

BARCELONA ENERGY AGENCY



TOWARDS A NEW
ENERGY CULTURE



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ENERGY AGENCY**

The Barcelona Energy Agency consortium includes Barcelona City Council, public institutions and organisations –the Institute for Energy Diversification and Saving (IDAE) depending on the Spanish Ministry of Industry, Tourism and Commerce, the Environmental Authority of Barcelona's Metropolitan Area and the Catalan Energy Institute (ICAEN) depending on the Government of Catalonia–, as well as two Catalan universities – the Autonomous University of Barcelona and the Polytechnic University of Catalonia.



Ajuntament de Barcelona



**Àrea metropolitana de Barcelona
Entitat del medi ambient**



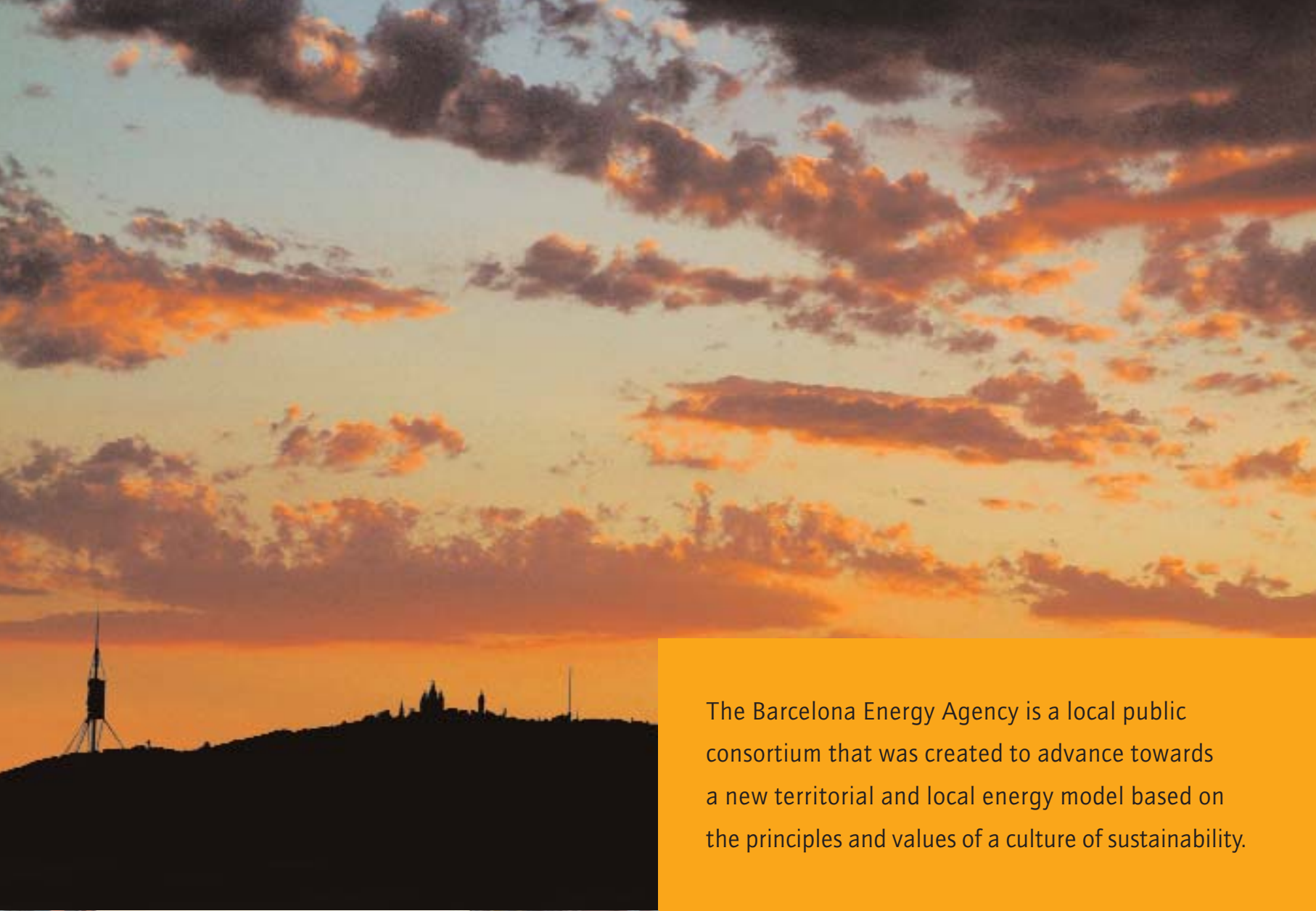
**Generalitat de Catalunya
Institut Català d'Energia**



Universitat Autònoma de Barcelona



**UNIVERSITAT POLITÈCNICA
DE CATALUNYA**



The Barcelona Energy Agency is a local public consortium that was created to advance towards a new territorial and local energy model based on the principles and values of a culture of sustainability.



