

Betim, Brazil

The Renewable Energy Reference Centre: Engaging stakeholders in renewable energy applications

The City of Betim established the first Renewable Energy Reference Centre (CRER) through the Local Renewable Network in Brazil. The first of its kind in Brazil, CRER has since become a focal point for the dissemination of knowledge and experience in renewable energy and energy efficiency. Through exemplary action, CRER has proved that it is a resource centre worth replicating.

105

ICLEI Case Studies

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Abstract

The main objective of the Renewable Energy Reference Centre (CRER) is to act as a node and driving force for the incorporation of renewable energy (RE) and energy efficiency (EE) into Betim's municipal development plan. CRER seeks to dispense information and encourage RE and EE solutions to meet the challenge of climate change and energy savings. Since its inception, CRER has served as an important tool to raise local and regional awareness, provide information, set up demonstration projects and monitor impacts.

CRER put the theoretical to test with concrete actions, by providing information to city dwellers and visitors about how to optimize daily energy use. CRER enhances this knowledge transfer through displaying their on-site renewable energy system. Through these activities, Betim is closer to realizing a sustainable energy future, with implications for Brazil as a whole.

Importance of Renewable Energy and Energy Efficiency

RE and EE are fundamental in realizing a sustainable future. RE sources include solar, wind, water, earth, and biomass. The energy from these sources can be captured as heat or electrical energy. In addition to being virtually infinite, RE sources present less negative environmental impacts than both fossil fuels and nuclear power. RE sources also represent a unique opportunity to electrify communities without access to electricity, and in Brazil, this corresponds to 15% of the population.

Additional benefits to local communities include stimulation in human capacity development for new skills and technologies, a strengthened local economy, the creation of market demand, and a reduction in energy costs through the more efficient transmission and distribution of energy. This cost reduction comes through the elimination of energy losses that inevitably occur in grid transport, through the local siting of many RE projects, and through matching an energy resource to final energy use. All listed benefits aid in job creation. In addition, RE and EE strategies could also promote links between the public and private sectors, attracting national and international investment.



Population:

approx. 435,000 (2008)

Land area:

346 km²

Municipal budget:

approx. R\$ 725 million (2007)
(US\$ 377 million)



An ICLEI Initiative

ICLEI supports and strengthens local governments which promote the generation and supply of renewable energy and energy efficiency in the urban environment.

Case Study



The City of Betim

Photo: City of Betim

Betim in Context

Betim is situated in the state of Minas Gerais, 30 km from the state capital Belo Horizonte. The city's industrial growth and its notable economic prosperity is matched by population growth. Today the city is home to approximately 435,000 inhabitants.

Betim's industrial and population growth are responsible for a large portion of the region's greenhouse gas (GHG) emissions, and have contributed to the growing contamination of the river running through Betim and a rise in waste production. While this scenario may seem dire, it has served as a source of inspiration for Betim, and Betim has not spared any efforts to mitigate social and environmental impacts caused by its intense industrial growth.

Since 2002 Betim has participated in ICLEI's Cities for Climate Protection (CCP™) Campaign, developed a GHG inventory, and made a commitment to cap and reduce its emissions levels. Betim has stood out in its activities related to renewable energy, specifically its activities that provide solar energy for under-privileged communities. This leadership led ICLEI to select Betim as a model community in ICLEI's Local Renewables Initiative in 2005.

CRER Betim was launched by the City of Betim with a mission to incorporate renewable energy services in local development and be a center of information and dissemination of technologies and projects in renewable energy to inspire public policies and actions in other cities.

The Renewable Energy Reference Centre (CRER)

The Origin: The Renewable Energy Reference Centre (CRER) was launched in Betim in June 2006 during the Local Renewable Network's first international event in Brazil. At this event, ICLEI organized a workshop that reflected the desired multi-stakeholder approach, and included a wide range of participants from the beginning: the six Brazilian network communities, representatives from various sectors of Betim's government, NGOs such as Cidades Solares (Solar Cities), agencies from the Federal Government such as IBAMA (Brazilian Institute of Environment and Natural Resources), strategic partners such as CEMIG (Minas Gerais Energy Company), and the Secretariat of Environment and Sustainable Development from the State of Minas Gerais (SEMAD). Workshop participants supported the definition of the priorities and expectations for CRER, in its function and activities.

