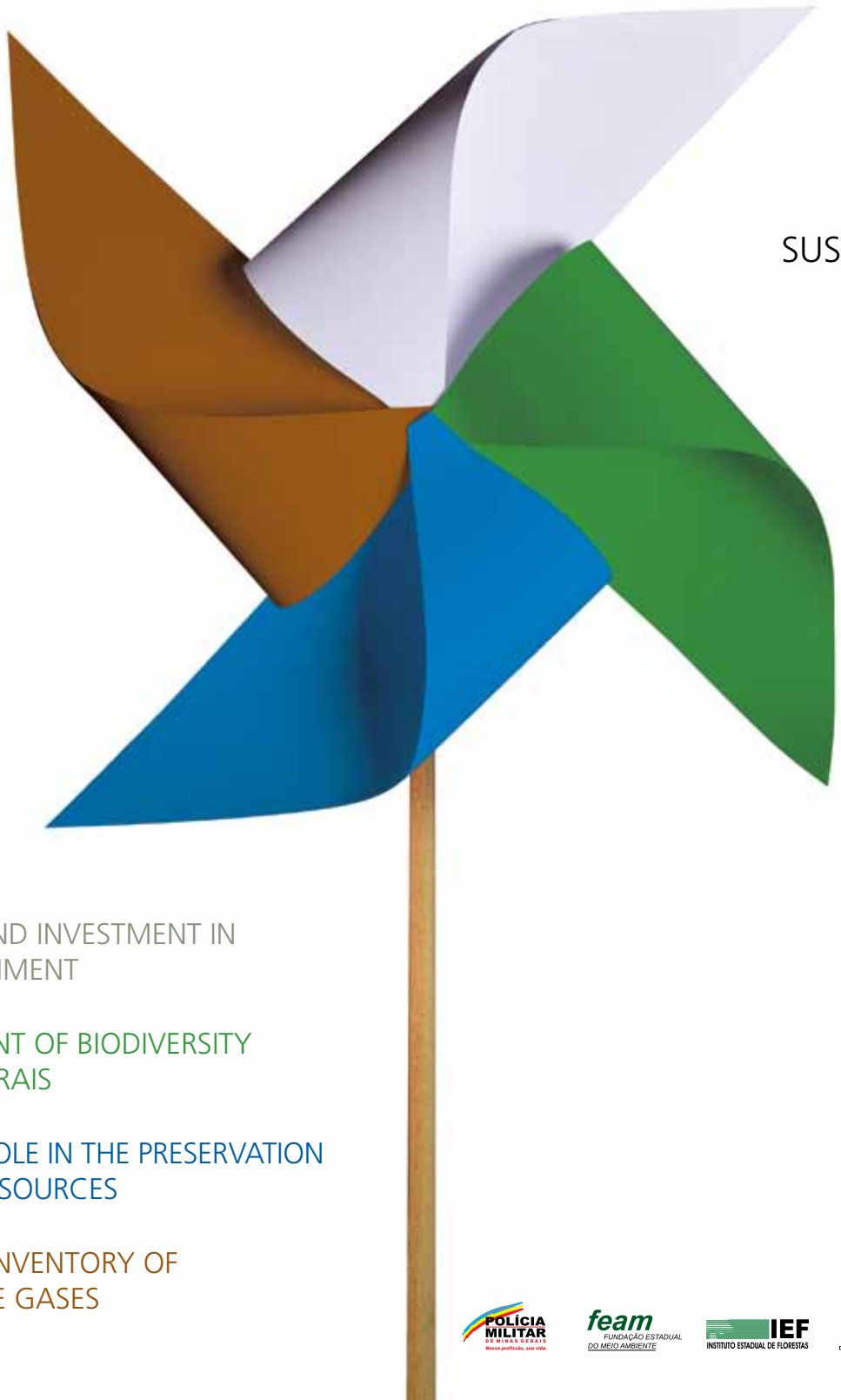
State Environment and Water Resources System / MG

Sisema



2008
SUSTAINABILITY
REPORT

THE STATE AND INVESTMENT IN
THE ENVIRONMENT

MANAGEMENT OF BIODIVERSITY
IN MINAS GERAIS

STRATEGIC ROLE IN THE PRESERVATION
OF WATER RESOURCES

FIRST STATE INVENTORY OF
GREENHOUSE GASES

POLÍCIA MILITAR DE MINAS GERAIS
Nossa profissão, sua vida.

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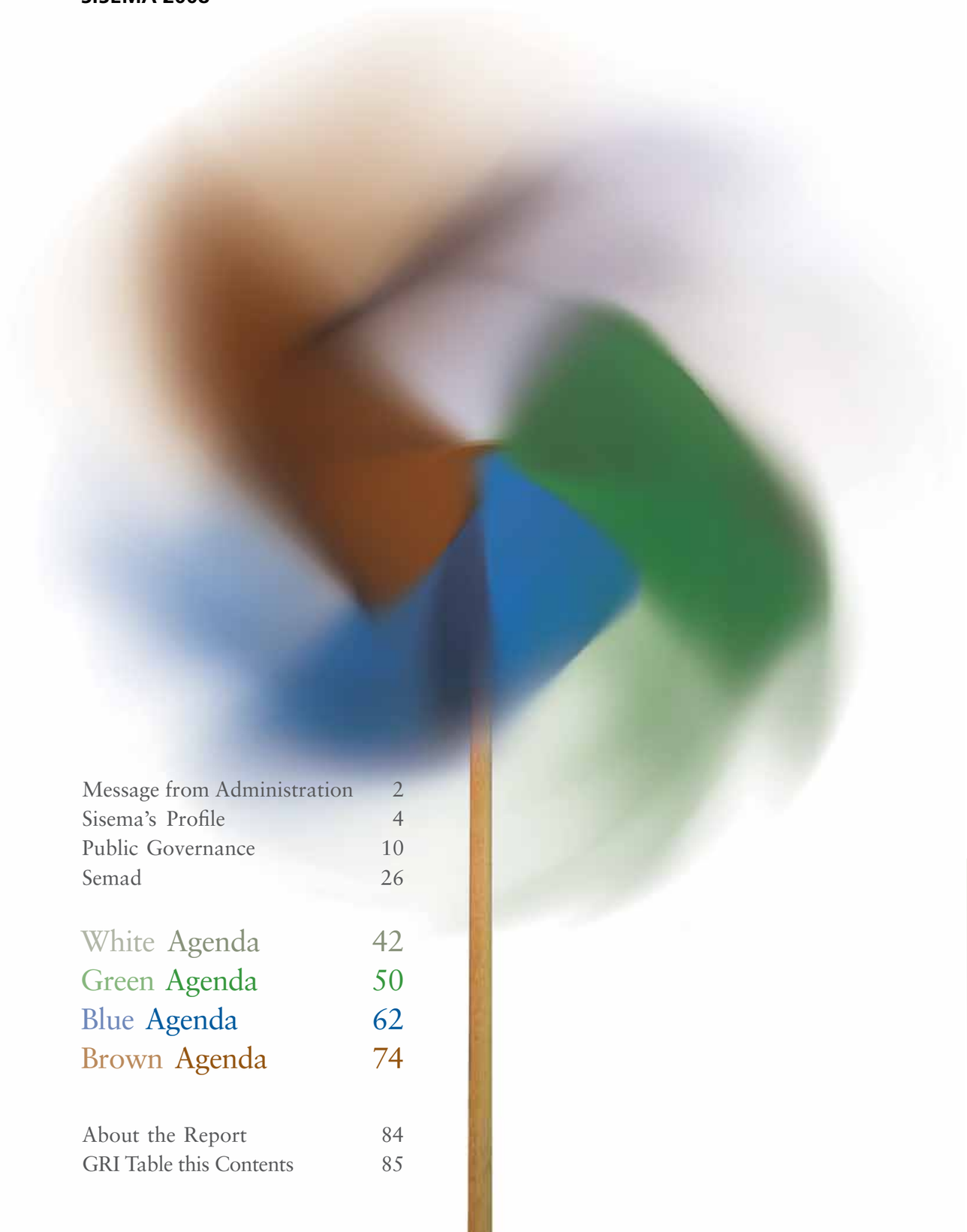
GOVERNO DE MINAS

SUSTAINABILITY REPORT
SISEMA 2008



MISSION

To guarantee citizens their right to a healthy environment and ensure the implementation of policies compatible with sustainable development

VISION

Excellence in the promotion of environmental quality

VALUES

Credibility
Ethics
Partnership
Social Responsibility
Transparency

Presentation

This is the first Sustainability Report by the State Environment and Water Resources System (Sisema) of Minas Gerais, and the first by a Brazilian public body to adopt Global Reporting Initiative (GRI) guidelines, the most advanced and rigorous reporting standard worldwide.

First of all, this report's first objective is to render an account of Sisema's activities to society, and, equally important, the reporting process contributes to consolidating integrated and collaborative action between bodies and entities comprising it, united in the mission of watching over the quality of Minas Gerais State's environmental management.

Sisema believes that this publication will provide a solid basis for public decision-making involving the environment and society of Minas Gerais, showing an evolutional way forward in these areas – independently to what administration is responsible for State government.

To clear up doubts or make suggestions regarding the contents of this report, please e-mail renata.meirelles@meioambiente.mg.gov.br.

How to read this report

We have provided certain elements throughout this publication, for ease of reading:

Hiperlinks to access entities' websites and the full text of laws quoted.

▲ **Glossary** with additional information about expressions, acronyms and concepts.

WORLD MAP

Brazil is the largest country in South America, with an area of approximately 8.5 million sq km (*see highlight in world map*).

The country has a population of 193 million people distributed in 26 States, one Federal District and 5,565 municipalities, according to data from the Brazilian Institute of Geography and Statistics (IBGE).

Minas Gerais is one of the 27 federated units (26 States and one Federal District) in Brazil (*see highlight*). The State is in the country's Southeastern Region, has 853 municipalities in an area of 586 thousand sq km, totaling 19.3 million inhabitants.

The State Environment and Water Resources System (Sisema) is a group of organizations for direct administration of the State government with a common goal: to improve the quality of the environment in the State of Minas Gerais.

Sisema comprises the following bodies and entities: State Secretariat for the Environment and Sustainable Development (Semad); State Foundation for the Environment (Feam); Minas Gerais Institute for Water Management (Igam); State Forest Institute (IEF); State Council for Environmental Policy (Copam), Environmental Management Nuclei (NGAs) of State secretariats that are Copam members; Military Environmental Police; and Hydrographic Basin Committees and Agencies.

Brought together in Sisema, these are Brazil's first public bodies and entities to prepare a sustainability report based on Global Reporting Initiative (GRI) guidelines. GRI is a non-governmental organization that has established the internationally best known standard for reporting on the sustainability tripod: social, environmental and economic matters.

Following an extended period of internal restructuring to integrate the activities of Sisema's different bodies and entities, this report contributed to clearly identify the reasons why the system was put in place, the current status of our endeavors and the objectives and targets we pursue. This publication was constructed on the basis of matters our different strategic publics deem relevant, and it has allowed us to visualize the first results of this format of integrated management, symbolized by the weather vane on the report's cover, the colors of which represent the White, Green, Blue and Brown agendas.

We have chosen a new institutional model and we are well aware it is no easy matter to replace Cartesian vision – which divides up the environment into departments and sections – with a systemic vision. Nor is it an easy matter to implement modern management, with targets, systems and strategic objectives and planning, in the public sphere. The degree of difficulty we have been facing is directly proportional to our daring.

In 2008, the period covered by this report, we took giant steps forwards in integrating the bodies and systems comprising Sisema, facing countless challenges. Bringing together civil servants from independent bodies with characteristics of their own into a single structure has taught us a great deal, mainly the need for effective, ongoing internal communication. Change begets resistance, and we are still building up a new internal culture, where formerly segmented bodies become convergent and transversal.

We wish to strengthen the stance of the Government of Minas Gerais State regarding preservation of the environment and promoting environmental reclamation, following a history of degradation. We have a role in influencing the market though our regulatory clout, but at the same time we must look inwards. For this reason, in 2008 we brought out a decree setting out criteria for sustainable purchasing and the use of certified wood in public works, in partnership with the State Secretariat for Planning & Management (Seplag).

In the area of management, we have found ourselves facing the historical problem of segmentation of different public bodies acting autonomously, pursuing unconnected sector policies. Through the Environmental Management Nuclei (NGAs) – which have been set up in 12 of the State's 18 secretariats so far – we have been building bridges to incorporate environmental responsibility into all strategic decisions, thus making coherent sector policies possible.

By integrating the bodies and entities comprising Sisema, decentralizing licensing and strengthening NGAs, for the first time we have ushered in the principle of transversality of environmental management. We enjoy the support of over 900 representatives of government, NGOs and the entrepreneurial sector who, divided into participative and collegiate councils, have helped us put together this new way forward. Knowing what strategic matters come up for debate ensures us quality and safety in decision-making. Matters discussed by the councils include environmental licensing and activity related to water and forest resources and environmental pollution, organized in the Blue, Green and Brown Agendas.

We have invested in consolidating and strengthening these collegiate bodies. The State Council for Environmental Policy (Copam) went through restructuring in 2008 to adjust to changes stemming from decentralization.

The concept of sustainable development, borne by Semad in its very name, bears within itself a change of paradigm. In the face of every decision, it represents a key question: Is what I'm doing with nature today going to allow future generations this same possibility? If so, let's go ahead. If not, we must search for alternatives.

This sustainability report is an account of what Sisema went through in 2008, a year that saw different advances. For instance, we developed a key instrument for environmental regularization in the State: Economic Ecologic Zoning, which made it possible to include the factor of location in the criteria for analyzing environmental licenses. We also concluded two Strategic Environmental Evaluations, which will help orient the inclusion of the environmental variable in the road building and hydroelectric energy sectors.

Additionally, we processed over six thousand environmental regularization applications, 55% more than in 2007. They were all submitted to the collegiate bodies for approval. The bodies analyzed the opinions issued by the nine Regional Superintendents' interdisciplinary technical teams.

Internally, Sisema has to face the challenge posed by high turnover of technicians, who are lost to the private sector. In 2008 we laid on over 150 thousand hours of training courses, to qualify 551 new employees taking over positions.

In the Green Agenda, we managed to reduce deforesting in the State by 29.3% as compared to 2007 and ensure protection of 84 thousand hectares, distributed into 14 Conservation Units (UCs) set up last year. Between 2007 and 2008 we regularized 65 thousand hectares in Conservation Unit areas, exceeding our target. With the resources of environmental compensation, we paid R$ 40 million with expropriations.

We created, tested and approved a mechanism for payment of environmental services performed by people or entities doing more than is required by law in connection with forest preservation. With the aim of measuring how effective our policies are, we created 13 indicators which are monitored systematically.

In the Blue Agenda, we strengthened the Hydrographic Basin Committees and, in a long participative process, put in place, the steps necessary to start charging for use of water before the end of 2009. We believe that in the near future water resources will become the greatest challenge to the federal pact, opening the door to horizontal cooperativeness between States, bringing together municipal, state and federal entities with common objectives.

In the Brown Agenda, preparing the State Policy for Management of Solid Waste was a major achievement. In line with international concern, we concluded the Inventory of Greenhouse Gases in Minas Gerais State, a pioneering initiative at the State level in Brazil. We thus worked scientifically to adapt to coming temperature changes on the planet.

Above all, we have a clear guide to get our bearings: the four structuring projects whose objectives are directly linked to our Mission and our Vision. They take into account matters related to management of water resources, biodiversity and waste, as well as Target 2010 which calls for decontaminating the stretch of Das Velhas River that runs through the Metropolitan Region of Belo Horizonte.

Our short-term objective is to conclude consolidation of Sisema. We expect the servants of related bodies to take on the same challenges, so that we can work together to ensure environmental quality in Minas Gerais. We are doing our bit to attain this objective and make the State the best to live in by 2023.

José Carlos Carvalho
State Secretary for the Environment and Sustainable Development

NATURAL RICHES: A HISTORY OF EXPLOITATION

Minas Gerais' outstanding role in the Brazilian economy has traditionally been based on exploitation of the State's abundant natural resources

Since the 18th Century when gold was discovered and started to be mined in the colonial period until the first few decades of the Republic, when cattle raising in Minas Gerais was Brazil's main economic activity – even influencing national politics – clearing land to expand farming and cattle raising, and commercial extraction of metals and ore were matters of paramount importance for the State, which is currently Brazil's third richest.

However, until the mid-20th Century the global view was that natural resources should be at the service of economic growth. The perception that such resources are not infinite and that economic activity must respect natural renovation cycles gained repercussion beyond academic debate as of 1972, when a report titled *Limits to Growth* was published.

Prepared by the Club of Rome, the document was the basis of debates at the United Nations Conference on Human Environment, known as the Stockholm Conference, which took place that year. The document calls for zero growth as a premise for economic stability and due consideration for limits to natural resources such as water, energy and food, contradicting economic theory then in vogue.

Since then, given the impossibility of zero growth, the alternative has been to seek another way to promote growth, increasingly incorporating political, economic and social debate.

Brazil has become a protagonist in world debate on environmental matters. The Ministry of the Environment was established in 1985 and an exclusive chapter on the environment was incorporated into the 1988 Federal Constitution. In 1992 Brazil hosted Rio-92, a United Nations Conference in Rio de Janeiro, which brought together over 180 heads of state to debate environmental matters and the concept of sustainable development, coined by the Brundtland Commission and divulged in a document titled *Our Common Future*, in 1987. The event lent visibility, not only to the subject, but also to the treatment afforded by Brazil – one of the countries with the widest biodiversity worldwide – to its own internal environmental issues.

Semiprecious stones extracted and marketed in the Curvelo region.

Adapting to the new context in Minas Gerais State

Against the backdrop of this national and international scenario, in 1995 Minas Gerais established its State Secretariat for the Environment & Sustainable Development (Semad), which innovated when incorporating into its own name the concept divulged by the Brundtland Commission and consolidated at Rio-92. In the late 1990s, with the redefinition of the State's role based on the new paradigm of the "Efficient State", planning became key. In order to adapt to actuality, in 2003 the Government of Minas Gerais promoted administrative reform by means of a policy called "Management Crash". Focus shifted to efficiency and improvement of services to citizens *(more on pages 19 and 38)*. The organic structure of public environmental bodies – Semad, Igam, Feam and IEF – was changed to make them more dynamic and widen their scope of attention to taxpayers and action to improve environmental quality in Minas Gerais. As of 2007 these bodies were integrated into the State Environmental and Water Resources System (Sisema).

Minas Gerais' environmental management has thus entered a new phase. As in many ways this is a pioneering initiative in Brazil, we are still endeavoring to consolidate changes and overcome challenges – one is facing internal resistance from State servants, which to a certain extent is natural during the period when a new paradigm is in the process of incorporation.

In 2008 a considerable part of Sisema's efforts went into acclimating and fostering consolidation of this new scenario. Even so, the body made significant advances that will be described in this report.

INTEGRATED ENVIRONMENTAL BODIES

The presence of all the government's environmental bodies in a single system brought about faster decision-making regarding management of natural resources and impact on the environment in the State of Minas Gerais.

Riparian forest preserved in the municipality of Sabará.

Established in January 2007 by Executive Law 125/07, the State Environment and Water Resources System (Sisema) brought together organs linked to environmental matters in Minas Gerais. Their common objective is to comply with the Mission of guaranteeing citizens their right to a healthy environment and ensuring implementation of policies compatible with sustainable development.

Some of its duties are developing research, granting licenses to operate small, medium-sized or large enterprises, environmental controls, monitoring environmental quality and initiatives to fight or reduce the effects of climate change.

Other duties of Sisema's consist of protecting biodiversity with emphasis in setting up Conservation Units, reducing refuse dumps and fostering native forest species aimed at the reclamation of degraded areas, especially Permanent Preservation & Legal Reserve Areas, as well as monitoring water, vegetation and air quality.

With the aim of attending public interest, decision-making within the system is based on dialogue and society's participation in strategic decisions. For this reason, the bodies comprising Sisema are supported by counseling entities for strategic decisions: the State Council for Environmental Policy (Copam), the State Council for Water Resources (CERH) and the Managing Committee for Integrated Environmental Inspection (CGFAI).

The oldest is Copam. Set up in the late 1970s, this forum brings together equilibrium of representatives of government and civil society (environmental entities, the academic community, the entrepreneurial sector and the citizens themselves). *(More on page 6).* Copam members debate through their decentralized units, for example, on whether or not to grant a license to establish an enterprise in Minas Gerais State.

Sisema's coordination is carried out by the State Secretariat for the Environment & Sustainable Development (Semad), which handles environmental matters on the basis of deliberations at Copam and CERH, in accordance with their prerogatives.

"Minas are many"

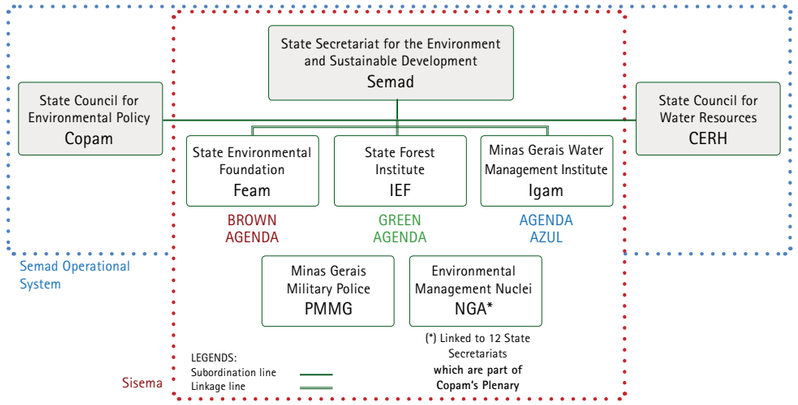
The heterogeneity of the State of Minas Gerais, acclaimed in writer Guimarães Rosa's words above, calls for regional policies to meet its many particularities depicting a scenario of cultural and economic diversity. In order to foster administrative efficiency in different parts of the State, the government of Minas Gerais decentralized activity linked to the process of environmental regularization. To this end, nine Regional Superintendent Offices for the Environment & Sustainable Development (Suprams) were established, coordinated by Semad. They are subject to a single rule, within a matrix-type policy.

Another change following the Management Crash was the integration of procedures inherent in environmental regularization, together with improvements in efficiency indices for analysis and inspection activities. Before it was taken over by Semad, through the Suprams, the process of environmental regularization was carried out by technical bodies in Sisema: Feam, IEF and Igam. All three are linked to Semad's area of competence, and have their own juridical form and enjoy administrative and financial autonomy.

To the government of Minas Gerais, decentralization meant integrating operational action for protecting the environment into three agendas: Green, Blue and Brown, led respectively by IEF, Igam and Feam. The Green Agenda involves matters related to management of forest resources and biodiversity. The Blue Agenda involves management of water resources. Finally, matters related to prevention and control of pollution and environmental degradation come under the umbrella of the Brown Agenda.

See below further information about the composition and main prerogatives of each of the bodies and entities linked to Sisema, Hydrographic Basin Committees (CBHs), the Conservation Units' Consulting Councils and Copam.

Operational system of the State Secretariat for the Environment and Sustainable Development (Semad) and the
State Environment and Water Resources System (Sisema)



Semad – State Secretariat for the Environment and Sustainable Development

Semad was established in 1995 by Law 11.903, to design and execute the environmental policy and strategy of the State government of Minas Gerais. In 2003, with the "Management Crash" policy and establishment of 31 structuring projects *(more on Page 19)*, the body initiated a process of deep internal change, which led to the creation of the State Environment System (Sisema) in 2007, whose name became State Environment & Water Resources System (Sisema) as of 2009, in accordance with Law 18.365/09. With this system, Semad is still the body establishing governance in the State's environmental area. The Secretariat is assisted by counseling entities – State Council for Environmental Policy (Copam), State Council for Water Resources (CERH) and Management Committee for Integrated Environmental Supervision (CGFAI).

Suprams – Regional Superintendent's Offices for the Environment & Sustainable Development

Suprams are structures organized to plan, supervise, guide and execute activity related to State environmental protection policy and management of water resources within their territorial areas. They were put in place in 2003 after the "Management Crash" that implemented the policy of decentralizing administrative functions.

Suprams report to Semad on administrative matters; and to Feam, IEF and Igam on technical aspects. The State is now divided up into ten regions, each with its respective Superintendent's Office. The Supram in the State's capital city of Belo Horizonte is responsible for two Collegiate Regional Units (URCs): Paraopeba and Velhas. Superintendent's Offices act as the URCs' executive secretariats.

Copam – State Council for Environmental Policy

Copam is the body actually setting out guidelines for State environmental policy regarding the Green and Brown Agendas. It is the Council's duty to promote concrete action for such policy in connection with environmental regularization and the application of penalties. It is a collegiate body with a 36-member Plenary, representing public power, civil society, the entrepreneurial sector, environmental organizations and academia. All members are entitled to one vote of equal weight.

Established in 1977 by Decree 18.466 – initially as a commission representing participative management – Copam has undergone different structural changes to better adjust to environmental challenges and new social, political and economic reality. Over more than three decades, it has acquired increasing clout in Minas Gerais' environmental policy.

After its last restructure, in 2007, under Decree 44.667, it now consists of a Normative and Recourse Chamber and five Theme Chambers, as well as its Presidency, Plenary, Executive Secretariat and, spread over the State, ten Collegiate Regional Units. Since 2008, Copam has brought together a total of 914 councilors, taking into account chair holders and their alternates *(more on page 12)*. When the decree came out, it led to the consolidation of Minas Gerais' environmental administration's modernization, initiated in 2003.

URCs – Collegiate Regional Units

The URCs were put in place in 2003 as a result of the "Management Crash" and the creation of the Environmental Management Structuring Program – MG 21st Century. This project took for granted the decentralization of administrative tasks in Minas Gerais' environmental policy.

Regional Superintendent's Offices for the Environment and Sustainable Development (Suprams)

Collegiate Regional Units (URCs) belonging to the State Council for the Environment (Copam)

SUPRAMS & URCs:	HQ:
Alto São Francisco	Divinópolis
Jequitinhonha	Diamantina
Eastern Minas Gerais	Governador Valadares
Northern Minas Gerais	Montes Claros
Southern Minas Gerais	Varginha
Triângulo Mineiro & Alto Paranaíba	Uberlândia
Zona da Mata	Ubá
Northwestern Minas Gerais	Unaí
Metropolitan Center	Belo Horizonte
– URC Paraopeba River	
– URC das Velhas River	

From that year on, URCs have ruled on medium-sized environmental regularization applications. As of 2007, with the reorganization of Copam, they have become more important and also started to deliberate upon the regularization of large enterprises in their respective areas.

Seven URCs were established between 2003 and 2004. By the end of 2008 there were ten Regional Units, eight upstate and two in Belo Horizonte, the capital city. They function as a first instance of Copam's deliberations on the approval of environmental regularization and the application of penalties. URCs enjoy the administrative, technical and juridical support of the Regional Superintendent's Offices for the Environment and Sustainable Development (Suprams), which act as executive secretariats of Copam's decentralized units.

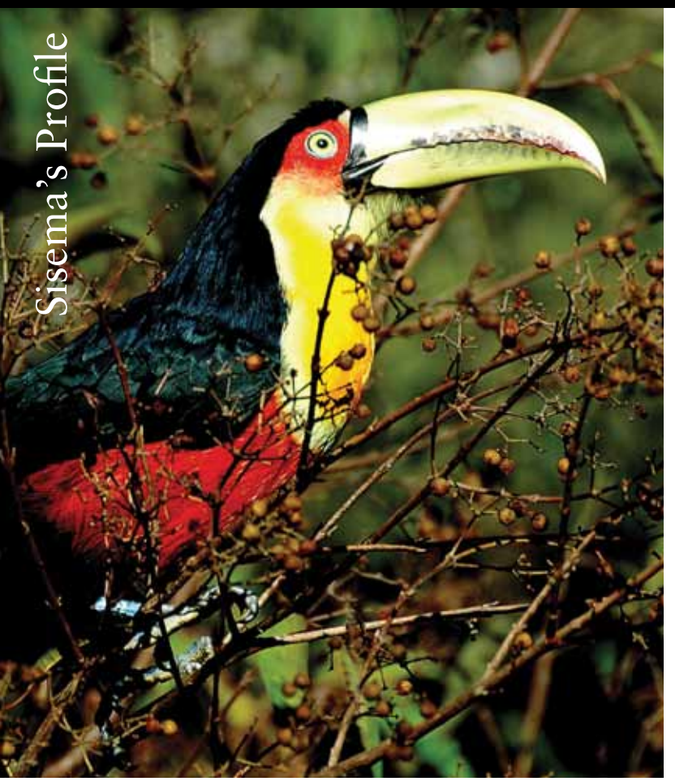
Regional Units' councilors also propose regional policies for environmental conservation. Each URC has a maximum of 20 councilors *(see how URCs are made up on page 12)*.