Established in 2002, the referents pursued by the Barcelona Energy Agency are EU's energy policies as set in the Energy White Paper (1997).

This European document acknowledges the role of energy efficiency and renewable sources in meeting sustainable development goals as well as the role of local authorities in energy issues and how significant it is that cities exchange their own experiences.



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The goals of the Agency

The Agency's work is oriented towards making the city of Barcelona improve in social and environmental grounds by fostering energy saving and energy efficiency; by learning more about renewable energy sources and promoting them, and by developing high-quality energy services for all citizens.



The territorial level

As a local consortium, the Agency basically focuses its actions in Barcelona. However, the global dimension of any energy and environmental issue and the integration of the city into a metropolitan region drive the Agency to plan its actions beyond the administrative boundaries of Barcelona city with the active participation of other local and supramunicipal institutions and organisations.

The areas of action

The Barcelona Energy Agency develops its own activities in the fields of studying and analysing the regional and municipal energy situation; planning mid and long term resources, and leading local projects to foster a more sustainable energy model based on savings, efficiency and the promotion of renewable energy sources.

Two other core lines of the Agency's strategic action are giving impetus to the participation and involvement of citizens next to disseminating knowledge and already developed actions. The top priority of such lines is to share responsibility for building this emerging energy model with all citizens.





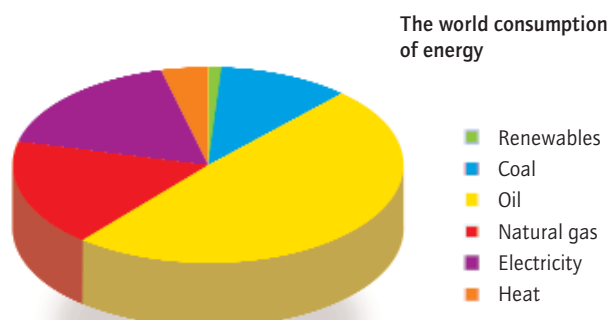
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THE ENERGY SCENARIO

ENERGY IN A GLOBAL WORLD

All future scenarios developed by international organisations concur that the world consumption of energy will keep increasing over the next few decades and that oil will still play a prevailing role in such increase. Nonetheless, the gradual exhaustion of oil, the crises periodically affecting its production and the environmental impacts deriving from the intensive use of fossil energy sources, have introduced a new emerging reality in which energy efficiency and the use of renewable energies will play a key contribution to moving forward towards a new, more sustainable world energy model.

Therefore, the search for sustainability relating energy issues must break the connection between economic growth and energy consumption, as well as encouraging efficient systems and technologies and diversifying energy sources for the benefit of renewables.



Top priority: the climate

The transformation and consumption of energy is one of the human activities causing the greatest environmental impact. For instance, around two thirds of all greenhouse gas derive from such process. This is why, again, energy was among the five top-priority issues that focused the debates at the last UN World Summit on Sustainable Development, held in Johannesburg in 2002. The increasingly bigger evidence that the intensive use of oil and its by-products cause a harmful impact on the planet's climate has turned the current energy model into the international community's centre of attention in the last few years.

The Johannesburg Plan of Implementation -in line with the recommendations made by the Kyoto Protocol and UN Framework Convention on Climate Change-, insists upon the need to reduce the emissions of greenhouse gases during a gradual transition to a more efficient economy with low-carbon production and consumption patterns, committed to reducing dependency on fossil fuels while increasing it on renewable energy sources.

FROM THE LOCAL ARENA,
THE BARCELONA ENERGY
AGENCY IS COMMITTED
TO ACTING IN FAVOUR
OF A MORE SUSTAINABLE
GLOBAL ENERGY MODEL

CITIES' RESPONSIBILITY

The running of most cities in developed countries is based on an energy model featured by the use of energy sources with a fossil and nuclear origin and by the inefficient use of resources. This centralised energy model with few generation plants and a large number of consumers cannot be sustainable as it makes it necessary to build a huge network of transport infrastructures with obvious social and environmental impacts worldwide.

