



Eco-ordinances on building and energy seek to reduce energy consumption in construction on the island

The island is almost completely energy dependent. 99% of the energy consumed is oil-based and most consumption-linked indicators show a tendency towards progressive growth. Over the last five years the consumption of water, primary energy, electricity and oil has risen by around 50%. The number of vehicles has increased by almost 170% in the last 15 years. Finally, with regard to construction, cement consumption has registered a cumulative growth of 268% over the last 8 years.

In order to reorient this situation, this proposal of eco-ordinances focuses on the connection between energy and construction, whose associated final energy consumption accounts for around 43% of the total, without taking into account the consumption due to mobility and water desalination (between them totalling 57%) which are closely related with residential + tourist consumption.

This report is an initial approach to a series of island eco-ordinances with specific ideas on energy in construction on the island. It is a proposal that is open to debate and is not intended for immediate implementation, and which above all seeks to foster the adoption of good practices on the part of actors with responsibilities in planning and energy management by means of a regulated agreement process.

Summary of Report:

“Initial approach to island eco-ordinances on management of energy demand in construction on Lanzarote”

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1. Introduction

Reorienting the runaway growth in world-wide fossil fuel consumption is one of the main objectives of the lines of work that seek to combat climate change on Earth –one of the most serious environmental problems facing humanity–, and very especially of the protocol arising from the Kyoto Summit in 1997 and the European Union’s own commitments to reduce its CO₂ emissions in the year 2010 by 8% in relation to 1990 levels.

In this international and European setting, Spain adopted certain objectives such as limiting CO₂ emissions to grow by no more than 15% in the year 2010; a target that it now seems almost impossible to fulfil in view of the spontaneous dynamics of energy consumption in the country and the weakness of the measures put forward by the public administrations. In fact, according to European Environment Agency reports, if the policies of certain key sectors –including the energy sector– do not change radically, our country could reach excess CO₂ emissions of more than 48% in the year 2010, i.e. 33% more than stipulated; a matter that would logically lead to a series of corrective measures by our European partners over the coming years.

The recent development of the Canary Isles, based on tourism, has also given rise to a giant leap in energy consumption over the last decades. The continuous growth of the residential and tourist population, with increasingly high income levels, has led to a soaring energy demand which rose between 1995 and 2000 at a cumulative annual rate of 6.11%, 20% greater than the Spanish average; percentages that for many reasons cannot be maintained in the future. As a result, the Canaries Government advocates a fundamental reorientation of regional development, and in its recent Directives on General Planning and Tourism Planning it commits itself to draw up new Directives on Energy Planning in which it will give priority to the promotion of alternative means of production to fossil fuels (especially solar and wind power), demand management, savings and energy efficiency.

An energy analysis of Lanzarote also offers a broad and integrated overview of the problems affecting the environment, resources and sustainability that the current development model has brought to the island and which cause it to exceed its carrying capacity. It is sufficient to recall that the island’s economic anchor depends on mass tourism which is based on cheap energy that makes possible affordable mass air transport, the transportation (by air and sea) of almost all food, consumer products, building materials, etc., with directly or indirectly subsidised energy, or that the current level of water consumption is unthinkable without the incorporation of a vast amount of energy in the process, etc.

Besides, tourism is linked in energy terms with the buildings that accommodate it and with the transport that makes possible the high turnover of visitors and their mobility on the island. This proposal of eco-ordinances focuses on the connection between energy and construction, whose associated final energy consumption accounts for around 43% of the total, without taking into account the consumption due to mobility and water desalination (between them totalling 57%) which are closely related with residential + tourist consumption. Therefore, it is evident that an initiative to reorient the island community towards a more sustainable model must first reconsider the energy model currently in force, and one of the ways to start to do this is to implement eco-ordinances in the aforementioned scope and others related with it.

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Exploring new lines of action, financing and taxation for the Biosphere Reserve

growth. For instance, over the last five years the consumption of water, primary energy, electricity and oil has risen by around 50%. For its part, the population has grown over the last 15 years by 90% for residents and 190% for visitors. The number of vehicles has increased by almost 170% in the same period. Finally, with regard to construction, cement consumption has registered a cumulative growth of 268% over the last 8 years.