CERH – State Council for Water Resources

CERH is an entity in the State System for Management of Water Resources (SEGRH), incorporated into Sisema in 2009. Collegiate, deliberative and normative in character, CERH is responsible for establishing guidelines for State Policy for Water Resources and functions as a second instance for appeals against decisions taken by Hydrographic Basin Committees, deliberating on conflicts in the geographical areas covered by the different committees.

Among the Council's prerogatives are: establishing criteria and norms for granting water use and collecting for the use of water resources; approval of creation of Hydrographic Basin Committees and deliberation on classification of bodies of water. Matters involving water resources of more than one hydrographic basin also involve CERH.

The Council comprises representatives of public power, private sector and organized civil society, which have equal votes *(see composition of CERH on page 12)*.



A Toucan species common in several regions in the State.

It was set up to ensure control of water and its use in terms of both quality and quantity.

The body comprises a Plenary and three technical chambers. It enjoys the administrative support of an Executive Secretariat, exercised by the assistant secretary for Environment and Sustainable Development. It was established in April 1987 by Decree 26.961.

CBHs – Hydrographic Basin Committees

Hydrographic Basin Committees [1] are organized to deliberate, by means of participative and decentralized management, upon the management of water resources in Minas Gerais, within a given geographical planning unit. The boundaries of hydrographic basins were legally defined when Water Resources Planning & Management Units (UPGRHs) were set up in 2002.

In 2002 the Minas Gerais Water Management Institute (Igam) developed methodology to establish Hydrographic Basin Committees, setting out a number of prerequisites to be met before setting up a CBH. These include setting up a pro-committee commission and carrying out an electoral process to choose the entities to represent public power, users and civil society in the composition of these bodies.

In Minas Gerais the process of setting up CBHs is coordinated by Igam and subsequently submitted to CERHMG for deliberation on whether or not to go ahead. CBHs are subsequently established by government decree and support the execution of plans, promote debate on water-related matters and arbitrate, in the first administrative instance, on conflict involving water use. It is also the CBHs' duty to issue documents approving or turning down projects for obtaining resources from the Fund for the Recuperation, Protection and Sustainable Development of Hydrographic Basins in Minas Gerais State (Fhidro).

As far as the participation of representatives of civil society is concerned, CBH composition is similar to that of CERH. By late 2008, Minas Gerais had 34 established CBHs and two pro-committee commissions *(further information on pages 11 and 73)*.

CGFAI – Management Committee for Integrated Environmental Control

CGFAI was originally set up in 2006 as a management control group, by Law 15.972. The following year it was restructured as a committee, and regulated by Decree 44.770/08. Its constitution was a response to demand generated by structural change stemming from the creation of Sisema, with the integration of the administrative functions of its related bodies. The collegiate is responsible for planning integrated and systemic environmental controls. It sets out guidelines and deliberates on the planning of integrated and sector-related control operations. CGFAI also deliberates on policy for attending to irregularities reported and environmental emergencies.

The committee is made up of 24 members, including representatives of the private sector and organized civil society. In 2008 it was responsible for 17 major operations *(more in pages 12, 46 and 49)*.

NGAs – Environmental Management Nuclei

A pioneering initiative in Brazilian public administration, NGAs are responsible for ensuring awareness of environmental matters when policies are set up in all the State's public bodies. NGAs are present in 12 Minas Gerais secretariats comprising Copam, and they consist of at least three servants from each secretariat. Semad, which presides over the State Council for Environmental Policy, also works on the coordination and linkage of NGAs with other State secretariats, with Seplag's support. NGA members are responsible for identifying interface issues involving secretariats and bodies related to Sisema, and advising their respective secretaries and deliberative bodies on environmental matters *(further information on page 17)*.

Igam – Minas Gerais Water Management Institute

Igam was established in 1997 by Law 12.584, which changed its name and set out new duties for the old Department of Water Resources of the State of Minas Gerais (DRH-MG), related to the Secretariat for Mineral, Water and Energy Resources. It is now a State autarchy linked to Semad and a part of Sisema, responsible for management of preservation action for quantity of water and maintenance of water quality in Minas Gerais State. This change was regulated last year by Decree 44.814/08.

In the setting of the integrated system, Igam is in charge of the principal action in the so-called Blue Agenda. The body's end is to execute State policy for water resources and the environment established by Semad, the State Council for Water Resources (CERH) and the State Council for Environmental Policy (Copam). At the Federal level, the body is a part of the National System for Management of Water Resources (SNGRH). At the State level, the Institute is a part of the State Environment and Water Resources System (Sisema), which takes on the duties of SNGRH within the State.

Igam is responsible for concessions of the right to use water resources, monitoring the quality of surface and underground water in the State, coordinating the creation of CBHs and consolidating Basin Agencies. The body also acts as an executive secretariat to Fhidro *(more on page 72)*.

IEF – State Forest Institute

IEF acts in the development and execution of policy for forests, fishing, renewable natural resources and biodiversity in Minas Gerais. Established in 1962 by Law 2.606, it was originally an autarchy linked to the State Secretariat for Agriculture. In 1995 the body was linked to the recently created State Secretariat for the Environment and Sustainable Development (Semad). After Sisema was established, IEF's action was regulated in 2008 by Decree 44.807.

With offices in over 200 cities, IEF is responsible for most of the so-called Green Agenda's action, in Sisema's ambit. The body supports and fosters forestation and reforestation action, carries out research, makes inventories of and maps out biomass, biodiversity and natural resources in the region. Its mission is "to ensure sustainable development, by means of execution of policy for forests and the protection of biodiversity" and it executes environmental policy put in place by Semad and the State Council for Environmental Policy.

It is the Institute's duty to create and manage State conservation units and environmental protection areas aiming at conservation and preservation, as well as fostering and endeavoring to ensure the quality of ecotourism in the State *(more on page 54)*.

In 2009 by Law 18.365/09, forestry stimulation of an economic nature was transferred to the aegis of the State Secretariat for Agriculture, Livestock and Supply (Seapa). Activity related to reforesting and fostering forestry with the aim of reclaiming Permanent Preservation Areas, Legal Reserves and the formation of ecological corridors remained under the aegis of IEF.

Feam – State Environmental Foundation

Feam's activities started in 1989 as a government body linked to the State Secretariat for Science, Technology and the Environment, acting as Copam's executive secretariat and taking on responsibility for action related to the State's environmental management, including research.

After Semad was established in 1995 and the Agendas were set up, Feam took on responsibility, as a matter of priority, for action in the Brown Agenda, including operationalization, research and innovation of instruments for licensing, monitoring and control, supported by environmental normalization.

As of 2007, with decentralization of environmental regularization, Feam started to concentrate its efforts on stimulation, development and research management, in addition to setting out strategies seeking improvement of environmental quality in Minas Gerais.

Feam's programs are now structured along four axes by subject: air, soil, waste and energy, and climate change. The body carries out studies and research in these areas, as well as educational and environmental extension programs *(further information on page 76)*.

Environment Military Police

As a member of Sisema, the Environmental Military Police force contributes with controls and by ensuring compliance with the State's environmental legislation, through the Directorate for the Environment & Traffic (Dmat) and Environment & Traffic Operational Execution Units. In 2008 the Environment Military Police force numbered nearly 1.3 thousand.

Environment & Traffic Operational Execution Units are subordinated, in the technical sphere, to DMAT. However, the Colonel-Director is responsible for operational coordination of CGFAI. The Colonel-Director orders trained military police to act in environmental controls in all nooks and crannies of the State. This allows for decentralization of activity, economy of material resources and rationalization of the allocation of human talent, resulting in a closer relationship of the military police with their places of work and rendering their services faster and more dynamic.

Glossary

[1] An instance created by the National System for Management of Water Resources, the committees were set up to manage water in the hydrographic basins in decentralized and integrated fashion. Committees may be State or Federal (if the river runs through more than one state).

Source: *Almanaque* Brasil Socioambiental

ENVIRONMENT POLICE UNITS IN MINAS GERAIS

UNIT	MUNICIPALITY WHERE BASED
Cia. PM MAmb	Belo Horizonte
4.ª Cia PM Ind MAT	Juiz de Fora
5.ª Cia PM Ind MAT	Uberaba
6.ª Cia PM Ind MAT	Lavras
7.ª Cia PM Ind MAT	Bom Despacho
8.ª Cia PM Ind MAT	Governador Valadares
9.ª Cia PM Ind MAT	Uberlândia
10.ª Cia PM Ind MAT	Patos de Minas
11.ª Cia PM Ind MAT	Montes Claros
12.ª Cia PM Ind MAT	Ipatinga
13.ª Cia PM Ind MAT	Barbacena
14.ª Cia PM Ind MAT	Curvelo
15.ª Cia PM Ind MAT	Teófilo Otoni
16.ª Cia PM Ind MAT	Unaí

Work on tidying and maintaining tracks, carried out by IEF in Pico do Itambé State Park, in Santo Antônio do Itambé.

BUILDING UP CONSENSUS

Sisema's management is markedly collegiate and participative, ensuring that representatives of civil society participate in making strategic decisions about the environment in Minas Gerais

Bodies and entities comprising Sisema stimulate and endeavor to make full use of the potential of society's participation in political decision-making. By strengthening **collegiate bodies**[1], participative management of environmental matters in Minas Gerais is also strengthened and becomes more mature.

An outstanding example is the State Council for Environmental Policy (Copam). This body is linked to Semad and deliberates on policy, technical norms, regulations, guidelines, standards and other matters of an operational nature related to preservation of the State's natural resources. This forum is also active in applying laws, through the State Secretariat for the Environment and Sustainable Development (Semad) and technical bodies linked to the System.

Originally created as an Environmental Policy Commission, Copam is now a normative, collegiate, consulting and deliberating body. Formerly responsible for matters in the Brown Agenda *(further information on page 76)*, since 2007 the body has also been active in matters in the Green Agenda *(further information on page 50)*. Copam is currently responsible for approving the whole process of environmental regularization granted by the State of Minas Gerais.

With the new decentralized model stemming from integration of environmental bodies and the agendas, decisions from all over the State, which were formerly taken in the capital city of Belo Horizonte, are now taken in first instance under the aegis of the Collegiate Regional Units (URCs) – extensions to Copam that function in nine regions of Minas Gerais, including the Metropolitan Region of Belo Horizonte.

In addition to the URCs, in the capital of Minas Gerais, Belo Horizonte, Copam has the necessary structure to propose changes in legislation and to analyze environmental regularization procedures in the second and last instance. For this purpose it has a Normative and Appeals Chamber and another five specialist chambers: Energy & Climate Change, Chamber of Industry, Mining & Infrastructure, Chamber of Agro-forest-pastoral Activity (agricultural, animal-raising and forest production), Chamber for Environmental Management Instruments, and Chamber for Protection of Biodiversity and Protected Areas. The body also has a President (a position occupied by the State Secretary for the Environment and Sustainable Development), the Plenary and the Executive Secretariat (under the aegis of the Assistant Secretariat in Belo Horizonte and the Suprams, to attend to the URCs).

Councilors are not remunerated and meet in ordinary and extraordinary meetings made necessary by specific matters. With its new structure, Copam has 914 councilors, between office holders and seconds *(see Copam's composition in the table on Page 12)*.

State Council for Water Resources

While Copam concentrates on matters related to the Brown and Green Agendas, the State Council for Water Resources (CERH) is responsible for participative and collegiate management of matters related to the Blue Agenda *(further information on page 62)*. The Council is the central collegiate, deliberative and normative body in the State System for the Management of Water Resources (SEGRH-MG). Its target is to improve mechanisms for planning, ensuring compatibility, assessing and controlling Minas Gerais' water resources, taking into account requirements for volume and quality necessary for its multiple uses. CERH also establishes criteria and general norms for granting the right to use water resources and collecting for this right to use water.

The Council's internal regime was set up in 1999 by CERH Normative Deliberation Nº 1. The collegiate body is organized into a Plenary and three technical chambers: Institutional & Legal; Plans for Water Resources; and Instruments for the Management of Water Resources. The President is the State Secretary for the Environment and Sustainable Development. Its Executive Secretariat is run by the Assistant Secretary. The executive unit is responsible for administrative support and coordinating CERH's technical activities, and can also propose setting up Technical Groups to debate on specific matters.

Besides the councilors, representatives of other sector and technical entities can also be members of the Council, as consultants and with no vote. These entities include Feam, IEF and Igam.

Another of CERH's duties is to provide an instance for appeals against decisions made by the Hydrographic Basin Committees and in connection with the application of penalties called for in Law 13.199/99, which covers State Policy for Water Resources.

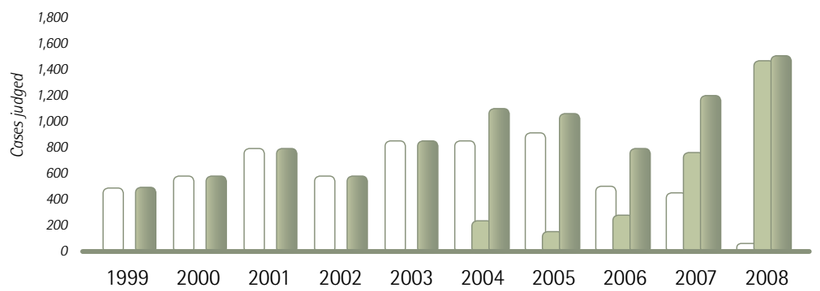
The 34 Hydrographic Basin Committees (CBHs) in place at the end of 2008, in turn, provide a first instance for issues related to the management of water resources in areas affected by the respective hydrographic basins.

The complexity of environmental matters and integrated policy, which requires greater interface with the three Agendas, led to the need for joint deliberation involving Copam and CERH members in the same debate. This new reality led to the creation of a juridical framework in 2008 covering both collegiate bodies. This happened, for example, when establishing policy for contaminated areas and classifying bodies of water in the State.

Maturing process

Coordination of this undertaking on the path to participative management was a major challenge for the State. The difficulty was caused by the lack of habit of all those involved in initial debates. Even if, at first, the positions of environmental NGOs and the business sector were diametrically opposed and irreducible, present council meetings are increasingly productive in building up consensus, showing increased maturity on the part of members. Results obtained with this policy ensure that social control of public action in the State will not be overturned.

PERFORMANCE OF COLLEGIATE UNITS



		1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Cases judged	Specialist Chambers	502	603	804	586	876	873	929	514	453	36
	Regional Collegiate	0	0	0	0	0	251	143	306	784	1,489
	TOTAL	502	603	804	586	586	1,124	1,072	820	1,237	1,525
ENVIRONMENTAL LICENSES - AAFs								984	2,862	2,343	4,851

Glossary

(1) Collegiate bodies include different kinds of representation, and decisions are taken by the group.

COMPOSITION OF COLLEGIATE BODIES

		Members	Designation	Representativeness
State Council for Environmental Policy (Copam)	**Plenary**	36 members	The President is the State Secretary for the Environment and Sustainable Development	Parity between public power and civil society. Twelve State Secretariats; Environment Military Police; Proctorship-General of Justice; Legislative Assembly; Ibama; Association of Municipalities; Commercial Association; Agriculture Federation; Federation of Agricultural Workers; Federation of Industry; Micro, Small and Medium Sized Business Council; Minas Gerais Mining Institute; Real-Estate Market Chamber; Brazilian Sanitary Engineering Association; representatives of 4 elected environmental NGOs[1]; representatives of 3 elected teaching and research entities[1]; representatives of 3 elected civil liberal professional entities[1]
	Normative & Appeals Chamber[2]	20 (maximum)	President of Copam	Parity between public power and civil society
	Specialist Chambers[2]	12 (maximum)	President of Copam	Proportion of one representative of public power to one representative of the private sector to one representative of civil society.
	URC[2]	20 (maximum, per URC)	President of Copam	Ensured for State Public Power (PP); Federal PP; Municipal PP; entrepreneurial sector entities; liberal professionals involved with environmental protection; NGOs legally established to protect, conserve or improve the environment; regional entities with interrelation between public powers and the environment; teaching, research and technological development entities.
		Members	Designation	Representativeness
State Council for Water Resources	**Plenary**	40	President is the State Secretary for the Environment and Sustainable Development	[3] Parity between public power and civil society. Nine State secretariats; nine municipal city halls (representing all basins); Minas Gerais Energy Company; Minas Gerais Sewage Company; Agricultural Federation of Minas Gerais State; Federation of Industry of Minas Gerais State; Brazilian Mining Institute; Cataguazes-Leopoldina Electric Energy and Light Company; Representatives of Universities located in the State; Representatives of municipal waterworks and sewage companies; Representatives of associations linked to fishing; Representatives of irrigation users; Representatives of entities for protection, conservation and improvement of the environment; Representatives of entities linked to water resources.
	Institutional and Legal Technical Chamber of Minas Gerais – CTIL-MG	8	President of CERH	[4] Composed of lawyers recognized for their expertise in environmental and water resources law.
	Technical Chamber for Water Resources Plans of Minas Gerais' State Council for Water Resources- CTPLAN-MG	8	President of CERH	[5] Parity between state and municipal public power, representatives of users of water resources, and civil society. Two State secretariats; two municipal city halls; Brazilian Steelmaking Institute; Minas Gerais Sanitation Company; Minas Gerais Association for Environmental Defense; Paraopeba River Basin Intermunicipal Consortium.
	Technical Chamber for Management Instruments - Minas Gerais State Council for Water Resources - CTIG-MG	8	President of CERH	[6] Parity between state and municipal public power, representatives of users of water resources and civil society. Two State secretariats; two municipal city halls; Brazilian Mining Institute; Minas Gerais Energy Company; Paraopeba River Basin Intermunicipal Consortium; Brazilian Groundwater Association.
		Members	Designation	Representativeness
Integrated Control Management Committee	**Plenary**	24	President is the State Secretary for the Environment and Sustainable Development	[7] Ensured for public power and Copam. Four State secretariats; Military Police, Igam; Feam; IEF; Delegate's Office Specializing in Preservation of Quality of Life and the Environment; Minas Gerais Military Fire Brigade; Minas Gerais Agriculture and Livestock Raising Institute; Environmental Complaint Reception Center; Copam representatives.

[1] *Entities elected in accordance with Article 25 of Decree 44.667/07 (www.siam.mg.gov.br/sla/download.pdf?idNorma=7551);* [2] *A complete list of entities represented is to be found in www.conselhos.mg.gov.br;* [3] *As described in Article 34 of Law 13.199/99;* [4] *www.igam.mg.gov.br/sistema-de-recursos-hidricos/ctil;* [5] *www.igam.mg.gov.br/sistema-de-recursos-hidricos/ctplan;* [6] *www.igam.mg.gov.br/sistema-de-recursos-hidricos/ctig;* [7] *As described in Article 11 of Decree 44.770/08 (www.siam.mg.gov.br/sla/download.pdf?idNorma=7967).*

ECONOMIC ECOLOGICAL ZONING

Territorial radiography of Minas Gerais has become an objective instrument for government decisions and investment in the State

Minas Gerais was one of the first Brazilian States to produce its Economic Ecological Zoning (ZEE) based on methodological guidelines proposed by the Ministry of the Environment (MMA). The main objective of ZEE is to contribute to identify strategic areas for the sustainable development of Minas Gerais, providing orientation for governmental and civil society's investments in accordance with regional peculiarities.

Without limitation or imposition, ZEE is a tool for territorial organization based on the natural, social and economic characteristics of the State's different regions. In other words, ZEE allows for a thorough survey of each region, providing public management with a technical foundation by identifying naturally vulnerable areas and social potential. In turn, the productive sector enjoys access to information about the regions that will serve as a basis for investment decisions.

On the basis of diagnosis of the socio-environmental and economic characteristics of each region, two principal maps are generated: one exhibiting natural vulnerability and the other social potential. The combination of these two components leads to the Economic Ecological Index, which shows six different zones for development. By taking these characteristics into account, government is able to improve the quality of its decisions and ensure improvement in the quality of services rendered to society.

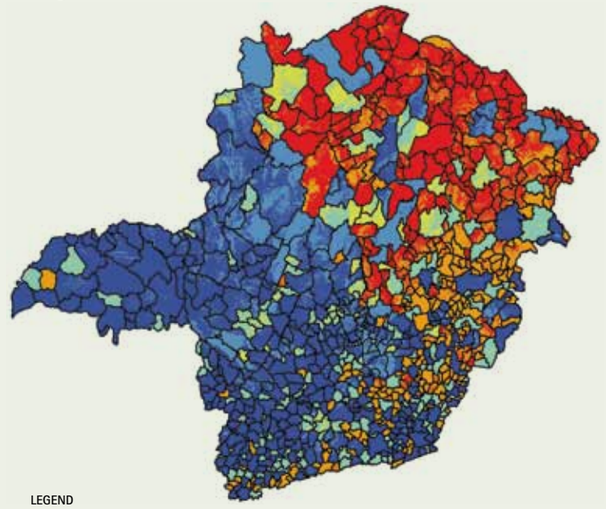
An example of the application of this tool is contribution to orderly and integrated territorial occupation and planning infrastructure projects. Strengthening its character of service to society, ZEE's analysis tool, a Geographical Information System, is available to the public on the internet (www.zee.mg.gov.br) and helps technicians analyze projects, entrepreneurs plan base surveys for preparing environmental studies, and civil society in the exercise of social control.

Legal Basis

In Minas Gerais, ZEE was implemented by the State government during the 2003-2006 administration, in the sphere of Environmental Management Structuring Project – MG 21st Century – Action P322, and by Copam Norm Deliberation 129, dated November 27, 2008, which sets up Economic Ecological Zoning as a support instrument for planning and managing government action for the protection of Minas Gerais State's environment, in addition to recognizing ZEE's databank as official.

Zoning was coordinated by Semad and included the participation of State secretariats and other entities representing society. Work was carried forward under the aegis of the Administrative, Technical, Scientific, Financial and Operational Cooperation Agreement between Sisema and the Federal University of Lavras (Ufla), through the Foundation for Support of Teaching, Research and Extension. The João Pinheiro Foundation also acted in the process, as the partner responsible for diagnosis of social potential. The result of this work complies with Federal Decree 4.297/02, which sets out criteria for Brazilian ZEE.

Economic Ecological Zoning in Minas Gerais



CHALLENGES OF LICENSING

Sisema's aim is to reduce the time for making decisions about applications for authorization, while maintaining the quality of the analyses

One of the main objectives of the "Management Crash" policy put in place by the government of Minas Gerais in 2003 was to increase the efficiency of public services rendered. Semad went through profound organic reformulation to speed up analysis of the environmental regularization process and meet the targets established in the Environmental Management Structuring Project – MG 21st Century, which was set up that year. The Project decentralized attention and judgment with the introduction of Suprams and URCs, and it brought all the environmental bodies under Sisema's umbrella in 2007, setting up interdisciplinary teams to analyze projects for implementing small, medium sized and large enterprise.

These teams set new rhythm to granting licenses once the analyses for projects in the Green, Blue and Brown Agendas were unified. Assisted by legal counselors, the teams issue a single opinion, with a global vision of the enterprise. Government servants learnt to make joint decisions synergistically. This form of action is key to deal with the increasing complexity of applications for licenses. The interdisciplinary aspect brought about gains in quality and agility in the State's environmental regularization process.

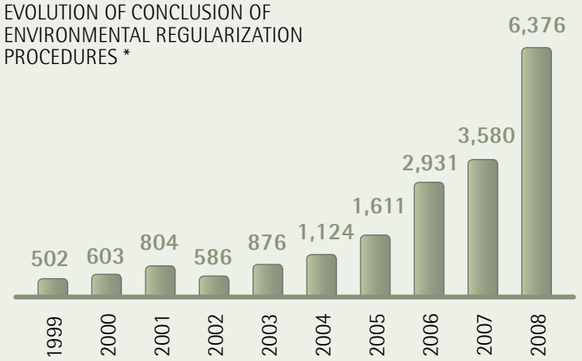
Until 2007, Feam's technicians were solely responsible for issuing opinions about the installation of enterprises in the State's Brown Agenda. Despite the experience and knowledge accumulated by Feam, analysis of applications from different business sectors of different size by a single technician led to an extended time for attention.

The results of the changes made became apparent. In 2008, 6,376 authorizations were granted, 55% more than the 4,099 registered in 2007 *(see chart below)*. In 2008 the average time for granting environmental, installation and operating licenses for class 3 and 4 enterprises stood at 111.2 days, more than meeting the target set in the first stage of the Agreement on Results *(more on page 22)*, 180 days. The target set for 2009 is 150 days.

Despite these advances, there are further opportunities for improving the process. The decentralized model is still endeavoring to meet stakeholders' requirements for less time taken over licensing and for increased transparency of the process. The objective is to make the rules clearer, so that all parties are aware of them and they maintain uniform criteria for procedures at Suprams.

Another matter requiring attention is the high turnover of technicians. Bodies and entities comprising Sisema face difficulty in retaining some of their talent, in spite of heavy investment in training programs. As it is a public body subject to the State government's policy for salaries, it is extremely hard to compete with salaries paid by private initiative.

EVOLUTION OF CONCLUSION OF ENVIRONMENTAL REGULARIZATION PROCEDURES *



**As of 2004, besides licensing, the figures also take into account Environmental Operation Authorizations (AAFs), a simpler and quicker procedure for regularization.*

111.2 days

was the average time for the analysis of environmental licenses for class 3 and 4 enterprises in the State of Minas Gerais in 2008

ENVIRONMENTAL REGULARIZATION ANALYSES - *IN DAYS*

SUPRAM	Target 2008 (2nd half)	Actual 2008	Target 2009 (1st half)	Actual 2009 (concluded only)	Actual 2009 (with those not concluded)
Alto São Francisco	90	59.93	90	22.22	101.67
Metropolitan Center	90	57.8	90	17.65	117.58
Eastern Minas Gerais	90	40.67	90	31.25	83.74
Jequitinhonha	90	No demand	90	25.00	117.71
Northwestern Minas Gerais	90	55	90	44.44	101.06
North Minas Gerais	90	42.43	90	20.00	91.00
South Minas Gerais	90	40.62	90	30.17	33.98
Triângulo Mineiro and Alto Paranaíba	90	63.23	90	35.76	89.19
Zona da Mata	90	33	90	60.00	75.56
TOTAL	90	49.09	90	30.35	81.95

Structure of Management

Environmental licensing, monitoring environmental quality and controls are the three axes comprising environmental regularization – the main concern of Sisema's system of environmental policy in Minas Gerais. Put together, these three axes affect the Blue Agenda (granting the right to use water), the Green Agenda (eliminating vegetation, for example) and the Brown Agenda (liquid effluents and solid waste, for instance), setting up what the bodies and entities in Sisema call the White Agenda – the sum of all colors.

In order to invest in qualifying the licensing process, another two instruments for environmental policy management were developed, in compliance with Law 6.938/81: Economic Ecological Zoning (ZEE) and Strategic Environmental Assessment (AAE).

LOCATION CRITERIA

Since 2004, in accordance with Copam Normative Deliberation 74/04, licensing has been assessed on the basis of two parameters: the enterprise's size and its potential for causing pollution. The incorporation of a third criterion in the process, location, is currently being studied, and is to be implemented on the basis of the revision of Copam ND 74/04.

Incorporation of the criterion of location in assessing an undertaking's potential impact level will improve environmental licensing as it will be considered one of the region's pre-existing environmental conditions. In this connection, Minas Gerais' ZEE (more on page 13) will play a key role on account of its characteristics, acting as a guide for licensing.

The new measure minimizes chances that the State might license an enterprise in a region where existing occupation is putting at risk the environment's capacity for recovery from the sum of all the different impacts. For this reason, the seventh and eighth kinds of licensing were introduced *(see before and after on next page)*.

Location in Zoning has been divided into three kinds: low, medium and high impact. In the case of medium impact, which does pose a certain degree of environmental risk, even more complex studies must be submitted in order to set up an enterprise, showing what is going to be done, and how and how much will be invested to minimize risks. Such an enterprise would be Class 7.

In the case of an area considered high-risk, the entrepreneur would have to invest even more in technology, projects and studies to obtain authorization to operate in the region. This would be a Class 8 enterprise.

Low impact enterprises, Classes 1 and 2, enjoy a simplified procedure for licensing, in the mould of the Federal Government. The entrepreneur makes a pact with the State by signing a Commitment. However, should information be retained or neglected and this be established by controls or monitoring, both the technicians involved and the owners of the enterprise will be held responsible, and may be penalized by being fined or even proscription of the business.

CHANGES IN ZEE AFTER REVISION OF COPAM ND 74/04

	NOW	FUTURE
Levels	Three	Three
Classes	Six	Up to eight
Impact	1 & 2 – low 3 & 4 – medium 5 & 6 – high	Former classes kept, and two new ones added, depending on impact of enterprise.
EIA /Rima	Waived for low-impact enterprises	Still waived in the case of Class 1 & 2 enterprises
Factors considered	Size Polluting potential	Size Polluting potential Location

INTEGRATED CONTROLS

The participation of civil society and the private sector in strategic decisions involving controls and monitoring adds to transparency and contributes to a cultural change. The creation of the Management Committee for Integrated Environmental Controls (CGFAI), regulated by Decree 44.770/08, strengthened such participation.

