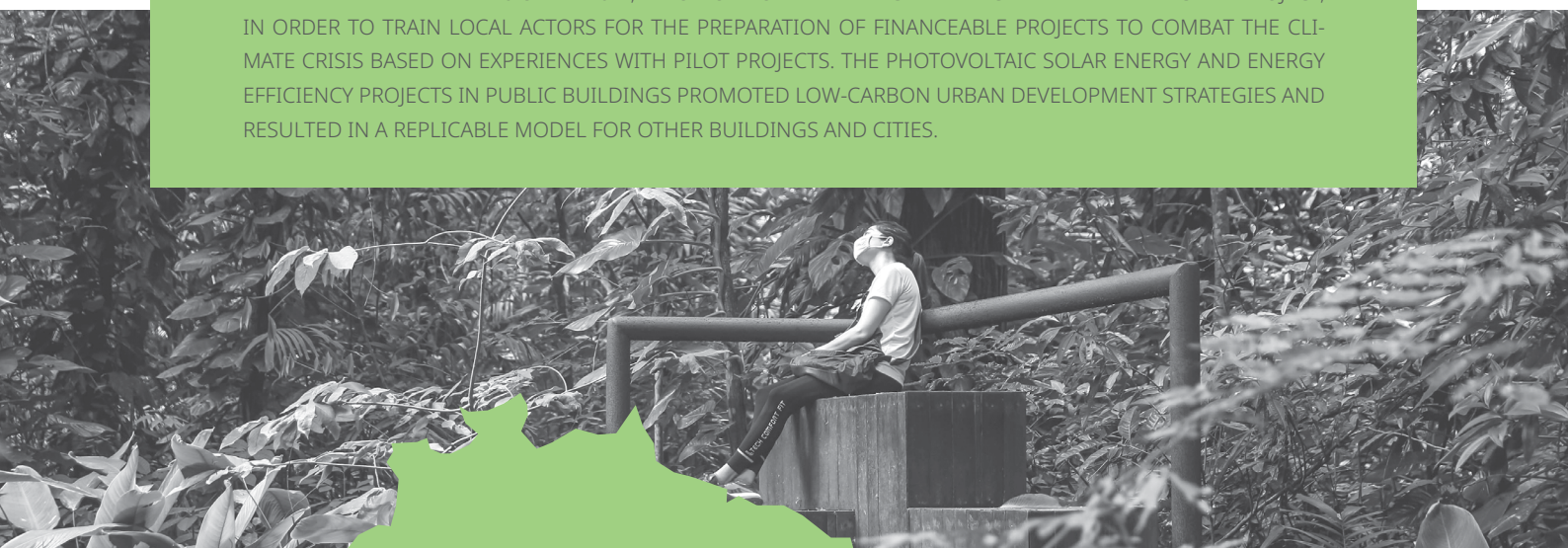


BELO HORIZONTE AND RECIFE, BRAZIL

EMPOWERING LOCAL ACTORS TO DEVELOP PROJECTS THAT
CAN BE FINANCED BY CLIMATE ACTION



BETWEEN 2019 AND 2021, BELO HORIZONTE AND RECIFE PARTICIPATED IN THE LEDS LAB PROJECT, IN ORDER TO TRAIN LOCAL ACTORS FOR THE PREPARATION OF FINANCEABLE PROJECTS TO COMBAT THE CLIMATE CRISIS BASED ON EXPERIENCES WITH PILOT PROJECTS. THE PHOTOVOLTAIC SOLAR ENERGY AND ENERGY EFFICIENCY PROJECTS IN PUBLIC BUILDINGS PROMOTED LOW-CARBON URBAN DEVELOPMENT STRATEGIES AND RESULTED IN A REPLICABLE MODEL FOR OTHER BUILDINGS AND CITIES.



LEDs LAB CITIES IN BRAZIL

RECIFE

BELO HORIZONTE

RESUME

In order to form a laboratory for financing climate action projects, LEDs Lab, an initiative that is part of the Urban-LEDs II project, selected two Brazilian cities to provide technical assistance in the preparation and implementation of energy efficiency and photovoltaic energy projects – Belo Horizonte and Recife. The initiatives took place in public buildings in the education sector (Herbert José de Souza Municipal School, in Belo Horizonte) and in the health sector (Recife Women's Hospital), resulting in the promotion of clean energy sources, reducing greenhouse gas emissions, and in financial savings for the municipality.

