrounding reservoirs and rivers. Information is given on how Cemig operates its reservoirs, the true causes of floods are explained to public opinion, and, jointly with the public, a system of monitoring and warnings is built.

iii Other risks including shifts in consumer attitude and demand.

Since water is Cemig's main raw material (approximately 97%), climate changes may affect the availability of water, thus affecting the production of energy.

Strategies and actions taken by Cemig, focused on the reduction of carbon emissions that may affect global climate balance include energy efficiency and conservation measures in the various productive sectors of society; incentives for the development of Small Hydroelectric Plants – SHPs and high efficiency cogeneration (combined heat and power), incentives for the production of technologies and the development of alternative sources of energy such as solar, wind, hydroelectric, biomass, fuel cell, biodiesel and others; the development of sustainable energy consumption programs, including partnerships with its clients from the residential, commercial, industrial and agro-industry sectors.

b Opportunities: What commercial opportunities does climate change present to your company for both existing and new products and services?

Cemig appointed a work group with the task of identifying opportunities to develop CDM projects in the carbon market, and also to introduce a tool for analysis into its management system, for assessment carbon projects for each new construction proposed.

In line with the worldwide efforts to reduce greenhouse gas emissions, and re-use energy contained in processed gases, the Barreiro thermal plant has a project qualifying under the Clean Development Mechanism (CDM) of the Kyoto Protocol, already registered with the Executive Committee of the United Nations Framework Convention on Climate Change

(UNFCCC), which could result in its obtaining Certifications for Reduced Emissions, which would be registered with the UNFCCC as "Project 0143 – UTE Barreiro S.A. Renewable Electricity Generation Project".

Cemig participates in forums and work groups, including the Minas Gerais State Forum on Climate Change, and the Energy and Climate Change Technical Chamber (CTClima) of the Brazilian Business Council for Sustainable Development (CEBDS). The company's professional staff receive training in this area, including participation in courses held by the United States Agency for International Development (USAID) and the World Bank.

More over, the Efficientia S.A., a service company 100% controlled by Cemig, provides energy solutions, offering consultancy on energy efficiency to industrial and other companies, and public bodies. It has provided services to the Regional Power Integration Commission in Latin America (CIER), through training given in Ecuador, Peru and Uruguay. It was also contracted by the Colombian power generator Isagen to provide consultancy and training on the structure and functioning of an Esco.

Other business opportunities analyzed by Cemig regarding the implementation of thermal cogeneration plants, mainly at pig-iron plants and sugar-alcohol mills.

c Strategy: Please detail the objectives and targets of the strategies you have undertaken or are planning to take to manage these risks and opportunities. Please include adaptation to physical risks.

Several activities undertaken by Cemig are directly related to climate events and their reflexes in the operation of the system:

- The Company operates and monitors important hydro-meteorological and sedimentological events at approximately 150 stations located on rivers and reservoirs, as this is fundamental to the proper planning of water use and the operation of its reservoirs.
- As mentioned above, Cemig has a specific system for the management of floods. The Company performs meteorological forecasts on a daily basis and provides storm warnings.
- It monitors wildfires so as to protect its transmission lines.
- Within the Cemig/ANEEL Research and Development Program, Cemig is developing the following project: "Research on the interactions between the rain regime and the flow regime of the Camargos HPP reservoir drainage sub-basins".
- Makes available to society, through its Internet Portal (www.cemig.com.br/usinas/index.htm), the operative data from the Company's main reservoirs. The information is updated daily and contains the storage level, the percentage of useful volume, the incoming and outgoing flow of the reservoirs, in addition to a comparison with the data from the same day during the previous year. This information originates in the Hydro meteorological Telemetry System, which is composed of 95 telemetric field stations which transmit on-line data on rain, water levels, atmospheric pressure, solar radiation, temperature and wind velocity

and direction to a central station, where it is then composed and transformed into operative and climatologic information, which can be used to help diverse sectors of the company and society with hydro climatologic monitoring.

