

# Belo Horizonte – MG, Brazil

## Belo Horizonte's steps towards a new solar energy legislation

The experience of Belo Horizonte – Minas Gerais (MG) in drafting laws on the use of solar heaters and its participation in the Sustainable Construction Policies (PoliCS) project demonstrates the role of local governments in promoting renewable energies and sustainable policies. They hold a unique set of regulatory and administrative tools. The creation of sustainable municipal model-programs under the direction of ICLEI is an excellent way of setting an example, involving all stakeholders and replicating successful experiences in other localities.

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### Abstract

As a result of the great number of buildings in the city using solar collector technology to heat up water, Belo Horizonte has become a national reference point. The city is considered to be the national solar energy capital.

The Energy Working Group (WG), under the PoliCS project, and the Belo Horizonte City Government Municipal Committee on Climate Change and Eco-efficiency drafted a bill on the installation of solar water heating systems in the city's private and public buildings. This bill is one of the key results of the collaboration between the Belo Horizonte Municipal Committee on Climate Change and Eco-efficiency and ICLEI Latin America and Caribbean Secretariat (LACS) that was realized through the Energy Working Group and its coordination with stakeholders. The development of a sustainable municipal model program is an excellent way to involve all stakeholders and replicating successful experiences in other localities.

### The Importance of energy efficiency in buildings

Due to the high level of energy consumption and greenhouse gas emissions, cities are considered to be one of the main contributors to global environmental change. Around 80 per cent of all energy is consumed in cities, generating around two thirds of global CO<sub>2</sub> emissions, and the tendency is that this will increase.

The Intergovernmental Panel on Climate Change (IPCC) projected that by 2020, CO<sub>2</sub> emissions from buildings could be reduced by around 30 per cent globally in an economically efficient way, such as by adapting buildings to local climates and introducing new technologies like solar heating systems.

Cities are not only part of the problem, but also part of the solution. In this context, the PoliCS project, an ICLEI initiative, aimed to commit local governments in South America to develop and implement sustainable construction policies with an emphasis on energy efficiency and fostering low carbon emission technologies.



#### Population / Land area

~ 2.45 million / 331 km<sup>2</sup>

#### Municipal budget

Approx. 6.5 billion BRL (2009)  
(2.8 billion €)

*Belo Horizonte joined ICLEI  
in June 1993.*



The PoliCS project, which is part of the global ICLEI Cities for Climate Protection™ (CCP) campaign, aimed at exploring solutions to reduce greenhouse gas emissions in the civil construction industry in South America.

## Case Study

### The City Context

Belo Horizonte is the capital of the State of Minas Gerais and the center of a major metropolitan region. It contributes 1.4 per cent to Brazil's GDP. Belo Horizonte is a center for services, knowledge and technology with its industrial park being one of the five largest in South America. Industries include automotive, steel, electronics and civil construction. The city's economic standing is on par with the largest Latin-American cities.

Belo Horizonte has a history of pro-actively addressing urban problems. For example the Solid Wastes Management Plan for the Construction Sector is in force since 1995, while the national CONAMA resolution number 307, which regulates construction debris issues, was only published in 2002. Belo Horizonte is also one of the few Brazilian cities that produced a greenhouse gas inventory in 2009.

### Belo Horizonte, Brazil's solar energy capital, moves towards a law on solar heating use

#### Solar initiatives in Belo Horizonte

Because of the high number of multi-family buildings that are equipped with solar collectors for water heating, Belo Horizonte is considered to be Brazil's solar energy capital. It has become a national reference point. However, there is no statutory requirement that regulates the mandatory use of solar panels in buildings. This case study highlights the emergence of a respective regulation.

In 1990, the solar energy initiative was introduced by a combined action of the local electricity company, Minas Gerais Energy Company (CEMIG), the Federal University of Minas Gerais, (UFMG), Minas Gerais Catholic University (PUC Minas) and local manufacturers. The aim was to explore the potential and

Photo: © BH Solar



Solar water heating systems

## Solar energy in Belo Horizonte, Minas Gerais and Brazil in comparison

The thermal solar energy sector in Brazil grows at an average rate of 20 per cent per year. In 2001, it grew by 120 per cent.