The initiative aimed to collaborate with one of the great challenges of local governments: obtaining financing for climate mitigation and adaptation projects. Through training offered by consultants, mapping potential funders and the bridges created by collaborators of the LEDs Lab project, Municipal managers were able to improve their capacity to prepare financeable projects and take another step towards achieving the cities' climate goals.

The Guide for the Elaboration of Financeable Climate Action Projects, made available to the entire ICLEI network, is one of the products resulting from these experiences and can guide municipalities in the preparation of financeable projects.

CONTEXT

CITIES IN DEVELOPING COUNTRIES IN THE FIGHT AGAINST CLIMATE EMERGENCIES

Cities are key players in tackling the climate emergency. It is estimated that greenhouse gas (GHG) emissions from urban activities may correspond to about 70% of global anthropogenic emissions (UN-Habitat, 2011; UN-Habitat, 2020), therefore, the city has a strategic role in climate mitigation. Furthermore, the impacts resulting from global warming can strongly affect cities (IPCC, 2014), which is why urban climate adaptation actions are also urgently needed.

In order to respond to this global threat, as established by the Paris Agreement, it is essential that there are “financial

BELO HORIZONTE

ASSOCIATED WITH THE ICLEI NETWORK SINCE 1993

RECIFE

ASSOCIATED WITH THE ICLEI NETWORK SINCE 2015



flows compatible with a trajectory towards a development that is low in greenhouse gases and resilient to climate change” (Paris Agreement, 2015). However, cities belonging to developing countries are not always able to allocate their own resources to climate action projects. Therefore, it is very important that city halls have professionals trained to design robust projects and access alternative sources of financing to municipal resources, making climate finance reach the local scale.



WE UNDERSTAND MORE CLEARLY THE FINANCING MECHANISMS AND WE BETTER UNDERSTAND CERTAIN STRUCTURES THAT ARE WITHIN THE CITY HALL ITSELF. THIS CAME FROM THE WORK, THE TRAINING GIVEN AND THE OTHER BRIDGES THAT WERE OPENED TO EXPAND KNOWLEDGE ON THIS SUBJECT. WE ARE NEW PROFESSIONALS TODAY.”

Ana Maria Caetano, Secretary of Environment of Belo Horizonte

LEDS LAB

ARTICULATION OF LOCAL ACTORS TO IMPLEMENT PROJECTS TO COMBAT THE CLIMATE CRISIS

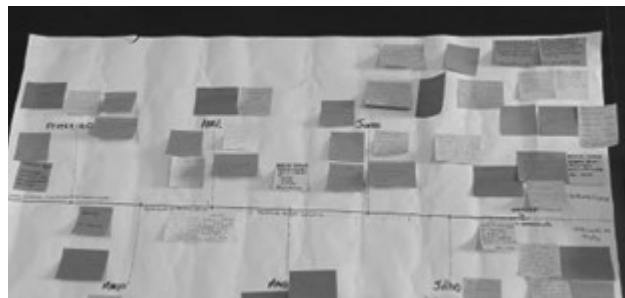
AN AMBITION THAT GOES BEYOND THE EXECUTION OF THE PILOT PROJECT

Launched in 2019, LEDS Lab was part of the Urban-LEDS II project, financed by the European Commission and implemented through a partnership between UN-Habitat and ICLEI - Local Governments for Sustainability. The initiative aimed to improve the installed capacity of city halls for the preparation of financeable projects, considering aspects of mitigation and adaptation to climate change.

For this purpose, four cities were selected, two in Brazil (Belo Horizonte and Recife) and two in Colombia (Envigado and Tópaga), for the implementation of photovoltaic solar energy pilot projects and energy efficiency measures in public buildings, subject to execution in the short term and replicability.

