Porto Alegre, Brazil

Enhancing solar energy: Legal incentives and institutional provisions in Porto Alegre

ICLEI Local Governments for Sustainability

Porto Alegre, one of the greenest cities in Brazil, created a legal regulation framework with incentives for the use of solar thermal energy. The city, however, faces various challenges in the implementation of the law. The Renewable Energies Reference Center (CRER) in Porto Alegre is studying ways to overcome these difficulties and to encourage the use of solar energy in the municipality.

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Abstract

Porto Alegre is considered as one of the greenest cities in Brazil with over 1.2 million trees. The law on vegetation compensation provides procedures and a framework for the removal, transplantation or pruning of plant species. The legislation ensures off-set standards for any removal of vegetation. Porto Alegre has a longstanding tradition of maintaining the city's green reputation.

The 2006 revision of the vegetation law (Decree 15.418/2006) took the current context of climate change into consideration. It added to the planting of a mandatory number of trees an alternative option. In the case of new buildings, the off-set for removed trees can in addition be achieved by combining two sustainable building measures. As additional off-set measures solar heaters, rainwater collectors and the use of certified wood can be combined. However, in practical terms the legal framework did not show the desired impact.

This case study identifies key challenges for the effective implementation of the legal framework and offers solutions to overcoming these. CRER, and in particular its Advisory Group, has been identified as a stakeholder of great importance in the process of identifying and implementing new solutions.

Population / Land area
~ 1.43 Mill. / 470 km²

Municipal budget
Approx. BRL 2.8 billion (2008)
(€ 1.2 billion)

Porto Alegre joined ICLEI in November 1997.

Importance of institutional provisions for solar energy

Cities account for around 80 per cent of all energy consumed worldwide, and it is estimated that 60 to 90 per cent of greenhouse gas (GHG) emissions in cities originate from the use of fossil fuels for transportation and the generation of energy. Therefore, cities must also be part of the solution. Local governments dispose of a wide range of instruments to minimize emissions, create incentives for low carbon economies, and implement a sustainable approach to urban planning.

For guaranteeing the long-term success regulations, possible ineffectiveness need to be identified through a close monitoring process and corrections carried out.

Creative solutions, which can be achieved through discussions among stakeholders gathered within CRER´s Advisory Group, as well as gaining their political support by adopting a multilateral approach to the process, contribute to achieving better results and stimulate the expansion of local renewable energy.

LOCAL RENEWABLES
An ICLEI Initiative

This case study was developed under the auspices of ICLEI's Local Renewables Initiative which refers to locally and efficiently generated renewable energies.

Case Study

The City Context

Porto Alegre is the capital city and with 1.4 million inhabitants the largest city of the State of Rio Grande do Sul in the South of Brazil. The city is an important trading center due to its proximity to Argentina and Uruguay and part of the Mercosul free trade zone.

Porto Alegre has been a model for other cities in and outside of Brazil. Within ICLEI's Cities for Climate Protection (CCP) campaign, Porto Alegre developed its GHG inventory, which serves as a basis for its action plan for the reduction of GHG emissions.

The city joined the Local Renewables Model Communities Network Project (LR Network) in 2006, which is part of ICLEI's Local Renewables Initiative. The LR Network aims to promote renewable energies and energy efficiency by enhancing the roles and responsibilities of local governments as a driving force for technological innovation and investment in sustainable development. For the second phase of the project in Brasil, Porto Alegre was selected in 2008 as a Model Community in the LR Network. As a part of the project, Porto Alegre took the important step of creating a Renewable Energies Reference Center (CRER) in the city.

Photo: Municipality of Porto Alegre, Brazil

Porto Alegre

COMAM

The Environmental Municipal Council (COMAM) is made up of representatives of civil society that directly participate in the administration's public management. Under the framework of the Municipal Secretariat of Environment (SMAM), it has an advisory and deliberative character and is able to propose and formulate environmental policies for the municipality and to follow-up on its implementation. COMAM is comprised by 27 members with renewable mandates that last two years.