Therefore, as cities may play a crucial part with regard to energy consumption, they must encourage and promote the implementation of a new energy model based on savings and the efficient use of renewables.



The running of cities is similar to that of an ecosystem. Such running can be understood after analysing its metabolism, namely, the flows that take place inside the city: flows of materials, water, information and, certainly, energy. These flows determine the relationship of the city with the outside world.



We are convinced that the city or town is both the largest unit capable of initially addressing the many urban architectural, social, economic, political, natural resource and environmental imbalances damaging our modern world and the smallest scale at which problems can be meaningfully resolved in an integrated, holistic and sustainable fashion.

As each city is different, we have to find our individual ways towards sustainability.

We shall integrate the principles of sustainability in all our policies and make the respective strengths of our cities and towns the basis of locally appropriate strategies.

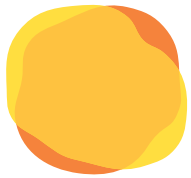
Principle 1.3 of the Aalborg Charter

Barcelona subscribed to the Aalborg Charter in 1995

The role of local agencies

The Aalborg Charter, the document approved in 1994 by the European Conference on Sustainable Cities and Towns, makes an emphasis on the capacity of towns to face up to and solve some of the global environmental problems as they hold a good deal of responsibility.

Cities are high-energy consumption systems. Large urban European centres of population, for instance, consume 75% of all energy, while they only take up 10% of the land. The creation of organisations that plan and handle urban energy demand and supply represents a significant step when it comes to boosting a new energy culture for cities with saving, efficiency and renewable energies as three of its core lines of action. In this sense, local energy agencies such as the Barcelona one, must play an outstanding role on the path towards an urban energy model that is committed to the environment and to future generations. These agencies are the real manifestation of a local and global will to build a more sustainable future.



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ENERGY IN BARCELONA

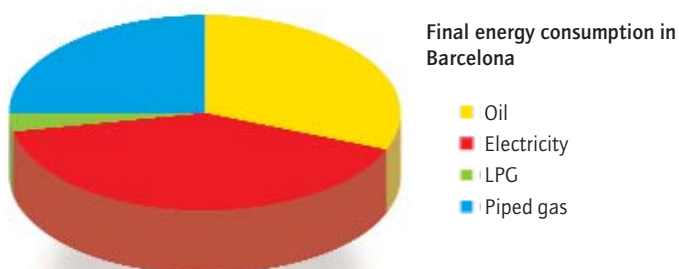
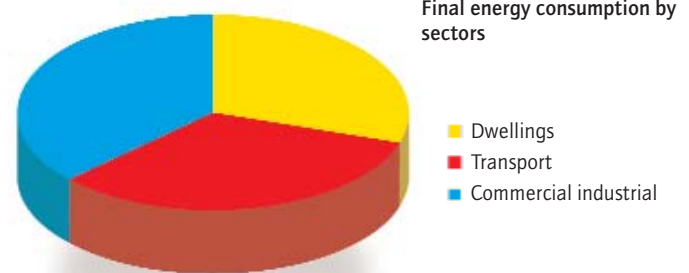


THE FIRST STEPS: THE CITY'S COMMITMENT

Over the last few years, the city of Barcelona has acquired a series of international commitments that are aimed at consolidating renewable energies and moving forward on savings and efficiency. As a result, energy policy has become one of its outstanding focal points of action and it is gradually pervading the whole municipal organisation.

In 1993, Barcelona signed the Amsterdam Declaration during the Convention of European Municipal Leaders on Climate Change. In this declaration, local governments committed themselves to working jointly with their own communities and with each other, as well as with national governments and international agencies with the objective of developing an action plan to reduce air pollution.

Furthermore, in 1994, Barcelona joined the Heidelberg Declaration to reduce CO₂ emissions, one of the main types of greenhouse gas. Barcelona is a member of Klimabündnis and Energie-cités, two city associations that work towards reducing such gas emissions and, thus, comply with local responsibility as set by the Kyoto Protocol.



Barcelona is currently consuming half the electricity it would have required only ten years ago to perform at the same levels. Although this level of consumption is still considered to be higher than the one the city could achieve if more advanced end-use technologies were used, the good results that have been attained prove that the efforts made in energy efficiency and saving were successful.