In addition, a consortium of specialized consultants, comprising Mitsidi Projetos, I Care & Consult, Markup Consultores and Hill Consulting, was hired to support the implementation of these projects. The consortium was responsible, together with ICLEI, for the development of all stages of the project, including the implementation of the pilot project and the mapping of funding sources.

Although the visible result in Brazilian cities is the photovoltaic system and the retrofit of lighting installed in the selected buildings, the technical strengthening of the parties involved and the creation of a model to help municipalities in the preparation and implementation of financeable climate projects were two key deliveries of the projects.



Figures 1 and 2. Flavia Bellaguarda, ICLEI Climate Change Advisor, presenting the LEDS Lab timeline used for the dynamic “How can I contribute to the LEDS Lab?”. Belo Horizonte, February 2020. Photo taken by Vladimir Faria.

ENGAGEMENT OF LOCAL ACTORS AND FORMATION OF A WORKING GROUP

The engagement of local actors, mainly municipal employees, was a key aspect of the project, as its primary objective was to improve the installed capacity in the city halls. As a result, a Working Group (WG), with the participation of different municipal bodies and secretariats, was formed to foster the structuring of climate governance in municipalities, enabling them to prepare financeable projects, in addition to identifying possible contributions of each part for the development of the project.

The WG of Belo Horizonte was composed of 14 organizations and the WG of Recife, of 10. Focal points were designated in each of them (people to assume a leadership

role who would have constant communication with ICLEI and consultants), professionals from the Municipal Secretariat of the Environment, in Belo Horizonte, and of the Secretariat of Environment and Sustainability, in Recife. The importance of the involvement of the Secretariats of Education, in Belo Horizonte, and of Health, in Recife, is also highlighted, as a public school and hospital were chosen, respectively, for the implementation of the projects. In addition, although there seems to be no direct relationship between these secretariats and the climate issue, it is a cross-cutting and intersectoral agenda, which requires all sectors of the city to integrate the climate perspective in their actions and decision-making.

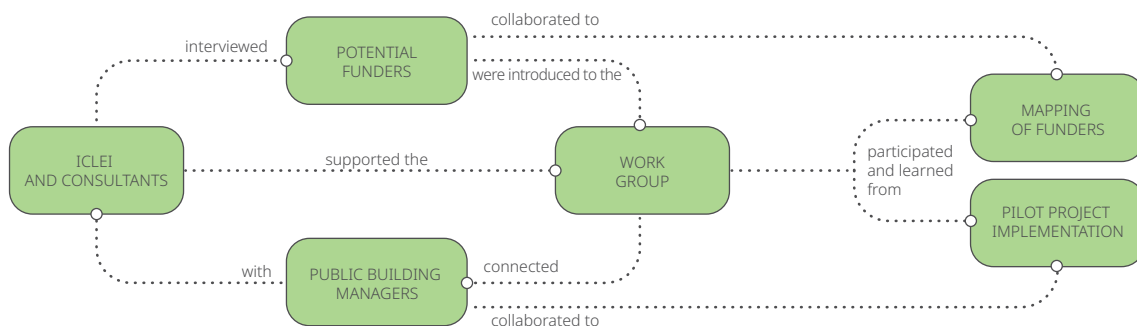


Figure 3. Connections and articulations between actors for project implementation
Source: Prepared by ICLEI - Local Governments for Sustainability Secretariat for South America

STRATEGIES TO STRENGTHEN CAPACITY WITH MUNICIPAL ACTORS

The project combined two strategies to train city halls in the preparation of financeable projects: theoretical learning, through workshops, webinars and meetings, which required constant interaction between participants; and practical learning, which consisted of the active participation of the Working Groups for the preparation and monitoring of pilot projects and mapping of potential sources of funding. The municipalities, through the WGs, were positioned as protagonists in the process, ensuring collective learning and ownership of the project. As illustrated in Figure 3, the connections and articulations between the actors were fundamental for the implementation.