Promoting solar energy through legal incentives

In Porto Alegre the Municipal Secretariat of Environment (SMAM) is the executive body responsible for the protection of the natural environment and the monitoring of the municipality's environmental quality.

With the Urban Arborization Master Plan (vegetation and open space development) (Resolution no. 05/2006) the Environmental Municipal Council (COMAM) introduced an instrument for policies on planting, preservation, management and expansion of vegetation in Porto Alegre. In addition to this regulation, SMAM

revised the legislation on vegetation (Decree No. 15.418/2006) that regulates the removal, transplantation and pruning of vegetation. It also defines how construction and urban arborization (arboriculture) can comply with existing vegetation, and ensure the compensation for all vegetation that is removed.

The municipal authorities integrated a special article into the legislation on vegetation to stimulate the use of certified wood, rainwater recycling systems and thermal solar energy. Article 22 of Chapter VII should render construction in the municipality more sustainable.

In the case of buildings, the number of saplings to be replaced in accordance with the vegetation replacement table in Annex I or when an environmental permit is required, shall be reduced by half if the venture complies with at least two of the following:

I – the use of certified wood;
II – rainwater recycling systems
III – use of solar energy that meets demand of at least 30 per cent.

Photo: Municipality of Porto Alegre, Brazil

Solar Panels in Porto Alegre

Difficulties and possible solutions

The law, however, has fallen short of expectations as it has failed to substantially increase the use of certified wood, rain water collectors and solar energy in new constructions. Only a few buildings have off-set removed vegetation with the use of solar energy and rainwater collectors. And even in these cases, the construction company had anyway planned to implement these technologies even without the exact knowledge of the actual benefits from the legal incentive.

In order to better understand the limited impact of the law, CRER contacted the unit responsible for the procedures of verification of compliance, the Natural Environment Coordination Unit (CAN), which is composed of professional biologists and agronomists. As it appears, CAN was having technical difficulties in assessing whether a construction meets the law's requirements. For instance, CAN have no expertise in determining whether a solar panel system would meet 30 per cent of the heated water demand of a building, as is required by the Decree.

One solution would be to assign engineers from the Municipal Secretariat of Public Works and Roads (SMOV) for the technical aspects of the building verification process. SMOV has a competent team with expertise in the approval and inspection of construction projects. In the light of SMOV's expertise, the Environmental Secretariat should discuss with SMOV the possibility of taking over responsibilities for the assessment of buildings to determine compliance with the standards foreseen by the Decree.

CRER's main goals

Education: To expand and disseminate knowledge about renewable energies and energy efficiency;
Public policies: To promote the development of public policies that enhance the use of sustainable energy technologies in Porto Alegre;
Projects: to implement projects that use renewable energies technologies and energy efficiency.

Renewable energy incentives and CRER's role

One of the positive aspects of the above mentioned Article 22 is that it provides an incentive to invest into renewable energy sources such as solar thermal energy and in this way enhances the reduction of GHG emissions. Renewable energy sources are considered to mitigate global warming and effects of climate change.

Solar thermal energy also offers to decrease the electricity consumption and therefore increase financial savings to its users. A successful example is the installation of solar heaters in housing developments in Betim-MG. As a consequence of these investments the energy consumption dropped by 25 per cent which translated into a reduction of the electricity bills by 57 per cent for households comprising 3 to 4 persons (see also ICLEI Case Study #112, Betim, Brazil).

CRER seeks to develop and promote renewable energy policies. It involves the relevant stakeholders in its activities through an Advisory Group (AG) that is composed of representatives from a variety of stakeholders from the civil society. Also the implementation of the vegetation law has been added to the work plan of the advisory group. Currently, CRER explores together with its stakeholders the measures that are required to increase the applicability and incentives of Article 22 (Decree 15.418).

CRER understands that the next necessary step is to identify who has the expertise to inspect construction plans that claim to be in accordance with the law. Once a solution to this challenge is found, CRER will begin, in a second step, to work with its AG and others in order to establish a long-term campaign with the goal of informing people about the 30 per cent solar energy policy and its benefits.

