

# The Best Human Development Index in Minas Gerais

The water and sewage services in Poços de Caldas Minas Gerais, were organised in 1929, with the participation of engineer Saturnine Francisco de Brito, considered one of the pioneers of sanitary engineering in Brazil. The municipality, with precious thermal springs, was the major destination for luxury and health tourism among the Brazilian elite until the middle of the past century.

## Thermal springs preceded the foundation of the municipality

In 2000, the Human Development Index (IDH) of the municipality was 0.841. The UNPD considered this a high index rate for human development.

The parameter that mostly contributed to population growth in the last decade was life expectancy, which rose by 39.5%, indicating good sanitary conditions in the municipality.

The history book of Poços de Caldas started with the discovery of the first springs in the 17<sup>th</sup> century. The rare waters with therapeutic properties were responsible for the prosperity of the city since its foundation, when the area started attracting ex-gold miners disillusioned by the decline of the mining activity. They went on to cattle farming and were forced to travel long distances in search of grazing lands for the animals.

Since 1886, there has been a health spa in the city, specialised in the treatment of skin diseases. The spa receives sulphur containing and thermal water from the Macacos Spring. The Emperor of Brazil, D. Pedro II, visited the Poços de Caldas community and inaugurated the Health Spa Pedro Botelho and the Station of the Company Mogiana Railways. Another spa was inaugurated in 1889, the year of the municipality's foundation.

The prohibition on gambling in 1946, and the discovery of antibiotics, had a strong impact on the city's tourism industry. Thermal waters stopped being advocated as the most effective treatment for diseases and the casinos closed down. The economy of Poços suffered a great setback, but soon found an alternative source of income by entering the "honeymoon cycle". The city was popular as a destination for honeymoon, so tourism remained a main source of income. After that period, the profile of the tourist changed. The middle class, in big groups, started frequenting the thermal springs, visiting the fountains and other attractions of the city, which were previously restricted to the elite.

Currently, the city is investing in order to increase the number of tourists by making use of other attractions, for all age groups, and seeks to develop alternative types of tourism such as ecological, cultural, adventure and extreme sports. Poços's

### Poços de Caldas, Minas Gerais

Population estimate, 2005: 151,605 / Urban population: 110,123 / Index of urban water assistance: 100% / Index of urban sewage assistance: 100% / Total cost of the service per m3 invoiced: R\$ 1.10 / Average tariff: R\$ 1.10 per m3 / Invoice revenue loss index: 47% / Productivity index: 4.2 workers per thousand water and sewer connections / Gross annual operational revenue (direct and indirect): R\$ 15,534,724.13 / Gross annual cost of the service: R\$ 15,107,521.31 / Annual utilisation cost: R\$ 13,449,206.37 / Average duration of repair works in sewage leakages: 0.10 hours / Coliforms outside the limit: 14.3 / HDI: 0.841 / Source: SNIS 2003, IBGE 2000

story was transformed into one of the samba-themes of the Carioca samba school Beija-flor (Hummingbird) in the 2006 Carnival. Beija-flor has been the champion of the 2003, 2004 and 2005 carnivals. The desire is that samba will boost the image of the municipality throughout the whole world.

## **DMAE administers the mineral waters**

The municipal Autonomous Service of sanitation runs the company Mineral Water Poços de Caldas, which collects, bottles and distributes the water in the market.

DMAE, together with the Sanitation Surveillance Agency, defined the rules for the operation of thermal springs used by the population and tourists. The waters of these springs are considered therapeutic and taste excellent. Filters, which are monitored by the Autonomous Service, were installed, thus improving the quality of potable water.

DMAE complies with Order 518/2004 of the Ministry of Health, which defines the parameters and establishes control and monitoring mechanisms to guarantee the quality of potable water. The monitoring of water quality is a responsibility of the Sanitation Surveillance departments of the Municipality's and the State's Health Secretaries.

The water quality laboratory is considered a regional model for its infrastructure and the skills of its technical personnel. DMAE has just implemented the Laboratory Quality programme in order to guarantee the use of state of the art techniques in the future.

## **Saturnino de Brito participated in the foundation of the service**

The water and sewage services were organised in 1929, with the creation of the Water Distribution Agency of the Poços de Caldas City Hall.

At that time, engineer Saturnino Francisco de Brito who is considered one of the pioneers of sanitation engineering in the country, was working in the city.