- There is also a Storm Localization System – SLT, in real time and in operation since 1988, with the objective of detecting, processing, distributing, and storing information on atmospheric discharges and thereby helping the Company to issue meteorological warnings. The SLT is composed of a central processing station and various detector stations located throughout the many regions of Minas Gerais. The information on atmospheric discharges is used for: the optimization of operative adjustments to the electric system; meteorological forecasts; analyses of events at physical installations (Substations, Transmission Lines, Plants, etc.); positioning of maintenance teams; the determination of the density atmospheric discharges that reach the Earth; the monitoring of heavy rains on federal and state highways and the issuance of civil Defense warnings, meteorological warnings, and others. This Cemig System is part of the National Atmospheric Discharge Monitoring System which supplies information on the Internet at: www.rindat.com.br;

- Correctly predicting that human occupation may be altering the relationship between precipitation and drainage and, also considering that some of the company's projects were planned at a time when there was little hydrological information available, Cemig is developing a review action plan called "cheia de projeto do vertedor". The main objective of this action plan is to evaluate whether any of the spillways have been under dimensioned and whether there is a need to make operational or physical improvements to any of the dams. Complementing this work is a multidisciplinary group of professionals with the goal of assuring the perfect functioning of the outflow sectors in the event of exceptional flooding, guaranteeing the safety of the population and the enterprise.

- Cemig also concentrates its efforts on another activity, called water resources management, by participating in the River Basin Committees and in both the National and the State Water Resource Councils which enjoy the egalitarian participation of the public sector, civil society and its users, such as Cemig. Among the many and important issues discussed are the importance of flood control and the perenization of dams, which receive especial attention in these committees. Cemig is represented in nearly 20 Committees dealing with State River Basins and in 4 Federal River Basin Committees by active representative officers and participates in the coordination of Water Resources and the Environment Groups from Abrage – the Brazilian Association of Electric Energy Generation Companies.

- The monitoring of hydro meteorological events allows Cemig to improve the monitoring of ambient temperature behavior, predicting trends such as physical growth and temperature anomalies. This allows for safer generation planning and transmission line loading, thereby minimizing the risk of circumstantial and structural interruptions in the electric system.

With these measures, Cemig expects to minimize the impacts on its businesses caused by climate change.

2 Greenhouse Gas Emissions Accounting

a Methodology: Please provide the following information on your company's emissions measurements:

i The accounting year used to report GHG emissions.

Cemig's emissions of greenhouse gases come from one thermal plant, burning fuel oil, from its fleet of vehicles and aircrafts, and from emissions of SF_6 from programmed maintenance and tests of equipment installed in the electricity distribution network and substations. In 2006 these emissions represented 119,846 CO_2 equivalent tons.

The consumption of fuels between 2004 and 2006 was reduced by 17.7%, due mainly to the replacement of its fleet of vehicles and the implementation of the online refueling management. As for the Igarapé Thermal Power Plant (installed capacity of 131 MW), in 2006, was in operation for 1,600 hours to supply for contingencies of the interconnected electric system.

The Igarapé thermal plant (131 MW), which operates on fuel oil, contributed 81.7 % of the emissions we quantified.

ii The methodology by which emissions are calculated.

Cemig's emissions of greenhouse gases come from one thermal plant, burning fuel oil, from its fleet of vehicles and aircrafts, and from emissions of SF_6 from programmed maintenance and tests of equipment installed in the electricity distribution network and substations.

Both the conversion and the standardization of the units for tonnes/CO_2e were made based on the methodology proposed by the GHG Protocol.

iii Whether the information provided has been externally verified or audited.

Fuel consumption data are calculated based on the internal controls performed by the transportation area (vehicular fuel consumption) and on the Company's thermal power plant.

iv An explanation for any significant variations in emissions from year to year, e.g. due to major acquisitions, divestments, introduction of new technologies, etc.

Even with the reduction by approximately 8% of vehicular fuel consumption from 2005 to 2006, direct Greenhouse Gas Emissions (tonnes of CO2 equivalent) have increased from 35,145 Tonnes of CO2 equivalent to 119,846 Tonnes of CO2 equivalent.

This increase was due to a longer operational period of the thermal plant, from 274 hours in 2005 to 1,660 hours in 2006 to supply for contingencies in the interconnected electric system. It is noteworthy that the Thermal Plant is responsible for 81.7% of the all emissions quantified in 2006, even though it produced only 2.01% of all the energy generated by Cemig.

b Scope 1 and 2 of GHG Protocol: Direct and Indirect GHG emissions and electricity consumption. Please complete the table below for tonnes CO_2 e emitted and electricity consumption:

	Globally
Scope 1 activity tonnes CO_2e emitted	119,846
Scope 2 activity tonnes CO_2e emitted[1]	7,913.8
MWh of purchased electricity	30,309.5
Percentage of purchased MWh from renewables[2]	70.9

Note:

1) The emission factor of electric energy consumption was 261 kg CO_2e/MWh. This figure was obtained through the ACM0002 version 6 of 19/05/2006 consolidated baseline methodology, approved by the United Nations Organization Executive Committee for Climate Changes at the 16th Meeting.