The involvement of this multi-stakeholder group was essential in creating a centre that not only serves the needs of Betim, but also serves public institutions, business and civil society within and outside of Brazil. By integrating the workshop participants' suggestions in its workplan, CRER established itself as a centre with open doors for a wide-ranging audience. In order to reach these objectives, CRER's technical staff, with the support of ICLEI and CRER's work-group, established a work plan that details its main activities. These activities included organizing an activity programme for RE and EE, making reference materials both virtually and physically available, and offering technical support.

The importance of involving stakeholders: A work-group was created to help the Centre overcome the challenge of being the first of its kind in Brazil. Composed of multiple stakeholders, the work-group meets once a month to assist project staff, oversee decision making and provide advice. The importance of the work-group was evident in the organization of the 2nd International Seminar of



Renewable Energy, Energy Efficiency and Local Power that took place in Betim in June 2007, in which the work-group members were intensely involved and their contribution to the seminar's promotion, theme discussion, speaker selection and contact, among other assistance was indispensable for a successful event.

Continued capacity-building: The Centre's staff was continually at full capacity with the constant development of new studies and projects. In response, study visits to several reference centres were arranged, and Betim and the other Network Communities met with the representatives of other Brazilian, Indian and European cities that have already implemented RE and EE strategies, or that are beginning to develop their own strategies. These activities enabled CRER's founders to learn about activities that have been successful in other places in order to replicate them in Betim's Centre.

Partnerships guarantee success: The partnerships established through the project have contributed to the project's success. Before the project began, Betim had established a partnership with the Minas Gerais Energy Company (CEMIG), for the purpose of installing solar heaters in public housing units (which continues today). As a result of this partnership, CEMIG committed itself to build an eco-efficient building that could house CRER. The eco-efficient building will incorporate several types of RE and EE technologies that can be shown to the Centre's visitors. The building is still under construction, and in the meantime CRER-Betim is housed within the Adjunct Secretariat of Environment. Another important partnership between Betim and the Caixa Econômica Federal (Bank), is expected to lead to the installation of a biodigestor at the Centre.

Political commitment: Just as important as the institutional partnerships was the active participation from the city's political leadership. The participation of the mayor and secretaries of other city sectors served as inspiration and was a stronghold during the first phase of the project. Such responsiveness and proactiveness brought concrete results, including a growth in the centre's staff.

Results and Impacts of the Centre's Work

Betim's success has attracted the attention of their municipal neighbours, the State of Minas Gerais, Brazil and the international community. Several specialists and national politicians have visited Betim to learn about this first model community. In parallel, Betim's mayor, secretaries and technocrats have dedicated themselves to the promotion of RE and EE in other countries such as Germany, South Africa, Canada, India and the United Kingdom.

CRER has become a centre of exchange and debate: CRER integrated the city of Betim, LR cities and other partners through events such as international seminars. They have collaborated with other networks and reference centres in Nagpur (India), Freiburg (Germany), Leicester and Machynlleth (United Kingdom). CRER's 2007 Debate and Presentation Series on Renewable Energies and Energy Efficiency (RENOVAR) raised awareness through five debates that took place with over 1,000 participants, where carbon credits, biodiesel, biodigestors, ethanol distilleries and fundraising methods for sustainable energy projects were all debated. CRER also promoted RE and EE through many of its partnerships.

CRER's Work-group is composed of:

- Betim's Adjunct Secretary for the Environment
- Betim's Municipal Council
- Municipal Company of Transportation and Traffic (Transbetim)
- Companhia Energética de Minas Gerais (CEMIG)
- Minas Gerais State Secretary of the Environment and Sustainable Development (SEMAD)
- Belo Horizonte
- OngTrem
- Projecto Gaia
- Betim's Superintendent of Habitation
- ICLEI - Local Governments for Sustainability

Photo: CRER Betim



Visitors learning about and viewing Betim's solar installations.

CRER has become an information centre on the subjects of RE and EE: CRER provides information on RE and EE technology, hosts a collection of relevant literature, and has an installation RE and EE equipment on-site that includes diverse types of solar energy equipment and an ethanol-burning stove. CRER's website (www.crer.betim.mg.gov.br) is a key component in making information available to the public.

CRER's technical support has resulted in tangible improvements, for example:

- Initiation of the procurement process for the substitution of conventional traffic lights for LEDs in public ways in the city of Betim, with an aim to reduce 90% of energy consumption in each stop light;
- Mobilization of cities to use low-cost solar heaters in residences;
- Engagement of local businesses in the consultation process of the Internal Commission of Energy Conservation (CICE);
- Use of biodiesel in the company that operates the city's public transit system, which is composed of 560 vehicles;
- Signature of a mayoral decree which established the purchasing preference for multi-flex vehicles;
- Development and implementation of a biodigester and environmental education project in the outskirts of the city;
- Installation of 1,684 solar heaters in public housing units for low-income families; and
- 100% substitution of mercury-based for sodium-based lighting in Betim's public ways.