According to Sonaly Cristina Rezende, doctor of demography from UFMG and Professor Leo Heller cited in "Sanitation in Brazil - policies and interfaces", "when Saturnino de Brito started working on sanitation in 1890, the Brazilian cities were in precarious sanitary state.... The engineer was using all the appropriate technologies, according to the physical, cultural, social and economic dynamics of each Brazilian city....He was the principal campaigner for the adoption of the absolute separation system for sanitary sewage instead of the English, mixed system". One of the city's water supply dams is named after him.

The municipality of Poços de Caldas is located in the Southwest of Minas Gerais, 440 kilometres from Belo Horizonte, covering an area of 546 km<sup>2</sup>. The city, which is located in the crater of an inactive volcano at an altitude of about 1,200 m, does not have springs that produce significant water volumes, a fact that makes water collection and distribution more difficult.

The municipality has five springs of small and medium water flow and three water treatment plants. The Municipal Department of Water and Sewage (DMAE) is responsible for sanitation services. It was founded in September 1965 by Law 1.220.

About ten years ago, DMAE reached universal provision of water. This was achieved thanks to detailed planning and careful administration of water resources, combined with constant technological innovation.

The fact that Poços de Caldas has high quality mineral water and a seasonal increase in tourist numbers, raises water consumption significantly. The Autonomous Service guarantees better infrastructure and higher volumes of water during periods of high tourist influx.

The Municipal Master Plan foresees that the urban population, today around 150,000, will reach 190,000 by 2023, while the increase in the demand will be covered by a R\$ 1.5 million investment for the expansion of the Water Treatment Plant, which receives water from the Cipo Stream.

By 1995, sanitary sewage was collected from all residences. It is expected that by 2007, 100% of that sewage will be treated. Currently, there are two sewage treatment plants in operation, while the Sewage Treatment Plant of the das Antas Stream is under construction. According to the Autonomous Service this R\$ 15 million project, will allow the treatment of 100% of the municipality's sewage.

In the last two opinion polls carried out by the Municipal City Hall covering the periods 1997-2000 and 2001-2004, DMAE enjoyed high approval rates for its services from the population.

The sanitation and environmental control magazine "Environmental Sanitation", in the July 2005 article titled "Best of Sanitation", ranked DMAE as the 39<sup>th</sup> sanitation service operator in Brazil and the 3<sup>rd</sup> in the State of Minas Gerais. The article ranked the operators that invested the most in sanitation in 2005. In addition to sanitation, the municipal autonomous service of Poços de Caldas is involved in the administration of electricity production. The municipality of Poços de Caldas is unique for having a municipal department of electricity (DME Energetica). DMAE and DME have had joint projects for the recovery and protection of springs and the construction of emissaries.

Through this collaboration with DME Energetica, DMAE achieved a 15% reduction in electricity expenses.

## **The management plan aims to strengthen the personnel**

DMAE is the Competence Administration Plan, with a company specialised in human resources, aiming to modernise its activities and motivate an administrative reform process.

The 306 employees of DMAE are conscious of the importance of providing high quality services to the population and their collective responsibility for service provision. DMAE is adopting measures aiming to strengthen the image of the institution internally through the publication of a newspaper edited by the communication department, which consists of employees from various sectors of the Autonomous Service. The Autonomous Service has also produced an institutional video, emphasising the importance of its collaborators. It has also created an internet site which is updated daily with an intranet that facilitates communication between the departments and triggers improvements to DMAE's performance.

According to Rodopiano Marques Evangelista, director of the DMAE and president of the Minas Gerais division of the National Association of Municipal Sanitation Services (ASSEMAE), "the success of the Autonomous Service is owed to its qualified employees and their eagerness to use the most appropriate techniques for the improvement of the services".

The employees are participating in internal thematic commissions. DMAE confers with a Communication Council, formed by employees from various sectors of the service, who analyse the communication strategy and meet once a month.

Purchase requests are planned, analysed and assessed by a Requests Committee that meets every day and consists of employees from the purchase, legal, accounting and administration departments.

The new headquarters of DMAE is another project under construction that will further improve the quality of water and sewage services in the city. The new headquarters have a modern design, guaranteeing effective and functional services for the community.

## Tariff system guarantees investments and respect to the consumer

The law regulating the water and sewage tariffs in the municipality applies a progressive taxation system depending on the level of consumption, while implementing an internal cross subsidy system. The general expenses of the Autonomous Service are the main factors defining the price policy. Price and tariff readjustments are analysed by an Advisory Board and approved by the mayor through municipal decrees.