2) 97.16% of Cemig's generating park is comprised of hydraulic sources, and therefore is renewable. Nevertheless, the Brazilian electric grid is interconnected, which makes it impossible to identify the origin of the electric energy utilized in Cemig's facilities.

Scope 3 of GHG Protocol: Other Indirect GHG emissions. Where feasible please provide estimates for the following categories of emissions:

i Use/disposal of company's products and services.

ii Your supply chain.

iii External distribution/logistics.

iv Employee business travel.

Cemig does not perform an inventory regarding Scope 3 of GHG Protocol.

Section B:

3 Additional Greenhouse Gas Emissions Accounting

Using the methodology as set out in 2(a), please state your Scope 1 and 2 emissions as follows:

a Countries: For each country in which you have operations, where available.

b Facilities: For facilities covered by the EU Emissions Trading Scheme (EU ETS). Please also include the number of

allowances you were issued under the applicable National Allocation Plans.

c EU ETS impact: What has been the impact on your profitability of the EU Emissions Trading Scheme?

The questions above are not applicable, as Cemig's businesses are basically located in Brazil and the country has ratified the Kyoto Protocol as an integral part of Non-Annex 1, that is, it has no GHG emission reduction goals.

4 Greenhouse Gas Emissions Management

a Reduction programmes: What emission reduction programs does your company have in place?

Please include any reduction programs related to your operations, energy consumption, supply chain and product use/disposal.

i What is the baseline year for the emissions reduction program?

Since Brazil is not part of Annex 1, emission reduction goals were not established. However, we have adopted measures directed at reducing carbon emissions such as the replacement of the fleet of vehicles and energy efficiency and conservation measures both internally and in the various productive sectors of society.

ii What are the emissions reduction targets and over what period do those targets extend?

Cemig's generation park is predominantly based on hydroelectric plants, corresponding to approximately 97%. This means that the only sources of greenhouse gas emissions are a thermal plant (burning fuel oil and used sporadically), the fleet of vehicles and aircraft and the emissions of SF_6 from equipment installed in the Company's electrical distribution networks and substations.

Within this scenario, Cemig's central goal for the reduction of greenhouse gases is to participate in the main initiatives that make the rational and efficient use of energy possible.

With this view, Cemig has adopted a series of measures designed to contribute towards a reduction in greenhouse gas emissions. Among these are energy efficiency and conservation programs, natural gas projects, the use of solar energy and small hydroelectric plants and research into alternative energy sources.

Energy efficiency in public lighting was improved with the installation of 58,133 public illumination posts, in 200 municipalities in the state of Minas Gerais, resulting in an annual reduction of 4,244 kW in demand and 18,587 MWh in electricity consumption – equivalent to the consumption of approximately 14,000 homes. The Public Illumination Improvement Program (*Reluz*) modernized approximately 150,000 public illumination posts in 2006, primarily in the city of Belo Horizonte, with investments of R$ 35 million, leading to an annual reduction of 21,000 MWh in electricity consumption and some R$ 3 million in the annual consumer invoices of the municipal prefectures.

The *Conviver* project, serving the poorer populations of Greater Belo Horizonte and country regions of the state, was begun in 2006 and advises low-income clients on energy efficiency measures. It works with community relationship agents, and will aim to serve an estimated 300,000 homes in the next five years.

The *Efficient Sustainable Agribusiness Integration (IES) Program* aims to encourage rational use of electricity in agribusiness. It has created Corporate Support and Integration Centers, fostering technical training for rural producers and encouraging formation of associations. So far there are three of these Centers in the State: in Greater Belo Horizonte, Campos das Vertentes and in the Minas Triangle. In all three, Cemig has put in place

Energy Management Systems aiming for energy efficiency and sustainability of the sectors that make up the agribusiness chain (production, industry and commerce).

The Minas Gerais State Planning Department ("Seplag"), in partnership with Cemig, has structured the State Energy Management Program (PGEE), which operates the Intelligent Consumption Monitoring System, and trains employees. Continuing this program, which was begun in 2004, changes were made in 946 buildings, achieving reduction in electricity consumption from 2005 to 2006 of 2,436 MWh/year – a saving of 15.75%.