Lessons Learned

- **Raising awareness and acceptance in the general population takes time and needs patience:** One of the project's greatest challenges was raising low-income family awareness of RE, specifically solar energy. Being concerned with basic short term needs, these families originally were highly resistive to the idea that the initial elevated costs related to the installation of the solar energy equipment would eventually be compensated by energy savings and environmental benefits.
- **Poverty alleviation measures and sustainability measures must be taken in tandem :** Due to precarious living conditions, some of the community members sold their solar heaters in order to receive money that would be used for more immediate needs such as food and education. In other cases, the heater was bartered for old refrigerators that when used actually raised energy use rather than the intended reduction. In other cases, the installation was more expensive because of precarious architecture that was incapable of supporting the weight of the solar installations (about 230 kg), requiring structural interventions and thus increased costs. Facing these difficulties, CRER's members realized that environmentally sustainable measures cannot precede or be disassociated from poverty alleviation measures. More importantly, it is necessary to convince the population and other government leaders that the adoption of renewable energy could bring multiple benefits such as the reduction in energy costs for its less privileged communities.

- **Familiarity of the city's staff with the community and the issue is key:** Another important lesson learned is that in order for a reference centre to accomplish its mission with authority, its staff must have a wide-ranging knowledge base about the locality to be able to disseminate the information effectively. Therefore, all efforts to create centres such as the one in Betim cannot precede staff training and capacity building. The training offered by ICLEI through site visits, courses, and encounters with partners from other centres was fundamental for the consolidation of bases for CRER Betim.



One of the solar systems installed on Betim roofs.

Decision makers have to be able to explain the issue and its importance:

In addition to training the technocrats and staff responsible for the implementation of the project, it was also realized that it is necessary to target decision makers to give them the tools to understand the importance of renewable energy, to thereby enhance communication between the technical and political spheres. It is necessary here to highlight the extreme importance of creating and strengthening opportunities for the interaction between technical staff and politicians involved in a project.

Partnerships, and cross-sectoral and inter-office cooperation are crucial:

The case of Betim also demonstrates that the success of initiatives related to sustainable development is related to the coordination of not only the environmental sector but with the inclusion of multiple societal sectors. Betim serves as a practical example of how to engage public servants from other municipal sectors such as infrastructure and transportation in 'environmental' projects. The importance of partnerships that encompass a diverse collaboration among various sectors is highly evident in the CRER Betim case and was fundamental for the consolidation of projects planned to better the quality of life for its citizens and deliver indirect benefits.

Partnerships can be complex and require patience: While the inclusion of multiple sectors is important for project success, it can also present difficulties that should be addressed with flexibility. The partnership between Betim and CEMIG provided this lesson, while CEMIG's donation of the eco-efficient building to serve as CRER's home was received with much enthusiasm, the diverse actors involved in the donation caused innumerable delays in the construction. Faced with this delay, the Adjunct Secretary of Environment with the support of the municipality's leadership, offered a space to serve as CRER's headquarters while the procedures associated with the donation were being finalized. Without this flexibility, CRER's inauguration would have suffered more delays and other negative results could have materialized.

International cooperation can increase the effectiveness of a project: Having an outside body to contribute information and technical resources smoothes project uptake. Guidance from localities that have experience dealing with an issue a city is experiencing can facilitate an expedited and more effective solution. Such collaboration avoids many of the difficulties of being a pioneer in addressing issues being faced by a community and with projects like CRER.



Betim's solar roofs in low income areas: 1,684 units have been installed thus far.

Replication

The fundamental principle behind the project and the development of CRER, is its ability to be replicated, and the dissemination of information that it organizes and produces.

CRER has already begun to go beyond its local borders. In addition to having the participation of an audience from diverse regions of Brazil in its Debate and Presentation Series on Renewable Energies and Energy Efficiency (RENOVAR) and a high-traffic website, CRER has begun to take RENOVAR to other cities and regions. One of the most crucial strategies has been to dedicate time to visit other centres and promote both the process of CRER's creation and its activities in various forums in and outside of Brazil.