The support provided by ICLEI and the consultants to the WGs in the preparation of pilot projects was based on

strengthening the capacities of local actors considering the governance, technical and financial pillars. The governance capacity was mainly strengthened with learning built from the mapping of internal and external actors, definition of engagement strategies and establishment and alignment of commitments between actors. The improvement of the technical capacity was achieved through the management of the buildings' energy diagnosis, the evaluation of intervention alternatives and the definition of management mechanisms for the implementation and operation of the project. Finally, financial capacity was increased through understanding the institutional conditions and criteria for obtaining financing and participating in the mapping of potential sources.

IMPLEMENTATION OF THE PILOT PROJECT AND MAPPING OF FUNDING SOURCES

Project options to be developed as a pilot for the LEDS Lab were identified with the city halls and a project was selected in each city. In Recife, it was decided to implement the project at the Recife Women's Hospital and, in Belo Horizonte, at the Herbert José de Souza Municipal School. After selecting the pilot projects, energy diagnoses of the buildings were carried out. Consultants detailed a set of possible interventions and proposed, in both cities, the installation of a photovoltaic system and the improvement of energy efficiency through the retrofit of lighting, replacing conventional light bulbs with LED. The interventions, approved by competent bodies, could be financed by seed capital, made

available by the Urban-LEDS II project, or by obtaining resources from one of the mapped financing sources.

The mapping of funding sources explored the opportunities for municipalities to carry out all the proposed interventions in the selected buildings, the feasibility of expanding the project and replicating the model in other buildings. This mapping was one of the products delivered to city halls, with guidance to municipal teams, aiming at a good result in fundraising.

In Figure 4, a simplified flowchart of the development of these steps in the LEDS Lab is presented.

