

Sustainable architecture and urban design in Portugal: An overview

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ABSTRACT

This paper presents a general overview on the subject of sustainable building and urban design in Portugal – within the Southern-European context. It focuses on its evolution, the most striking aspects, present needs and future trends. Various case studies are presented, including the integration of renewable energy systems at urban and building scale.

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1. Introduction

During the past decade, there has been a significant evolution in the area of urban and building design in Portugal. Visible results were achieved, both in terms of know-how and implementation, though much remains to be done. This paper aims at providing a summarised overview of the most striking aspects observed on this matter, and presents some relevant examples that may be useful to regions with similar contexts.

Portugal is located in Southern Europe, being constituted by a continental area and two insular zones (Azores and Madeira). Over the last two decades, the environmental infrastructure (e.g. for water supply and treatment) has been expanded, following the population increase in urban areas, particularly in coastal cities [1].

The quality of life has improved significantly over the last thirty years; in terms of the Human Development Index (HDI), its value moved from 0.787 (1975) to 0.904 (2003) and it now occupies the 27th position on the international ranking [2].

Nevertheless, when compared with other EU countries, it is still below average in terms of social-economic indicators: this fact must be seen in many situations both as a challenge and a positive opportunity.

The large majority of the population in the country is concentrated near the coast; this is a phenomena that results, to a large extent, from the migration of the population from the inland rural areas of the countryside to the large urban areas on the coast, which occurred throughout the 20th Century. In the present days, this

migration is still going on to some extent, due to the ever decreasing economic importance of agriculture when compared with services and industry. As a consequence, much of the land is left abandoned, which, combined with the global warming trend, is one of the main causes of the forest fires, which have been particularly severe in the last few years. Furthermore, according to previsions on the future impact of global warming, there will be a tendency for desertification in many areas of southern Europe, including the southern part of Portugal [3].

Architects and Urban Planners have a large responsibility in terms of reducing the serious environmental problems existing today, and the ones that lay ahead. In this process, the interactivity with other scientific areas is crucial – in a team effort to influence politicians and market agents. It is possible to achieve a satisfactory development in social-economic terms and simultaneously implement environmentally conscious measures – these two variables are complementary to each other.

2. Environment and urban development

Portugal faces the challenge of achieving economic, environmental and social development, in order to converge with that of other European countries. In terms of Environmental policies, the country has benefited much from the E.U. pressure, for instance on issues of the use of natural resources, the restructuring of land use or constraints on pollution [4].

In the 1990s, Portugal made much progress in establishing a revised, modern environmental legislative framework (largely but not solely in response to EU environmental directives), in strengthening its environmental institutions (including establishing a single ministry and related regional bodies in charge of both environmental and land use matters), in developing national

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Fig. 1. Nations' park, partial views – before (left) and after (right).

environmental planning (e.g. its first national environmental plan, in 1995, and strategic plans concerning water and waste services), in adapting physical plans covering the entire country (e.g. national coastal area protection plans, national nature protection plan, municipal land use plans) and in investing in, and programming, water and waste-related infrastructures, particularly in the context of the 1994–1999 and 2000–2006 EU Community Support Frameworks.

In the last ten years the strategy was based on prevention and targeting a sustained development, pursuing the integration of environmental concerns into the decision making process (e.g. promoting environmental impact assessment of major projects), trying to adopt environmental management and eco-efficient solutions. The discussion on environmental and sustainability issues and the resultant implementation of adequate measures is slowly, but steadily, rising in Portugal, including the critical areas of urban planning and building's design and construction.

Academic and institutional researches have also produced useful tools, such as the LiderA environmental management system, to evaluate urban and building performance and promote environmental sustainability [5].

Relevant examples of the application of sustainable measures at urban level are the Polis National Programme, the urban renewal of the “Parque das Nações” in Lisbon (where the Expo 98 took place), and the city of Vilamoura in Algarve.

2.1. The POLIS programme

The programme was formally initiated in May 2000 with the major goal of improving the quality of life in Portuguese cities. It involved 28 cities and urban renewal projects with a strong environmental component and aimed at developing a model for other actions to be undertaken throughout the country.

It included the intervention in cities which have been classified by UNESCO as World Human Patrimony: such as Angra do Heroísmo, Évora, Sintra and Oporto.

Complementary measures were carried out, such as new ways of mobility in the urban context; installation of monitoring and environmental management systems; urban and environmental qualification of school buildings' surroundings; and environmental education actions in the urban space.

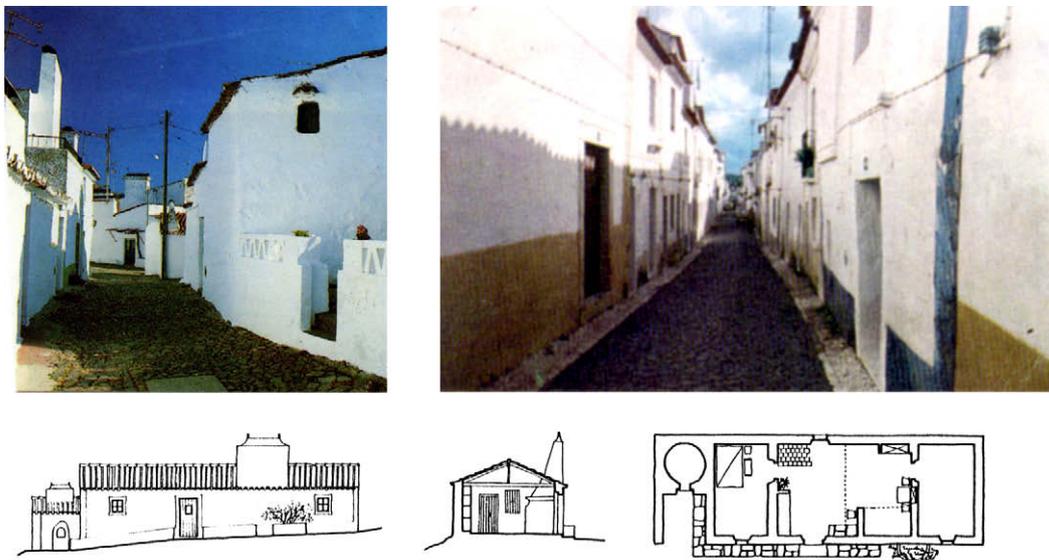


Fig. 2. Vernacular architecture in the south of Portugal (Alentejo). White paint is used to reflect back solar radiation, the thick walls are made with adobe (earth) to provide thermal inertia, streets are narrow to provide shading, windows are small to increase (Summer and Winter) insulation, the large chimney is used for stack-effect ventilation. Internal temperatures are very stable and comfortable – reaching differences of up to 15 °C below external temperatures during hot Summer days.

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