Area of installed solar panels per inhabitant:

- Belo Horizonte = 326 m<sup>2</sup> per 1,000 inhabitants.
- Minas Gerais = 98.6 m<sup>2</sup> per 1,000 inhabitants.
- Brazil = 27.4 m<sup>2</sup> per 1,000 inhabitants.

Total area in Minas Gerais: 1.98 million m<sup>2</sup> of solar collectors, of which over 800,000 m<sup>2</sup> are in Belo Horizonte.

In any region of Brazil, solar heating systems can provide annual energy savings in monthly energy bills of between 30 and 60 per cent depending on the panels' sizes and dimensions.

The Brazilian Electricity Regulatory Agency (ANEEL) Resolution 300/2008 made it mandatory for energy concessionaires to direct at least 0.5 per cent of their annual net operating revenue to programs that include energy efficiency actions and projects. In Minas Gerais, CEMIG has applied a considerable part of these resources to solar heaters for housing developments. In 2009, CEMIG installed 7,500 solar heating systems in social housing units in the State of Minas Gerais, and another 15,000 are to be installed in 2010 (bidding already completed).

opportunities for using solar technology in buildings. The results of the research by CEMIG estimated that savings of up to 80 per cent could be achieved in buildings using solar panels instead of electric shower heaters.

There are currently about 2,600 buildings in Belo Horizonte that use this technology, with 800 thousand square meters of installed solar collectors. This has resulted in an annual reduction of over 22,000 tons of CO<sub>2</sub> through savings in electricity consumption.

Belo Horizonte will be one of the host cities for the 2014 World Cup. The event is expected to attract around 30 new hotels, as well as other infrastructures for sport, urban mobility, tourism, communications and public utility projects. This would be an opportunity to provide a legal framework for the mandatory use of solar heaters in new buildings.

### Partnerships and projects

Renewable energy sources have become a stronger consideration since the Municipal Committee on Climate Change and Eco-efficiency (CMMCE) was created by the government of Belo Horizonte in 2006.

The Committee was established to discuss and implement actions that:

- reduce greenhouse gas emissions;
- use renewable energy sources;
- improve energy efficiency and sustainable use of energy.

The Committee has an advisory and coordinating role for public and private sector policies to reduce polluting gases and raise environmental awareness. It is made up by representatives of the city's executive bodies, City Council, State Government, universities, NGOs and representative entities of industry and trade.

The CMMCE was the main executor of the PoliCS Project in Belo Horizonte and one of its objectives has been to develop a legislation that makes the use of solar energy mandatory.

One of the first steps was the creation of two Working Groups on Energy and Sanitation in August 2009, which Belo Horizonte and ICLEI considered as key themes for the city. The Working Groups sought to develop sustainable building policies for their respective theme. The groups are coordinated by government representatives and meet at least once a month. The results of these meetings have been various such as building capacity, raising awareness and developing public policies.

### **Towards the solar law**

The Energy Working Group contributed considerably to the implementation of a solar law in Belo Horizonte. The law addresses the installation of solar water heating systems in the city's public and private buildings.

The first draft of the bill was sent by the Committee to the responsible party, the Governmental Secretariat, which forwarded it to the Urban Policies Secretariat. This secretariat discussed it with the Joint Offices for Housing and Urban Regulation to put forward its recommendations. The Committee then adapted the text of the bill to include the recommendations by the Urban Policy Office. The bill was then sent again to the Governmental Secretariat, where it remains. If approved, the bill will be sent to the City Council for voting, and if approved will be sanctioned by the mayor. The law will then be regulated through a decree by the executive branch. During this process the Committee and the Energy Working Group seek to raise the importance of the law and ensure support and approval.

### **Inclusion of technical parameters**

Belo Horizonte decided to have a concise law proposal to leave the inclusion of technical parameters for the regulatory stage. The design of the regulation becomes, thus, an executive decision, relying on the municipality's technical staff and other stakeholders to design the parameters of the law and regulatory implementation. According to the bill, solar water heating systems should have the potential to provide at least 51 per cent of the annual energy demand for heating water. Furthermore, the heating system equipment must have the Inmetro seal.