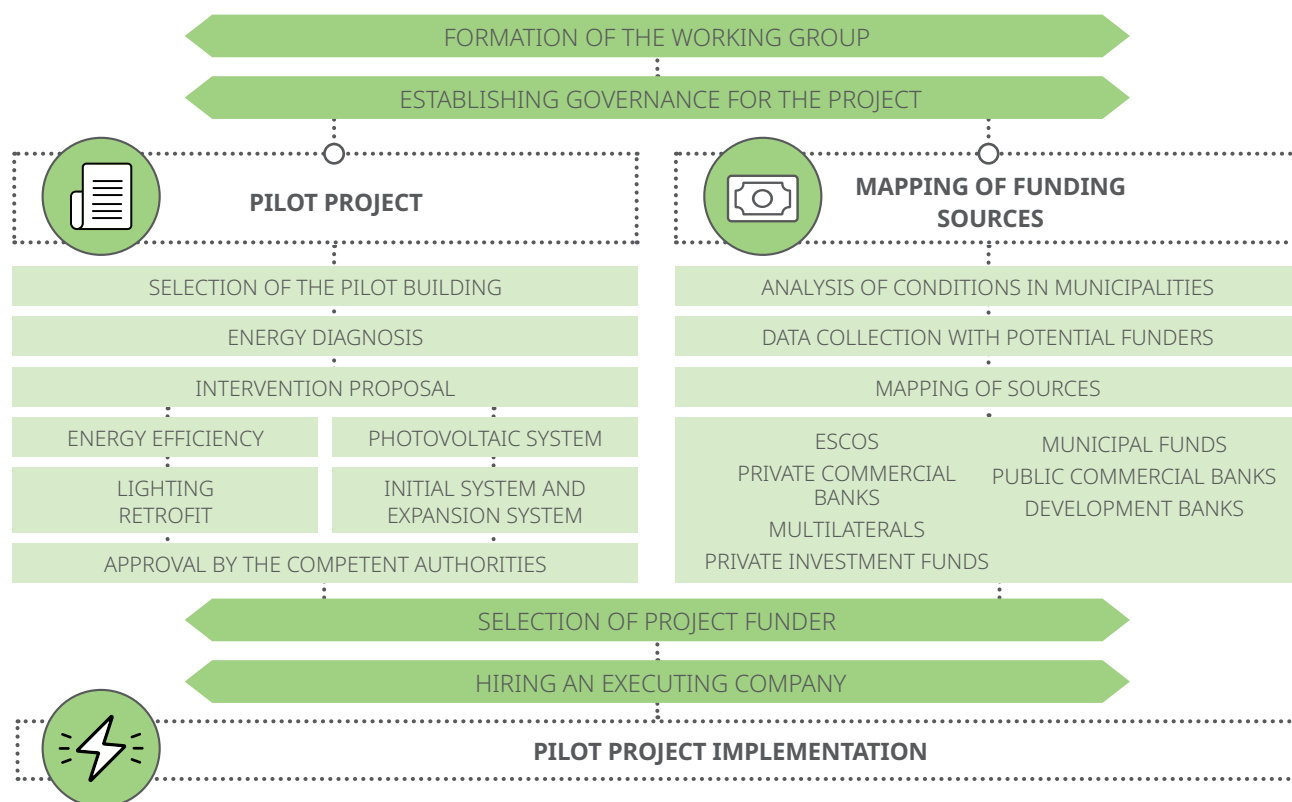


Figure 4. Simplified flowchart of LEDS Lab development
Source: Adapted from ICLEI; Mitsididi; I Care; Markup; Hill (2020a, 2020b)

COSTS AND FINANCING

The LEDS Lab project was financed by the European Commission and the resources foreseen included the provision of seed money to be used in the implementation of the pilot projects in Recife and Belo Horizonte.

In Recife, the successful mapping of potential financing sources culminated in the opportunity to finance the project by CELPE (Pernambuco Energy Company), through resources remaining from the Energy Efficiency Program (PEE) that are available for the concessionaire to use in projects of strategic interest. CELPE financed the

initial photovoltaic solar energy generation system, the expansion project provided for in the plan delivered by the consultants, in addition to the retrofit of the external lighting. The total value of the investment made by CELPE was R\$1,278,000.00. In Belo Horizonte, seed capital was used to implement the pilot project in the amount of R\$347,627.68.

The resource that would be used in the Recife pilot project was then redirected to the creation of two Educational Centers; one in each participating city.

TOTAL FUNDING BY CELPE IN RECIFE

R\$ 1.278.000,00

URBAN-LEDS II SEED MONEY IN BH

R\$347.627,68

OVERALL RESULTS OF LEDS LAB IN BRAZIL

The results of the LEDS Lab, presented below, show the potential of the model to assist local governments in raising funds for climate action projects.

- **Improvement of the installed capacity in city halls for the elaboration of financeable projects to fight the climate crisis.** During the project, the capacities of the city hall were strengthened considering the governance, technical and financial pillars. In total, 24 organizations (the vast majority linked to city halls) were involved in the LEDS Lab. Although the WGs' collaborators did not all participate to the same extent in the initiative, it was possible to sensitize a diverse group of actors regarding the climate emergency and produce shared knowledge on the preparation of financeable projects.
- **Mapping of funding sources.** Twelve potential sources of financing were mapped for Belo Horizonte and 13 for Recife, with an indication of the best options for raising the resources needed by the city hall for the implementation of projects similar to the LEDS Lab. This product, delivered to city halls, aims to assist the municipal team in the steps following the implementation of the pilot projects. The document lists detailed information about each source, including forms of financing, products, deadlines and necessary procedures.
- **Preparation of the Guide for the Elaboration of Financeable Climate Action Projects.** The Guide was a product developed during the LEDS Lab process with cities. In it, a step-by-step guide is structured to guide actors in conducting a project that can be successful in obtaining financing for climate action. The guide has versions in Portuguese, Spanish and English and will be disseminated through the ICLEI global network.
- **Creation of two Educational Centers** (Figures 5 and 6). The Educational Centers, installed in November 2021 at the Center for Idioms, Languages, Innovation and Creativity - CLIC, in Belo Horizonte, and at the EcoNúcleo Jaqueira, in Recife, aim to serve as a teaching laboratory to disseminate topics such as climate change, renewable energies and energy efficiency, as well as a space for exhibition and meeting for various social actors. The target audience of the Centers is diverse and includes municipal public education students, city hall employees, community or educational environmental groups, groups led by ICLEI, among others.
- **Pilot projects implemented in the short term during the COVID-19 pandemic.** Only the initial meetings and mobilizations took place before March 2020. Most of the project took place during the pandemic, which affected, in particular, the Recife Health Department and, significantly, the Belo Horizonte Department of Education, both of extreme relevance to the project. Even in this context, due to the engagement of local actors, it was possible to complete the pilot projects in 2021, within the foreseen deadline.