The aim is to use controls as an instrument for environmental education and straightening out the wayward, as well as for seeking alternatives to minimize environmental impact, no longer focusing on punishment. Furthermore, Sisema intends controls to be an efficacious instrument for returning to the licensing sector in the search for more suitable parameters for defining conditioning factors for environmental regularization.

Procedures and action for controls performed by bodies comprising Sisema have been systemized in two manuals: a Manual of Directives and an operational one, which came out in 2008 after a year's internal discussion. Procedures are divided among the three agendas – Blue, Brown and Green and contain information about how police and officials should act in the face of a variety of situations involving command and control in the environmental area.

In the new model, officials' actions are integrated from the time of annual strategic planning, when matters of priority to be put in place over the coming 12 months are established. This meeting leads to the Annual Program of Controls, which also orients targets stipulated at a later date through the Results Agreement for areas of command and control (more on page 22).

In addition to action programmed in annual planning, approved by CGFAI, Sisema also proceeds through lawsuits received through different reporting channels, including those belonging to the Public Attorney's Office, and civil society, received through CAD (Channel for Attention to Denouncers).

THE EXERCISE OF TRANSVERSALITY

Environmental Management Nuclei (NGAs), effectively put in place as of 2007, contribute to incorporate the environmental variable into the public policy of 12 secretariats of the State of Minas Gerais with representation in Copam.

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The idea of establishing nuclei for environmental subjects in Minas Gerais' state secretariats stems from a problem common to all spheres of government. Normally, when a body is established to address environmental matters, the others tend to leave consideration of environmental variables up to that body.

This, however, is contrary to the systemic vision approach and the exercise of transversality, which are necessary for the concept of sustainable development to be put in practice. The objective is for environmental matters to be present in the strategic decisions of different sectors in the public sphere, building bridges for preparing integrated government projects.

Environmental Management Nuclei consist of representatives (a minimum of three) in the 12 Minas Gerais State secretariats comprising Copam. It is their job to introduce environmental variables in the governance of these entities. Workshops with NGAs are held periodically to identify interface with the environmental system and define projects in common that can be carried forward through technical cooperation. The Nuclei are institutional structures established by Decree 43.372/03, but it was not until 2007 that the project took form. That year, NGAs started working with new methodology, valuing their importance in the State's public management. The objective is to prevent the nuclei from being considered "foreign bodies" and therefore losing influence in the secretariats.

In this sense, coordination of NGAs led to a "project fair" in 2008, with the presence of 38 public bodies belonging to the State Government, including all the secretariats comprising Copam. As of then, within projects presented at the fair, it became possible to identify

130

Is the number of projects of the Government of the State of Minas Gerais incorporating environmental bias due to NGAs' work in 2008

Tree-lily in Serra do Rola Moça State Park, in Belo Horizonte.

major subjects with greater interface with the environmental area, where the involvement of NGAs would lead to more favorable results.

Finally, the bodies connected with Sisema signed Transversal Agreements for Technical Cooperation with other government bodies and secretariats, involving 130 projects – most of which are linked to matters such as protection of biodiversity, environmental sanitation, education and environmental extension. NGAs are in charge of assessing environmental impact of projects stemming from Cooperation Agreements *(more on page 17)*.

An example of partnership between NGAs and the secretariats is the database generated by ZEE, which has been made available to Sisema as a technical subsidy for other State bodies, endeavoring to help with management.

Strategic Environmental Assessment

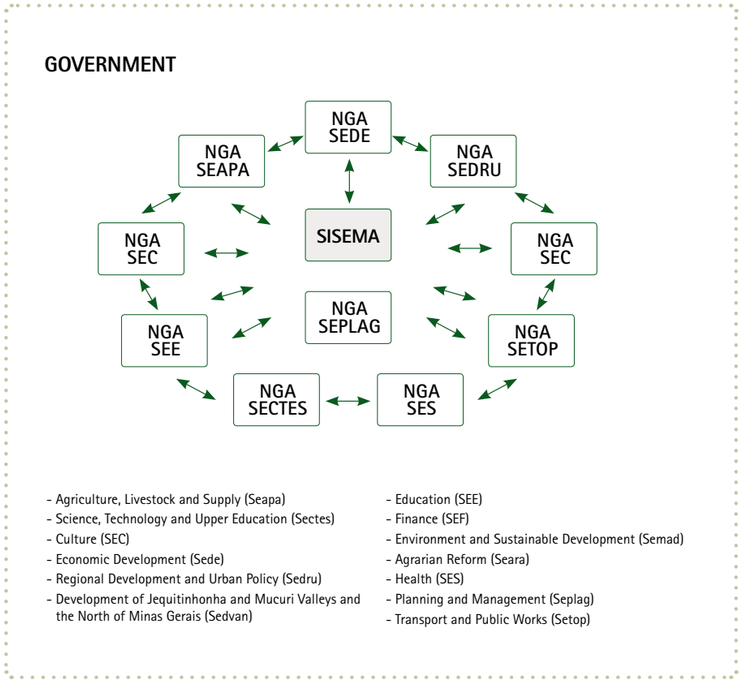
Strategic Environmental Assessment (AAE), introduced by State Decree 43.372/03, was put in place for the analysis of governmental programs, in Brazil, by the State of Minas Gerais in early 2008. It is a process for evaluating policy, plans and programs developed by the government with the aim of getting decision-makers to take environmental variables into account, as early on as possible.

In line with other measures adopted by bodies linked to Sisema, AAE enjoys the participation of society, through field offices, where representatives of NGOs and the business sector make their contribution and take part in the validation of diagnoses. Other forums for the participation of civil society are Copam and CERH, which watch over the work and validate the final document.

So far two AAEs have concluded: one in the hydraulic energy producing sector and the other in the transport sector, taking only the highway mode into account. Both resulted in a decision matrix that influenced a number of projects and programs in these two areas. The energy sector AAE, for instance, made it clear that the State must diversify its energy supply mix and make greater investments in alternative energy, so as not to overload hydroelectric sources. These findings led to the State Government's 2009 decision to invest R$ 213 million in purchasing wind farms in Ceará State, which was put in practice by Cemig.

Upcoming challenges are to further involve society, especially the business sector, in performing AAEs, and increase their use by Sisema and sector-specific secretariats in decision-making. Additionally, three new AAEs are being prepared, in the areas of sanitation, agribusiness and mining.

MINAS GERAIS STATE SECRETARIATS WITH NGAs:



GOVERNMENTAL STRATEGIC PLANNING

"Management Crash" lays out new premises for the action of public bodies and incorporates the environmental dimension into Minas Gerais' strategic planning

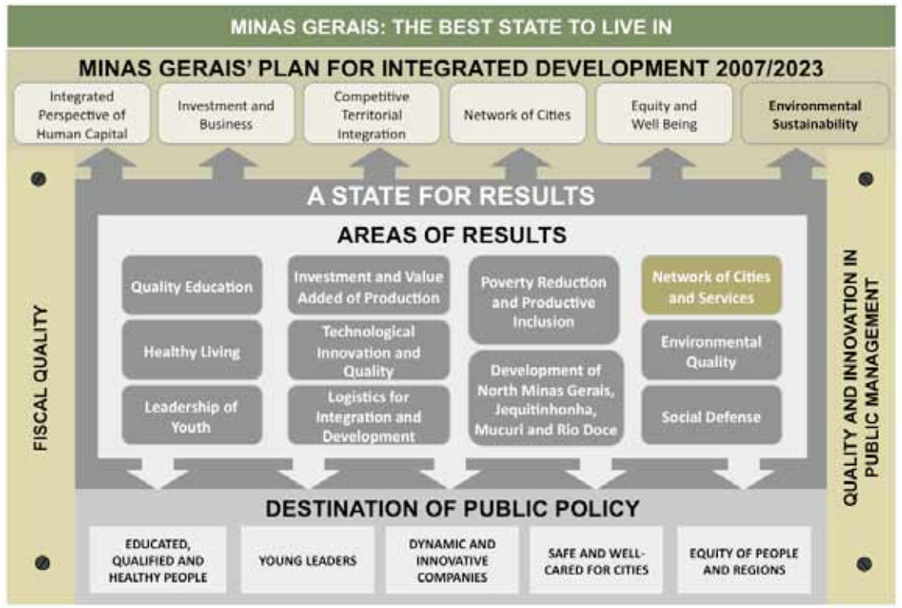
In Brazil, all entities in the Federation use three common tools for governmental planning. The Pluriannual Governmental Action Plan (PPAG) is prepared in the first year of an administration with the objective of planning action for the three following years, plus the first year of the subsequent administration. The PPAG defines programs and their objectives, and turns them into projects or activities, for which targets, ends, products, and provision of resources are established. Budget Guideline Laws (LDOs) are passed in the first half of each year with the aim of establishing guidelines and norms for drafting Annual Budget Laws (LOAs) which, in turn, are defined in the second half to estimate revenue and fix expenses for the next exercise. What LOAs do is review and establish targets for each and every project or activity included in the current PPAG, as well as to provide budgetary resources to be spent on meeting these targets.

In addition to these three tools, the Government of the State of Minas Gerais has created yet another, the Minas Gerais Plan for Integrated Development (PMDI). Its objective is to carry out retrospective and prospective analyses of the State's condition, establishing priorities and ways forward to socio-economic development. In other words, PMDI's nature is theoretical and qualitative, and this tool provides orientation for the other three tools, whose nature is objective and budgetary.

First Generation of the "Management Crash"

In 2003 the newly-elected government identified a balanced budget and the modernization of public administration as its major challenges. Initiatives adopted to overcome these challenges were brought together under the title of "Management Crash", and some of the first initiatives put in practice were reduction of the number of secretariats from 25 to 15 and of the number of positions of confidence, as well as cuts in the salaries of the governor and all the positions of confidence in the State's Executive Branch.

Following the logic of management modernization, Governmental Strategic Planning for 2003 adopted important innovations. Firstly, planning was based on



the "Minas Gerais of the 21st Century" booklets, a set of retrospective and prospective analyses of the most relevant aspects of the State's development. The second innovation consisted of putting together scenarios with challenges and opportunities for the State's socio-economic development until 2020. This differed from earlier versions, which were limited to 4 years. This PMDI also innovated by adopting SIGPlan (Management and Planning Information System), adapted from the Federal Government's system, incorporating IT and speeding up preparation of PPAG and LOAs, in addition to fostering greater future integration of planning and budgeting. Lastly, the fourth innovation consisted of preparing a portfolio of Structuring Projects, priority programs to materialize priorities for meeting targets established for the first four years of the period covered by the plan. Their budgetary resources were to be guaranteed by the State and intensely managed.

Second Generation of the "Management Crash"

In 2007, with the so-called Second Generation of the "Management Crash", the PMDI was reviewed with the aim of widening vision of the future, updating scenarios and reviewing the Structuring Projects portfolio. PMDI 2007-2023 *(see table on previous page)* incorporated "environmental sustainability" into the State's strategic planning, with specific Structuring Projects earmarked for improving the State's environmental quality *(see schedule on this page)*. Another first was the systematization of Governmental Strategic Planning into 11 Areas of Results. Diagnoses, exploratory scenarios, strategic objectives, indicators, targets for improving these indicators and new Structuring Projects were prepared for every Area of Results. Thus, global guidelines for the socio-economic development of Minas Gerais, as well as the information and knowledge they were based on, were expanded and organized in the eleven Areas of Results, allowing for integrated management of interfaces and synergy between actions belonging to each area, regardless of what particular body executes them.

With this new structure, in PPAG 2008-2011, Sisema became responsible for coordinating the 4 Structuring Projects in the "Environmental Quality" Area of Results. Additionally, the system became involved with the Structuring Project for Simplification, belonging to the "Investment and Value Added of Production" Area of Results as the entity responsible for the part of this project relative to expediting and modernizing environmental regularization.

Yet another important innovation was consolidating the idea of public policy focusing on final results, perceptible to society. However, as fiscal quality and innovation in public management are objectives that have not yet been met, they were included in parallel in governmental strategy, so as to generate structural conditions able to sustain results. Action and initiatives included in these objectives were incorporated transversally in the strategic plans of all sectors of the Executive Branch, in the form of Sector-specific Agendas for "Management Crash".

Sector-specific Strategic Planning

Taking Governmental Strategic Planning as a model, every Executive Branch operational system does its own planning, which must set out how it is going to contribute to meeting the Vision of the Future and the Strategic Objectives, within their respective competences. Sisema thus prepared its own Sector-specific Strategic Planning between 2007 and 2008, consolidated in the Roadmap *(see diagram below)*.

This document is a strategic map based on adapting Balanced Scorecard (BSC) methodology to public administration. This is intended to guide preparation, implementation, monitoring, assessment and feedback in connection with an organization's strategy. BSC not only takes the organization's major result into account (financial in the case of companies, or social in the case of governmental bodies); it also covers dimensions leading to this result.

In the specific case of Sisema, in addition to final results in terms of environmental quality and sustainability, strategic objectives were also set to meet intermediate results in connection with target-publics, the evolution of internal processes, implantation of mechanisms for learning and growth, and efficiency and responsibility in financial and budgetary management.

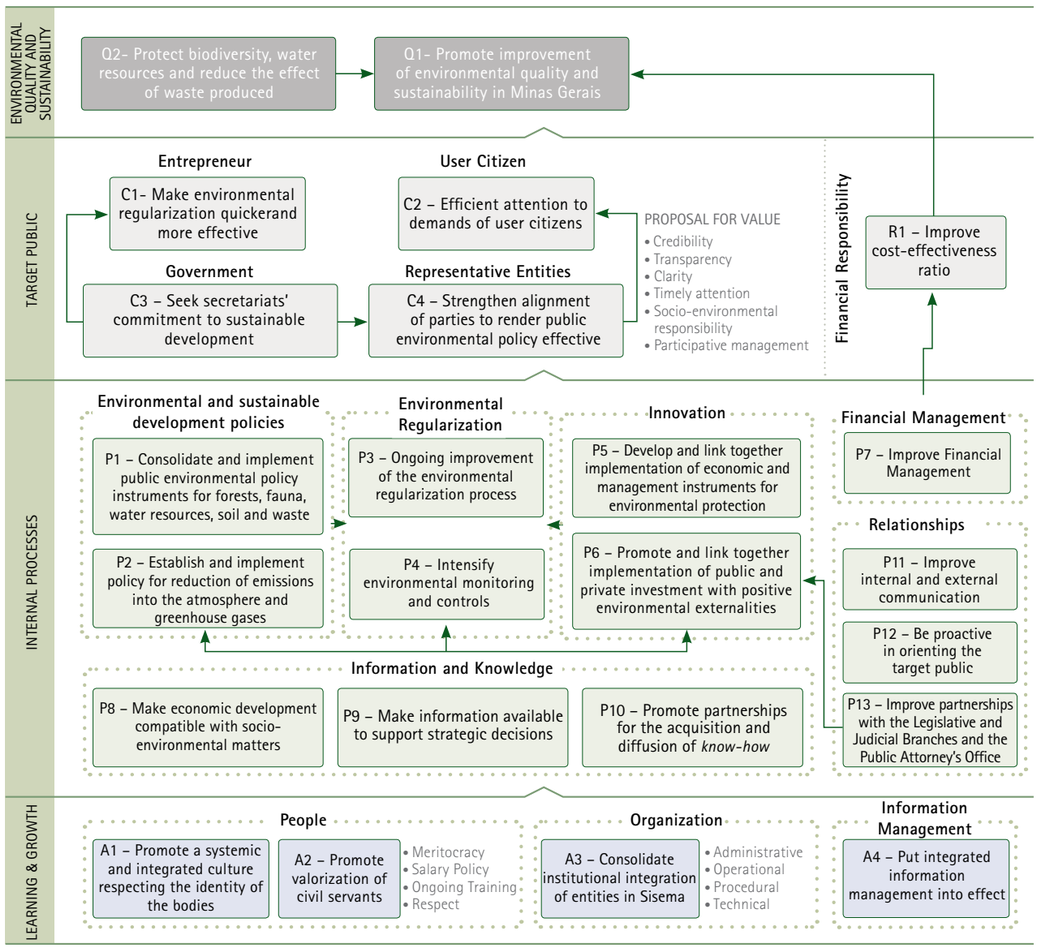
After this, each of the bodies and entities comprising Sisema established indicators, activities and targets under its own responsibility, so as to show how each one should contribute to meeting the system's strategic objectives.

STRUCTURING PROJECTS – FINAL TARGETS

Area of Results	Structuring Project	Indicator	Actual 2008	Target 2008	Target 2009
Environmental Quality	Consolidating Management of Water Resources in Hydrographic Basins	Water Quality Index (IQA) – Nº of rivers over 60	7	11 rivers over 62[1]	11 > 63[1]
		Water Quality Index (IQA) – Nº of rivers over 70	3	3 rivers over 70[1]	3
		Nº of UPGRHs structured (accumulated)	-	-	3
	Target 2010	Biochemical Oxygen Demand in das Velhas River	6.3 mg/l	7 mg/l	6 mg/l
		Water Quality Index (IQA) of das Velhas River target area 2010	38.17[1]	41.1[1]	45[1]
	Preservation of Cerrado (Brazilian savannah) and Recovery of Atlantic Forest	Vegetation cover index (ha)	Nil[2]	Nil[2]	Nil[2]
		Percentage of territory with native vegetation coverage (Atlantic Forest, Cerrado, Caatinga)	33.65% (2007)	33.8% (2007)	
	Solid Residues	Percentage of urban population with access to adequate waste disposal	45.9%	45%	50%
Investment and Value Added of Production	Simplification Program	Average time of deliberation about environmental licensing applications – Prior License (LP), Installation License (LI) and Operation License (LO) for Classes 3 & 4	111.2 days	180 days	150 days

(1) Dimensionless: These figures refer to an IQA note and show no measuring unit. (2) Sisema no longer uses the Vegetation Coverage Index to measure the area in the State filled with vegetation. The measure currently in use in the Balance of Vegetation Coverage arrived at with the formula "raised area + preserved area – anthropic action". The ideal result is, at least, zero.

ROADMAP



Dom Helvécio lake, in Rio Doce State Park, in Marliéria

Agreement on Results

The Agreement on Results is a management contract whereby on the one hand the Government and its bodies and entities reach agreements on results and targets, and on the other autonomy of management is established to facilitate their execution. The methodology of Agreement on Results was created in 2003, as one of the "Management Crash" initiatives, and was perfected in 2007 with the Second Generation of "Management Crash".

During the 1st stage, the Government and Sisema set up targets for the system's Final Results, the execution of Structuring Projects, the execution of action in the Sector-specific Agenda, and the performance of its financial and budgetary management. Semad, Feam, Igam and IEF immediately make their respective agreements with the system's top authorities, where targets for the contribution of each and every team belonging to these bodies, to meeting the strategic objectives of the Government and Sisema.

Arrival at Agreements on Results is tied to the concession of significant mechanisms encouraging organizational and individual performance, known as management autonomies, often consisting of making certain bureaucratic rites typical of public administration more flexible. A good example is the Productivity Prize, a financial incentive paid annually to servants in bodies reaching performance of at least 60%.

TARGET PUBLICS

Sisema's view is that the main beneficiary of its action is society in general, which has the right to social, economic and environmental sustainability.

However, Sisema also considers target publics: enterprises requiring environmental regularization services, citizens making use of other services, other State Government bodies and entities that must introduce the matter of the environment transversally into the manner in which their public policies are carried out, and entities representing different collective interests affected by Sisema's action, such as the productive sector, NGOs, other governmental spheres and areas, and the servants of the bodies comprising them.

IDPA IS A THERMOMETER FOR PUBLIC POLICY

Gauging the effectiveness of public policy is a challenge for the government. To face it, Semad adopted a set of 13 indicators to evaluate the performance of public environmental policy in the State of Minas Gerais

The Performance Index for Public Environmental Policy (IDPA) is an instrument designed for developing countries, and it is applied to Minas Gerais' actuality. It comprises the sum of 13 quality indices such as, for example, the index of fecal coliforms in water and the proportion of the population enjoying access to proper refuse disposal *(see table)*.

To make analysis easier, the indicators have been grouped, with different weighting, in six areas: air, water, soil, biodiversity, institutional and socio-economic. The sum of these variables, adjusted according to their respective weighting, forms the IDPA. A figure from 0 to 1 is obtained from this equation, which qualifies the State's environmental quality which, in turn, affects the population's quality of life.

With the participation of 150 environmental specialists, IDPA was put together with data possessing historic measurement series, to make it possible to see the past and spot trends for the future. The results of this task can help steer public policy in two ways: in aggregate form considering IDPA, or in non-aggregate form, by means of the 13 indicators comprising it.

150
especialists
were consulted
to draft IDPA

The State of Minas Gerais has exhibited a tendency to improve since 1977, although IDPA fell in 2008 as compared to the year before *(see table)*.

This was mainly due to the lack of positive results for the policy for rational use of pesticides, measured by soil index, and a decline in Semad's share of general resources made available by the State. On the other hand, the indicators for biodiversity, air, refuse and sewage showed improvement.

Water Quality Indices have remained stable. The State's IDPA is currently in the bracket considered "tolerable". The objective for 2011 is to raise it into the next bracket, bringing the State "Fair". This is yet another indication of how far Minas Gerais is advancing in its public environmental policy.

INDICATORS COMPRISING IDPA*

Air	Inhalable Particles – PM10
Water	Biochemical Oxygen Demand – BOD
	Fecal Coliforms (thermo-tolerant)
	Dissolved Oxygen – DO
	High Toxicity
	Percentage of population enjoying treated sewage or disposed of adequately
Soil	Percentage of population enjoying adequate disposal of refuse
	Kilo of pesticide/hectare in cultivated area
Biodiversity	Percentage of area with native vegetation in relation to total area
	Percentage of preserved areas in relation to total area
	Percentage of cleared area in relation to total area
Institutional	Percentage of public resources earmarked for the environment in relation to total spent
Socio-economic	Infant mortality

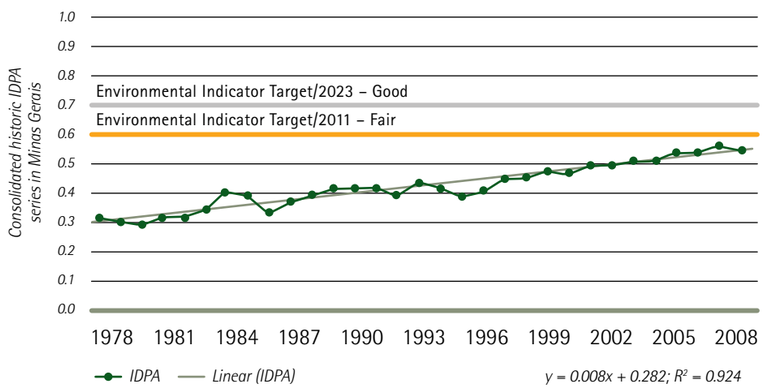
** IDPA results related to final targets set out in Structuring Projects are distributed among the Blue, Green, Brown and White Agendas in the following chapters of this report.*

A grotto open to visitors in Lapa Grande State Park, in Montes Claros.

ASSESSMENT OF IDPA IN MINAS GERAIS, BY INDICATOR

Year	Air Index	Water Index	Soil Index	Biodiversity Index	Institutional Index	Socio-Economic Index	IDPA
2007	0.1170	0.1662	0.0750	0.1008	0.0348	0.0817	0.5755
2008	0.1149	0.1675	0.0685	0.1029	0.0288	0.0819	0.5646

IDPA



IDPA	Classification
0.9 a 1.0	Excellent
0.8 a 0.9	Very Good
0.7 a 0.8	Good
0.6 a 0.7	Fair
0.5 a 0.6	Tolerable
0.4 a 0.5	Poor
0.3 a 0.4	Very Poor
<0.3	Wretched

COPAM UNDERGOES INTERNAL RESTRUCTURING

With these structural changes, Copam took on the role of second (and last) instance for decisions on environmental regularization, and ruling on cases where, for example, the entrepreneur does not agree with the deliberation of a given URC. A Normative and Appeals Chamber, in turn, took on the role of final administrative instance.

With the previous structure, it was up to Copam's specialist chambers to deliberate in the first instance. The new structure calls for bodies now known as thematic chambers to play a more proactive role in connection with changes and improvements to environmental legislation, similar to the work carried out by the technical chambers of the National Council for the Environment (Conama), at the Federal level.

The Plenary has already deliberated on two norms in this new setup. The first, in 2008, made changes to the parameters in the listing of norms and rules governing environmental licensing in the agro-forest-pastoral sector (agricultural, livestock and forest production). The second, in 2009, included the "location factor" which, added to the factors of size and potential pollution caused by enterprises, will be the basis for analysis of environmental licensing (*more on page 14*).

The challenge for the state will be to make this new model formal, with regulations setting out clear attributes and criteria.

Howler monkeys in a Conservation Unit in the Fervedouro region.

LEGISLATION: A CONSTANT CHALLENGE

Semad's mission is to formulate and coordinate State policy for protection and conservation of the environment. The challenge is to keep it up to date in a changing world

To prevent its action from getting bogged down by legal rites, Sisema invests in a qualified legal team through the State Secretariat for the Environment and Sustainable Development (Semad). The objective is for this team to interpret law so as to allow the body to keep up to date with changes in Minas Gerais' society and at the same time improve the quality of the State's environment. The legal team has contributed, for example, to reducing the average time taken by environmental regularization procedures.

Another example involved adapting the Environmental Crime Law to Minas Gerais' actuality. The Legislative Assembly of Minas Gerais passed Law 15.972 in 2006, and soon afterwards, Decree 44.309, which cover the subject of administrative penalties for infractions in the environmental area. This legislation brought about different reactions. On the one hand, it was harshly criticized by the agro-forest-pastoral sector (agriculture, livestock and forest production) who considered it too risky, and on the other it was considered soft by representatives of NGOs linked to environmental matters.

These complaints reached the State Council for Environmental Policy (Copam) and the Legislative Assembly of the State of Minas Gerais. With the support of legal teams from bodies and entities comprising Sisema, the text of the law was adjusted, leading to Decree 44.844 which came out in 2009. This represented a "middle path", and was successful in balancing the expectations of the business sector, civil society and public power.

Legal "Hierarchy"

At the Federal level, legislation involving national matters, such as the environment, enjoys greater hierarchy. In such cases, the Federal Constitution is the greater law. It is the Federal Government's attribute to draft more general laws, which are adjusted to regional specifics by State legislation, and, in yet greater detail, by city halls so as to mesh with local reality in the different municipalities.

However, the speed of revision does not always keep up with social change. This makes it necessary for one of the two sides to take the initiative and draft specific legislation, even if its basis in a national code is not yet consolidated. This is what happened in the case of Minas Gerais' State Policy for Management of Solid Waste, signed by the government in 2009 *(see more on page 79)*. The National Policy has been bogged down in Congress for 18 years. However, some of Conama's norms regulate action regarding specific matters, such as disposal of tires and batteries, but have been unable to overcome the absence of a regulatory framework.

Another advance in the juridical area took place in 2008, when the Green Grant was approved *(more information on page 56)*. On the basis of this law, the State will be able to financially reimburse rural producers who perform environmental service by maintaining a preservation area on their land. Without this law, the State was unable to disburse funds directly to the citizen. The alternative found before the norm was to make reimbursements through third parties – NGOs hired to work on specific projects - but this increased bureaucracy and expense.

Influencing by example

Well aware that the State has a duty to positively influence the market regarding sustainable action, Sisema, through Semad, endeavors to set good examples of sustainable behavior and works on setting up regulatory frameworks for sustainable purchases within government, a major consumer. To this end it helped draft the Manual of Sustainable Public Works, in partnership with State secretariats for Education, Health and Transport and Public Works. The document came out in 2008 and is available on the internet, serving as a guide for both public bodies and the private sector. Civil construction, particularly undertakings in connection with infrastructure, is one of the segments with major impact on the environment.

The manual was one of the conditions for a US$ 976 million World Bank loan to the government of Minas Gerais. These funds were allocated to Partnership Programme II for the Development of Minas Gerais, which assists in the implementation of the Second Generation "Management Crash". The State Government's end of the deal is compliance with targets established by the Structuring Projects and in the Agreement on Results.

Sustainable purchasing

In 2008 the Minas Gerais State Government supported the publication of the second edition of *Guide to Sustainable Purchasing – Use of the Government's Purchasing Power to Promote Sustainable Development*. The document was drafted by Iclei – Local Governments for Sustainability, in partnership with Getúlio Vargas Foundation's Center for Sustainability Studies (GVces).

The manual endeavors to provide governments with orientation about how to organize a sustainable public tender. This is a key step in a country like Brazil, where 10% of GDP stems from public purchases made in different governmental spheres.

There is still a long way to go before the State will improve its own behavior in connection with sustainable public purchasing. It is vital, for example, to implement a regulatory framework to allow the purchase of products with sustainable characteristics, establishing criteria not necessarily related to the rule of cheapest price.

In Minas Gerais, regulation of norms for public tenders in the responsibility of the Secretariat for Planning and Management (Seplag), which carries out training courses on sustainable purchasing, in partnership with Iclei. It is Semad's duty to provide Seplag with technical information so as to make the construction of such legal frameworks viable.