## **Results and Impacts of the Project in the Community**

- **Legislation:** The draft bill on solar water heating systems, that should provide at least 51 per cent of the annual energy demand for heating water, is one of the main outputs of the collaboration between the Belo Horizonte City Government Municipal Committee on Climate Change and ICLEI, mostly through the PoliCS Energy Working Group and its coordination with stakeholders.
- **Capacity and institution building:** While the bill was being drafted, institutions of the government were strengthened and capacity was built. This is important for the future implementation of sustainable building policies. The process enabled, at various points in time, capacity building of public managers, technical staff of the governments and of the private sector.
- **Inter-governmental collaboration:** The Energy Working Group that worked on this bill was composed of approximately 20 people. Among the municipal offices involved were the Secretariats of the Environment, Government, Urban Regulation, Housing as well as the Bureau for Development of the Capital (SEUDECAP).



- **Stakeholder involvement:** Partnerships between the government of Belo Horizonte and other stakeholders involved in the implementation of the law were also strengthened. Important was also the contact and exchange of experiences between Belo Horizonte and other governments that were part of the PoliCS project, through the support of ICLEI, such as Buenos Aires and Montevideo and other participating governments such as Betim-MG, Porto Alegre-RS and São Paulo-SP.

## Lessons Learned

The following elements can be singled out as lessons learned from the issuing of the solar heating law in Belo Horizonte:

**Internal Body for preparation and coordination:** An internal body within the city government, such as the Municipal Committee on Climate Change and Eco-efficiency, helps to bring together relevant information, promote the extensive participation of stakeholders and coordinate actions among them.



Photo: © Municipality of Belo Horizonte

Meeting of the Municipal Committee on Climate Change and Ecoefficiency in 2010

**International projects provide new impulses:** The participation in an international project, in the case of Belo Horizonte in ICLEI's Rede Elo and PoliCS projects, can give new impulses to the development of a law.

**Participation of stakeholders:** The participation of important segments of society, the relevant municipal bodies as well as specialists with the relevant expertise is essential to the drafting of the law.

**Collaboration with specialists:** Expertise is important to avoid inconsistencies or the unfeasibility of the law.

**Investing in capacity and training:** Already in the process of drafting the bill, it is important to invest in capacity building and training in order to ensure that the installation of solar panels can be carried out successfully once the law has been passed.

**Collaborating with the Executive Branch:** Bills can be drafted either by the executive branch of the city or through the legislative power (City Council). Following a law approval, when it foresees regulation, it requires an executive

decree. The decree's objective is to explain in detail the rules and norms contained in the law and establish procedures that must be undertaken to comply with the law.

**Building capacity and knowledge through cooperation and exchange among municipalities:** ICLEI's coordination of the PoliCS project, facilitating capacity building, supplying information, promoting partnerships and exchanges among the project cities and other local governments constituted an essential element of the process. For example, representatives of the Energy Work Group participate in the Renewable Energies Center Advisory Group in Betim - MG. The Center was also drafting a bill at the same time as Betim's solar law and both cities shared information and acquired new knowledge.

## Replication

The number of policies on solar heating has grown in recent years and in particular since 2008. Spain was among the first countries to approve such a policy. On the local level the City of Barcelona is exemplary. Barcelona's experience has provided the model for many policies on solar power in Brazil, especially in the City of São Paulo, which enacted its law on July the 3rd 2007.

Based on the experience of Belo Horizonte, the following steps are suggested for those embarking on a similar process:

Photo: © ICLEI LACS



Meeting of the  
Energy Working Group

Creating a government body to converge sustainability activities: Despite the importance of the CMMCE for Belo Horizonte, very few Brazilian cities have a similar municipal agency. Through ICLEI projects, such as Rede Elo, other cities like Betim-MG and Porto Alegre-RS are also following this path, concentrating their energy sustainability actions in the CRER – Centers of Reference in Renewable Energies.

Fostering of multidisciplinary partnerships: Through bodies such as CMMCE and CRER, it is possible to promote the participation

of various segments of society in the development and implementation of public sustainability policies.

## Budget and Finances

The PoliCS project received the support of the technical staff of the City of Belo Horizonte. The participation of other stakeholders in the CMMCE and the Energy Work Group was made possible through partnerships, without the need of financial investment by the City.

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