Efficient Barcelona: lower consumption, higher standard of living

In recent years, Barcelona City Council has implemented several measures to reduce energy consumption and enhance energy efficiency in municipal facilities and services. For instance:

- Replacing street-lighting lamps by low-consumption ones.
- Replacing low-efficiency bulbs and luminaires in the main Council buildings.
- Incorporating sustainability criteria into municipal dwelling developments (bioclimatics, solar hot sanitary water, energy efficiency, etc.).
- Placing solar collectors and PV panels in municipal buildings.
- Introducing low-polluting fuels into its bus fleet.
- Handling energy supply and carrying out saving proposals in municipal buildings.
- Approving regulations on street-lighting facilities during Christmas time.

Pioneering Barcelona: The Solar Thermal Ordinance

One of the most significant steps forward made by Barcelona in the field of solar energy was the coming into force of the Solar Thermal Ordinance in 2000. The goal of the ordinance is to encourage and regulate the incorporation of low-temperature active solar collector systems to generate sanitary hot water in buildings and facilities across the city. Bearing in mind the rate of application the Ordinance has undergone since it came into force, Barcelona will reach 100.000 sqm of solar collectors by 2010. This will imply that some 15,000 metric tons of CO₂ equivalent emissions could be avoided every year.



The international recognition of Barcelona

The actions led so far by Barcelona in favour of a new energy culture have been internationally recognised through several awards. Special mention must be made of the award obtained under the Campaign for Take-Off (Renewable Energy for Europe), led by the European Commission's Directorate General for Transport and Energy to promote renewable energies, in addition to the Climate Star award by Klimabündnis, after Barcelona's commitment to the environmental management of energy and its local activities in favour of climate protection.



One of the emblematic solar energy facilities in Barcelona is the photovoltaic pergola placed on the roof of the main City Council buildings. Its power is 85 kWp, its collectors take up 650 sqm and it generates 93,000 kWh every year, which implies that almost 10 metric tons of CO₂ emissions are avoided.

THE CREATION OF THE
BARCELONA ENERGY AGENCY
RESPONDS TO THE WILL OF
BARCELONA CITY COUNCIL TO
TURN ENERGY EFFICIENCY AND
SAVING INTO ONE OF
THE CORE ACTIONS OF ITS
ENVIRONMENT POLICY



THE COURSE TO FOLLOW: THE NEW ENERGY CHALLENGES

The least polluting energy is energy that is neither consumed nor squandered. In this sense, cities must focus their efforts on energy efficiency and saving through active educational and demand-management policies that build citizen awareness and promote information and participation.

Barcelona City Council has prepared an Energy Improvement Plan (PMEB) in line with taking on the challenges of a sustainable energy strategy as well as with encouraging that city energy activities that have an impact on the urban environment and on people's standard of living are better known and managed.

The PMEB is a first approach to the structural knowledge of the energy sector and a tool that must allow to carrying on with the implementation of a new culture on the use of energy in Barcelona.

Barcelona's commitment to sustainability

The Barcelona Energy Improvement Plan is also a step forward in the city's development of its Agenda 21 and of the People's Commitment towards Sustainability 2002-2012. In this sense, the fifth objective of the Commitment states the following with regard to energy:

- Reduce energy consumption. Increase efficiency in both energy generation and energy use by using the best available technology.
- Increase the proportion of energy derived from non-polluting renewable sources, with a minimum goal of 12% of total consumption coming from renewable sources, as stipulated in European Union guidelines.
- Develop and promote projects that demonstrate energy efficiency and the use of clean, renewable energy sources. Co-operate to eliminate information, price, or marketing barriers that impede their widespread use.
- Apply environmental and energy efficiency criteria to urban housing developments. Include these in the granting of construction licenses, with tax credits for projects that apply these criteria.
- Acquire daily saving habits for energy and other natural resources as well as desirable shopping and consumption practices.

The objectives of the Barcelona Energy Improvement Plan

The prime objective of the Barcelona Energy Improvement Plan is to define an energy strategy in the scope of the city of Barcelona to boost efficiency and the use of renewable energy sources in addition to reducing greenhouse gas emissions.

With this objective in mind, other goals come natural such as getting to know consumption levels and the origin of energies used in Barcelona; evaluating the energy generation and consumption model; determining which measures and types of technology should be fostered; detecting the most suitable management systems and the legal and financing mechanisms that may allow the appearance and application of such measures and technologies, and defining the line to disseminate a new culture of energy consumption.

The Plan is set on the basis of action proposal directives that are currently becoming specific through various tools: urban development ordinances, internal City Council actions, direct investment, campaigns to boost private actions, co-operation with energy agents, and so on.