Some action is already being taken by the government of Minas Gerais. Last year the State brought out Decree 44.723/08, which sets down procedures for public administration to purchase wooden products or sub-products from native or planted trees, in order to track the wood's legal origin. The State signed a pact with environmental NGOs committing itself not to buy illegal wood, and it is now on Greenpeace's list of Friends of the Amazon.

BEHAVIOR AND ETHICS CODE

All newcomers to State civil service in any of the bodies linked to Sisema are given a copy of the Civil Servant's Code of Behavior and Ethics, and attest they are aware of its contents. The latest version of the Code, published in accordance with State Decree 43.885/04, is valid for all the State of Minas Gerais' public bodies. It sets out civil servants' key principles of behavior and contains information about their rights, duties and boundaries.

In the case of Sisema, it is the duty of the State Secretary for the Environment and Sustainable Development to order initiation of administrative enquiry proceedings if there is any indication that a civil servant may be involved in a case of corruption. This procedure is carried forward under the aegis of Semad's Ethics Commission, which appoints a group of two or three career civil servants – amongst those who have been trained by the Auditor-General of the State to exercise the function – to investigate.

The Commission has 30 days, which can be extended by another 30, to issue an opinion. If the accusation is proved, punishment of the civil servant concerned ranges from suspension to dismissal, depending on the gravity of the case.

Accusations reach Sisema through different channels: the Environmental Ombudsmanship, e-mails, or anonymous letters (*see Contacts on page 47*). In 2008, 45 administrative proceedings, probes and investigations of special accounts were initiated, to investigate possible irregularities such as loss of material, road accidents, vehicle theft and other suspected wrongdoing. Of the 45 cases, 15 led to guilty verdicts, leading in turn to administrative penalties, indemnity for losses or forwarding to other instances of justice. At the time of writing, October 2009, there are eight cases pending. The others were discontinued due to lack of evidence.

TRANSPARENCY OF ACCOUNTS

Semad is responsible for managing Sisema's turnover of resources as a whole. Budgetary funds and monies from investment funds, agreements and partnerships added up to nearly R$ 253 million in 2008

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Last year Sisema's new institutional arrangements led to wide reformulation of the work programs of all associated bodies. This measure ensured implementation of action designed to strengthen environmental management, as called for by the Pluriannual Plan of Governmental Action (PPAG) 2009-2011.

Along 2008, Sisema's different revenues added up to R$ 253,467,999.14 while total outlay for the same period were R$ 241,847,023.60 (*see graphs and table*). The system's main expenses involved preservation action, controls and improvements in the State's environmental quality, as well as payroll, meeting contracts and maintenance of premises and operational structure in Belo Horizonte and upstate.

The budgets of bodies linked to Sisema come mainly from the following sources: Ordinary Treasury Resources, Revenue Collected Directly, Purpose-Specific Revenue, Forestry Rates, Rates for Environmental Controls, and Revenue from Agreements.

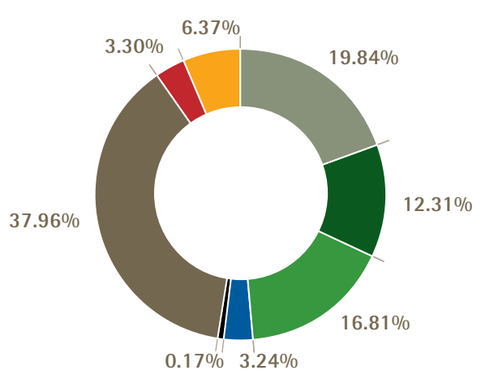
The highest proportion of resources collected – 37.96% of the general total – came from Source 31, which involves financial compensation for the use of water resources. In accordance with Law 13.199/99, 40% of funds collected from this source are earmarked for the Fund for Recovery and Sustainable Development of Water Resources (Fhidro). The volume of resources collected from Source 31 increased 92% over a four-year period, from approximately R$ 51 million in 2005 to nearly R$ 96 million in 2008.

Investment of Fhidro funds requires the approval of its Coordinating Group, a deliberative body, as well as the State Council for Water Resources *(more on page 70)*.

Source 60 – which consists of directly-collected resources which are not purpose-specific – has also shown an increase since 2006. These resources stem from services rendered such as, for example, chainsaw licenses, environmental licensing and grants.

REVENUE OF BODIES IN SISEMA IN 2008

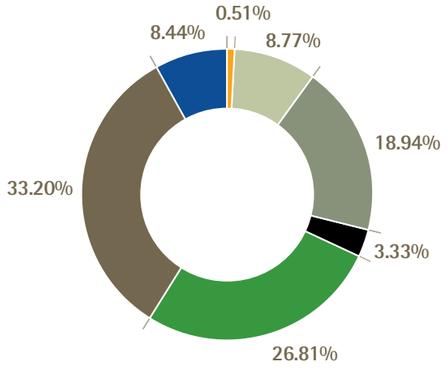
R$ 253,467,999.14



50,290,058.68 Source 60
31,200,387.17 Source 61
42,612,886.07 Source 26
8,360,051.75 Source 52
429,942.63 Source 47
96,213,106.82 Source 31
8,214,596.13 Source 24
16,146,969.89 Source 10

EXPENSES OF BODIES IN SISEMA IN 2008

TOTAL VALUE R$ 241,847,023.60



1,244,847.52 Taxes Payable
21,200,695.09 Contributions
45,798,383.62 Investment
8,054,566.83 Per Diem for Travel/Tickets
64,838,304.94 Personnel
80,304,561.28 Other Corporate Third-Party Services/ Consulting
20,405,664.32 Consumption Material/Tickets

EVOLUTION OF REVENUE OF BODIES IN SISEMA, BY SOURCE (IN R$)

Source of resources*	2005	2006	2007	2008	Grand total
60	34,054,648.02	36,484,350.87	42,043,270.69	50,290,058.68	162,872,328.26
61	9,489,403.51	31,603,983.31	15,835,156.52	31,200,387.17	88,128,930.51
26	27,798,191.94	33,619,525.01	39,571,985.21	42,612,886.07	143,602,588.23
52	1,753,434.22	7,326,108.67	7,480,786.86	8,360,051.75	24,920,381.50
47	0.00	442,447.02	0.00	429,942.63	872,389.65
31	51,380,076.27	49,955,523.63	116,271,080.79	96,213,106.82	313,819,787.51
24	17,334,311.66	44,410,049.48	5,695,108.61	8,214,596.13	75,654,065.88
10	5,943,265.69	8,462,417.16	11,605,971.62	16,146,969.89	42,158,624.36
TOTAL	147,753,331.31	212,304,405.15	238,503,360.30	253,467,999.14	852,029,095.90

** Each of these sources is explained in the text of this page and the following one.*

In 2006, so-called directly-collected resources contributed substantially to the revenue of bodies and entities linked to Sisema, accounting for 23% of total revenue as compared to 17% in 2006 and 2007, and 19.84% in 2008.

In turn, source 61 also enjoys directly collected resources, but they are specifically earmarked. These are taxes for forest replacement, fish replacement, environmental compensation and forest compensation. In these cases, resources collected may only be spent on specific action. The value of this source has doubled as compared to 2007 and 2008.

Another two sources for resources, 26 and 52, also depend on Sisema's having collected environmental taxes.

The former refers to collection of forest tax. In 2008 forest tax accounted for 16.81% of the grand total collected by bodies linked to the system. Collection of forest tax increased 27% from 2006 to 2008, when it almost reached the R$ 43 million mark.

Source 52, which stems from environmental control rates, began to be applied after 2005. In 2008 it contributed with a small increase in collection, equivalent to 3.30% of the total.

Resources stemming from entry agreements, represented by Source 24, showed a 47% drop over the four years considered. This source includes resources received from other bodies. Outstanding in 2008 were the Ministry of National Integration, Ministry of the Environment, National Water Agency, Minas Gerais Sanitation Company and International Tropical Timber Organization (ITTO). Last year Source 24 accounted for 3.24% of total resources collected, well below 21% registered in 2006.

With regard to Source 10, these are resources from the National Treasury which are not specifically earmarked and may thus be spent freely, and it also refers to resources stemming from 1% of the State's ordinary current revenue. There was an increase of about 171% in the value handed to Sisema by the State from 2005 to 2008.

For more detailed information about revenue and expenses of bodies and entities comprising Sisema, consult the site of the State Secretariat for Planning & Management: www.planejamento.mg.gov.br.

RESOURCES HANDED OVER BY SISEMA IN 2008*

AGREEMENT SIGNATORIES	SISEMA				
	Feam	IEF	Igam	Semad	TOTAL
Foundations	865,000.00	2,584,949.04	0.00	401,069.96	3,851,019.04
Public Enterprises	0.00	0.00	0.00	100,000.00	100,000.00
NGOs	550,000.00	4,673,797.00	1,283,000.24	1,307,154.46	4,513,760.70
Oscip	1,616,585.92	0.00	0.00	0.00	1,616,585.92
City Halls	30,000.00	1,434,282.39	0.00	7,936,442.00	9,400,724.39
TOTAL	3,061,585.92	8,693,028.43	1,283,000.24	9,779,666.42	21,200,695.09

** Refers to investment in research, infrastructure and others.*

Agreements and partnerships

Agreements and partnerships with other entities for specific projects designed to improve the environmental quality of Minas Gerais constitute a way forward for Sisema to multiply the effects of its action. Some are arrived at with public entities, such as the Ministry of Public Integration (MI) and the São Francisco Valley Development Company (Codevasf). Others involve international and multinational fostering entities, such as the World Bank (Bird), the German bank Kreditanstalt für Wiederaufbau (KfW) and the German Ministry of International Cooperation (BMZ). The latter two had an agreement with Sisema, through IEF, for financial cooperation for development of the Atlantic Forest Recovery Program (Promata). Resources from the project were spent, for instance, on improving and extending park infrastructure *(more on page 55)*.

The World Bank entered into an agreement with the Federal Government, through the Ministry of the Environment (MMA), the National Water Agency (ANA) and the Ministry of National Integration. The agreement involved a loan for over R$ 8 million, with which ProAgua was set up, a program to develop and ensure water resources in the semiarid region of Brazil. On the Minas Gerais side, the program is managed by the Minas Gerais Institute for Water Management (Igam).

78,2%

of the value of Sisema's

acquisitions and third-party contracts in 2008 went to suppliers in Minas Gerais

Suppliers

Semad also administers contracts with service providers and payment of suppliers. Expenses for maintenance of Sisema's structure, including payroll and associated taxes and benefits are another part of the entity's duties.

Semad is responsible for purchasing material and contracting for services associated with preservation and environmental controls, such as renting aircraft for the forest-fire monitoring program and settling the fees of laboratories responsible for water and soil quality analysis.

Similarly to all other State Direct Public Administration bodies, Sisema's purchases of goods and services follow rules set out by specific, Federal and State legislation. For example, public tender is waived in the case of engineering services costing less than the R$ 15 thousand limit and for other purchases or services up to R$ 8 thousand. Neither is a public tender required for emergency needs of public administration.

In these cases, where public tender is waived, Sisema will give preference to suppliers in Minas Gerais, because they tend to be less expensive. This also contributes to fostering local development. Another mechanism for differentiation is established by **State Decree 44.630/07**, which grants privileges to small and medium-sized companies, which ends up benefiting suppliers and service providers in the State. In 2008, 78.2% of the total value of acquisitions of goods and services made by the bodies and entities comprising Sisema was allocated to suppliers and providers resident in Minas Gerais or with headquarters in the State.

In the case of public tenders, Semad uses the "electronic bidding" system. Besides expediting the purchasing process, this resource ensures greater transparency, establishing objective criteria for competition.

The contracts for the highest value signed in 2008 involve acquisition of materials, such as vial trays (R$ 6.3 million) and barbed wire (R$ 1.03 million), and services such as administrative support (R$ 15.29 million) and identification of samples in the process of analysis in laboratories (R$ 3.33 million).

HOMEWORK

AmbientAção Program, developed by the State in 77 public premises throughout 2008 is a reference and an example for other Brazilian States

AmbientAção Program - Environmental Education in Public Premises in Minas Gerais - is a communication and socio-environmental educational program whose objective is to foster sensitivity in connection with behavior change and incorporation of ecologically correct attitudes in the daily activities of Minas Gerais' civil servants.

Coordinated by Sisema through the State Foundation for the Environment (Feam) in partnership with a contracted Civil Society Organization of Public Interest (Oscip), the program has lines of action for Conscious Consumption and Waste Management. Campaigns are organized to stimulate reflection and contribute to revert environmental un-sustainability and improve the quality of life by adopting simple actions in a collective drive.

By 2008 the initiative had been adopted by 32 public entities in Minas Gerais, involving a total of 77 buildings, involving nearly 15 thousand civil servants, of which 1.4 thousand were Sisema's. The Program is to continue expanding its network of entities in 2009 and 2010 with the Administrative City, which will bring together practically all the State's direct and indirect administration.

In order to gauge efficiency of environmental education as an instrument for management, AmbientAção Program establishes targets and has five essential indicators monitoring consumption of water, electric energy, disposable cups, A4 paper and the quality of selective refuse collection in all organizations.

Registration of data stemming from the AmbientAção Program Network is carried out by means of the Integrated Ambient Management System (Siga), a tool developed with the objective of allowing any internet user to keep track of the performance of participating entities and produce reports on results. Over 2005 and 2006 the project won three awards: Minas Gerais State Award for Excellence in Public Administration (2005), Minas Gerais' Environmental Award (2006) and the Ford Motor Company's Award for Environmental Conservation (2006). Further information about AmbientAção Program and its action, management and monitoring is available at www.ambientacao.mg.gov.br.

Sisema's Performance

2008 saw the conclusion of the integration of the structure of all bodies linked to Sisema in a single location, in downtown. The personnel of Semad, Igam, Feam, IEF, and the Military Environmental Police were transferred to this single location, whereas they had formerly occupied different premises all over Belo Horizonte.

The concentration of these servers in one location facilitated the implementation of various programs to promote awareness and foster sensitivity in connection with AmbientAção Program, such as lectures, training, workshops, itinerant exhibitions and theatrical interventions.

In 2008, systematic monitoring of generation of waste and consumption of water, electric energy, A4 paper and disposable cups was restricted to the Belo Horizonte premises, but is to be extended in 2009 to IEF's 13 regional offices and the nine Suprams, which are also involved in the program.

Additionally, as a part of its sustainability report based on Global Reporting Initiative (GRI) guidelines, for the first time Sisema made an estimate of Greenhouse Gases (GHG) stemming from its activities, taking 2008 as the base-year. Standards for calculations were those recommended by GHG Protocol Revised (WRI/WBCSD, 2004).

The following are the results of this research and the principal action for control and awareness-raising in 2008 and next year's targets.

A4 PAPER

3,009,500

sheets

were consumed by Sisema's HQ in 2008

SISEMA'S CONSUMPTION OF A4 PAPER, BY SERVANT*
2008

Monthly average per servant (sheets)	194
Total Sisema (sheets)	3,009,500

** Survey covers only Sisema's Belo Horizonte premises.*

HOW DOES SISEMA CONTROL

CONSUMPTION OF A4 PAPER

Action	Expected Results
Implementation of procedure to discipline use of A4 paper at Sisema;	Reduction of consumption and waste of A4 paper
Training secretaries and other publics in use of outsourced printers;	
Implementation of procedures to use both sides of a sheet of paper for copies;	
Configuration of all printers to print on both sides of a sheet of paper;	
Implementation of a system for controlling printing and setting up quotas;	
Educational action stressing conscious use of A4 paper such as distributing blocks of reused paper and placing reminder notices in strategic locations.	

TARGET

5% reduction
in consumption of A4 paper at Sisema's Belo Horizonte premises, in 2008

DISPOSABLE CUPS

262,100
units

were consumed at Sisema's HQ in 2008

CONSUMPTION OF DISPOSABLE PLASTIC CUPS BY SISEMA, BY SERVANT*
2008

Monthly average per servant (units)	17
Total Sisema (units)	262,100

** The survey only covers Sisema's Belo Horizonte premises*

HOW DOES SISEMA CONTROL

CONSUMPTION OF DISPOSABLE PLASTIC CUPS

Action	Expected results
Replace throw-away cups with durable individual mugs;	Reduce consumption and waste of disposable cups; Encourage use of individual mugs; Minimize throw-away culture and generation of waste.
Improve facilities for washing mugs at Sisema;	
Bring out and implement a procedure for disciplining use of disposable cups at Sisema;	
Quantitative assessment of durable mugs and utensils for use at internal events;	
Remove dispensers for disposable cups by water fountains on the premises;	
Educational campaigns to stimulate rational use of disposable cups.	

TARGET

60% reduction
of consumption of disposable plastic cups at Sisema's Belo Horizonte premises in 2008

ELECTRIC ENERGY

1,443,177
kWh of electric energy

were consumed by Sisema's HQ in 2008

ELECTRIC ENERGY CONSUMPTION AT SISEMA, BY SERVANT*
2008

Monthly average per servant (in kWh)	96
Total Sisema (in kWh)	1,443,177

** Consumption of electric energy was ascertained on the basis of bills issued by Cemig and covers only Sisema's Belo Horizonte premises.*

HOW DOES SISEMA CONTROL

CONSUMPTION OF ELECTRIC ENERGY

Action	Expected results
Educational stickers placed by boxes with light switches on corridors of HQ, on all floors;	Raise awareness of energy source; Monetary reduction of electric energy expenses.
Updating Internal Commission for Conservation of Energy (CICE);	
Drafting and implementing an official order covering times for switching lights on and off and connecting and disconnecting lifts in HQ;	
Review times when electric food heaters in canteen are connected;	
Survey quantity of domestic equipment in sectors;	
Identification of light switches by sector so that the servants themselves can turn off the lights;	
Implement system of specific lifts for odd and even floors;	
Survey consumption of electric energy by computer monitors on the premises.	

TARGET

10% reduction
of *per capita* consumption of electric energy at Sisema's Belo Horizonte HQ in 2008

AmbientAção Program for awareness-raising amongst workers

WATER

8,055 m³

were consumed by Sisema's HQ in 2008

WATER CONSUMPTION
2008

Monthly Average per servant (in liters)	528
Sisema Total (in m³)	8,055

**Water consumption was measured by analysis of Copasa bills and includes only Sisema's Belo Horizonte premises.*

HOW DOES SISEMA CONTROL

WATER CONSUMPTION

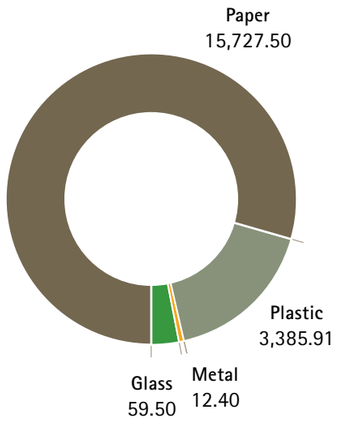
Action	Expected results
Periodic inspection of premises' hydraulic system and correction of problems;	Conscious use of water; Monetary reduction of water expenses;
Remove approximately 80% of showers in premises' bathrooms, which are responsible for constant leaks;	
Put up educational signs encouraging conscious use of water in toilets and kitchenettes.	

TARGET

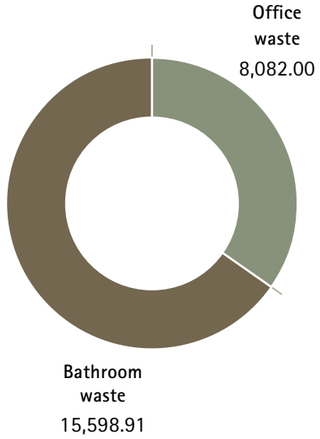
10% reduction
of *per capita* consumption of water at Sisema's Belo Horizonte premises

WASTE PRODUCED BY SISEMA IN 2008 (IN KG)*

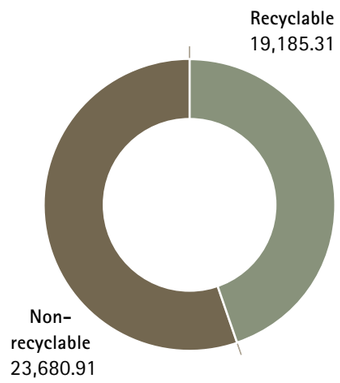
RECYCLABLE
TOTAL: 19,185.31



NON RECYCLABLE
TOTAL: 23,680.91



RECYCLABLE VS. NON-RECYCLABLE
TOTAL: 42,866.22



**The survey only covers Sisema's Belo Horizonte premises. Residue is almost all classified as not dangerous. That considered dangerous consists of: hospital waste from the Infirmary Nucleus, which is sent to a special area for sanitary disposal and burial but was not taken into account in the survey as it is of an insignificant volume, and batteries and fluorescent lamps, which are sent to specialist companies for recycling. All waste classified as not dangerous is recycled where possible, or sent to sanitary landfills.*

FUEL

FUEL CONSUMPTION OF SISEMA'S FLEET OF VEHICLES*
2008

Type	Liters
Alcohol fuel	58,522.85
Gasoline	599,454.87
Diesel fuel	326,002.78

**Refers to 963 vehicles of which 278 are "flex" (can run on gas or alcohol), 36 run on alcohol, 433 run on gas and 216 run on diesel fuel.*

Recyclable material collection units made available to workers.

RESIDUES

42,866.22 kg

were produced by Sisema's HQ in 2008, with over 19 tons sent for recycling

HOW DOES SISEMA CONTROL

WASTE

Action	Expected results
Cleaning team visited Belo Horizonte's sanitary landfill for awareness raising;	
Course on composting domestic organic waste for Sisema's HQ facilitators;	
Use of biodegradable cleaning materials;	Reduce, reuse and recycle;
Diagnosis of performance of selective collection at Sisema's HQ;	Conscious consumption;
Training conservation and cleaning team at Sisema's HQ;	Selective collection.
Action for awareness-raising to improve selective collection;	
Course on selective collection in condominiums;	
Itinerant exhibitions.	

Sanitary landfill in the Barreiro region, in Greater Belo Horizonte.

GREENHOUSE GAS EMISSIONS

1,910.9 tons of CO_2

is the estimated total of emissions resulting from Sisema's activities in 2008, excluding biomass

ESTIMATES OF SISEMA'S EMISSIONS IN 2008, BY SOURCE (IN TCO_2)

Source	Consumption	Direct emissions from fossil fuels (Scope 1)[1]	Indirect emissions from electric energy purchased (Scope 2)[2]	Emissions from renewable fuels (biomass)[3]
Electric energy	1,443,177 kWh		69.8	
Alcohol fuel	58,522 liters			86.1
Gasoline	599,454 liters	1,003.9		230.9
Diesel fuel	326,002 liters	831.9		24.0
Liquefied petroleum gas	1,809 kg	5.3		
TOTAL		1,841.1	69.8	341.0

[1]*Estimates were made in accordance with methodology proposed by IPCC (1996, 2006) and WRI/WBCSD (2004), on the basis of conversion of mass units and volume of fuels in energy units, and subsequent multiplication by emission factors for each fuel. Due to the considerable uncertainty associated with standard emission factors for methane gases (CH_4) and nitrous oxide (N_2O) suggested by IPCC, and because they are not considered highly representative of total emissions from mobile sources (WRI/WBCSD, 2005; IPCC, 2006),only carbon dioxide (CO_2) emissions stemming from the use of fuel were taken into account, assuming that the entire carbon content of fuels is oxidized during the process, i.e. converted into CO_2 (a conservative approach), according to specific methodology proposed for mobile sources (WRI/WBCSD, 2005). In the case of gasoline and diesel fuel we used the values of standard CO_2 emission factors suggested by IPCC (2006). In the case of alcohol fuel, we used the emission factor suggested by the "Carbon Balance in Minas Gerais' Energy Activity" Project, as it was considered the closest to State actuality.* [2]*Estimates were made using the average CO_2 emission factor for generating electric energy of the National Interconnected System in Brazil for 2008 (MCT, 2009).* [3]*CO_2 emissions stemming from the use of renewable or biomass fuels, which are considered neutral, represented by ethyl alcohol, anhydrous alcohol (present in the composition of gasoline in a proportion of 25%) and pure biodiesel fuel (present in the composition of diesel fuel in a proportion of 3%) were taken into account in this scope, because carbon emitted was incorporated in the process of vegetal growth originating these fuels.*

HOW DOES SISEMA CONTROL

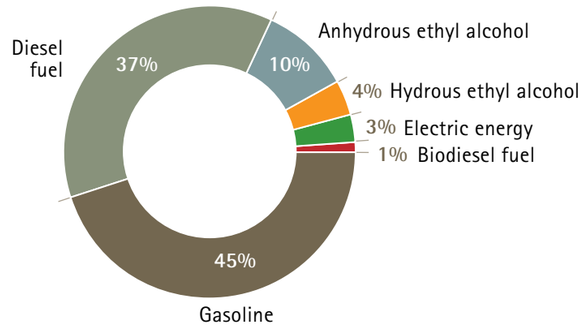
Emissions of greenhouse gases

Emissions of CO_2 of biomass origin account for approximately 15% of total renewable and non-renewable emissions *(see chart)*. Predominant consumption of fuels with major fossil composition has contributed significantly to the high level of CO_2 emissions of non-renewable origin.

Increases in the use of alcohol fuel – which is widely available in Minas Gerais' gas stations – in the total consumption of Sisema's own fleet of motor vehicles may be an outline for reducing emissions of fossil origin stemming from the entity's action.

An effort is made to increase consumption of renewable fuels at the expense of fossil fuels, with guidelines for drivers to choose alcohol fuel rather than gasoline in the case of flex-fuel vehicles. Of the 235 official vehicles available at Sisema's Belo Horizonte premises, 28.37% (68 cars) are of the flex-fuel type; 0.43% (1) runs on alcohol fuel alone; 35.9% (82) run on gasoline alone, and 35.7% (84) have diesel engines.

BREAKDOWN OF SISEMA'S EMISSIONS IN 2008, BY SOURCE*
(INCLUDING BIOMASS)



** As this is equivalent to only 0.2% of total non-renewable emissions, liquefied petroleum gas consumption has not been included in this chart*

INTEGRATION FOR EFFICIENCY

At the bodies and entities linked to Sisema, the servants' technical capacity and personal engagement to improve the State's environmental quality make all the difference

Semad is responsible for human resources (RH) management at the four entities linked to Sisema: Feam, IEF, Igam and the Secretariat itself.

In view of the needs of the new organic structure, two sub-secretariats were set up: one for Integrated Environmental Management and the other for Innovation and Logistics. In addition to its other duties, the latter is responsible for management of human resources, which is carried forward by the HR Superintendent's Office.

The servants of the bodies comprising the system *(see charts)* are still in the process of adjusting to changes stemming from integration itself. There are myriad challenges to be faced in this change of culture.

One is the matter of salary, which has led to considerable difficulty in retaining talent. In 2008, 125 servants left Sisema, although 25% of these cases were due to death or retirement. Despite this difficulty, personnel turnover throughout the year was relatively low *(see chart)*.

Field technicians, especially those involved in analysis of the process of environmental licensing, are on Sisema's front line, and are therefore highly visible. The outstanding ones wind up being offered jobs in private initiative, with new proposals for professional challenge and better salaries.

Semad recognizes that salaries in public service are not competitive as compared to the private sector, but the Secretariat does not have the authority to raise them. It is a matter of State government policy, set by the State secretariats for Planning and Management (Seplag) and Finance (SEF), respecting the limitations of the Fiscal Responsibility Law which, among other items, limits expenses with public payroll to a proportion of tax collection.

Throughout 2006, the State government carried out a public competition to fill job vacancies in Sisema. The salary of an environmental analyst for a 40-hour week was R$ 1,000.00 in 2005. This value was adjusted by State personnel legislation to R$ 1,500.00 for an environmental analyst with a university degree. In addition to this raise, Semad managed to continue the meal voucher system, unlike other secretariats which cancelled the benefit.

About 80% of the 550 vacancies were filled by means of the 2006 public competition. This competition, which was valid until 2008, was extended another two years, and will be in force until 2010. After its first three years, 30% of the civil servants appointed no longer work for Sisema.

On the same lines, competitions for filling vacancies in bodies comprising Sisema keep 20% for professionals with disabilities. However, as a rule, there are not enough such applicants to meet the quota. This explains the low number of civil servants with disabilities. In December 2008 they numbered 25, and filled only 2% of administrative positions.

3,080
professionals,
including effective servants, temps, interns, apprentices and outsourced staff were working for Sisema in December 2008

SERVANTS OF BODIES AND ENTITIES COMPRISING SISEMA
2008*

	Full-time	Part-time	Under 30	30 to 50	Over 50
Board[1]	42		1	8	33
Management [2]	72		12	41	10
Environmental analysts and managers	829		442	311	76
Assistants and technicians[3]	298		148	92	58
Apprentices[4]	45		45		
Interns[5]		408	408		
Outsourced - Permanent [6]	982		741	199	42
Temps[7]	202				

** In December. Sisema does not use gender as an indicator of diversity, and therefore the numbers of males and females are not included in this survey.*
[1] Secretary and Assistant Secretary, President and Vice-President, General Director and Vice-Director, Sub-secretary, Superintendents (HQ), Attorneys, Auditors and Directors.
[2] Middle management, and commissioned positions in Sisema.
[3] Other effective servants of Sisema's.
[4] Minors in a situation of high social vulnerability.
[5] Students at secondary and higher levels.
[6] Maintenance, cleaning, conservation and administrative support teams.
[7] Work contracts for upper level professionals to meet seasonal and emergency requirements.