Efficientia S.A., a service company 100% controlled by Cemig, provides energy solutions, offering consultancy on energy efficiency to industrial and other companies, and public bodies. It received NBR ISO 9001:2004 certification in 2006, and was the first Brazilian Esco (energy service company) to get this certification. Its work has included projects to increase lighting efficiency for companies, and holding of courses. It has provided services to the Regional Power Integration Commission in Latin America (CIER), through training given in Ecuador, Peru and Uruguay. It was also contracted by the Colombian power generator Isagen to provide consultancy and training on the structure and functioning of an Esco.

Regarding the use of natural gas, Gasmig, which is owned by Cemig, and Gaspetro, part of the Petrobras group of companies, have the goal of realizing the potential benefits of using natural gas. By supplying natural gas to industry and vehicles, Gasmig provides a substitute for fuels that produce greater amounts of pollution than natural gas.

Since natural gas does not contain sulfur and nitrogen compounds, its combustion is free of SO_2 (sulfur dioxide) and has a lower rate of emission of NO_x (nitrogen oxides), in comparison to all other fossil fuels. Also, because it is in gaseous form, it burns more completely and gives rise to less carbon monoxide than the other fossil fuels.

1,150 solar water heating systems were installed in homes in public housing projects, and these systems were also installed in the "Cidade dos Meninos" (*City of Kids*) social assistance project in Belo Horizonte. Solar water heating systems were also installed in hospitals: the São João de Deus Hospital in the city of Divinópolis has the second largest solar water heating system in any public hospital in Latin America.

1,280 photovoltaic systems to convert solar energy to electricity were installed in low-income homes in country area, under the Light for Everyone program. And 3,000 schools in the countryside were provided with electricity, of which 700 through photovoltaic systems, in the "**Luz no Saber**" (*Light on Learning*) program, which brought electricity service to the rural schools of Minas Gerais state. The first photovoltaic system linked to the electricity grid was also installed, a 3 kWp generator, in Cemig's Seeds Laboratory.

The **Minas Gerais Small Hydroelectric Plant (PCH) program** is a partnership between Cemig and private investors, departments of Minas Gerais state and the Minas Gerais State Development Bank (BDMG). Small plants, generating a maximum of 30MW, are important sources of renewable energy. There are 37 plans for small plants registered in the program, with total installed capacity of 565 MW: the first approved for construction, the Cachoeirão PCH, has 27 MW, and the second, the Pipoca PCH, has 20 MW. The small plants to be constructed under the program must obligatorily have all the environmental approvals and licenses.

Cemig has encouraged technological production and development of alternative energy source projects, in conjunction with universities and research institutions. Especially interesting are those that use conventional biomass (wood, coal, waste). The research projects include: technologies for making gas from biomass; development of the first Stirling engine with Brazilian technology that functions from any heat source; the use of micro-turbines in generating "cold-megawatt" energy from atmospheric pressure differences; and studies on the possibilities of co-generation in the sugar/alcohol and pig iron sectors. The use of methane from bio-digesters in the farming sector is also being studied; and also generation of electricity from the pressure gradients in natural gas distribution.

Experiments have been carried out on use of vegetable oils in internal combustion engines to run irrigation systems in the municipalities of Montes Claros and Paracatu, using castor oil, cotton oil and soy oil. There are research projects and experimental installations for production and certification of bio-diesel in electricity generation; evaluation of the use of ethanol in generation-motor groups; and studies on the productivity of various oilseeds, including *Jatropha Curcas* (*pinhão manso*) and sunflower seeds.

We are researching production of hydrogen and its use as an energy source, resulting in the Cemig experimental hydrogen production laboratory, which has an experimental unit for production of hydrogen by alkaline water electrolysis; and a prototype to produce hydrogen by transforming ethanol. In nanotechnology, Cemig is developing special membranes for application in fuel cells, a clean solution for generation of electricity that will be widely used in the future.

A research project is in progress for production of solar-grade silicon and low-cost photovoltaic cells, in partnership with the Minas Gerais Technological Center Foundation (Cetec). Also at implementation phase, together with the Federal Technological Education Center of Minas Gerais (Cefet-MG) is the first solar thermal generation plant in Brazil, with potential to produce 10 kW, an experimental project which will make it possible to study the feasibility of this technology. A freezing system run on solar energy is also being developed, for rural communities, and a study for pyrolysis of garbage to produce electricity.