The Barcelona Energy Observatory

In order to deepen in the awareness of the local energy situation and build a forum to set links among city agents related to this industry, Barcelona has its Energy Observatory. From a stance of rigour and independence, this tool aims at disseminating energy production and consumption trends as well as the social and environmental effects of such trends. The Energy Observatory also leads a follow-up process on the application of the Barcelona Energy Improvement Plan in order to set future action priorities.



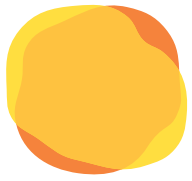
Forum 2004: the future is now

Since its conception as an international event, the Forum encouraged, promoted and supported any environmentally friendly attitude and action in agreement with the principles and values of sustainable development.

As a result, a series of preventive mechanisms and actions were activated in several areas to reduce the impacts that the planned actions and activities could cause on the environment. This was done by applying emerging and innovative environmental technologies and policies.

In fact, one of the sustainability criteria applied was to plug the rational use of energy and the use of renewable sources. For example by building a 1.3 MWp urban photovoltaic plant, by setting up a district-heating and cooling urban grid and by implementing bioclimatic solutions when designing buildings and temporary facilities.

ONE OF THE OBJECTIVES
PURSUED BY THE BARCELONA
ENERGY AGENCY IS TO
GUARANTEE THE APPLICATION
OF THE CITY'S ENERGY
IMPROVEMENT PLAN. THIS WILL
TAKE THE CITY TO A NEW
ENERGY AND ENVIRONMENTAL
SCENARIO BY THE YEAR 2010

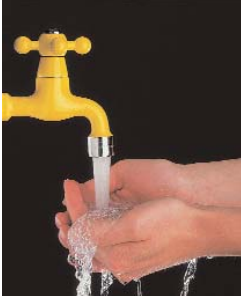


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The future energy-related projects and actions in Barcelona will keep growing in number to reach every scope of local activity in agreement with the challenges that were adopted by various plans and commitments approved or signed over the last few years.

This process will require the indispensable co-operation of citizens and the active participation of the social and economic agents involved.

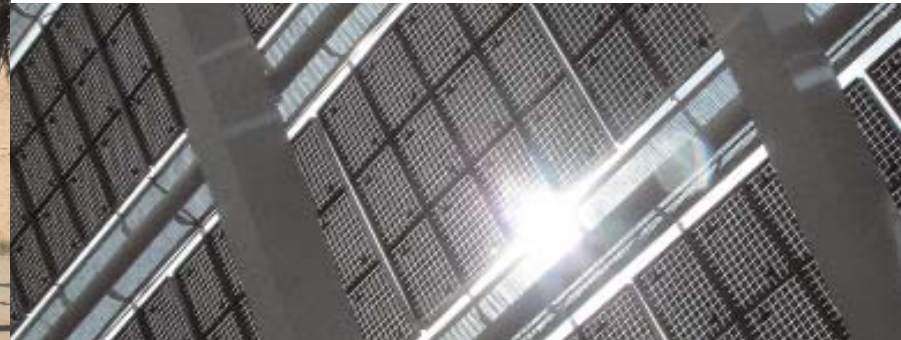
The Barcelona Energy Agency will contribute to this by...



BOOSTING ENERGY SAVING
AND EFFICIENCY



PROMOTING THE USE OF
NON-POLLUTING RENEWABLE ENERGIES



IMPROVING THE ENVIRONMENTAL
QUALITY AND MAKING GREENHOUSE
GAS EMISSIONS DECREASE



FOSTERING PARTICIPATION
AND INFORMATION IN ENERGY TOPICS



CULTIVATING A MORE SUSTAINABLE
MOBILITY WITH A MORE RATIONAL
USE OF PRIVATE CARS



INCORPORATING ENERGY CRITERIA
INTO URBAN PLANNING
AND LAND DISTRIBUTION



ENCOURAGING BIOCLIMATIC
AND ENERGY-EFFICIENT BUILDING



IMPROVING EFFICIENCY
IN STREET-LIGHTING
AND REDUCING LIGHT POLLUTION

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"Barcelona must be driven by a type of energy that ensures our city's way forward to a new and more sustainable global energy model".

Imma Mayol
President of the Barcelona Energy Agency

Sustainable development is being built day after day with the co-operation of the whole citizenship. The ultimate objective of a culture of sustainability is to fulfil present needs without jeopardising those of future generations.

From its local scope of action, the Barcelona Energy Agency would also like to contribute to making progress towards a more efficient city with higher standards of living and better welfare for all.

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