TURNOVER AT SISEMA
2008

	Women	Men	Under 30	30 to 50	Over 50
No longer working for Sisema	34	66	36	58	6
Ratio	2%	5%	2%	4%	0.06%

Gratuity reduces imbalance

Another challenge stemming from integration was imbalance between the remuneration of technicians working for the four bodies linked to Sisema. Servants of the same seniority and with equivalent positions were paid different amounts, depending on what particular body they were employed by.

2007 saw extensive negotiations with the State Secretariat for Planning and Management (Seplag) and, with decisive assistance from employees' associations, Semad managed to implement a gratuity, in accordance with seniority and educational level, to reduce distortion between the salaries of servants of bodies and entities comprising Sisema.

The initiative was made official in 2008 by State Law 17.351, which set up gratuities for School Level, Performance and Individual and Institutional Productivity (Gedama). These gratuities are for career civil servants who are active and a part of the Environmental and Sustainable Development Activities Group, i.e. appointed to the positions of environmental analyst, environmental manager, environmental technician or environmental assistant in the four bodies linked to Sisema.

This benefit is a reply to a long standing claim of the servants'. However, it is criticized because it is paid monthly to active servants alone. Those retiring lose their right to the gratuity.

It is variable, defined on the basis of a points system taking into account school level, time of service and individual and institutional performance assessments, in accordance with State government policy, which is based on results. In 2008, R$ 12,067,257.14 were distributed, benefiting all effective career servants.

Another of the servants' claims involves compliance

SISEMA TRAINING LEVELS, BY HIERARCHICAL LEVEL
2008

	Total hours	Average hours per servant
Board	1,724	41.05
Management	4,832	67.11
Administration	144,114	108.43

TRAINING OF TECHNICAL CORPS AT SISEMA
2008

	Total training time (in hours)	Total number of participants trained	Average hours per servant
Environmental Analyst	43,890	403	109
Environmental Manager	4,366	25	175
Environmental Technician	24,229	71	341
Environmental Assistant	11,265	52	217
TOTAL	83,750	551	210.5

** In the case of servants with administrative contracts, there is no systematic methodology for making records of this kind of information, nor are there training policies or programs for this public at Sisema.*

with State legislation linking public servants' salaries to seniority. The law establishes that every two years servants change administrative level, depending on position and seniority, on a scale ranging from A to J. Such changes mean increases in salary, in accordance with category. However, application of the law depends on general government policy and it cannot be complied with by only one or another public body.

Training

Sisema is endeavoring, through Semad, to standardize quality of attention to the public on all fronts, whether in the State capital of Belo Horizonte or in upstate locations. To this end, the entity has made great efforts to provide ongoing training for servants.

Notwithstanding this, the challenge posed by loss of technical knowledge stemming from personnel turnover deserves special attention. Sisema spends resources on training, from the probationary period on, and if a servant leaves the entity, all the knowledge accumulated also leaves, making it necessary to go through the whole process again to train a less experienced replacement. In 2008 Sisema attempted to deal with this challenge in two ways. The first was to obtain resources to make use of so-called Administrative Contracts, which allow recruitment of professionals in the market on a temporary basis. At the end of last year, Sisema had 222 servants with this kind of contract. Their salaries are equivalent to those of servants in the same category who earned their positions in competitions, but they are not entitled to the same benefits (maternity and paternity leave, and meal vouchers) and gratuities.

Effective servants are encouraged to develop their competence by means of the Annual Plan for Development of Civil Servants (Pades). Semad uses its own resources to support servants participating in courses and training, whether in-house or external, basic (reading and writing) to higher (post-graduate degrees, etc.), as long as the formation aspired to is related to the professional's area of action in public service.

Sisema also runs its own courses. In 2008 every servant had an average 104.41 hours' training, taking into account administrative, managerial and board levels.

Stimulating post-graduate work

Both the State Foundation for the Environment (Feam) and the Minas Gerais Institute for Water Management (Igam) run post-graduate courses focusing on the environment, in partnership with universities. In partnership with the University of Ouro Preto (UFOP), Igam offers the body's servants a Master's degree. Throughout the course they work on theses on matters of interest to the Foundation. Twenty-five technicians are expected to have obtained their Master's degrees by the end of 2009.

Igam arrived at an agreement with Minas Gerais State's Foundation for Patronage of Workers (Ultramig) for a post-graduate course on the environment, with emphasis on Water Resources. The course started in May 2008 with 20 participants. Total hours run to 380.

Management is evaluated

The superintendents of Institutional Planning and Modernization, Logistics & Maintenance Resources, Human Resources and Accounting & Finance, who are all connected with Semad's Sub-Secretariat for Innovation and Logistics, went through evaluation of their technical and behavioral competence before they were appointed. They went through the process of obtaining their occupational certificates, a mechanism for recruiting and placing people in public service management positions, put to use through Seplag. The Foundation for Research and Development (Fundep), which is a partner of the Federal University of Minas Gerais, is responsible for directing the process, which was key for Semad to expedite the appointment of superintendents, whose positions were created at the time of the organic reorganization of the Secretariat to meet requests for integration of different environmental bodies in Sisema's milieu.

Relationship with civil servants

The process of setting up Sisema started in January 2007, when Feam, Igam, IEF and Semad moved into the same physical location, the HQ Building. Integration became legally effective in 2008, by means of State decrees changing the organic structure of the bodies and entities comprising Sisema.

The Human Resources, Accounting & Finance, Budgeting & Planning and Logistic Resources areas of all the entities were placed under the Sub-Secretariat for Innovation & Logistics (SIL). As they are the master spring of Sisema because of their duty to put all the machinery of the technical corps in motion, this change in the entities' structures revolutionized the system's behavior, affecting all its servants.

By Law 15.461/05, the former individual careers and management of the four newly linked bodies were unified into a single career, in the Activity Group for the Environment and Sustainable Development.

Sisema's model is daring, and signaled advances in the quality of attention to users. Nevertheless, personnel management is still a daily challenge. Grouping the administrative areas together still causes conflict and questioning.

As is the case in every change, full adjustment can only be expected in the medium and long term. The Sub-Secretariat for Innovation & Logistics encourages the construction of joint solutions to diminish differences inherited from the different bodies now linked together. This was the purpose of Gedama *(more on page 30)*, as well as standardization of benefits such as meal vouchers, Financial Assistance for Students and the Assistance Grants for trainees. Civil Servants' Associations[1] were called in, to take their place in work groups and unite efforts to find solutions regarding benefits. As for salary negotiations, these take place in the institutional milieu, in dialogue between the State Secretariat for the Environment and Sustainable Development and the entities representing the workers.

In daily life at work, integration has taken place in accordance with the needs and participation of areas involved, taking into account improvements in joint action and targets met. All servants are invited to join teams and work groups to construct more efficient routines and practices with participative management.

Institutional communication

The main vehicles for communication between the bodies comprising Sisema and their servants is a newsletter emailed to corporative addresses and Intranet, which connects all computers in Sisema. They are both updated daily. The challenge is to get all this information widely divulged, and reach servants who do not work directly on computers.

Another form of institutional communication is a program called "Chat about Sisema". It consists of debates, which are open to internal and external public, featuring informal discussion of subjects directly or indirectly related to environmental policy in the State of Minas Gerais. In 2008, approximately 15 debates took place.

There is a project to create a wall-journal. However, this will not be put in practice until after the move to Administrative City in 2010, so as to avoid wasting resources on purchasing materials that cannot be used in the new location.

External communication, in turn, is carried forward by giving out information on Sisema's action in the form of press releases, which are emailed to representatives of the media and posted on www.meioambiente.mg.gov.br In 2008, 881 press releases were sent, and the site had 526,588 hits.

Glossary

(1) ASSEMA – Trade Union - State Servants of the Environment www.assemamg.com.br

ASIVERDE – Integrated Association of Environmental and Associated State Servants of Minas Gerais www.asief.com.br

A blue-and-yellow macaw, an abundant species in the Cerrado region of Minas Gerais.

Thanks to collective efforts, there are already concrete results to be seen in the recovery of the das Velhas River. This is a major challenge taken on by the environmental bodies comprising Sisema.

White Agenda

1. Collection and treatment of sewage

- A key factor for meeting the 2010 Target, the volume of treated domestic sewage in Minas Gerais increased from 2.5% in 2003 to 23% in 2008.

2. Increase in controls

- Policy adopted by the Management Committee for Integrated Environmental Controls (CGFAI) makes action more effective and contributes to improve relations between inspectors, companies and society.

R$ 1.4 billion

will have been invested in decontaminating the basin of das Velhas River by 2010.

85.9 million

cubic meters of sewage was treated in the basin of das Velhas River in the Metropolitan Region of Belo Horizonte in 2008.

SWIMMING, FISHING & BOATING IN DAS VELHAS RIVER

A fish hooked in the das Velhas River, in the municipality of Santo Hipólito.

All the bodies and entities comprising Sisema are determined to meet the target of revitalizing the metropolitan stretch of the river by 2010.

All the bodies and entities comprising Sisema are determined to meet the target of revitalizing the metropolitan stretch of the river by 2010.

The government of Minas Gerais is determined to give back a river that can be used for swimming, fishing and boating to the Metropolitan Region of Belo Horizonte. In order to do so, it set up the Structuring Project for Revitalizing the das Velhas River Basin – Target 2010, one of 57 Structuring Projects established in the Second "Management Crash" in 2007.

Efforts concentrate on transforming the metropolitan stretch of das Velhas River from Class III, forbidden for many uses, to Class II, by improving water quality. To this end the State Government is to invest R$ 1.4 billion by 2010. R$ 600 million have already been invested, from 2007 until mid-2009. The target of this project is to raise the Water Quality Index (IQA) from 59.5% recorded in 2005 to 67% in 2011, and to 75% in 2023. For this, it is necessary to eliminate discharges of untreated sewage into the river. Included in government action is the implementation of sanitary works in the main sub-basins in the metropolitan region, such as expanding sewage collection and building Sewage Treatment Stations (ETEs).

Action to revitalize das Velhas River is coordinated by Sisema through linked bodied, together with the Velhas Hydrographic Basin Committee (CBH-Velhas). City halls of municipalities located in the hydrographic basin, Minas Gerais Sanitation Company (Copasa), municipal sanitation services, State secretariats, NGOs, Manuelzão Project, communities and companies are also involved. Citizens are involving themselves in the project through projects for environmental education and awareness-raising of the importance of preserving this tributary to the São Francisco River.

The conception of Target 2010 was the Manuelzão Project, which is linked to the School of Medicine of the Federal University of Minas Gerais (UFMG). As of 2003, people involved in the project started organizing annual expeditions called "Manuelzão goes down the das Velhas River". The object of the initiative was to raise riverside dwellers' awareness of the need to preserve the quality of the river's waters. During these expeditions, quality of water was monitored by technicians and students.

2,100%

is the figure for growth

of volume of sewage treated by RMBH, comparing 2002 (3.9 million m³) and 2008 (85.9 million m³)

Action and result

In 2004 Igam coordinated the draft of the Director Plan for Water Resources in das Velhas River Basin, focusing on Target 2010. Once it was approved, that same year, by CBH-Velhas, the Director Plan proposed decontaminating the river and treating sewage dumped into it. This document became the basis for execution of the Target 2010 Project.

When the initiative was classified as a Structuring Project, the program gained importance and therefore a substantial increase in volume of resources, which are spent mainly on improving the system of collection and treatment of domestic sewage, which is Copasa's responsibility. The matter of sewage dumped *in natura* in water bodies is a major challenge for Sisema in meeting Target 2010, due to the need to negotiate offsetting action with municipalities and having to wait for completion of Copasa's work on infrastructure.

Initial results of collective efforts and funds invested are already apparent. The sewage collection and treatment rate, which stood at 2.5% in 2003, increased to 23% in 2008. The goal is to reach a rate of 84% in 2010. In absolute figures, the State was treating 3 million cubic meters of sewage a year in 2002, and the figure for 2008 is 85 million m³ a year. It is estimated that treatment will reach the 127 million m³ mark in 2010.

In 2009, a new expedition organized by Project Manuelzão found that fish have reappeared in some stretches of the river, which is an excellent indication of improved water quality and increased presence of oxygen.

Complementary structural and management action involving the das Velhas River Hydrographic Basin was put in place by the Director Plan for Water Resources, with the approval of CBH-Velhas. Action taken includes collecting for the use of water; setting up an entity on the same footing as the Basin Agency (AGB-Live Fish), the structuring of which was directly supported by Igam; a register of users; building Sewage Treatment Stations (ETEs) on the banks of the Onça, do Arrudas and da Mata rivers (identified as critical points of degradation); recuperating vegetation in the basin's and sub-basins' surroundings; and environmental education, communication and mobilization campaigns aimed at politicians, entrepreneurs and the population at large, to avoid further dumping of any kind of waste or effluents in rivers.

QUALITY INDEX FOR DAS VELHAS RIVER[1]

2007 (reference)	Target 2008	Results 2008	Target 2009	Target 2010
37.96[2]	41.10[2]	38.17[2]	45[2]	50.10[2]

BIOCHEMICAL OXYGEN DEMAND OF DAS VELHAS RIVER[3]

2007/2008 (reference)	Target 2008	Results 2008	Target 2009	Target 2010
7.0 mg/l	7.0 mg/l	6.3 mg/l	6.0 mg/l	5.0 mg/l

(1) IQA Rio das Velhas River – The higher the index, the better. This index stems from four quarterly sampling campaigns at 11 stations, taking eight parameters into account: dissolved oxygen, fecal coliforms, pH, biochemical oxygen demand, nitrate, total phosphate, water temperature, turbidity and total solids. (2) Non-dimensional. (3) BOD das Velhas River – The lower the index, the better. This index refers to the quantity of oxygen necessary to oxidize biodegradable organic matter. A high content of organic matter can lead to extinction of oxygen in the river. Measured at a sampling station downstream, on the RMBH boundary.

THE CHALLENGE OF CONTROLS

An instrument for environmental management, controls play a major role in environmental education and correcting unsuitable behavior

A maned wolf, an inhabitant of the Cerrado region, which is subject to environmental controls.

Sisema considers controls an important instrument for environmental management. In addition to their educational nature and the power of coercion in cases of unsuitable behavior in connection with environmental matters, controls provide feedback to the environmental regularization sector, with information that may change the course of use of natural resources on account of identical typologies in different ecosystems.

Challenges encountered are related to the territorial dimensions and occupation of Minas Gerais State, which is larger than France. There are 550 thousand farms in the State with over 700 thousand producers and a wide range of enterprises, and 100 thousand industrial establishments of different kinds spread over 853 municipalities, and approximately 4 thousand rural communities.

Environmental management models involving public power, the entrepreneurial sector and civil society, whether singly and directly or through social organizations, empower society and increase citizens' awareness. This is reflected in the increase of watchfulness over the environment and, consequently, an increase in the number of reports, complaints and lawsuits reaching the bodies linked to Sisema.

In 2008, there were 34 thousand reports, complaints and lawsuits related to environmental controls registered – and they are being attended to. This requires structure capable of receiving, processing, attending to and replying to all these lawsuits and complaints reaching environmental bodies. The Executive Secretariat of CGFAI (SE-CGFAI) has a direct channel of permanent communication for citizens, a 0800 telephone number for the Attention Center for Denouncers (CAD). It is a free service for citizens wishing to remain anonymous if they so desire *(see highlight).*

1.3
thousand

is the number of Military Environmental Police in Minas Gerais State

34
thousand complaints,

approximately, are followed up yearly

In most cases, this channel is the choice of environmental NGOs for complaints, and such is also the case for servants of Sisema itself and of the Brazilian Institute for Renewable Natural Resources (Ibama).

Nearly 500 complaints a month are received by SE-CGFAI, which are passed on by CAD to the different bodies in Sisema according to their nature. In 2008 they were mostly related to deforestation and activities in permanent preservation areas, as well as irregularities in mining enterprises *(see graphs on page 48).*

Agreement reinforces police support

Historically, the Military Environmental Police have worked with Minas Gerais' environmental bodies through agreements. Examples are the agreements arrived at between MP and IEF since 2003 for ostensive police patrolling of forests and water springs. This action was strengthened in 2007 by means of Law 15.972/06, which delegated control of environmental infractions under the responsibility of Feam, IEF and Igam to the Military Environmental Police.

Renewed annually, the cooperation agreement between the MP and Sisema makes it possible, through CGFAI, to plan and monitor environmental controls in Minas Gerais State, as well as investigate complaints submitted to Sisema. The Military Environmental Police support CGFAI directly, meeting the body's requirements and taking a seat on the committee, so as to contribute to establishing annual control strategies.

Training

Military Police are routinely trained in different ways; on a daily basis at the beginning of every shift; weekly, with four hours of classes; and by means of specific courses in accordance with a calendar set up in advance, as well as occasional opportunities as they may come up.

Training is a part of an MP's daily life, to refresh job-specific knowledge and skills originally learnt at the time of their basic training, as well as learning new techniques and keeping fit.

In line with the above, different environmental courses and training sessions were put in place, in all cases focusing on matters of "Community Police" and "Human Rights", with emphasis on the transversality of contents. As a highlight, police stationed at Environmental Police Units participated in the following courses: "Fighting Environmental Crime"; "Environmental Education"; "Fighting Illegal Pesticides"; "Checking Cleared Land for Slash-and-Burn Methods", "Piloting State Public Service Boats": "Crewing State Public Service Boats" and "Integrated Training on Water Resources Controls", amongst others.

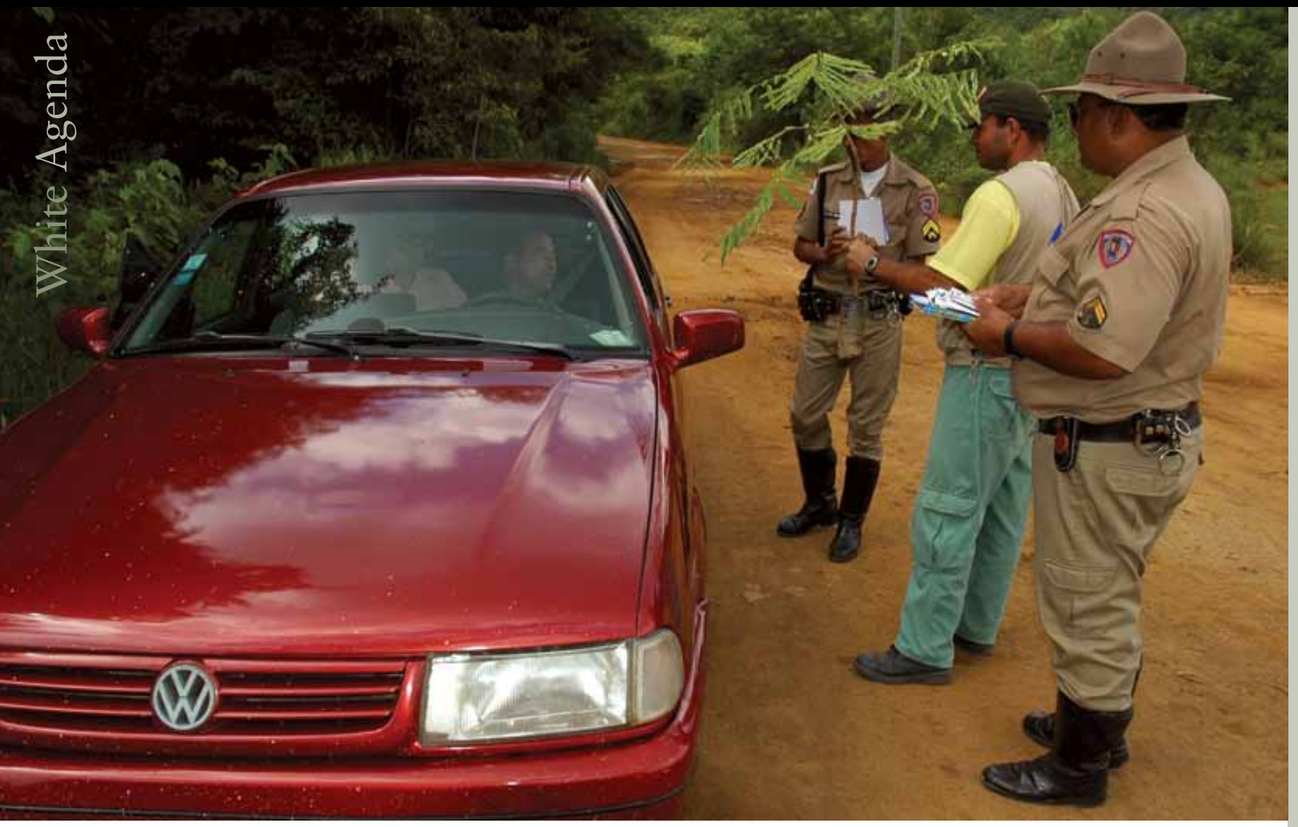
Channels for Complaints and Reports

In addition to matters generated by CGFAI, Military Environmental Police attend to complains and reports on numbers 181 and 190, and by e-mail. Other channels for alerts are Fire Prevention (0800-283-23-23), which prioritizes wildfire in Permanent Preservation Units, and Environmental Emergency (31 3219-5627), for cases of oil spills or other dangerous products. On average, Military Environmental Police investigate 32 thousand incidents per year.

DIAL -
- COMPLAINT:
0800 283 62 00
Fax: (31) 3219.5517

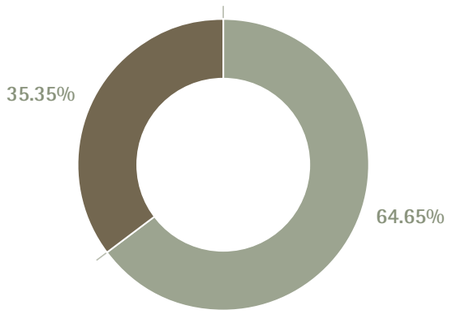
E-mails: **denuncia@meioambiente.mg.gov.br**

Postal Address: **Rua Espírito Santo, 495 Centro, 30.160-030, Belo Horizonte, Minas Gerais, Brazil.**



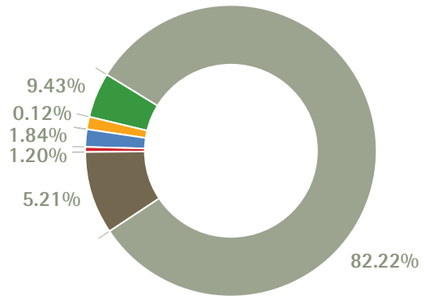
Educative blitz with distribution of seedlings; the activity is a partnership between IEF and the Military Environmental Police.

REPORT BREAKDOWN
PER SOURCE (CAD/2008)



2119 Public Attorney's Office, Civil and Federal Police
3875 Reports from society at large (including Environmental Ombudsmanship)

TREATMENT FOR REGISTERED
REPORTS (CAD/2008)



4928 Passed on to technical area
565 Resolved complaint (concluded)
312 At CAD for deliberation and reply
110 Passed on to the Environmental Police and Supram
7 Cancelled complaint
72 Incident Report for information

INTEGRATION IN PRACTICE

Integrated management practice stems from GCFAI's guidelines and strategic decisions; this body coordinates the action of Igam, Feam and IEF through the executive secretariat. Day by day, servants of the three entities involved in major operations realize that integrated work is more effective, due to exchange of information and formation of interdisciplinary teams.

The entrepreneurial sector is also changing its vision of controls. Little by little, entities undergoing controls are reaching the conclusion that such action can be positive. This is what happened, for example, after blitzes carried out by Sisema teams, through CGFAI, in quartzite extraction industries in Furnas and São Tomé das Letras, and slate quarries in Paraopeba.

Mining and quarrying these minerals cause substantial environmental and social impact, even damaging the health of workers and nearby residents. A large proportion of what is extracted is residue, which is inhaled in powdered form. However, the sector is significant in economic terms, employing many people in their locations.

There was a strong, generalized movement against controls in São Tomé das Letras. Operations led to several procedures and closures of illegal enterprises.

Aware that social and economic questions should not be neglected, thus negatively affecting environmental matters, CGFAI adopted a more proactive stance in the search for solutions. The committee linked up with companies in the region, the Public Attorney's Office and the judicial authorities to organize courses for local entrepreneurs about techniques and technology for the extraction of minerals with lesser impact and production of residues, in partnership with Feam and Academia.

Two seminars were held, in Papagaios and in São Tomé das Letras, bringing together the Secretariat of the State of Goiás and representatives of Feam, Igam and IEF. Alternatives were discussed for reducing the environmental impact of this business sector, and projects were submitted for management of quarry and mining residues.

After this process, receptivity to controls on the part of dwellers, workers and entrepreneurs became more positive.

State servants rest after working on a track in Rio Preto State Park.

Visitors at a tourist attraction in Ibitipoca State Park.

Minas Gerais' action to protect biodiversity is coordinated by the State Forest Institute, which is responsible for the main activities in the Green Agenda.

2008 saw important advances, with increases in vegetation coverage in protected areas and regularization of land – the greatest in State history.

Green Agenda

1. Protected areas

- IEF set up 14 Conservation Units (UCs) in 2008. Added together, they cover 84 thousand hectares of preserved vegetation coverage.

2. Protection of biodiversity

- Law 18.365 was passed in August 2009, and makes Minas Gerais State's forest legislation stricter, setting out targets for the gradual reduction of consumption of charcoal made from native forests, and bolstering the fight against predatory exploitation.

29.3%

is the decrease in the land clearing rate in Minas Gerais State in the 2006/2007 period, and compared to the two prior years.

MANAGING BIODIVERSITY

Species of squirrel common in the Cerrado and Atlantic Forest areas.

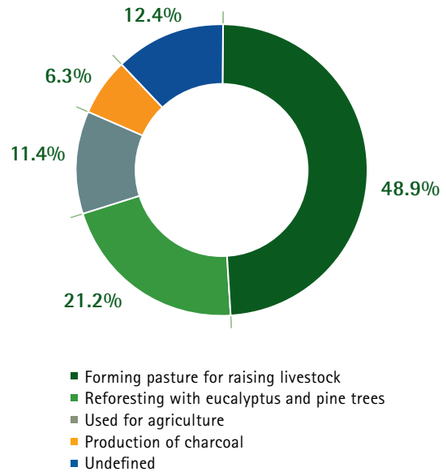
Sisema's results for 2008, through the State Forest Institute (IEF), include establishing 14 Conservation Units, reducing land clearance by 29.3% and regularizing almost 65 thousand hectares of land.

As in other Brazilian States, the Atlantic Forest and Cerrado biomes have been affected by centuries of pressure from human activity in the territory of Minas Gerais. Elimination of native forest and alternative use of land reached the 93% mark in the case of the original Atlantic Forest, and led to the loss of two thirds of the State's native vegetation coverage. What remains is mostly fragmented, which requires reinforced controls to avoid extinction.

To conserve these natural resources, Sisema, through IEF, has been making efforts ranging from controls to creating State Parks and protected areas, including reforesting, firefighting and payment for environmental services helping preserve forests and ecosystems.

Management of biodiversity, or to be more precise, preservation of the Cerrado and recovery of Atlantic Forest, is one of 57 State Government Structuring Processes enjoying action by the four bodies linked to Sisema. Although they are the responsibility of IEF, Green Agenda action also interfaces with other bodies, such as Igam and Feam. The following are some of the main programs and actions developed under this heading.

REASONS FOR CLEARING LAND
IN MINAS GERAIS



HIGHLIGHTS OF BIODIVERSITY IN MINAS GERAIS

- **19 million hectares** (33,8% do território) (33.8% of territory) occupied by native forests in Minas Gerais
- **Atlantic Forest and Cerrado biomes** are predominant in the State, according to Forest Inventory released in 2008
- **The State has eight thousand endemic species** identified in the Atlantic Forest
- **Of 270 species of mammals** in Brazil's Atlantic Forest biome, 70% were identified in Minas Gerais' forests
- **Two thirds of birds catalogued** in Brazilian territory are to be found in Minas Gerais

Sources: Forest Inventory (2008) and Project for Protection of Minas Gerais' Atlantic Forest (Promata)

Forest Inventory

Preparing the second issue of the Inventory of Native Flora and Reforesting in Minas Gerais, which came out in April 2008, has become a key tool to set up forest controls, policy and preservation. It was drafted in partnership with the Federal University of Lavras (Ufla), and the study quantifies the State's forest area and compares current vegetation coverage with that of earlier years. Scientific information about the Atlantic Forest, Cerrado and Caatinga biomes is mapped out, as well as data regarding where different species are to be found and the condition of the fragments of forest still existing in Minas Gerais' territory.