Staff and Actors Involved

CRER's staff is composed of two full-time staff members and one intern under the supervision of Betim's Adjunct Secretary of Environment. It is important to highlight the importance of the working-group that has supported CRER and its operations. See the text box on page 3.

Budget and Financing

CRER – Betim is directly associated with the Adjunct Secretariat of Environment and receives resources from this institution and partners mentioned in this document. Capacity building of staff and the facilitation of international exchange, including study visits and costs are co- funded through international donors, such as the British Government's Strategic Programme Fund (2005 – 2007) and German Federal Ministry for Economic Cooperation and Development (2008 – 2010).

ICLEI's Local Renewables Initiative

With the Local Renewables Initiative, ICLEI supports and strengthens local governments in increasing the generation and supply of renewable energy and energy efficiency in the urban environment. It is the roles and responsibilities of local governments that the initiative focuses upon as the driving force for innovation and investment in these communities.

The Local Renewables Model Communities Network

ICLEI's Local Renewables Model Communities Network is a key component of the Local Renewables Initiative. The Network is an international project where leading cities cooperate in sharing their expertise and experience with Renewable Energy and Energy Efficiency.

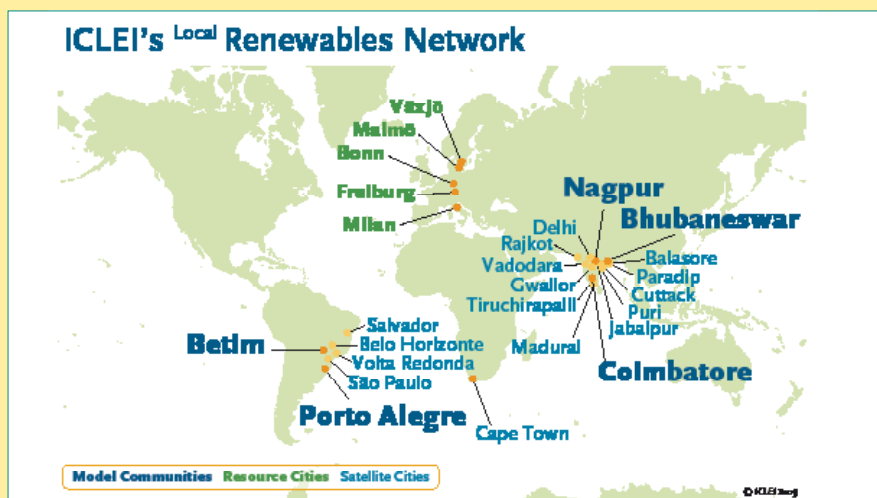
India and Brazil are the countries in which special support can be given to selected model cities, due to generous funding from the German Federal Ministry for Economic Cooperation and Development and the GTZ. Model communities are supported to develop exemplary practices with the goal to also inform and encourage other local governments to follow.

Activities with model communities include:

- Compiling energy audits and energy status reports,
- Researching urban renewable energy potential,
- Involving stakeholders,
- Developing local policies for RE and EE and adopting these policies in the municipal council, and
- Establishing and operating RE and EE Resource Centres as places to learn, showcase practical RE and EE applications, and to provide technical expertise.

ICLEI invites selected local governments to join the Network. They are selected according to region-specific criteria and funding availability. The LR Network connects three types of cities:

- (a) Model Communities: cities or towns that have declared their intention of becoming model communities, and have made a formal commitment to local renewable strategies.
- (b) Resource Communities: cities or towns that would like to share their resources with other cities in the Network and beyond. Resource communities have highly developed renewable energy and energy efficiency strategies, with effective actions implemented.
- (c) Observer Communities: cities or towns that have an interest in learning with the Network and contribute when possible.



Currently Indian, Latin American and European cities are part of the LR Network Model Communities. Betim was the first Model Community in Latin America, followed by Porto Alegre. Additional Brazilian communities in the Network include the Observer communities of Belo Horizonte (MG), Salvador (BA), Sao Paulo (SP) and Volta Redonda (RJ).

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Photo: CRER Betim

Knowledge sharing and exchange at CRER Betim

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Prefeitura de
BETIM
Cidade para Todos

ICLEI – Local Governments for Sustainability is an international association of local governments implementing sustainable development. ICLEI's mission is to build and serve a worldwide movement of local governments to achieve tangible improvements in global sustainability with special focus on environmental conditions through cumulative local actions.



This case study is part of a series focusing on the activities of ICLEI members across the globe. ICLEI World Secretariat, Toronto, Canada. Email: iclei@iclei.org

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