With the aim of providing a framework for debate on the proposals of greatest utility for reducing energy consumption in construction, Lanzarote Island Government has drafted this report, in which it proposes a set of recommendations that affect town planning, building models, bioclimatic solutions applied in construction, management of energy demand, generation of energy from local sources, etc. The function of these eco-ordinances is currently focused on raising awareness on the different aspects of energy on Lanzarote, with the aim of progressively introducing the lines of action that are most profitable in terms of efficiency in new ordinances (island or municipal) that are mandatory in the corresponding fields.

2. General guidelines for reducing energy consumption in construction on Lanzarote

The report, which consists of 132 pages, establishes **eight preliminary bases** for the development of general guidelines on management of energy demand in construction and building use on Lanzarote, making consideration of:

- a. The current energy model.
- b. Indicators linked with the growth of energy consumption.
- c. Characterisation of the island climate.
- d. Legal texts on energy planning, town planning and building.
- e. The characteristics of building models on the island.
- f. The bioclimatic solutions of traditional local or regional architecture.
- g. Traditional types of construction.
- h. Local materials for construction: bioclimatic function and substitutes.

The report also establishes **seven general guidelines** for sustainable planning and bioclimatic building on the island:

- 2.1. For the planning and ordering of building.
- 2.2. Basic criteria for more sustainable planning.
- 2.3. Lay-out of built-up areas.
- 2.4. Relationship between planning and energy consumption.
- 2.5. Design of built-up areas, roadways and open spaces.
- 2.6. Building conditions.
- 2.7. Proposals of energy demand management for building-related uses.

3. Articled text of eco-ordinances

Following the general guidelines, the report proposes a preliminary draft of an articulated text of island eco-ordinances for the reduction of energy in construction on the island, which is divided into **six directives in the form of recommendations**, namely:

- 3.1. Town planning recommendations for built-up areas compatible with the adoption of bioclimatic solutions and the use of renewable energy sources.
- 3.2. Recommendations on building planning and bioclimatic building.
- 3.3. Recommendations for the integration of renewable energies in building.

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Exploring new lines of action, financing and taxation for the Biosphere Reserve

- 3.4. Recommendations for energy demand management in buildings: installations.
- 3.5. Recommendations for energy demand management in buildings: management and reduction of electricity demand.
- 3.6. Recommendations for the performance of energy audits in buildings.

4. Management of implementation of the eco-ordinances

The report proposes a series of stages and tools for the correct implementation of the eco-ordinances on energy in construction on the island of Lanzarote.

4.1. Dissemination and implementation

Dissemination and implementation of the eco-ordinances with the participation of public and private actors related with energy and building. It is proposed to develop these activities in five phases:

- Complementary studies, debate and preliminary consensus.
Initial stage of performance of complementary studies, dissemination and involvement of actors related with energy and building, culminating in the creation of a sectorial committee with representation of the sectors involved.
- Public information
Once the definitive document agreed by the sectorial committee has been drafted, it would be presented for public information and widely disseminated.
- Incorporation of suggestions.
Studying, answering and, where applicable, incorporating allegations relating to the eco-ordinances.
- Approval and preliminary implementation.
Gradual integration of the eco-ordinances in existing legal instruments.
- Definitive implementation and continuous improvement.
Definitive implementation and continuous improvement would be the responsibility of the institutions and key actors on the island with the indispensable collaboration of the Lanzarote Energy Agency (AEL).

4.2. Energy Agency and demonstration centre

The mission of the AEL would be to coordinate, promote and undertake actions related with the reduction of energy in construction, for which it must coordinate, control and evaluate, as well as execute the demonstrative actions.

For its part, a demonstration centre will be set up with the aim of informing on and presenting all matters related with the eco-ordinances and the reduction of energy in construction in general. It will include an information office, an exhibition of the processes involved, etc.

4.3. Programmes and stimuli

The launching, progress and success of the eco-ordinances requires incentives to support their application, such as grants and subsidies, bonus systems and, after a certain point, taxes and penalties for those who have not adapted to them.

Life Lanzarote 2001-2004:

Exploring new lines of action, financing and taxation for the Biosphere Reserve

Finally, it is suggested that the AEL should open a line of third party finance and soft loans for projects of excellence in the adaptation of existing buildings to the eco-ordinances, exploring the possibility of applying for this purpose the Canaries Investment Reserve (RIC).