Figure 5 - Educational Center installed in Belo Horizonte's Municipal Education Department, MG. Source: Sapoti Projetos Culturais (2021)



Figure 6 - EcoNúcleo Jaqueira Educational Center, at Parque da Jaqueira in Recife, PE. Source: Sapoti Projetos Culturais (2021).



BELO HORIZONTE

CONTEXT

Capital of the state of Minas Gerais, the city of Belo Horizonte (BH) is located in the southeast region of Brazil and is the sixth most populous city in the country, with approximately 2.5 million inhabitants in 2020 (IBGE, 2020).

The municipality has a relevant history of local planning for actions to combat climate change, having as its main pillars the Municipal Policy to Mitigate the Effects of Climate Change, instituted in 2011; the Municipal Committee on Climate Change and Eco-efficiency, created in 2006; the Greenhouse Gas Inventories, with emissions assessed between 2000 and 2019, and the Greenhouse Gas Reduction Plan, revised in 2020 (PBH, 2021).

Within the scope of LEDS Lab, the “Solar Schools Project: Energy to renew the hopes of future generations”, submitted by Belo Horizonte in the selection, emerged from an initiative called COMpassos that aims to integrate universities, community and local government, with the Federal University of Minas Gerais (UFMG) as an important actor in this process. After the integration of the project to the LEDS Lab, the Municipal School Herbert José de Souza was selected for the implementation of the pilot project, having stood out for being the largest school unit in the northern region of the city and for being located in an area of climate vulnerability. The pilot project consisted of implementing an 81.45 kWp photovoltaic system and replacing all conventional light bulbs with LED.

DATA

Population

2,52 million (2020)

Total area

331,354 km² (2020)

Municipal GDP

91.957,09 million (2018)

Available GHG Emissions Inventory

2000 to 2019

GHG Emission Indicators

4.160.083 ton/CO₂e (2019)

SPECIFIC RESULTS

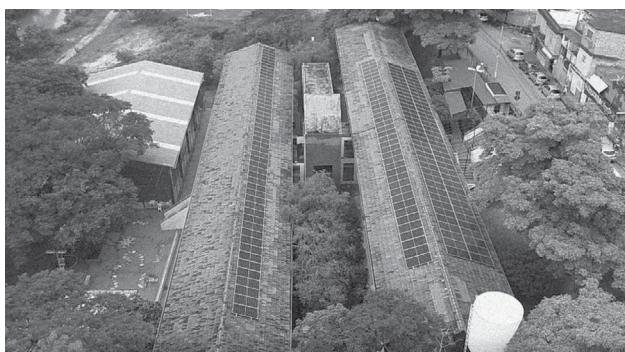
- Improvement of the capacities of the municipality of Belo Horizonte for the elaboration of financeable climate action projects. Project participants in Belo Horizonte reported the importance of the experiences lived in the LEDS Lab for the improvement of their capacities considering the governance, technical and financial pillars. Of the participants in the WG, in addition to the Municipal Environment Secretariat, the improvement of the capacities of the Secretariat of Education stands out.
- Implementation of a photovoltaic generation system at the Herbert José de Souza Municipal School (Figures 8 and 9). Installation of a system with the potential to produce 117,634 kWh/year, which will meet 222% of the local energy demand.
- Improved energy efficiency at the Herbert José de Souza Municipal School. Savings of 1,660.58 kWh/month with the exchange of conventional light bulbs for LED.

SPECIFIC RESULTS

- Reduction of greenhouse gas emissions. The installed photovoltaic system has the potential to avoid 8.82 tCO₂/year, and the installation of LED light bulbs, to avoid 1.49 tCO₂/year.
- Municipal financial savings. Replacing all the light bulbs will bring an estimated savings of R\$1,204.18 per month. The installation of the photovoltaic system will generate savings of R\$5,881.70 per month.
- Creating a model for other schools. The “Solar Schools” project foresees the expansion of the pilot to other schools in the municipality. Capacity building on the project, the Guide for the Preparation of Financeable Climate Action Projects, and the mapping of potential funders can be important tools for project continuity.