The inventory identified the State's regions where flora is in the best and worst condition, in addition to mapping out and classifying differing vegetable physiognomy still remaining and areas disturbed by human action. Information broken down by region makes controls easier in areas suffering the greatest pressure. The inventory also quantifies, for the first time in Brazil, available stocks of carbon and volumes of firewood **biomass**[1] in Minas Gerais' forests.

Survey results show a 29.3% drop in land clearing in the State in the 2006/2007 period as compared to the two prior years. This is a result of Sisema's preventive action, through IEF, in fighting deforesting.

Inventory results led to intensified controls in small pieces of cleared land, in regions where burning is predominant as part of the agricultural process, which causes considerable impact on the environment. High rates of land clearance were to be seen in other locations, which are the result of perfectly legal action taken by companies owning property in the municipality. IEF started fostering the creation of private nature reserves in these regions.

Expansion of vegetal coverage

Forest plantation areas[2] comprise a rational source of forest products and relieve industrial pressure for supplies of charcoal, the production of which in many cases involves felling native forest. The target is for all charcoal to be produced from planted forests by 2020.

IEF estimates that an increase in areas where exotic species have been planted from 2.1% to 4% will be sufficient to meet the State's total demand for forest products and sub-products, including charcoal. Nearly 50% of charcoal consumed in Minas Gerais is produced in the State itself, and of this total, approximately 70% comes from forest plantations.

In connection with the controversy over planting eucalyptus – that the species may contribute to exhausting the soil and groundwater in the location – based on research, Sisema is of the opinion that, provided that certain pedological (the study of soil in its natural environment) and climate conditions are observed, eucalyptus is no more harmful than any other species. In terms of environmental impact, grazing land, for instance, could cause greater impact – and pasture accounts for 50% of the territory of Minas Gerais State.

Glossary

(1) Biomass: all renewable resources stemming from organic matter (whether animal or vegetable) that can be used for energy production.

Source: Aneel

(2) A term applied to homogeneous planting of trees, mostly exotic but also native species, for commercial ends.

Source: *Almanaque* Brasil Socioambiental

Protected areas

Some of the policies of the government of Minas Gerais to enhance protection of surviving natural areas involve extending the State's **protected areas** [3], by establishing Conservation Units **(UCs)** [4]. IEF set up 14 UCs in 2008 and recognized 37 Private Reserves of Natural Heritage **(RPPNs)**[5] adding up to over 90.5 thousand hectares of protected areas.

In 2007, the State had a total area protected by its Conservation Units of approximately 2.4 million hectares, of which nearly 400 thousand were "Integral Protection" areas. All these help preserve the State and its different biomes: Atlantic Forest, Cerrado, Highlands, Ferruginous Fields, Caatinga and others.

In association with private partners, the State has developed a strategy to better protect surviving forests. RPPNs are stimulated to this end, and in late 2008 the State of Minas Gerais recognized 136 RPPNs covering roughly 40 thousand hectares, which is about 10% of all protected areas in the country.

IEF also has the Legal Reserve Support Center (Cearel), which provides technical support to Sisema and external public in connection with Legal Reserves. Each and every one of the State's 550 thousand rural properties should have its own conserved and regularized Legal Reserve, which would add up to over 11 million hectares of protected land. Facilitating mechanisms for the process of registration have been put in place to this end, such as simplifying procedures, spreading the word, and orientation for family properties. Monitoring the quality of Legal Reserves and their sustainable use – together with easier registration – will contribute substantially to conservation of natural resources and sustainable development of rural property in Minas Gerais.

Ecological ICMS

Criteria for distributing State resources to municipalities by means of the Tax on Circulation of Goods and Services (ICMS) were set out in Law 12.040/95. With changes put in place by Law 13.803/00, new criteria have been established, such as the Environment, leading to Ecological ICMS policy.

In accordance with this legislation, 75% of revenue collected by ICMS in the State goes to the Union, while the remaining 25% is distributed among municipalities in line with different criteria. In turn, one per cent of this sum is earmarked for municipalities contributing to environmental preservation, depending on two conditions.

The first is related to the Conservation Index (IC), and refers to creating and maintaining Conservation Units, which include RPPNs and other protected areas. The second condition, in line with the Environmental Sanitation Index (ISA), is related to sanitary landfills, sorting and composting plants and Sewage Treatment Stations (ETEs) *(more on page 79)*. Each of these sub-criteria corresponds to 0.5% of the percentage point earmarked for the environmental area.

Values transferred to the municipalities can be seen on João Pinheiro Foundation's website. By means of this mechanism, Minas Gerais' municipalities received a total of R$ 48,665,430.46, half for action linked to Conservation Units and the other half for environmental sanitation. Calculation of Conservation Index, established by Law 13.803/00, is carried out by IEF and takes the following into account: protected area as compared to total area of the municipality; conservation factor (a fixed value established by said Law); and quality factor, the parameters for which were established in July 2005 by Copam Norm Deliberation 86/05.

The implementation of Ecological ICMS policy encourages municipalities to contribute to compliance with the Structuring Projects' targets. In the case of the Green Agenda, for instance, over the last five years municipal circles have set up 22 new Conservation Areas – 17 of them for integral protection – making a total of 506 thousand hectares in new protected areas. Over the same period, 92 RPPNs were established, resulting in an 81-thousand hectare increase in area protected by private individuals in the State. There are currently 91 thousand hectares in RPPNs.

Glossary

[3] Areas with special legal protection due to their environmental, social or cultural importance.
Source: *Almanaque* Brasil Socioambiental

[4] Environmental areas with outstanding natural characteristics, which are legally instituted by Public Power with the aim of their conservation. They have defined boundaries and are subject to a special administrative regime whose protection is suitably ensured.
Source: WWF-Brasil

[5] An RPPN is a category of protected area set up by Brazilian legislation (Law 9.985/00, National Conservation Unit System – SNUC). It is set up on the initiative and by decision of the proprietor of the land.
Source: *Almanaque* Brasil Socioambiental

STATUS OF STRUCTURING PROJECT RELATED TO GREEN AGENDA

Structuring Project	Indicator	Measurement Unit*	Actual 2008	Target 2008	Target 2009	Target 2010
Preservation of Cerrado and recovery of Atlantic Forest	Percentage of territory with native vegetal covering (Atlantic Forest, Cerrado, Caatinga)	% of native vegetation	33.65% (2007)	33.8% (2007)	34%	34%

** Sisema no longer uses the Vegetal Covering Index to measure the area of the State covered with vegetation. The measurement currently used is balance of vegetal coverage, reckoned with the formula of "recovered degraded area and/or area interfered with by humans – area of eliminated vegetal covering". The dynamics of natural vegetal coverage of an area are the result of considering two factors: the Recovery Index of Degraded Areas and/or Areas interfered with by humans and Reduction of the State Deforesting Rate. Joint assessment of these two indicators makes it possible to arrive at an Index for Equilibrium of Vegetal Coverage, besides showing the final results of IEF's activities: fighting illegal elimination of vegetation, recuperation of degraded areas, and protecting biodiversity.*

MINAS GERAIS STATE INVESTS IN ENVIRONMENTAL SERVICES

When rural producers preserve a natural area on their property, they are providing a service that is of interest to society at large, and they must therefore be remunerated

Payment for environmental services is on the world environmental agenda. It is no different in the State of Minas Gerais. The bodies linked to Sisema consider that payment for the preservation of a native area is fair reward and a way to discourage felling of forests for economic reasons. In the Green Agenda, Sisema has worked on drafting legislation consolidating Payment for Environmental Services (PSA), financially rewarding rural producers maintaining preserved areas.

Pilot experience

Minas Gerais' Project for Protecting Atlantic Forest (Promata) is an example of a successful program of forest promotion, with payment of financial rewards for environmental services rendered. Carried out in partnership with the German bank Kreditanstalt für Wiederaufbau (KfW), the project started in 2003 with a 7.2 million euro donation by the bank, and a further 7.2 million euros put up by the State of Minas Gerais.

Through Promata, IEF signed partnership agreements with the city halls of Extrema and Itamonte, both in the south of the State, and Itabira, in the Metropolitan Region of Belo Horizonte (RMBH), as well as Civil Society Organizations of Public Interest (Oscips).

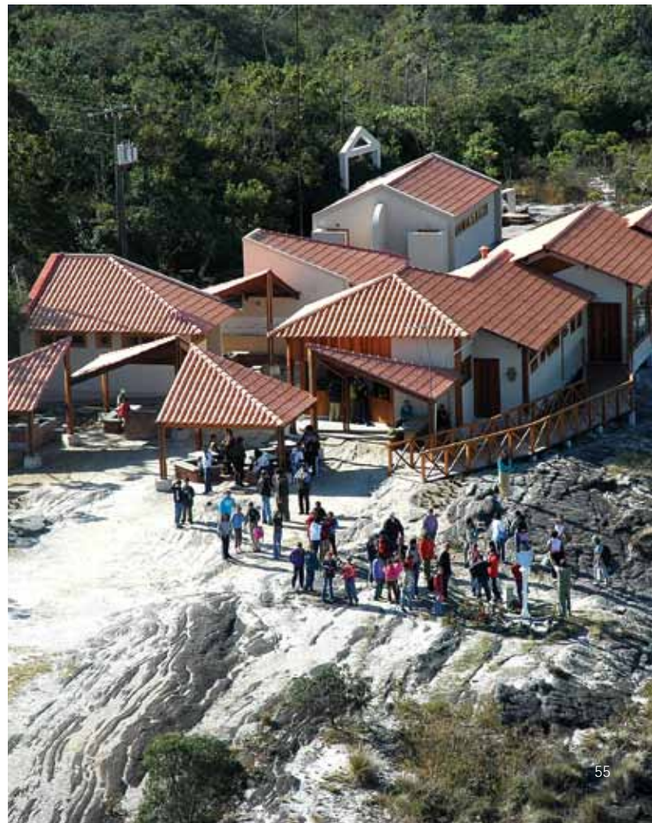
The partners allocated financial resources and made technicians available to join the IEF team. In the case of city halls, Promata also encouraged the creation of mechanisms of their own, in the municipal milieu, for payment for environmental services. With the sum of resources (nearly R$ 50 million at the time, also taking into account additional resources of the municipalities'), the program steered investments into different fronts of action, including:

- Investment in structuring Conservation Units;
- Recovery of forests in partnership with agriculture.

R$ 50 million

was the approximate sum Promata invested in forest stimulation

Part of Promata's resources was invested in improving support infrastructure for visitors to state parks, such as Ibitipoca.



With Promata's contributions, IEF endeavored to advance towards the target of the Structuring Project for the Preservation of the Cerrado and the Recovery of Atlantic Forest (in this case in an initiative directed at this latter biome) by forming preservation areas on private land. In exchange, farmers were paid a cash value in proportion to the protected area and the methods of protection used, over three years. In addition to this payment, IEF provides shoots and technical assistance to farmers.

Based on this practice, in the 2008/2009 agricultural year IEF recovered 17 thousand hectares of degraded land or land damaged by humans, covering thousands of rural holdings.

Experience gained by IEF during work developed at Promata made it possible for the body to act as an adviser at the time of drafting State Law 17.727/08, known as the Green Grant Law. This legislation was regulated in early 2009 by State Decree 45.113/09, which will make it possibly to greatly expand the State's program of payment for environmental services. In addition, negotiations for the implementation of Promata II, the second phase in this partnership, are at an advanced stage.

Another positive experience involving payment for environmental services is the Forest Recovery Project for Degraded Areas in the Mid-River Doce Region, in partnership with the International Tropical Timber Organization (ITTO). Since 2004 this initiative has been carrying out action for the recovery of degraded areas in seven tributary micro-basins of the Doce River, contributing to introduce sustainable management of the peppertree species in the region.

Rural producers participating in action for recovery of degraded areas are granted financial resources to foster production of shoots, which are used for planting and maintenance of areas in the process of recovery. Funds allotted to the project amount to approximately R$ 1.7 million, involving resources from the ITTO and Minas Gerais State Government.

IEF has a partner for every micro-basin, to develop project action such as environmental mobilization and education of communities, training rural producers, and others. Over 500 hectares are currently in the process of environmental recovery.

LAND TITLE REGULARIZATION[6]

Between 2007 and 2008 Sisema invested R$ 95 million in proceedings for land title regularization, through IEF. This sum is greater than the sum of all moneys invested by the entity over its 47-year lifetime. In 2008 alone, R$ 33 million were invested, of which R$ 25 million were spent on action for land title regularization and the balance on setting up Conservation Units and fostering investment in forests for protection. Minas Gerais thus became the first Brazilian State to spend all available resources for environmental compensation on forest Conservation Units. Land title regularization is one of the objectives of the Structuring Project for Preservation of the Cerrado and Recovery of Atlantic Forest, managed by IEF. Targets for 2008 were exceeded. IEF ended the year with 31,977.47 hectares of properly deeded land.

It is commonplace in Brazil for funds made available for land title regularization not to be fully used due to inadequate planning. In the case of Minas Gerais State, social control of the procedure has contributed to the last two years' good results. Investment of resources is established by the Environmental Compensation Chamber of the State Council for Environmental Policy (Copam). This entity enjoys the support of the Environmental Compensation Nucleus, which was set up in 2005 through IEF's partnership with Unesco, with the goal of investing resources in land title regularization proceedings. The chamber receives the projects for environmental licensing, estimates how much is owed for environmental compensation (as a percentage), in addition to the cost of the project, and decides how to invest this value, thus speeding up the process. Nearly 80% of funds are earmarked for land title regularization, and the balance is invested on purchasing equipment for execution of the job.

Glossary

[6] Land title regularization consists not only of marking the boundaries of territorial space legally instituted by Public Power as an environmentally protected area, but also of identifying squatters and proprietors within the boundaries of such areas, fostering changes in use or resettling the families living there.

Source: Sisema website

COMMAND, CONTROL AND PRESERVATION

When the activities most pressuring biodiversity are the same that, on the other hand, most contribute to employment and wealth, the State finds itself in a dilemma regarding the best course for sustainable development.

One of the major challenges posed by sustainability is conciliating economic and entrepreneurial progress with preservation of the environment and other related questions. In a State like Minas Gerais where biomass accounts for one third of the energy supply mix, this challenge becomes as complicated as it is necessary.

This is the dilemma of Minas Gerais' public entities, and the bodies linked to Sisema are no exception. In cases where there is strong pressure of economic activities on natural resources, the State government develops command and control mechanisms to ensure environmental preservation.

Charcoal controls

Fighting the exploitation and transportation of illegal products and sub-products is an old challenge for the State Forest Institute. Until 2002, when Law 14.309/02 was passed updating policy for forests and the protection of biodiversity, IEF only had far more restricted legal instruments to control extractive and clandestine activity in forests, including the use of charcoal made from native forests as fuel for industry, particularly steelmaking.

After the law was passed limiting the amount of charcoal made from native forests to 10%, companies started to declare mathematically calculated consumption, arriving at the perfect equation. It was only after the start of controls called "Carga Pesada" [Heavy Load] in 2003 that IEF managed to initiate dependable mapping of the situation in the State, on the basis of greater action, especially in the regions of Sete Lagoas and Divinopolis, where 80% of Minas Gerais' operational steelmaking industry is concentrated.

At the time, the Institute was able to determine that not less than 50% of the charcoal consumed in the territory of Minas Gerais State was produced from irregularly felled native forest. Nearly 40 frontier posts were set up between 2006 and 2008, to lessen the use of commercial invoices from other States to cover the exploitation of native forest in Minas Gerais. These posts were eventually closed down for operational reasons, including matters related to servants' safety and exposure to corrupt propositions.

After that, a computer system entered service to register charcoal arrivals at companies. Today, every truck entering industrial premises has 24 hours to make an online report, providing the vehicle's license number, the quantity of cargo, its volume, the commercial invoice for the consignment and the type of wood: whether native or planted. Data are cross-referenced with information about charcoal volumes authorized by IEF.

With the financial crises starting in late 2008, production of the State's major steelmakers fell up to 87%, and demand for charcoal dropped accordingly.

Controls are currently based on sampling. When the problem became more visible, especially after 2007, IEF started to enjoy the support of other actors involved in controls, such as the Public Attorney's Office, the State Secretariat for Finance (designing differentiated documents) and the Military Environmental Police. In 2008, 17 million cubic meters of charcoal were consumed in Minas Gerais, of which 10 to 20% were still illegal.

In August 2009, forest legislation in the State of Minas Gerais became even stricter when Law 18.365/09 was passed, replacing Law 14.309/02. The new legal framework establishes gradual targets for reducing consumption of charcoal made from native forests, until a 5% ceiling is reached in 2018 – all the rest has to be made from planted forests. The new law also sets up mechanisms for double pay for forest replacement.

Brigade-member training in the region known as 'Steel Valley'.

Souari nut, a common fruit in Minas Gerais Cerrado, serves as food and income source for the community attending Pandeiros Project.

ENVIRONMENTAL CROSSING

An IEF Project proposes fostering community initiatives addressing sustainable development

The Structuring Project for Preservation of the Cerrado and Recovery of Atlantic Forest also calls for setting up and implementing four programs in a project called "Environmental Crossing". Two have already been put in place and another two are at the identification stage. It was up to IEF to choose these community initiatives for sustainable development and coordinate Environmental Crossing's action.

This addresses incentives for multiple-purpose extractive practices, for wood and non-wood products, aiming at economically profitable and non-predatory activities leading to self-sustainability. Through work with partners, IEF authorizes the direct use of resources for forest replacement in the programs selected.

Pandeiros Project was already underway when the Structuring Project was set up, and was subsequently incorporated into it. It is considered a model for community initiatives addressing sustainable development.

In 2004, IEF closed down two carbonization ovens in the Pandeiros River region, in the north of the State, in order to set up an environmental preservation area **(APA)**[7] and the Pandeiros Wildlife Refuge. This action was adopted to fight the use of natural resources for predatory extraction, and because the area is considered key from the environmental point of view, as it contains the only swamp in Minas Gerais, which is a cradle of biodiversity in the State.

However, because of this measure 8.5 thousand people in nearly 30 communities, who made a living from felling native forest to produce charcoal, lost their livelihood. The Institute therefore added its efforts to those of civil society entities – NGOs and the private sector – to promote sustainable development in the region, fostering and training the community to earn a living from other sources.

Through Pandeiros Project, beneficiaries were trained and received subsidies and material for raising small livestock and beekeeping, for example. Additionally, the population gained access to orientation on sustainable methods for agricultural production, fruit picking in the Cerrado, arts and crafts techniques, as well as suitable and balanced environmental activities and agriculture. Community organizations and cooperatives were also set up within communities, with environmental, social and economic results.

From the environmental point of view, since Pandeiros Project was put in place, land clearance in the region has plunged from 3.5 thousand hectares, registered for 2003 and 2005, to 350 hectares in the 2005-2007 period. At the time of writing this Report in October 2009, project data for 2008 have still not been consolidated.

Glossary

[7] A conservation unit for sustainable use, with some degree of human occupation, with abiotic and biotic, aesthetic and cultural features considered especially important for the quality of life and welfare of human populations. The basic objectives are to protect biological diversity, discipline the process of occupation and ensure sustainable use.

Source: *Almanaque* Brasil Socioambiental

REPORT ON CONTROLS – COMMERCIAL ENTERPRISES*

Ano de 2008	No. of Establishments Visited	No. of Establishments Notified	No. of Establishments Registered by IEF
TOTAL	6,502	2,772	1,597

** Figures cover operations from January to December 2008.*

AQUATIC FAUNA AND FLORA

Another front of action in Sisema's command and controls, through IEF, is related to preserving aquatic flora and fauna. In some cases the body acts in partnership with Minas Gerais' Institute for Water Management (Igam). Policy is regulated by Law 14.181/02, which covers the matter of protecting aquatic flora and fauna and developing fishing and aquaculture in the State.

In the latest period for Piracema, November 2008 to February 2009, 6,502 commercial establishments were inspected, including fishmongers, ornamental fish shops and industry. A total of 72.8 thousand kilos of fish were confiscated, and fines totaled R$ 1.5 million.

In addition to fishing controls, IEF monitors fishery resources, flora and ichthyofauna[8], and projects for fencing in springs and for ecological awareness-raising.

Last year IEF processed 32 thousand applications for licenses for fishing native species, well over the 28 thousand expected for 2008. We expect to issue nearly 20 thousand new licenses in 2009. Twice as many enterprises were visited as compared to 2007, almost reaching the 6.5 thousand mark in 2008.

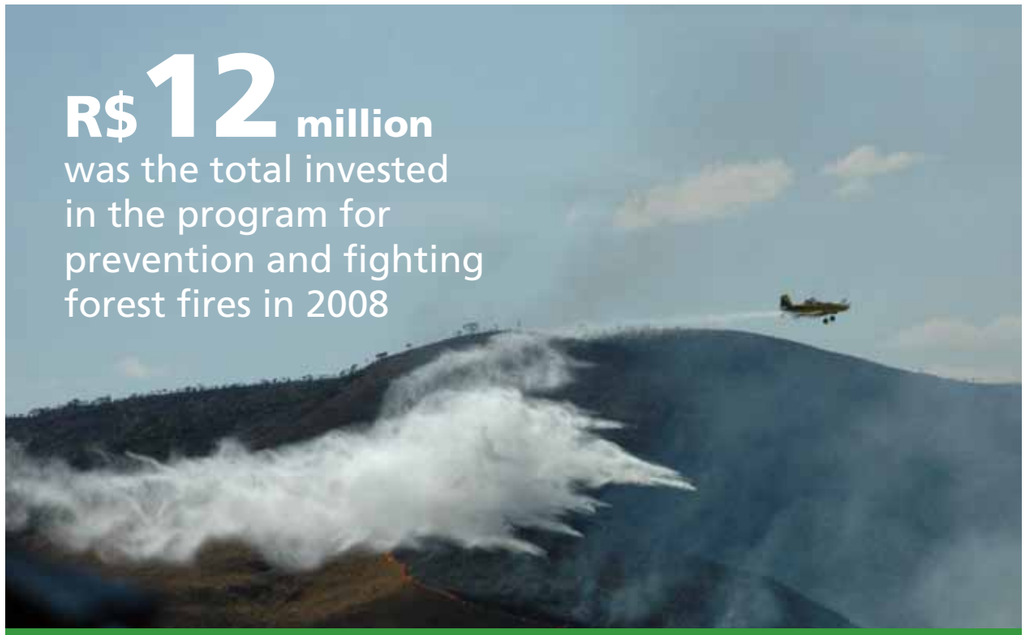
In the Conduct Manual issued by CGFAI in 2008, there is a chapter on controls in fishing areas. The publication tackles subjects such as legislation, classification of different kinds of fish, and instructions on how to fill out the questionnaire for assessing fish mortality. The manual acts as a practical guide for control agents and helps standardize procedures during joint operations.

Glossary

[8] Total species of fish in a given region or environment:

Source: Houaiss Dictionary in Portuguese

Firefighting with an aircraft in a Conservation Unit.



EXCELLENCE IN LATIN AMERICA IN PREVENTING AND FIGHTING FIRES

Sisema possesses differentiated action when it comes to forest fire prevention and fighting. Coordinated by IEF, the task force – which is called "PrevIncêndio" (Fire prevention) – involves professionals from the Military and Civil police forces, the Fire Brigade and Civil Defense. The initiative is internationally recognized as the largest forest fire prevention project in Latin America.

PrevIncêndio has existed since 2005. In 2008, R$ 12 million were invested in reinforcing its structure, by purchasing equipment for monitoring and firefighting, as well as training 514 new volunteer brigade-members to fight wild fires. With such courses, the number of volunteers has increased to three thousand all over the State.

Resources invested in PrevIncêndio come out of the budget of the Structuring Project for Preservation of the Cerrado and Recovery of Atlantic Forest, and environmental compensations. Of the total invested last year, approximately R$ 4 million were invested in flight hours, and the balance in infrastructure improvements, enlarging the program's first base at Curvelo Municipal Airport, and improving the sub-base at Januária Airport. Communications between the bases and Conservation Units is by radio.

PrevIncêndio makes large scale use of aircraft to monitor Minas Gerais' forests. In 2008 the State had two helicopters of its own, with the support of six fixed-wing aircrafts, in partnership with the Military and Civil Police Forces and the Fire Brigade. An additional nine airplanes especially prepared for firefighting were leased. The program also carries out systematic orientation and awareness-raising action for residents in areas deemed risky.

The number of heat focus spots and forest fires in Minas Gerais State fell from 18,203 in 2007 to 8,562 in 2008 in 2008, and burnt areas within Conservation Units in State territory also decreased, from 35,197 hectares in 2007 to 20,325 in 2008.

CREATION OF COPAS

Following the trend to split up responsibilities and ensure transparency adopted by the bodies and entities linked to Sisema, IEF set up Peer Commissions (usually known as "Copas"). These collegiate structures, comprising people from public power and civil society, discuss applications to eliminate native vegetal covering and action in Permanent Preservation Areas (APPs). Until then, these prerogatives were exclusively IEF technicians'.

There are currently 52 "Copas" in Minas Gerais, meeting monthly to discuss applications. Commissions have six voting members, three from public power: an IEF member acting as plenary chairperson, one person from the Technical Assistance & Rural Extension Enterprise (Emater) and a representative of the Military Environmental Police. The other three members are from civil society, with places for the representatives of the Agricultural and Livestock-Raising Federation of Minas Gerais State (Faemg), the Minas Gerais State Agricultural Workers' Federation (Fetaemg) and NGOs linked to environmental matters.

Tree-trunk covered in bromeliads in Ibitipoca State Park, south of Minas Gerais.

Dom Helvécio Lake in Rio Doce State Park, known for the quality of its waters.

The State of Minas Gerais is strategic in the country in terms of water availability. For this reason, management of water resources, which is coordinated by the Minas Gerais Institute for Water Management (Igam), is vital to ensure quality of life in Brazil.

Blue Agenda

1. The Value of water

- The Araguari, Piracicaba/Jaguari and Velhas CBHs, with Igam's support, set up the mechanism for charging for the use of water resources. The measure was approved by the committees, after public consultation in the above hydrographic basins.

2. Consumption scene

- The campaign for Regularization of Use of Water Resources contributed to awareness of the actual situation of water consumption in Minas Gerais State.

R$ 78 million

were made available by Fhidro, a State fund to support projects fostering improvements in the quality and quantity of water resources

MANAGEMENT OF WATER RESOURCES

Minas Gerais' territory includes Brazil's largest water-producing basin, after the Amazon basin. Preservation of this natural resource is key to ensuring quality of life in other Brazilian states also

Ribeirão de Areia Waterfall, in Pico de Itambé State Park, in Marliéria.

Located in the region of the São Francisco and Paraná Basins – two major Brazilian hydrographic basins – Minas Gerais State concentrates sources of rivers that supply not only the State itself, but also part of the population of Sao Paulo, Goiás, Espírito Santo and Bahia. Considering the growing scarcity of water resources and increasing complexity of negotiations between States for access to water, it can be safely stated that water management in national territory will be one of the major challenges facing the Federation in coming years.

At the State level, Sisema, by means of Igam, has tried to anticipate matters by coordinating and setting up mechanisms to ensure the quality and volume of water necessary to cover the needs of all its users in the long term.

The State System for Management of Water Resources (SEGHR-MG) comprises the following bodies: State Secretariat for the Environment and Sustainable Development (Semad), State Council for Water Resources (CERH), Igam, Hydrographic Basin Agencies and Committees (CBHs).

In accordance with Law 13.199/99, which covers the State Policy for Water Resources, the State Plan includes strategic guidelines for managing water resources and establishes, with the support of public consultation, programs, projects and action for hydro-environmental protection and recuperation of hydrographic basins.

The first phase of the State Plan is currently at the public consultation stage – with the participation of CBHs. Scheduled to conclude in December 2010, it is to be made a decree by the State governor.

Director Plans

Director Plans for hydrographic basins are tools also covered by Law 13.199/99. They establish agendas for management and use of water resources, incorporating specific particularities and needs of each Unit for Planning and Managing State Water Resources (**UPGRH**)[1]. CBHs are responsible for discussing norms and structure of plans. It is up to Sisema, through Igam, to provide all technical and administrative support for this process. The target is for 33 of 36 UPGRHs to have their director plans in place by 2010.

Exceptions are the Hydrographic Basins of the Low and High Paranaíba and Verde Grande, plans for which fall under the responsibility of the National Water Agency (ANA), a Federal body for management of water resources.

At the end of 2008, the State of Minas Gerais had concluded seven director plans for hydrographic basins. In 2009, another ten director plans entered their final stages, and a further five are at the contracting stage, and expected to conclude by 2010.

