

Poggioreale di Sicilia: an emergency in real opportunity: model research for eco-sustainable planning

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Poggioreale is a small town located in the inland portion of western Sicily, in the Italian province of Trapani. Its territorial size is 36 km² about and it is crossed by Belice River. The orography of Poggioreale is composed of few plains, near the river, and many hills with steep slopes. The choice of this city is due to its particular situation coming out from the earthquake that in 1968 destroyed the Belice Valley and specifically has determined the decision to abandon the historical centre and to move the settlement of the new town in an area which was wrongly considered safer. The plain of new city is organized in different areas: building area, public utility area, open spaces; this organization produced the abandonment of home-street-block system. The project proposes to utilize climatic and physic elements how tools of sustainable development. These actions must attain three objectives:

- to improve development building quality to internal comfort utilizing bioclimatic strategies (for example right use of water resource with phyto-depuration plant and roof gardens);
- to re-plan unused public spaces and design new aggregative areas to socialize (for example to drain slopes with creation of ecosystem parks and internal public gardens);
- to stimulate economic production based on territorial resources.

Local Iranian tradition to enhance global sustainability: low energy architecture facilities in Yazd, Iran

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Many traditional houses in Iran, particularly in the region of Yazd and Kerman (central Iran), are dominated by so called badgir, literally "wind catchers". They are high towers made by mud bricks that provide the houses with a natural air conditioning system, which does not requires energy produced burning or using not-renewable resources. They work due to the difference of air pressure between the ground level and the upper layers, creating a natural convection. Furthermore, the badgir are often linked to the ghanat, long underground canals (up to 50 Km) that lead water from sedimentary deposits at the base of mountains to cities and agriculture fields. In many cases, the ghanat feeds a basin on the bottom of the house and the air caught by the badgir passes on this basin, enriching itself with humidity. The results is a remarkable decrease of the air temperature in the house (e.g., temperature decreases from 36°C up to 24°C) as well as a healthy air (e.g., relative humidity increase from 20% up to 45%). The paper analyses this traditional and integrated system, demonstrating the usefulness of implementing it for contemporary architecture, in order to reach a more environmentally sustainable development.