Figure 7. Results of the Belo Horizonte pilot project
Source: Prepared by ICLEI - Local Governments for Sustainability Secretariat for South America



Figures 8 - Photovoltaic system installed on the School's roof. Source: ASCOM-PBH, 2021.



Figures 9 - Internal area of the School. Source: ICLEI; Mitsidi; I Care; Markup; Hill (2020a, 2020b)



RECIFE

CONTEXT

Capital of the state of Pernambuco, the city of Recife is located in the northeast region and is the ninth most populous city in Brazil, with an estimated population of 1,653,461 inhabitants in 2020 (IBGE, 2020). Regarding climate vulnerability, Recife occupies the 16th position in the ranking of the most vulnerable cities in the world (IPCC, 2007).

Recife plays a prominent role in combating climate change. It was the first Brazilian city to recognize, in 2019, the Global Climate Emergency and established, also in 2019, the zero carbon target by 2050. Among the climate policy instruments instituted by the city, stand out: the City of Recife Local Climate Action Plan, 2020; the Greenhouse Gas Inventories, with emissions assessed between 2012 and 2017, and the Climate Risk and Vulnerability Analysis and Adaptation Strategy of the Municipality of Recife, from 2019 (PCR, 2021).

The project presented by Recife and selected for the LEDS Lab is called "Recife City of Energy Efficiency". The initiative outlined priority action lines for energy efficiency and clean energy sources for different areas of the city hall, starting with buildings in the health area. For the pilot project implemented during the LEDS Lab, the Recife Women's Hospital was selected, a reference for the service of the female public, with a philosophy of humanization in health. The project, financed by CELPE, consisted of the implementation of a 320 kWp photovoltaic energy system and the retrofit of the hospital's external lighting system.

DATA

Population

1,65 million (2020)

Total area

218,843 km² (2020)

Municipal GDP

52.401,49 million (2018)

Available GHG Emissions Inventory

2012 to 2017

GHG Emission Indicators

3.043.608 ton/CO₂e (2019)

SPECIFIC RESULTS

- Improvement of the capacities of the municipality of Recife for the elaboration of financeable climate action projects. Participants at the LEDS Lab in Recife emphasized the importance of the WG participants being placed as protagonists of the process, an attitude considered essential for the improvement of local capacities. In addition to the Department of Environment and Sustainability, the Health Department's participation in the WG stands out,

an area that, due to its role in the project, was sensitized to the possibility of obtaining financing for the mitigation of the climate emergency.

- Implementation of a photovoltaic generation system at Recife's Women's Hospital (Figures 10 and 11). Installation of a system with the potential to produce 482,220 kWh/year, which represents 19.5% of system consumption.

SPECIFIC RESULTS

- Improved energy efficiency at Recife's Women's Hospital. Savings of 3,423.80 kWh/month with the exchange of conventional light bulbs for LED.
- Reduction of greenhouse gas emissions. The installed photovoltaic system has the potential to avoid 36.17 tCO₂/year, and the installation of LED lamps, to avoid 3.08 tCO₂/year.
- Financial savings of the municipality. Replacing all the light bulbs will bring an estimated savings of R\$2,902.72 per month. The installation of the photovoltaic system will generate savings of R\$20,092.50 per month.
- Creation of a model for other public buildings. The "Recife City of Energy Efficiency" project foresees the expansion of the pilot to other public buildings in the municipality. Capacity building on the project, the Guide for the Preparation of Financeable Climate Action Projects, and the mapping of potential funders can be important tools to move the project forward.
- Obtaining financing from CELPE for the pilot project. CELPE, through resources remaining from the Energy Efficiency Program (PEE), financed the entire project in the municipality (R\$1,278,000.00)