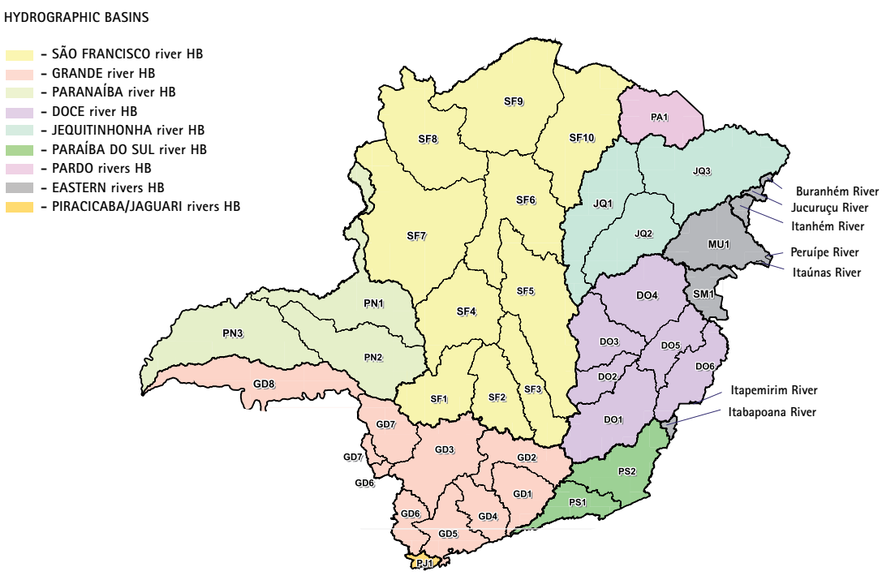
Glossary

[1] Territorial units, resulting from subdivisions of the State's 17 hydrographic basins. UPGRHs were set up by **Norm Deliberation 6**, dated 2002, of the State Council for Water Resources.

STATUS OF DIRECTOR PLANS FOR HYDROGRAPHIC BASINS

	HYDROGRAPHIC BASINS	UPGRH	YEAR OF CONCLUSION
CONCLUDED	das Velhas River Basin	SF5	2004
	Paracatu River Basin	SF7	2006
	Preto/Paraibuna Rivers Basin	PS1	2006
	Pomba/Muriaé Rivers Basin	PS2	2006
	Pará River Basin	SF2	2008
	Araguari River Basin	PN2	2008
	Piracicaba and Jaguari Rivers Basin	PJ1	2008
UNDERWAY	2nd Stage of State Plan for Water Resources	MINAS GERAIS	2010
	Integrated Plan for Water Resources of the Doce River Basin – 6 Plans for tributary basins in Minas Gerais State	DO1, DO, DO3, DO, DO5, DO6	2009
	Paraopeba River Basin	SF3	2009
	Jequitaí River Basin	SF6	2009
	Sapucaí River Basin	GD5	2009
	Pacuí River Basin	SF6	2010
	Furnas Reservoir Surroundings Basin	GD3	2010
	Basin of the Minas Gerais tributaries of Mogi and Pardo Rivers	GD6	2010
	Verde River Basin	GD4	2009
	Basin of the Minas Gerais tributaries of Verde Grande River	SF10	2010
CONTRACTING / DISCUSSION	Basin of the Minas Gerais tributaries of the lower Grande River	GD8	2010
	Basin of the Minas Gerais tributaries of the middle stretch of the Grande River Grande	GD7	2010
	Basin of the upper Grande River	GD1	2010
	Sides of Grande River Basin	GD2	2010
	Araçuaí River Basin	JQ2	2010
	Basin of the Minas Gerais tributaries of the upper Paranaíba River	PN1	2011
	Basin of the tributaries of the lower Paranaíba River	PN3	2011
	Basin in the surroundings of Três Marias Dam Reservoir	SF4	2010
	Basin of the tributaries of the upper São Francisco River	SF1	2010
	Basin of the Minas Gerais tributaries of Urucuia River	SF8	2010
	Basin of the middle stretch of São Francisco River	SF9	2010
	Basin of the Minas Gerais tributaries of Pardo River	PA	2010
	Basin of the Minas Gerais tributaries of Mucuri River	MU	2010
	Basin of the Minas Gerais tributaries of São Mateus River	SM	2010
	Basin of the tributaries of the upper Jequitinhonha River	JQ1	2010
	Basin of the tributaries of the middle and lower stretches of Jequitinhonha River	JQ3	2010

State Planning and Management of Water Resources Units (UPGRHs)



UPGRH			
Hydrographic Basin	Acronym	Hydrographic Basin	Acronym
Doce River	DO 1 – 6	Paraiba do Sul River	PS 1 & 2
Grande River	GD 1 – 8	Pardo River	PD 1
Jequitinhonha River	JQ 1 – 3	São Francisco River	SF 1 – 10
Mucuri River	MU 1	São Mateus River	SM 1
Paranaíba River	PN 1 – 3	Piracicaba & Jaguari Rivers	PJ 1

LEGEND

Sao Francisco River hydrographic Basin (SF):
SF1: Upper course of the hydrographic basin of São Francisco River until confluence with Pará River
SF2: Pará River Basin
SF3: Paraopeba River Basin
SF4: Basin in the surroundings of Três Marias dam and reservoir
SF5: das Velhas River Basin
SF6: Basins of Jequitai and Pacui Rivers
SF7: Hydrographic basins of the Minas Gerais tributaries of Paracatu River
SF8: Urucuia River Basin
SF9: Basins of Pandeiros and Calindó Rivers
SF10: Basin of the Minas Gerais tributaries of Verde Grande River

Basin of Paranaíba River (PN):
PN1: Basin of Minas Gerais tributaries of upper Paranaíba
PN2: Araguari River Basin
PN3: Basin of Minas Gerais tributaries of lower Paranaíba

Basin of Grande River (GD):
GD1: Basin of upper Grande River
GD2: Basin of Grande River watersheds
GD3: Basin of Furnas reservoir
GD4: Verde River Basin
GD5: Sapucaí River Basin
GD6: Basins of the Minas Gerais tributaries of Mogi-Guaçu/Pardo Rivers
GD7: Basin of the Minas Gerais tributaries of the middle stretch of Grande River
GD8: Basin of the Minas Gerais tributaries of lower Grande River

Doce River Basin (DO):
DO1: Piranga River Basin
DO2: Piracicaba River Basin
DO3: Santo Antônio River Basin
DO4: Suaçuí River Basin
DO5: Region of Caratinga Rivers
DO6: Manhuaçu River Basin.

Jequitinhonha River Basin (JQ):
JQ1: Basin of upper Jequitinhonha
JQ2: Araçuaí River Basin
JQ3: Basin of the middle stretch and lower Jequitinhonha

Paraíba do Sul River Basin (PS):
PS1: Basin of Minas Gerais tributaries of Preto and Paraibuna Rivers
PS2: Basin of Minas Gerais tributaries of Pomba and Muriaé Rivers

Pardo River Basin (PA):
PA1: All the area of this basin in the State

Mucuri River Basin (MU):
MU1: All the areas of this basin in Minas Gerais

Eastern Basins:
Buranhém River Basin
Jucuruçu River Basin
Itanhém River Basin
Peruipe River Basin
Itaúnas River Basin
São Mateus River Basin
Itapemirim River Basin
Itabapoana River Basin

Basins of Piracicaba/Jaguari Rivers (PJ1):
PJ1: All the area of the basin in the State of Minas Gerais

Charges for water use

In 2008 Minas Gerais established the basis for charging for the use of water in the basins of das Velhas, Araguari and Piracicaba/Jaguari Rivers. Collection is scheduled to start in late 2009. The measure was put in place after long discussions in the sphere of the respective Hydrographic Basin Committees (DBHs), and was submitted to three stages of public consultation, which were all favorable to charging for the use of water resources.

With ProAgua resources, in 2008 Igam brought out a public tender which led to the choice of a specialist company to develop methodology for collection, establishing values by sector and procedures to be adopted. Proposals were discussed by CBHs and Technical Chambers – with the support of workshops run in entrepreneurial sectors (agriculture, mining, industry and sanitation concessions) – until a consensus was arrived at. Results were then submitted to the State Council for Water Resources (CERH), which passed the measure.

The idea is that companies, agriculturists and any other users drawing volumes of more than 86 thousand liters a day be charged for use of water. There are a number of prerequisites for introducing collection by a CBH, one of which consists of setting up a Basin Agency to actually collect and manage resources. In 2008, four Basin Committees put their respective agencies in place *(see chart)*.

Article 53 of Law 13.199/99 – which established the State Plan for Water Resources (PERH) – called for further prerequisites which must be complied with to make is feasible to charge for water use. They consist of establishing a social communication program covering the economic, social and environmental need for protection and rational use of water, implementing an integrated national system for granting the right to use water resources, compatible with environmental licensing systems; regularizing users' rights; aligning the State of Minas Gerais with the Federal Government and neighboring states in cases where water from rivers in the federal domain are charged for, to be followed by technical cooperation agreements between the federative entities involved; and proposals for criteria and norms covering how tariffs are fixed, with the definition of technical and legal instruments related to putting collection in place.

Collection for the use of water in the Araguari, Velhas and Piracicaba Jaguari basins is expected to affect roughly 2 thousand users, generating revenue of approximately R$ 17 million in 2010. These funds may be used on recovery of springs and sources, as well as sanitation projects and environmental education.

This sum may not seem significant, but the main goal of charging for the use of water is educational rather than financial. It will be a stimulus for users' reflection on habits involving consumption of water resources.

HYDROGRAPHIC BASIN COMMITTEES WITH BASIN AGENCIES

CBH	Agency Names	UPGRH Code
das Velhas River	AGB Live Fish	SF5
Araguari River	Multi-sector Association of Users of Water Resources in the Hydrographic Basin of the Araguari River (ABHA)	PN2
Rio Preto-Paraibuna and Pomba-Muriaé	Pro-Management Association for Waters of the Hydrographic Basin of the Paraíba do Sul River (Agevap)	PS1 and PS2
Piracicaba-Jaguari	Inter-Municipal Consortium of the Hydrographic Basins of the Piracicaba, Capivari and Jundiaí Rivers (PCJ Consortium)	PJ1

KNOWLEDGE FOR ACTION

The success of action for managing water resources is directly related to technical knowledge of water courses, their use and their quality. Igam carries out monitoring and regulatory programs to these ends

Learn more 1

Piracicaba River Hydrographic Basin (DN 009/94); Paraopeba River Hydrographic Basin (DN 014/95); Paraibuna River Hydrographic Basin (DN 016/96); das Velhas River Hydrographic Basin (DN 020/97); Pará River Hydrographic Basin (DN 028/98); Verde River Hydrographical Basin (DN 033/98). There is a complete list of DNs: www.siam.mg.gov.br

Monitoring Minas Gerais' water courses is a key instrument for management. The quality of surface water has been monitored all over the State since 1997, by means of 467 sampling stations. Samples are taken every three months – an annual total of four sample-taking campaigns. Results of the analyses, as well as quarterly and annual maps showing the quality of water in each hydrographic basin, are made available on the internet, allowing for analysis of historic monitoring series. On the basis of this work Igam determines the Water Quality Index (IQA), which classifies water bodies as Excellent, Good, Medium, Poor and Very Poor, depending on their degree of contamination with organic, fecal, solid and nutrient matter. Contamination with toxic agents is also analyzed, and classified as Low, Medium or High, depending on the presence of heavy metals and other toxic matter. Data are compiled in the Environmental Quality Atlas, which comes out annually. The quantity of water in hydrographic basins is monitored by means of hydrometric networks consisting of measuring stations that provide different parameters, including liquid and solid dumping, water levels in water courses and pluvial measurement. The State has 341 hydrometric posts and operates, additionally, 19 Data-Collection Platforms (PCDs), of which ten are meteorological, eight are agro-meteorological and one is hydro-meteorological.

Classification

While Economic Ecological Zoning (ZEE) is a key tool to identify different kinds of fragility in a region and form a basis for whether or not to grant environmental licensing, fitting bodies of water into classes in accordance with the main use of water resources helps the decision-making process, whether the license in question is for water consumption or effluents.

It is a system for mapping and classifying bodies of water on the basis of their quality. A river is thus considered Class 1 when its waters are suitable for human use for drinking and preparing food. Class 2 waters are unsuitable for consumption, but they can be used for bathing. Class 3 waters are utterly degraded because of contamination or pollution.

In Minas Gerais most water bodies were classified between 1993 and 1998 by the State Foundation for the Environment (Feam), which was made official by Norm Deliberations[1] of the State Council for Environmental Policy (Copam). These classifications were not linked to the Director Plans for Water Resources (PDRHs) during the 1990's; it was not called for by legislation in force at the time.

Current legislation, which has been in force since Resolution 91/08 of the National Council for Water Resources (CNRH) was published, calls for classification of bodies of water in line with PDRHs.

2006 drafting of proposals for classification of the Paracatu River Hydrographic Basin, carried out by Igam technicians, was the first initiative carried forward in Minas Gerais State in accordance with the Basin's Water Resources Director Plan, with the participation of both society and CBH Paracatu who attended meetings called "Classification Workshops". Classification of water bodies in the Paracatu River Hydrographic Basin established normative instruments (classes of water bodies) and operational procedure (action and goals) to improve water in the medium and long terms. Its implementation is in the process of linkage by State and municipal public power and representative civil entities in the basin.

Igam's goal is for all UPGRHs to have their water bodies duly classified, preferentially under the aegis of the Director Plan for Water Resources, by late 2010. Adoption of this criterion by all hydrographic basins will also make environmental regularization easier in cases where projects involve action on bodies of water.

Regularization of water use

A campaign for the Regularization of Use of Water Resources in the State of Minas Gerais, developed by Igam as of 2007, is one action of the Structuring Project for "Consolidation of Management of Water Resources in Hydrographic Basins". It endeavors to increase the potential of regularizing water usage in the State.

Janela do Céu (Heavenly Window), a tourist attraction in Ibitipoca State Park, in the South of the State.

The objective is to set up an instrument which is easy for users to gain access to, and ensure temporary regularity regarding use of water resources. Illegal use of water is subject to different forms of punishment.

The campaign thus had an educational nature, for both prevention and social mobilization, fostering public awareness of the different legal implications of illegal consumption and of the need for regularization – until then unknown by most users. Another goal was to disseminate knowledge about the subject to foster social involvement in drafting plans for future action involving different uses of water resources. Igam enjoyed the support of partners all over the State. The sum-effort led to 350 events in 220 municipalities in 2008, including 80 lectures and 70 training courses.

In addition to disseminating information about the need for regularization and its importance for adequate management of water – defined as a social and public-domain possession in the 1988 Federal Constitution – the premise of Igam's plan was to foster regularization of water usage in Minas Gerais State.

By 2007 the Institute had granted 17 thousand licenses, a figure considered small as compared to potential – there are 550 thousand rural properties in the State, and 110 thousand industrial establishments. Given this scenario, the campaign started with a registration drive. According to the Constitution, water use must be authorized by the State or the Federal Government, depending on jurisdiction aspects. Granting the right to use water resources and registering even insignificant use are instruments for formal regularization.

Proprietors of small rural holdings, however, did not see a promising situation for regularization in the model for authorization of grants in force. Igam reevaluated the model for this reason, and initiated a process of stratification of analysis and publishing costs so as to reduce outlay for small producers.

The Institute also set up the Water Use Registry, through which users could obtain temporary regularization by filling out a form. Documentation could be handed in to Suprams, IEF offices, or premises of partner-entities, such as trade unions. In 2008 alone, 146 thousand registration applications were handed in, and upon reaching the deadline a total of 363 registrations had been applied for. Last year 2,715 regularizations were granted for action in water courses, for drawing water resources or dumping effluents.

On the basis of fresh information obtained through the "Water: Make Legal Use of It", Igam has already managed to systemize internal reports which enable the body to detect consumption profiles distributed by hydrographical basin within the State's borders. Cross-checks showed that most water resources exploited within the State are used for human consumption by means of tubular wells – and not for industrial needs, as had been envisaged.

FUND FOR IMPROVING WATERS

This public fund, which was set up with payment of royalties by hydroelectric power plants as environmental compensation for areas flooded, contributes to projects linked to management of water resources. In 2008, R$ 68 million were used

The Fund for Recovery, Protection and Sustainable Development of Minas Gerais State's Hydrographic Basins (Fhidro) is a public fund administered by the State Secretariat for the Environment and Sustainable Development (Semad) with the objective of providing supplementary financial support for projects fostering rationalization of water use and improvements in quality and quantity of water resources.

The Fund's financial agents are the Development Bank of Minas Gerais State (BDMG) in the case of projects to be reimbursed and Semad for those not requiring reimbursement.

Igam is responsible for Fhidro's executive secretariat. Set up in 2006, the executive secretariat has a full-time team to solve Fhidro matters, deciding on regulations, allocating resources and deciding how funds invested and results must be watched over.

Interested parties must apply to CBHs for finance, and they in turn issue a document of approval or non-approval. In the cases of approval, the interested party submits the documentation to the executive secretariat, where it is analyzed by Igam's technicians. At the next stage, the Fund's Coordinating Group approves (or issues an opinion, in the case of financing), and BDMG or Semad draw up and sign the contract for the project.

Resources originate in hydroelectric power plants' payments of royalties as environmental compensation

DISTRIBUTION OF FHIDRO BENEFICIARIES

Reimbursement Not Required	To be Reimbursed
State or municipal enterprises in public law	Not-for-profit private entities active in environmental conservation
Concessionaires of public municipal services acting in the fields of sanitation and the environment	Concessionaires of public municipal services acting in the fields of sanitation and the environment
Inter-Municipal Consortiums rendering public services in the fields of sanitation and the environment	Enterprises in private law
Hydrographic Basin Agencies or other entities on the same footing	Individuals using water resources
Civil organizations as per Articles 46 to 49 of Law 13.199	Civil organisations as per Articles 46 to 49 of Law 13.199

Pandeiros River, in the municipality of the same name, where Semad carried out an environmental project.

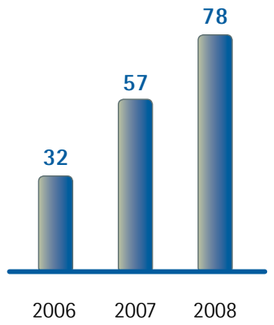
WARNING SYSTEM SAVES LIVES

On account of past human and financial loss caused by extreme natural events, Igam is working on improving flood warning systems. These are based on weather forecasts and hydrometric monitoring of data from the Data Collection Platforms (PCDs), information from meteorological satellites and from the State's lightning detection system.

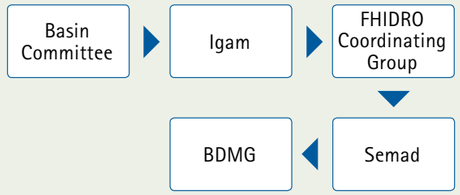
Data analysis makes it possible to know a few hours in advance that a critical event is likely to occur. In such cases, Igam alerts local Civil Defense, so local contingency plans can be put in action.

There are flood warning systems in place in the basins of the Doce and Sapucaí Rivers, and a critical event warning system is in the process of being set up in the basin of the Verde River. The former two were put in place in partnership with the National Water Agency (ANA) and the Brazilian Geological Service (CPRM). Implementation of a critical event warning system is scheduled for 2009 in the das Velhas River Basin, in partnership with Sao Francisco Valley Development Company (Codevasf). The target for 2010 is to set up a drought warning system in the semiarid region of Minas Gerais. A project is also being developed for the purchase of the State's first meteorological radar, with the objective of improving Igam's monitoring action.

FHIDRO'S BUDGETARY EVOLUTION
(IN R$ MILLION)



FLOWCHART



for flooded areas. Half these funds are kept by the Federal Government and half go to the State government, which in the case of Minas Gerais are invested in Fhidro. Another source of income is return on financing granted by the fund.

Finance can be granted in three modalities: to be reimbursed, not to be reimbursed or as a financial contribution of the State's for credit operations or as instruments for financial cooperation linked to water resources. Beneficiaries are usually distributed by modality *(see chart)* – it is important to stress that the proponent's regularization with respect to environmental and tax matters is a prerequisite for granting resources.

In 2008 the fund paid out R$ 68 million of R$ 78 million available. Most of this sum went to projects related to Target 2010, as well as strengthening structure and setting up Hydrographic Basin Committees. The fund has financed native vegetation preservation projects, as well as setting up State conservation units (UCs). Projects linked to flood prevention and erosion control are also on Fhidro's list, as they are indirectly linked to management of water resources.

Fhidro made R$ 75.6 million available in 2009. Igam is currently working on concluding regulations for projects, which by law must establish priorities for investment, with emphasis on rationale for use of resources. Minutes for the decree propose that in 2010, 7.5% of Fhidro's resources be employed on reinforcing the structure of CBHs. The document also sets out a mechanism for rendering accounts – by whichever body collected the resources – on the progress of the project financed.

STATUS OF THE STRUCTURING PROJECT LINKED TO BLUE AGENDA

Structuring Project	Indicator	Unit of measurement	Actual 2008	Target 2008	Target 2009	Target 2010
Management of Water Resources	Water Quality Index (IQA)[2] – No. of rivers over 60[1]	Unit	7	11 rivers over 62[1]	11 rivers over 63 [1]	11 rivers over 64 [1]
	Water Quality Index (IQA)[2] – No. of rivers over 70[1]	Unit	3	3 rivers over 70 [1]	3 rivers over 70 [1]	3 rivers over 70 [1]
	No. of structured UPGRHs[3] (accumulated)	Unit	-	-	3	5

[1] Non-dimensional: these figures refer to an IQA note, which is a part of IDPA, and indicate no measure unit. [2] IQA: the greater the index, the better. IQA is the weighted result of a formula seeking to determine water quality on the basis of 9 parameters: dissolved oxygen, fecal coliforms, pH, biochemical demand for oxygen, nitrate, total phosphate, water temperature, turbidity and total solids. [3] Number of Units for Planning and Management of Water Resources, where foundation and function are supported by Igam.

ALL FOR WATER

Hydrographic Basin Committees (CBHs) are base-organizations for decentralized and participative management of water resources in Minas Gerais. This is the reason why Igam invests and concentrates so much of its effort on mobilization for structuring these collegiate spheres.

Until the end of 2008, 34 of 36 UPGRHs had their committees in place. The last two are expected to be set up before the end of 2009.

Igam's job, after setting up CBHs, consists of training its representatives to provide ongoing technical advice and the conditions necessary to function. In 2008 the Institute made a clerk available to assist with administrative functions performed by each of the 28 committees in place at the time. Through an agreement with a CBH-approved entity, Igam makes it possible to meet the costs for the necessary infrastructure for committees to function.

MINAS GERAIS COMMITTEE FORUM

CBH members attend the Minas Gerais Committee Forum, an entity supported by Igam which represents all legally constituted committees in the State. The forum holds bimonthly meetings, attended by at least two members of each constituted committee.

The initiative has proved positive, as it functions as a vehicle for representatives to exchange information, minimizing natural differences existing between CBHs set up at different times. The goal is to strengthen basin committees so that they enjoy autonomy and independence.

In order to promote a channel for ongoing communication and exchanges about activities carried out by different CBHs, Igam brings out a quarterly information bulletin called *Dialogue with Committees*. This publication endeavors to contribute to the formation of a culture of co-responsibility for water management.

Waterfall in Pico do Itambé Municipal Park, in Santo Antônio do Itambé.

Area used for iron mining.

The elimination of 80% of refuse dumps by 2011 is one of the targets of the State Foundation for the Environment (Feam), which coordinates action of the so-called Brown Agenda.

In addition to matters related to solid urban refuse, Feam is also responsible for issues such as atmospheric pollution, energy and soil quality

Brown Agenda

1. Greenhouse Gases (GHGs)

- Minas Gerais was the first Brazilian state to publish an inventory of Greenhouse Gases.

2. Environmental Statement Bank (BDA)

- Use of this online tool, as of 2008, enables Sisema to more easily identify suspected soil contamination in the State.

R$ 7.8 million

were invested in the Structuring Project for Management of Solid Waste in 2008

SOLID WASTE MANAGEMENT

Through the State Foundation for the Environment (Feam), Sisema is responsible for solid waste management. Action focuses on environmental matters, but economic and social impact is also taken into account

After five years' action fostering better management of final disposal of municipalities' solid urban waste, the Minas Gerais without Refuse Dumps program registers nearly 50% fewer refuse dumps in use by Minas Gerais' municipalities and growth to the tune of 250% in urban population enjoying Systems regularized by Copam to this end.

Through Feam, Sisema endeavors to reduce contamination of water, soil and air by increasingly stimulating the adoption of integrated management of solid urban residues, considering that this kind of waste has an economic value and that effective management will bring about solutions for social, environmental and economic issues.

Structuring Project

At the time of the "Second Management Shock" in 2007, the government of Minas Gerais State incorporated management of solid waste into its 57 Structuring Projects. Under Feam, this project endeavors to broaden indices of residue treatment and increase the percentage of urban population with access to adequate disposal of refuse.

Copam established norms to support the State's solid waste policy with technical assistance from Feam. Minas Gerais without Refuse Dumps and AmbientAção *(more on page 31)* migrated in 2007 to the Structuring Project for Solid Waste, together with action to foster better management of industrial and mining waste.

The structuring project's final target is for 60% of Minas Gerais' urban population to enjoy adequate treatment or final disposal systems for solid urban residues by 2011. Partial targets, from 2008 to 2011, are for an annual 5% increase in the percentage of urban population with access to adequate disposal of residues – the target for 2008 was met with one more percentage point, which is equivalent to 7.5 million people now covered.

Minas Gerais without Refuse Dumps

This program stems mostly from Feam's strategy for eradication of refuse dumps in the State, and its starting point was compliance with Copam's Normative Deliberation 52/01. By means of such deliberation, Copam established deadlines for all cities with over 50 thousand inhabitants to establish adequate disposal of solid urban residues by 2005. All other cities would have to adopt measures set out by Copam to minimize environmental impact of their waste disposal systems.

In January 2003, only 18% of the urban population in the State's municipalities enjoyed systems for final disposal of residues duly approved by Copam.

When the deadline-dates set by Copam arrived, in view of the lack of results Feam launched the 2003 program called Minas Gerais without Refuse Dumps – a means of dialogue with municipal administrations to guide them in the implementation of solutions supporting improved management of solid urban residues, organizing seminars, workshops, meetings, technical inspections and bringing out manuals, as well as helping to meet deadlines.

118
municipalities

are responsible for more than 75% of refuse produced in the State of Minas Gerais

R$ 7.8 million were invested in 2008, and the target for 2009 is to invest nearly R$ 10 million to carry forward action for the Structuring Project for Solid Waste. In terms of results, Sisema's action in this area contributed to reduce the number of refuse dumps in the State from 823 in 2003 to 462 in 2008. As some of the municipalities producing the most refuse ignored Copam's guidelines, the original ones established in Norm Deliberation 52/01 were extended in new deliberations published between 2003 and 2008. There are currently 118 municipalities with urban population exceeding 20 thousand inhabitants (IBGE/2007), which are responsible for 75% of refuse produced in the State, and they have been summoned by Copam and instructed to implement technically correct solutions for residue management, with mandatory deadlines.

After the first round of official inspections, which was carried out in all Minas Gerais' 853 municipalities in 2004/2005, all those still dumping refuse were fined. They were given a chance to sign Conduct Adjustment Terms (TACs), where they made a commitment with Copam and Feam to solve the matter. Between 2006 and 2008, 515 TACs were signed, and compliance is being verified. Municipalities not meeting the terms set out in TACs have been sued by the State Public Attorney's Office.

Waste is energy

In 2008, Semad, Feam and the Energy Company of Minas Gerais State (Cemig) signed a Technical Cooperation Agreement for research in the area of producing energy from solid waste. Feam had already been carrying out such research even before the agreement was signed, through the Waste is Energy Program.

The two entities are currently carrying out potential and feasibility studies on two fronts – thermal treatment, which consists of producing energy from burning residues, where practical applications would be using waste as fuel for thermoelectric units and cement ovens; and methane production, which consists of transforming waste into methane gas which would, in turn, be used in biogas plants.

On the basis of these studies, Feam intends to encourage municipalities to invest in such alternatives as a way of contributing to solving the problem of solid residue.

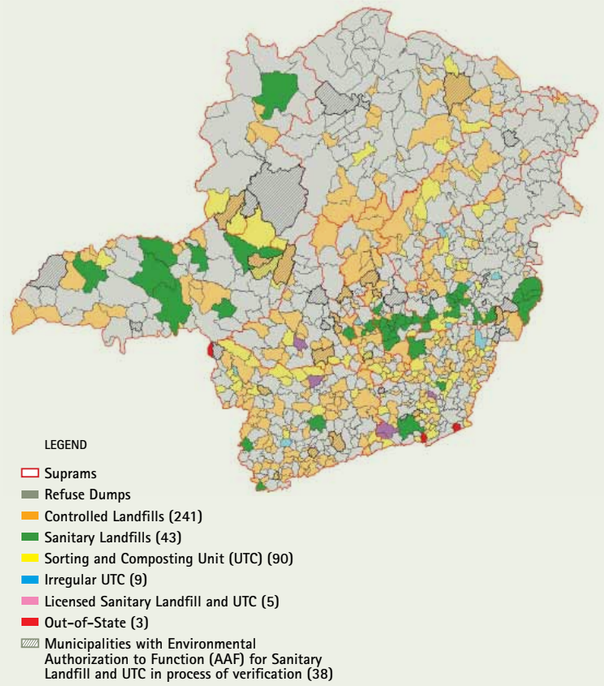
CMRR – MINAS GERAIS' REFERENCE CENTER FOR WASTE

In 2007 the government of the State of Minas Gerais, Feam, and the Volunteer Social Assistance Service (Servas) set up Minas Gerais' Reference Center for Waste (CMRR). Located in the State capital of Belo Horizonte, this entity was planned to serve municipalities, companies, civil entities, universities and communities in connection with issues linked to solid urban residues, consumption awareness, non-production of waste, reuse and recycling.