Photo: Municipality of Porto Alegre, Brazil

CRER Advisory Group - Porto Alegre

Results and Impacts of the Project in the Community

Monitoring: Through ICLEI's LR Network project and in particular CRER's research on the existing legislation on renewable energy and energy efficiency, CRER discovered that communities did not take advantage of the benefits the law on the compensation of vegetation provides.

Challenges: As part of its mission to promote local renewables, CRER has already identified some of the challenges. It is currently working to solve them with the goal of expanding the installation of solar heaters in new buildings in Porto Alegre.

Technical expertise: CRER identified a lack of technical expertise, which is required for the inspection of the proper implementation of the law. Identification of concrete problems is important to formulate the solutions. In the current stage, CRER is in contact with other municipal entities that have expertise in evaluating the possibility of officially transferring supervision functions to a municipal body with the required know-how.

Public awareness: Through raising public awareness on the economic and financial incentives created by the "law on the compensation of vegetation", CRER leaves its mark in the field of renewable energies.

Lessons Learned

The experience with the legislation on vegetation sheds light on the importance of the following processes:

Assessment: There should be an assessment of the application of legislation in the field of renewable energy. Studies on the incentives for communities to invest into renewable energy sources could be carried out in order to achieve more efficient results.

Technological expertise and professional competence: Complex projects with a technological dimension require that the relevant expertise is considered in drafting of the legislation on the respective issues. Policy makers also need to make sure that staff with the relevant expertise will be assigned to relevant positions.

Monitoring: Experts with the relevant knowledge need to monitor the implementation of the legislation and identify inefficiencies that then can be adjusted for more efficient policies.

Publicity and learning cycles: Positive results motivate those involved in the process, whereas negative results indicate a need for improvement. A virtuous learning cycle can be initiated which in turn will benefit future legislators.

Involving stakeholders: Multi-sectoral debates not only result in comprehensive solutions by incorporating different viewpoints through conciliation, but they also guarantee a better application of the policy since stakeholders with decision-making power have been involved in the process.

Replication

The lessons learned from this case study can be widely replicated among legislators at all levels of government.

The provision of incentives to install solar heaters through the umbrella legislation on environmental friendly compensation for constructions, can be easily

replicated in other municipalities. Many local administrations across Brazil have implemented similar legislation. CRER's experience in making this legislation effective may teach the way for other interested parties.

Budget and Finances

There were no expenses identified specifically for this action. The Porto Alegre CRER team and its operational expenses are paid for by the Municipality of Porto Alegre.

Local Renewables materials for Brazil

- **Case Study # 105:** The Renewable Energy Reference Centre: Engaging stakeholder in renewable energy applications; Betim Brazil.
- **Case Study # 106:** Cooking oil waste is used in community development with the Eco-oil Programme; Volta Redonda, Brazil.
- **Case Study # 107:** Turning pollution into profit: the Bandeirantes Landfill Gas to Energy Project; Sao Paulo, Brazil .
- **Case Study # 112:** Solar heaters in low income housing: Energy and financial savings in Betim; Betim, Brazil.
- **Case Study # 113:** Stakeholder involvement groups for Local Renewables in Betim and Porto Alegre; Betim and Porto Alegre, Brazil.
- **Case Study # 114:** Portuguese: Energia Solar é Incentivada em Lei sobre Compensação Vegetal em Porto Alegre; Porto Alegre, Brazil.
- **Case Study # 115:** Portuguese: Cemig leva Eenergia Elétrica elétrica chega à a comunidade de baixa renda com apoio do CRER Betim; Betim, Brazil.
- **Case Study # 122:** No caminho do sol – os passos de Belo Horizonte rumo à lei solar; Belo Horizonte - Minas Gerais, Brazil.

Further case studies about energy efficiency and renewable energy in India, Brazil and European, as well as city completion reports for the Local Renewables project are available on the project website. **www.iclei.org/local-renewables**

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