Foto da av. agamenon magalhães



	PILOT PROJECT IN RECIFE	
	LIGHTING RETROFIT	PHOTOVOLTAIC SOLAR ENERGY
FUNDING SOURCE	CELPE	
INVESTMENT	BRL 78,000.00	BRL 1,200,000.00
MONTHLY SAVINGS	BRL 2,902.72	BRL 20,092.50
PAYBACK	2.2 YEARS	5 YEARS
ENERGY SAVED	41,085.59 KWh/year	-
ENERGY GENERATED	-	482,220 KWh/year
AVOIDED EMISSIONS	3.08 tCO ₂ /year	36.17 tCO ₂ /year

Figure 9. Results of the Recife pilot project

Source: Prepared by ICLEI - Local Governments for Sustainability Secretariat for South America



Figure 10. Recife's Women Hospital. Photo: Recife City Hall



Figura 11. Leta Vieira (ICLEI) and the Recife City Hall team in through the installed photovoltaic system. Photo: Recife City Hall

LESSONS LEARNED

The lessons listed below were identified through interviews conducted with participants of the LEDS Lab project.

A CONSISTENT TRAJECTORY IN COMBATING CLIMATE CHANGE IS A DIFFERENTIAL FOR THE PREPARATION OF FINANCEABLE PROJECTS.

Establishing public policies to combat climate change is essential for municipalities. When municipal climate action policies are mature, the experience gained over the years makes it easier to prepare solid projects in advance, with concrete objectives, so that they can take advantage of good financing opportunities when they arise.

THERE IS NO CHANGE WITHOUT POLITICAL COMMITMENT.

Public managers engaged in combating climate change modify organizational structures and help make labor and resources available for projects, working to create local climate governance. When public managers embrace projects, and civil servants with the required skills are involved, execution becomes more effective and has better chances of continuity. Therefore, it is essential to sensitize public managers and technical teams and disseminate information about the climate emergency.

CLIMATE EMERGENCY IS A TRANSVERSAL ISSUE.

The elaboration of financeable climate action projects is of wide-ranging interest, and not just of the municipalities' Environment Secretariat. The involvement of actors from multiple secretariats and organizations is essential for the agenda to be transversalized and the search for funding sources is not restricted to a few bodies.

MORE EFFECTIVELY INVOLVING CAREER SERVANTS IN THE PROJECT CONTRIBUTES TO ITS CONTINUITY.

In order for the projects and their results to be perpetuated in the long term and for knowledge to reach future managements, it is important that these servers actively participate in the process and can accumulate knowledge for later application. Furthermore, it is essential that knowledge is systematized and instituted through governance structures for climate change.

IT IS NECESSARY TO CREATE MECHANISMS FOR AN OWNERSHIP OF THE PROJECT BY DECISION MAKERS.

The management group, made up of leaders of the local executive power, such as secretaries and the mayor, needs to take ownership of the project while it is being developed. Creating milestones in the project, in which partial results are expected to be disseminated, helps ensure political commitment throughout the process.

THE CHOICE OF BUILDINGS THAT ARE A REFERENCE IN THE MUNICIPALITY IS STRATEGIC IN THE PILOT PHASE.

Both the selected school and the hospital are public buildings recognized as local references. The choice of implementing pilot projects in these buildings was strategic, increasing their visibility, consequently, the opportunities for replicability.

REPLICABILITY

Considering the difficulties of local governments in developing countries in financing climate action projects with their own funds and the urgency for these projects to be implemented, replicability was defined as a key element of the LEDS Lab project. The format of the pilot project, the experiences acquired by the Working Group and the products delivered to the municipalities (the Guide for the Preparation of Financeable Climate Action Projects, the mapping of potential funders and training) place the municipalities participating in the project some steps closer to obtaining financing for new projects and achieving their climate goals.

In addition, products delivered to participating municipalities will be available on the ICLEI website for its entire network. In this way, the methodology created at the LEDS

Lab, which involves the governance, technical and financial pillars, can also be followed by other local governments that wish to develop projects in this area.

The climate mitigation and adaptation agenda is increasingly present on the agenda of various funders (Bhattacharya et al. 2020). Thus, with the correct targeting, local governments can use these resources to implement actions to reduce GHG emissions, climate risk management and strengthen resilience in urban territories.

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