The public sanitation policy is defined by DMAE and the Municipal Executive Authority during the preparation of the municipal budget. The Autonomous Service's budget is composed of income tariffs and, eventually, by the capital transfer for big investments. DMAE's revenues cover entirely the maintenance and operation costs. The percentage of the revenues directed to investments averages 18%. This is the main source of investments on sanitation of the Autonomous Service.

Recently, the municipality received financing for investments from the Federal Government, through the Ministry of the Cities.

Currently there is a proposal in city hall to revise the Tariffs Law in order to harmonise with the new Civil Code. On this occasion, DMAE proposed a new tariff with a social focus, offering discounts for low income consumers.

Through the "Good Consumer" Programme, DMAE has analysed each case of failure in debt pay off, offering personalised solutions for debt regularisation.

### Control from the society

DMAE's organisational structure includes a Tariff Advisory Board, which analyses the price policy of the Autonomous Service. This board is composed of representatives from the Trade Association, the Accountants Union, the Bar Association, other departments of the Municipal Executive Authority and the Municipal Department of Electricity. This body also provides administrative assistance in the evaluation of the objectives and performance indicators for the Autonomous Services' monthly meetings.

DMAE participates in the Municipal Councils of Environment (CODEMA) and Health, and takes part in the regular municipal conferences on environment and health. Recently, DMAE participated in the Conference of the Cities. Furthermore, DMAE participates in the Council of the Botanical Garden.

## Technology

DMAE uses a probe with a video camera, also known as pipe locator, which examines the sewage and pluvial water networks searching for problems in the tubing. The equipment allows the maintenance team to work at specific locations and thus reduce expenses and avoid unnecessary excavations.

Digital monitoring through remote control and communication equipment, which are installed *on situ* and in DMAE's headquarters, allow the control of water levels and the water inflow and outflow rates in the reservoirs and the pumps. Digital monitoring leads to fast detection of any problem in the network and quick decisions on the appropriate actions.

DMAE is installing a satellite tracking system in its vehicles. In this way, it will be possible to locate, through digital images, any vehicle of the fleet anywhere in the country. The objective is to offer increased safety to the drivers and reduce expenses by cutting down unnecessary routes and thus optimise the use of vehicles.

## **Sanitary and environmental education**

Around 10% of the population of Poços de Caldas lives in the municipality's rural area. In order to cover the rural population's demand for public services of water supply and sanitary sewage, DMAE and the Technical Assistance and Rural Extension Company of the State of Minas Gerais (EMATER-MG), jointly with the Municipal Secretary of Economic Development, created the Rural Sanitation Programme. The aim of the programme is to provide technical assistance to the rural population for the construction of wells and septic cesspits and the planting of trees.

DMAE has been organising seminars in local schools on the importance of environmental education and prepares to further systematise this initiative through leaflets, shirts and audio-visual material, with the support of the Alcoa Aluminium Company.

The Autonomous Service has permanent informational campaigns on rational consumption of water, cleaning up of residential water reservoirs, alterations in the look and the taste of water, water leakages and on proper residential sanitation.

DMAE was authorised through a municipal decree to construct sanitary installations in residences, with the cost covered by the property owners, when there is contamination risk from leaked sanitary sewage to the public water supply system. Periodically, the Autonomous Service cleans up the water reservoirs in the municipality's public schools.

## **The Minas Gerais Ecology Award 2003**

DMAE invests in the Integrated Management Plan of Hydrographical Sub-Basins. This plan aims to carry out projects on pluvial water storage, pollution control, rational water use, legislation adaptation, information and environmental education, in partnership with various entities and the Public Authority, always directed toward sustainable development.

The concept of the plan is analysed by students of the municipal schools, through lectures and field visits. DMAE is also involved in the maintenance of wells, reforestation and pest control.

In 2003, the Integrated Management of the Sub-Basin of the Ponte Alta Stream Project was the winner of the 2003 Minas Gerais Ecology Award in the water category. Other participants in this project were the Municipal City Hall through the Municipal Secretary of Rural Issues (currently named Economic Development Secretary), the Municipal Department of Electricity (DME), the State Forests Institute of Minas Gerais (IEF), the Minas Gerais Institute of Agriculture and Livestock (MAGNET), private entities and rural producers.

DMAE participates actively in the Committee of the Hydrographical Sub-Basins of the Mogi Guacu and Pardo Rivers, which is located in the Autonomous Service's headquarters. Currently, the director of DMAE is the president of the Committee.

With the collaboration of William Lazaro de Oliveira