In 1994, Cemig installed the experimental wind generating plant on the Morro do Camelinho, with generating capacity of 1 MW, in the municipality of Gouveia (Minas Gerais), the first wind plant linked to the Brazilian grid. Cemig is currently continuing its identification of promising wind sites, to assess the feasibility of commercial operation of large scale wind generating plants.

iii What investment has been/will be required to achieve the targets and over what time period?

R$ 46 million were invested in Cemig/Aneel energy efficiency programs in 2006.

iv What emissions reductions and associated costs or savings have been achieved to date as a result of the program?

Via the energy efficiency measures cited above, a reduction in energy consumption of 42,023 MWh was achieved. Based on an emission rate of 261 kg CO_2e/MWh, Cemig, through measures implemented at third-party facilities, managed a reduction in GHG emissions of 10,972 tonnes of CO_2e.

v What renewable energy and energy efficiency activities are you undertaking to manage your emissions?

As mentioned earlier, 97.16% of Cemig's generation park is hydraulic in nature, and therefore renewable. At 77.04%, the figure for Brazil as a whole is inferior to that of Cemig.

The national electrical system, in large part, is interconnected, rendering it impossible to identify the origin of the energy used in Cemig's installations.

The energy efficiency measures for third parties have been cited above. Below are descriptions of the measures implemented directly in Cemig's facilities.

Total consumption of electricity in facilities and offices was reduced by 38.4% over the period 2004–06, as a result of energy efficiency projects and awareness campaigns. The "Cemig 100% Efficient" project aims to optimize electricity consumption in Cemig's facilities. It includes action for efficient use of energy and combat of waste, including establishment of the Internal Energy Conservation Committee (CICE). This project takes action to optimize energy in the company's own buildings.

The consumption of fuels in the period from 2004 to 2006 fell by 17.7% due mainly to the replacement of the vehicle fleet and the implementation of an on-line vehicle refueling management system.

b Emissions trading: What is your company's strategy for trading in the EU Emissions Trading Scheme, CDM/JI projects and other trading systems (e.g. CCX, RGGI, etc), where relevant?

Cemig appointed a work group with the task of identifying opportunities to develop CDM projects in the carbon market, and also to introduce a tool for analysis into its management system, for assessment carbon projects for each new construction proposed.

In line with this efforts, the Barreiro thermal plant has a project qualifying under the Clean Development Mechanism (CDM) of the Kyoto Protocol, already registered with the Executive Committee of the United Nations Framework Convention on Climate Change (UNFCCC), which could result in its obtaining Certifications for Reduced Emissions, which would be registered with the UNFCCC as "Project 0143 – UTE Barreiro S.A. Renewable Electricity Generation Project".

c Emissions intensity: Please state which measurement you believe best describes your company's emissions intensity performance? What are your historical and current emissions intensity measurements? What are your targets?

The great majority of Cemig's generating plant is hydroelectric: 97.16 % of the installed capacity. This is regarded as a renewable energy source.

Cemig's generating plant in 2006

Source	% of total installed capacity	Electricity generated (MWh)
Hydroelectric	97.16	33,757,116
Fuel oil	2.01	105,220
Co-generation	0.81	350,228
Wind power	0.02	116
Total	100 %	34,212,680 MWh

Total installed capacity in 2006: 6,523.40 MW

Cemig's emissions of greenhouse gases come from one thermal plant, burning fuel oil, from its fleet of vehicles and aircrafts, and from emissions of SF_6 from programmed maintenance and tests of equipment installed in the electricity distribution network and substations. In 2006 these emissions represented 119,846 CO_2 equivalent tons.

This table shows Cemig's atmospheric emissions of CO_2 equivalent, sulfur dioxide (SO_2) and Nitrogen component gases (NO_x), in 2004–2006.

Atmospheric emissions of CO_2, SO_2, NO_x

Year	2004	2005	2006
Direct emissions of greenhouse gases (CO_2 equivalent tons)	40,676	35,145	119,846
Emissions of SO_2 (tons)	48.5	32.3	241.1
Emissions of NO_x (tons)	34.8	30.1	81.1

Emission factors per unit of energy, in $kgCO_2/TJ$, are: (i) Natural gas – 56,100 $kgCO_2/TJ$; (ii) Fuel oil – 73,300 $kgCO_2/TJ$; (iii) Coal – 98,300 $kgCO_2/TJ$.