CMRR is active on several fronts: supporting municipal management of waste; professional training; communication; information, research and education; and support for events and exhibitions fostering art in waste.

In the area of municipal management support, CMRR develops orientation projects for municipalities to set up refuse collection systems and implement Plans for Integrated Management of Solid Waste (PGIRS), with the aim of introducing municipal and regional selective collection. These measures are included in the scope of the Minas Gerais without Refuse Dumps program.

Situation of final disposal of Solid Urban Waste (Minas Gerais State) 2008



Consortiums: new strategies

Feam considers integrated policy for management of Solid Urban Waste (RSU) by establishing inter-municipal consortiums the best way forward to solve the State's refuse problems. In May 2008, the body submitted plans for Optimum Territorial Arrangements (ATO) for the State's 853 municipalities. The second step will be detailing a technical plan for the 230 municipalities in the hydrographic basin of São Francisco River, including the Metropolitan Region of Belo Horizonte.

According to the plan, municipalities may group together on the basis of number of technical criteria and form consortiums for RSU disposal. One of the criteria is a maximum distance of 30 km from the place of collection and that of final disposal.

The program calls for transshipment plants where waste arrives in smaller vehicles belonging to municipalities and is loaded on heavier trucks able to carry larger loads and make fewer trips.

At the sorting centers, waste is to be classified and separated as follows: for recycling (to be sent to recycling cooperatives), organic (for composting), construction and demolition (class A) and non-dangerous residue (for sanitary landfill). Resources will come from federal funds through the Growth Acceleration Program (PAC), as well as State and municipal funds. This program started in mid-2009.

Waste inventories

As the new deadlines established in negotiations linked to the Minas Gerais without Refuse Dumps program started to arrive, Feam representatives traveled all over the State to assess treatment of solid urban waste in different municipalities. During this process, which took place in 2006, 2007 and 2008, the foundation gathered enough information to produce the Inventory of Solid Waste in Minas Gerais State.

The basic tool used for inventory is a pioneering online instrument, the first in Latin America. Created by Feam, Semad, Minas Gerais' Reference Center for Waste (CMRR) and the Federal University of Lavras (Ufla), this method enables technicians to not only establish the volume of waste produced in a given area, but also to obtain other information about waste disposal in the region concerned.

In 2008, the State of Minas Gerais also brought out the second edition of the Inventory of Industrial Solid Waste. This document is based on a measure introduced by Conama's Resolution 313/02. In 2005, Copam made it compulsory for companies to submit these data, by post or e-mail.

However, the second edition of the inventory cannot be concluded until after the Environmental Statement Bank (BDA) is developed. This entity will make it easier for companies to send in their returns by filling in a computer form, and for bodies and entities comprising Sisema to gather information.

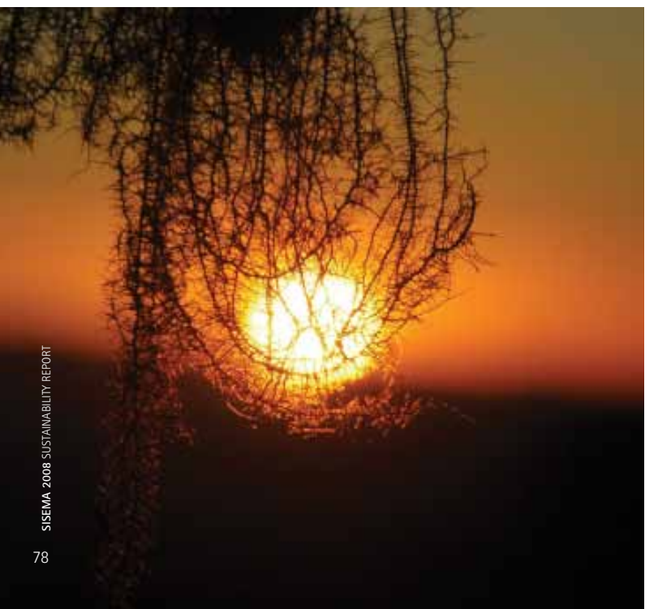
With the ease of operation obtained with software written for BDA, Feam introduced a new form in the system with the objective of setting up a specific inventory for Solid Waste from Mining. The volume is large and, when added to other industrial residues, distorts general vision of waste produced by the State's industrial sector.

By means of this inventory, society will be able to obtain detailed information about not only volume of residues, but also about areas impacted by mining. The target is to conclude the text of the form before the end of 2009, so that Copam can validate it and make it available to the public.

In 2007, 854 companies in 205 municipalities filled in the form, showing total production of residues approaching the 403 million ton mark. The objective is for the form to be thought-provoking and become an agent for change in management of processes and waste in companies. In mid-2009 the form was restricted to 26 sectors of industrial enterprise. It is Feam's intention to extend its use to all companies or, at least, widen the range of activity covered.

To ensure reliability of information once companies have turned in their statements, since 2008 Feam has been making random inspections, by choosing one company per industry. By mid-2009, Feam's inspections revealed incorrect values and typification of waste on the part of some companies. In such cases, the foundation helps orient industry, and helps put suitable measures in place.

A species of moss known as 'old man's beard', on a tree in Ibitipoca State Park.



853
municipalities
were involved in Optimum Territorial Arrangement

! TARGETS 2011
End of 80% of refuse dumps
Adequate final disposal of 60% of solid urban waste generated in Minas Gerais State in technically suitable systems, duly licensed by Copam

STATUS OF STRUCTURING PROJECT RELATED TO BROWN AGENDA

Structuring Project	Indicator	Unit of measurement	Actual 2008	Target 2008	Target 2009	Target 2010
Solid Waste	Percentage of urban population enjoying access to adequate disposal of refuse(*)	%	45.90%	45%	50%	55%

** The greater the index, the better.*

Dam management

In addition to solid waste, the entrepreneurial sector, principally mining and quarrying, accumulate refuse in containment dams. In such cases, Feam is also responsible for controls. Since 2006, in accordance with Norm Deliberation 87/05, the Foundation has been publishing Dam Management Reports, with an up-to-date register of dams built with refuse existing in the State. Responsibility for compliance with safety requirements is the entrepreneurs' alone. It is Feam's duty to guide and notify enterprises not complying with norms.

In 2008, the report listed 661 registered dams built with waste, 373 in the mining and quarrying sector and 233 in other industrial segments. As of 2008, data has been provided by filling in BDA's internet forms. The percentage of stable dams complying with norms and exhibiting low potential for causing environmental damage grew from 83% in 2007 to 86% in 2008, while the number of potentially unstable dams decreased from 10% to 9% over the same period. The number of dams whose stability cannot be reckoned due to lack of data or documentation dropped from 7% in 2007 to 5% in 2008.

State Policy for Solid Waste Management

Approval of State Policy for Solid Waste Management in late 2008 and its subsequent publication in January 2009 are both a framework and an advance in Minas Gerais' waste management. Through Feam and Copam, Sisema is now able to put its strategy in place on the basis of a text summing up strategic guidelines for waste management in the State.

Relevant issues are included in the text of the law, such as society's, public powers' and entrepreneurs' shared responsibility for residues, and valuation of recycling focusing on social inclusion. Matters such as a product's life-cycle, selective refuse collection, sorting and composting stations, integrated management and reverse logistics are also included.

In accordance with this new legislation, municipalities are obliged to have a policy for solid waste if they want to receive their proportion of the Ecological Tax on Circulation of Goods and Services (ICMS) linked to Environmental Sanitation, within environmental criteria. In order to be handed these funds, a municipality must also have a system for treatment or final disposal of refuse serving at least 70% of its urban population or a system for treating sanitary sewage serving 50% of its population. In 2008, the government of Minas Gerais State transferred R$ 24.3 million to municipalities complying with pre-established norms for environmental sanitation.

State Policy for Solid Waste Management also covers selective collection of refuse, biased in favor of environmental, social and economic aspects, seeking linkage with refuse collectors. In accordance with the text, municipalities must give preference to selective collection in urban areas, seeking partnership with associations and cooperatives.

Rain formation in the Municipality of Chapada Gaúcha, in the Serra das Araras Region.

CLIMATE CHANGE

In 2008 Sisema brought out Minas Gerais State's 1st Inventory of Greenhouse Gas Emissions, a pioneering initiative for quantification of emissions from socio-economic activity in a Brazilian state

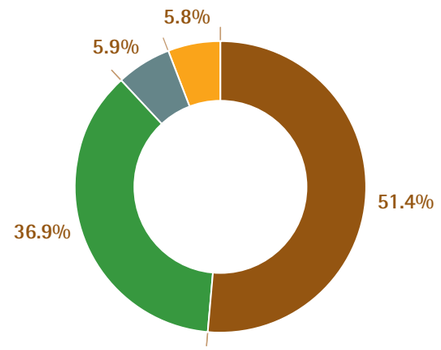
The State's first Inventory of Greenhouse Gas Emissions (GHGs) came out in November 2008, based on GHG Protocol methodology used by the Intergovernmental Panel on Climate Change (IPCC). Prepared by Sisema through Feam, the study examines the main greenhouse gases – carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O) – based on information for 2005. Feam enjoyed the support of IEF and the consulting service of the Center for Integrated Studies on the Environment and Climate Change (Centro Clima/Coppe), which is linked to the Federal University of Rio de Janeiro.

This initiative was a strategic step for inclusion of climate variables in drafting public policy of the State of Minas Gerais. After mapping, it will be possible to foster investment in alternative and cleaner technology, such as reusing residues in industrial processes, generating energy from methane gas (CH_4) – a result of decomposing organic matter in sanitary landfills – and optimizing use of energy in productive processes.

The inventory also contributes to identifying Minas Gerais' actual share of greenhouse gas produced in Brazil. The Agriculture, Forestry, Soil Use, Energy, Industrial Processes and Waste sectors were inventoried *(see chart)*.

In 2005, Minas Gerais' total emission of greenhouse gases was 122 million tons, equivalent to an annual average of 6.4 tons of CO_2 per inhabitant. Minas Gerais' average is smaller than the average for Brazil (9 tons/year per inhabitant); rather less than half of European countries' *per capita* emissions (12 tons/year per inhabitant); and one third of that for the United States (20 tons/year per inhabitant). One factor that might explain this relatively low average is large-scale use of renewable fuels such as alcohol and charcoal, and renewable energy sources such as hydroelectric power.

DIFFERENT SECTORS' SHARE OF TOTAL GREENHOUSE GAS EMISSIONS IN MINAS GERAIS STATE (VALUES IN GG CO_2EQ*)



** Gigagrams of carbon dioxide equivalent, representing the sum of all gases transformed into their equivalent in CO_2 according to their respective contribution to global warming.*

AIR QUALITY

In 2008, Sisema invested R$ 500 thousand in upgrading the air quality monitoring network, by purchasing more modern stations, updating software and training technicians.

This investment has led to more accurate analyses. In late 2008, for example, for the first time Feam registered a recurring increase in the presence of ozone in the atmosphere. With reference to air quality in Minas Gerais State, the index went from 0.117 in 2007, to 0.115 in 2008, showing a small reduction in the percentage of inhalable particles in suspension in the air. This minor change stems mainly from difficulty in implementing motor vehicle inspection in the State, a measure requiring greater support from other bodies.

State policy for reducing deforesting and land clearance has also helped. While land clearance accounts for 70% of greenhouse gases in Brazil as a whole, the figure for Minas Gerais State is 51.4%.

Feam is developing short and medium-term scenarios for Minas Gerais State, based on the inventory. The aim is to draft State Policy for Climate Change by 2010, linked to national strategy for the matter.

Another aim is to provide private companies with a tool based on the same conventions used by Feam to build up Minas Gerais' inventory, so that companies can measure their own emissions and thus contribute to minimizing their impact and help reduce the effects of climate change.

The proposal that Feam hopes to put in place, which has been defended by the body in forums and councils, is the inclusion of a variable for compensating CO_2 emissions as a compulsory criterion incorporated into the procedure for environmental regularisation. Companies would be held responsible for calculating their emissions, and Feam, which has already researched the viability of this measure, would be in charge of monitoring and controlling the process. However, forms of compensation have yet to be established.

Cleaner Production

After publication of the inventory, Sisema adopted some practical measures through the State Secretariat for the Environment and Sustainable Development (Semad). One consisted of signing protocols of intention with the Federation of Industry of the State of Minas Gerais (Fiemg) and with the Federation of Passenger Transportation of the State of Minas Gerais (Fetram).

These agreements involve a commitment from the entities concerned to make a joint effort to reduce emissions of greenhouse gases. The protocols include investment in Clean Development Mechanisms (CDM) projects, in accordance with the Kyoto Protocol, allowing sales of carbon credits in the international market.

Seeking induction of a more efficient product, with the least possible consumption of natural resources as well as effective reduction of GHG emissions, Feam is working on the **"Index for Cleaner Production"**[1], designed for manufacturing industry. Still at the pilot stage, the index is being built up on the basis of a number of indicators from large companies, such as consumption of energy, water and raw materials, volume of effluents and residues, atmospheric pollution and volume of GHG emissions.

Large companies take part on a voluntary basis. These companies are in Minas Gerais' six major industrial segments: steelmaking (pig iron), dairy products, textiles (tanning), metal/mechanical (auto parts) and cement producers (quartzite).

The objective is to produce a kind of certification, a sole quality index allowing comparison of companies in the same sector and, in the future, in different sectors.

Feam is currently endeavoring to refine the methodology for the process. Once concluded, the Cleaner Production program will be put in place, with the objective of attaining higher standards of **eco-efficiency**[2].

▲ Glossary

[1] Cleaner Production is a concept developed by the United Nations Environment Programme (UNEP) in cooperation with a network of agencies and governments, prioritizing prevention of pollution, conservation of natural resources and eco-efficiency. The objectives are rationalization of raw material and input use, elimination or reduction of production of waste, lessening the environmental impact of productive processes and increasing companies' eco-efficiency.

Source: Sisema's website

▲ Glossary

[2] Strategic action developed by companies to generate products and services with greater added value and, at the same time, consuming less energy, water and raw material, maximizing use of renewable sources, manufacturing more durable products that can be recycled, and generating less pollution.

Source: Based on *Almanaque* Brasil Socioambiental

QUALITY OF SOIL

Minas Gerais develops its own parameters to monitor soil contamination by chemicals

By means of its research project called Minas Gerais' Soil, the State is the second in Brazil to develop its own reference values for assessment of soil quality taking into account the natural concentration of chemical substances that may negatively affect human health or the environment. Values will serve as references to guide assessment, monitoring and control processes for contaminated areas, or where contamination is suspected, as well as providing a technical basis for taking emergency decisions or action.

Within the scope of action of the Structuring Project for Solid Waste, Minas Gerais' Soil is being developed by Feam in partnership with Minas Gerais' Technological Center Foundation (Cetec) and the Federal Universities of Viçosa (UFV), Lavras (Ufla) and Ouro Preto (Ufop). These entities signed the partnership agreements for this project in November 2008 and September 2009.

Work is currently at the stage of taking samples of the different kinds of soil in the State. These samples will be analyzed to determine the limits of substances for the State's soils to be considered clean.

Unlike atmospheric pollution and that of surface water, there is no standard international approach to assessing soil pollution. So far the State of Minas Gerais has used reference values from Sao Paulo or even foreign countries. However, it is necessary for Minas Gerais to determine its own standards due to the State's geological, climatic, hydrologic and geomorphologic particularities.

Contaminated areas

Throughout 2008 Feam developed a model for identifying contaminated areas in Minas Gerais State, whereby the company itself declares suspicion of contamination by filling out an internet form in the Environmental Statement Bank (BDA).

After registration, Feam orients the declaring company in connection with procedures necessary to confirm the suspicion (or not). In the affirmative, the foundation informs the company how it should proceed to reclaim the contaminated area. This cooperative task can be performed with companies that are willing to collaborate and make their own declaration.

Cataloging declarations by virtual means also enables Feam to inventory and map out contaminated areas, a measure performed by the Structuring Project for Solid Waste in the State of Minas Gerais.

The inventory was launched in 2008 and makes it possible to work out more efficient strategies to fight the problem. Fifty-six contaminated areas were registered, 55 of which belong to fuel filling stations and one to a rudimentary mine that had been abandoned. Feam believes this figure is too low due to environmental conditions existing in the State, stemming from the time when environmental matters were not on the agenda of the entrepreneurial and agricultural sectors, a period when the risks were still unknown.

Agrochemical use

The volume of agrochemicals used in agriculture in the State is a factor to have negatively influenced the Soil Index (IS), which is a part of the Performance Index for Environmental Public Policy (IDPA). Overuse of pesticides is currently the most critical contamination problem in the State.

Despite efforts to conserve soil and biodiversity by the proper use of fertilizers – which is also taken into account in the Soil Index – 2008 saw an increase of nearly 40% in fertilizer use as compared to 2007. Last year, 8.66 kg of agrochemical were used per planted hectare, well over the ideal figure of 1.5 kg per hectare.

To overcome this challenge, Sisema with the support of other State bodies, endeavors to implement rural extension programs to foster and guide rational use of agrochemicals.

PREPARED BY MANY HANDS

Preparing State Policy for Management of Solid Waste was an example of maturity in the relationship between the different collegiate and technical entities comprising Sisema. Texts went through an internal process of discussion which took a year and a half and considered, by means of tens of presential meetings and public consultation, the opinion of all parties involved, from NGOs to the business sector.

The text of the proposal was drafted by a partnership of Feam, the Federation of Industry of the State of Minas Gerais (Fiemg), the Brazilian Mining Institute (Ibram), the Forum of Environmental NGOs, and representatives of academia. The project's first minutes were thus sent to the offices of the eight Regional Superintendents for the Environment and Sustainable Development (Suprams) in the State, for discussion in Regional Collegiate Units (URCs) of the State Council for Environmental Policy (Copam). Changes and suggestions from URC councilors and Supram technicians were incorporated into the project, which also passed through Copam before being submitted to the Legislative Assembly, which in turn organized another four public audiences before passing the final text.

The project was wide in scope, and did not consider specific kinds of residues, which will be the object of their own regulations. This decision was taken to prevent undue delay in passing the law, as has occurred with the National Policy for Solid Waste, which has been bogged down in the National Congress since 1991.

The prerogative of discussing and deliberating these issues is Copam's, by means of specific norms.

Selective refuse collection, one of the legs State Policy for Management of Solid Waste stands on.

GRI REPORT SELF-DECLARED

GRI REPORT GRI CHECKED

About this report

As this is Sisema's first sustainability report based on the third version (G3) of Global Reporting Initiative (GRI) guidelines, and in the belief that drafting a report is a learning process, Sisema adhered to application level C. To be included in this classification, it is necessary to respond to at least 10 performance indicators, freely divided among social, economic and environmental spheres, as well as provide general information about the profiles of bodies and entities comprising the system.

Sisema's 2008 Sustainability Report was submitted to Global Reporting Initiative, and they confirmed applicability of level C for this publication. Twenty-three performance indicators were answered, of which 11 were social, 8 environmental and 4 economic.

The draft of this report also took into account the pilot version of the protocol of sector indicators of public agencies, to which reference is made in the second version (G2) of GRI's guidelines. Due to substantial changes between the two versions – G2 and G3 – Sisema decided not to establish any direct correlation between sector indicators and those in G3, which guide this report. For this reason, enunciation of public agencies' sector indicators, as well as the numbers of the pages where they are replied to, are at the end of the GRI Table of Contents, starting on page 85.

In order to establish the contents of this report, Sisema organized events for consulting servants – including a Work Group formed specifically for this project – as well as leaders, servants' associations and other employees – and representatives of external stakeholders, with both groups being invited to explain their requirements and suggestions. Differing expectations, internal and external, were used as guidelines for selecting priority subjects and indicators.

On approaching the end of this process, it can be concluded that subjects and indicators proposed by Sisema's leadership, the Work Group and external stakeholders were well tuned. As shown in the following chart, results indicate seven topics of priority in drafting the report. This objective was pursued until its conclusion.

Meeting to discuss report contents

Sectors	Participants	%
Consulting	2	9.1
Companies	2	9.1
Government*	6	27.3
NGOs	2	9.1
Sisema	9	41
University	1	4.5
Total	22	100

** Government indicates representatives from secretariats or government bodies other than Sisema's.*

TOPICS OF PRIORITY

Representation and planning

Context, history, profile and prospects

Governance

Budgetary resources and other financial resources

Policies

Corruption and harassment

Structure

Human Resources Policy and qualification of the technical corps

Services and prerogatives

Licensing

GRI APPLICATION LEVELS

		C	C+	B	B+	A	A+
Standard Disclosures	G3 Profile Disclosures	Report on: 1.1; 2.1 - 2.10; 3.1 - 3.8, 3.10 - 3.12; 4.1 - 4.4, 4.14 - 4.15.	Report Externally Assured	Report Externally Assured: 1.2; 3.9, 3.13; 4.5 - 4.13; 4.16 - 4.17.	Report Externally Assured	Same as requirement for Level B	Report Externally Assured
	G3 Management Approach Disclosures	Not Required		Management Approach Disclosures for each Indicator Category		Management Approach disclosed for each Indicator Category	
	G3 Performance Indicators & Sector Supplement Performance Indicators	Report on a minimum of 10 Performance Indicators, including at least one from each of: social, economic, and environment.		Report on a minimum of 20 Performance Indicators, at least one from each of: economic, environment, human rights, labor, society, product responsibility.		Respond on each core G3 and Sector Supplement indicator with due regard to the materiality Principle by either: a) reporting on the indicator or b) explaining the reason for its omission.	

GRI – TABLE OF CONTENTS

Profile indicators	Page reference/ response
Strategy and analysis	
1.1. Statement about the relevance of sustainability to the organization	2
1.2. Description of key impacts, risks, and opportunities	2
Organizational profile	
2.1. Name of the organization	Cover 2
2.2. Primary brands, products, and/or services	5
2.3. Operational structure of the organization	5, 6
2.4. Location of organization's headquarters	3
2.5. Number of countries where the organization operates, and countries with operations that are relevant to sustainability	5
2.6. Nature of ownership and legal form	5
2.7. Markets served	Cover 2
2.8. Scale of the reporting organization	5
2.9. Significant changes during the reporting period	4
2.10. Awards received in the reporting period	31
Report parameters	
Report profile	
3.1. Reporting period for information provided	2008
3.2. Date of most recent previous report	None
3.3. Reporting cycle	Annual
3.4. Contact point for questions regarding the report or its contents	renata.meirelles@meioambiente.mg.gov.br
Report scope and boundary	
3.5. Process for defining report content	84
3.6. Boundary of the report	84
3.7. Specific limitations on the scope or boundary of the report	84
3.8. Basis for reporting	84

3.9. Data measurement techniques and the bases of calculations	Informed along with indicators.
3.10. Explanation of the effect of any restatements of information provided in earlier reports, and the reasons for such restatement	None
3.11. Significant changes from previous reporting periods in the scope, boundary, or measurement methods applied in the report	None
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4.1. Governance structure of the organization	10
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4.3. Statement of the number of members of the highest governance body that are independent and/or non-executive members	10
4.4. Mechanisms for shareholders and employees to provide recommendations to the highest governance body	41
4.8. Internally developed statements of mission or values, codes of conduct, and principles relevant to economic, environmental, and social performance	27
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4.15. Basis for identification and selection of stakeholders	84
4.16. Approaches to stakeholder engagement	84
4.17. Key topics and concerns that have been raised through stakeholder engagement, and how the organization has responded to those key topics	84

Performance indicators	
Economic performance	Page reference/ response
EC1. Direct economic value generated and distributed	28
EC4. Significant financial assistance received from government	29, 30
Market presence	
EC5. Range of ratios of standard entry level wage compared to local minimum wage at significant locations of operation	All servants with Sisema receive remuneration above the National Minimum Wage. In 2008, the lowest wage paid by Sisema was equivalent to 181% of this baseline.
EC6. Policy, practices, and proportion of spending on locally-based suppliers at significant locations	30
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EN1. Materials used by weight or volume	31, 32
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EN3. Direct energy consumption by primary energy source	33
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EN8. Total water withdrawal by source	34
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EN17. Other relevant indirect greenhouse gas emissions by weight	36
EN22. Total weight of waste by type and disposal method	35
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EN26. Initiatives to mitigate environmental impacts of products and services, and extent of impact mitigation	Materials used – 32 Water consumption – 34 Emissions and waste – 36 Noise pollution and effluent emissions are not significant; therefore they are not measured by Sisema.
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EN29. Environmental impacts of transportation	34, 36
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LA1. Total workforce by employment type, employment contract, and region	38, 39
LA2. Total number and rate of employee turnover by age group, gender, and region	38, 39
LA3. Benefits provided to full-time employees that are not provided to temporary or part-time employees, by major operations	40
Occupational health and safety	
LA8. Education, training, counseling, prevention, and risk-control programs in place to assist workforce members, their families, or community members regarding serious diseases	Sisema has a nursery center with interns for minor daily attention and counseling, but there are no formal programs in place.
Training and education	
LA10 Average hours of training per year per employee by employee category	40
LA11. Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings	40
LA12. Percentage of employees receiving regular performance and career development reviews	All Sisema servants participate in a formal performance review.
Diversity and equal opportunity	
LA13. Composition of governance bodies and breakdown of employees per category according to gender, age group, minority group membership, and other indicators of diversity	38, 39
Social performance – Society	
Corruption	
SO2. Percentage and total number of business units analyzed for risks related to corruption	There is no systematic process to analyze risks of corruption in the units.
SO3. Percentage of employees trained in organization's anti-corruption policies and procedures	In 2008, Sisema did not hold specific training on the topic.
SO4. Actions taken in response to incidents of corruption	27
Sector indicators – Public agencies	
Profile of reporting organization	
Relationship to other governments or public authorities and the position of the agency within its immediate governmental structures; mission, functions, and responsibilities; operational structure; operating units/ facilities and related entities; jurisdiction or area in which it operates; legal form; primary users, beneficiaries, or main target groups of the public agency's activities, services, or interventions; stakeholders and relationship to the reporting organization	Cover 2, 2, 5, 6-9, 17, 18, 22
Governance	
Process for determining the expertise board members need to guide the strategic direction of the organization	41
Board-level processes for overseeing the organization's identification and management of economic, environmental, and social risks and opportunities	4, 14, 19, 20, 22
Organizational structure and key individuals responsible for oversight, implementation, and audit of internal policies related to sustainability	Partially responded. Cover 2

Stakeholder Engagement	
Approaches to stakeholder consultation reported in terms of frequency of consultations by type and by stakeholder group	2, 5, 11, 12, 18, 25, 61
Type of information generated by stakeholder consultations and use of information resulting from stakeholder engagements	5, 12, 16, 61
Policies and management systems	
Principal memberships in industry and business associations	The organization is part of the GRI's stakeholder group.
Systems for managing supply chain impacts, including contractors and sub-contractors	2, 26, 27, 30
Approach to managing indirect impacts on sustainability	2, 8, 17
Programs and procedures pertaining to economic, environmental, and social performance, including priority and target setting; programs to improve performance, communication and training; monitoring; auditing; and management review	31-37
Public policies and implementation measures	
Definition of sustainable development used by the public agency, and any statements or principles adopted to guide sustainable development polices	3, 13, 21
Identification of aspects for which the organization has established sustainable development policies	3, 19, 76
Identification of specific goals of the organization for each aspects listed in previous item	20, 23, 54, 72, 76
Description of process by which the aspects and goals above were set	19
For each goal, provide the following information: implementation measures; results of relevant assessments of the effectiveness of those measures before they are implemented; state targets and key indicators used to monitor progress; progress with respect to goals and targets; actions to ensure continuous improvement towards reaching the public agency's goals and targets; targets for next time period	Partially responded. 20-23, 79
Economic Indicators	
Total income broken down into capital and operating/recurrent revenue, including grants received	Partially responded.
Geographic breakdown of markets	28-30, 55, 70
Total sum of taxes of all types paid broken down by type	Cover 2
Gross expenditures broken down by type of payment (transfer, payment for service, investment, wages, taxes), including funds transferred by the agency to others	28-30
Gross expenditures broken down by financial classification	28-30
Describe procurement policy of the public agency as relates to sustainable development	2, 27, 30
Social Indicators	
Provisions for formal dialogue between management and worker representatives	41
Policies and procedures to evaluate and address performance within the supply chain and contractors, including monitoring systems and results of monitoring	27

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