Source: *2006 IPCC Guidelines for National Greenhouse Gas Inventories.*

As an indicative comparison, if Cemig's electricity generation was all from thermal plants, its emissions would total approximately 25,659,510 CO_2 tons equivalent – or 214 times what it actually was in 2006.

This calculation was based on the total of electricity generated by Cemig, the average theoretical CO_2 emission of a fictitious company in the electricity sector with generation equally divided between coal, natural gas and fuel oil. The average CO_2 emission factor used was 750 $kgCO_2/MWh$[1] [2].

The Igarapé thermal plant (131 MW), which operates on fuel oil, contributed 81.7 % of the emissions we quantified. In 2006 it operated for 1660 hours in the year, serving contingency situations in the Brazilian electricity system.

The Ipatinga thermal plant (40 MW) and the Barreiro thermal plant (12.9 MW) generated 350,228 MWh in 2006. They are both cogeneration projects using blast furnace gases, tar and other waste gases generated in the industrial processes of Cemig's consortium partners, both integrated steel companies: Usiminas and Vallourec&Mannesman. Note that the construction of these co-generation plants contributed to a reduction of the greenhouse gases directly issued by those steel plants, since instead of being released into the atmosphere those gases were used as an input in plants to generate electricity via steam.

d Energy costs: What are the total costs of your energy consumption e.g. from fossil fuels and electric power? What percentage of your total operating costs does this represent?

Fuel and electric energy costs have not been processed.

e Planning: Do you estimate your company's future emissions? If so please provide details of these estimates and summarize the methodology for this. How do you factor the cost of future emissions into capital expenditure planning? Have these considerations made an impact on your investment decisions?

As mentioned previously, the majority of Cemig's emissions arise from the thermal plant that enters into operation to meet contingencies in the interconnected electrical system, rendering it impossible to provide an estimate of our future emissions. Cemig seeks to optimize energy consumption in its facilities and takes actions directed at promoting the efficient use of energy and combating wastage, including the establishment of the CICE – the Internal Energy Conservation Commission. Another measure adopted to reduce fuel consumption is the replacement of the vehicle fleet and the implementation of an on-line vehicle refueling management system.

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1 Emission factors per unit of energy, in $kgCO_2/TJ$, are: (i) Natural gas – 56,100 $kgCO_2/TJ$; (ii) Fuel oil – 73,300 $kgCO_2/TJ$; (iii) Coal – 98,300 $kgCO_2/TJ$.
Source: *2006 IPCC Guidelines for National Greenhouse Gas Inventories.*

2 The calculation used average efficiency for electricity generation: Natural gas – 40%; Fuel oil – 35%; Coal – 35%.

Through these measures Cemig seeks to minimize GHG emissions in situations over which the company has control and to get reduce operational costs.

5 Climate Change Governance

a Responsibility:

i Which Board Committee or other executive body has overall responsibility for climate change?

Cemig adheres to the National Policy and Planning Programs Related to Climate Change, conducted by the Global Change Research Coordination Office of the Ministry of Science and Technology. The Brazilian Ministry of Science and Technology recommends the IPCC Third Assessment Report – Climate Change 2001 with regard to direct GHG emissions. Cemig is part of the Brazilian GHG Inventory in which the Electrical Sector has been taken into consideration. Our scope is solely the energy-related businesses and takes into consideration only the direct GHG emissions.

Brazil was one of the first countries to sign the United Nations Framework Convention on Climate Change in June, 1992 and the National Congress ratified it in February, 1994. The convention entered into force in Brazil in May, 1994. Later, Brazil created the Climate Change Program, whose objective is to support the development of scientific information concerning greenhouse gas emissions in order to foster the definition of the policy guiding climate change initiatives. The strategy for the Program was defined by the Brazilian Government, especially by the Ministry of Science and Technology and the Ministry of Foreign Relations, aiming at the fulfillment of the Country's initial commitments under the Convention. Currently, Brazil's main commitments as a developing country are not only to develop, update and periodically publish national inventories of anthropic emissions as per source and on the removal by sinks of greenhouse gases not controlled by the Montreal Protocol (article 4 of the Convention text), but also to provide information on the measures taken or planned for the implementation of the Convention (article 12 of the Convention text). The dissemination efforts made for all work done as part of the Program have been made via electronic publishing and served as a model for the establishment of the Convention Secretariat's own website and for other developing countries. Brazil is the main participant in the United Nations Framework Convention on Climate Change and has ratified the Kyoto Protocol. The Kyoto Protocol does not obligate Brazil to reduce emissions as it was listed as one of the Non-Annex 1 countries. See the website for the Brazilian Ministry of Science and Technology.

Regarding Cemig, the Board of Executive Officers constituted of seven Executive Officers, elected by the Board of Directors. One of the Vice-Chairman's attributions is to define environmental policies and directives and to monitor the execution of plans for the adherence to environmental, technological and quality-improvement directives.

The coordination of environmental protection directives is conducted in a corporate manner is supervised by the office of the Vice-Chairman, among whose attributions is the coordination of especial strategic and corporate environmental projects. Within this policy the Board of Executive Officers appointed a workgroup whose objective is the identification of development opportunities for CDM – Clean Development Mechanism

projects in the carbon market. This group is composed of at least one member of each Executive Office as well as a representative of Efficientia S.A., which is a services company (ESCO – Energy Service Company) owned by Cemig.

In addition to identifying CDM project development opportunities for the acquisition of Carbon Credits, this group is tasked with introducing into the Company's management system an analysis tool that shall provide advanced viability assessment capability, also taking into consideration the project development opportunities within the corporate sustainability concept.

ii What is the mechanism by which the Board or other executive body reviews the company's progress and status regarding climate change?

The commitment to the environment and to the quality of life for society is one of the basic conditions of the principles that govern Cemig's actions. Through actions such as encouraging the use of Natural Gas and Solar Energy, the installation of Small Hydroelectric Plants, the adoption of energy efficiency measures by the company itself and by its clients, the adoption of measures designed to reduce fuel consumption and through studies on alternative energy sources, Cemig seeks to contribute to the reduction of GHG emissions.

Cemig monitors the total consumption of electrical energy in its industrial facilities and in its offices, as well as the consumption of fuels used in its fleet of vehicles and aircraft and at the Igarapé Thermal Plant.

The Company also monitors emissions of GHGs, sulfur dioxide (SO_2) and nitrogen hydroxide (NO_x) at the Igarapé Thermal Plants, the Ipatinga Thermal Plant and the Barreiro Thermal Plant.

This information is collected and made available both internally and to investors, the community, NGOs and the environmental authorities through the Sustainability Report. This report can be found on Cemig's website (http://v2.cemig.infoinvest.com.br/static/enu/relatorios_sustentabilidade.asp) in both Portuguese and English.

b Individual performance: Do you provide incentive mechanisms for managers with reference to activities relating to climate change strategy, including attainment of GHG targets? If so, please provide details.

Inserted into the Work Group's scope of assessing development projects in the Company that may be eligible for the CDM – Clean Development Mechanism are project studies on increasing energy efficiency, co-generation using biomass or industrial process gases, renewable energy sources such as biomass, SHPs – Small Hydroelectric Plants and solar and wind energy.

Still within the context of CDM projects, the Thermal Plant Renewable Energy Generation project, which operates using process gases, was classified in the CDM – Clean Development Mechanism of the Kyoto Protocol and has already been registered with the

Executive Committee of the UNFCCC – The United Nations Framework Convention on Climate Change, which may lead to obtaining RECs – Reduced Emissions Certificates, registered with the UNFCCC as “Project 0143-UTE Barreiro S.A. Renewable Electricity Generation Project”.

Taking into account that the Cemig generation park is predominantly composed of hydroelectric plants, considered to be sources of renewable energy and, therefore, not carbon emitters, the strategies and actions taken by Cemig for the purpose of reducing carbon emissions that may affect climate equilibrium in the scope of its area of operation and influence are:

a) promote energy efficiency and conservation measures in the various productive sectors of society;

b) stimulate Small Hydroelectric Plant – SHP and high-efficiency cogeneration (combined heat and power) projects, examples of which are the Cemig Minas SHPs Program and the Barreiro Thermal Plant, which utilizes industrial process gases from a steel mill to produce energy;

c) facilitate the production of technology and the development of alternative energy source projects, like solar, wind, hydroelectric, biomass, fuel cells, bio-diesel, among others, and;

d) promote sustainable energy consumption programs, including more efficient processes in the energy field in partnership with its clients and public administration organs. In this context, energy efficiency is, for Cemig, a great ally in the reduction of carbon emissions, associated with a change in a cultural change in consumption habits by its clients.