

Building regulations based on sustainable principles in Italy: state of the art and trends

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Abstract

The future of Europe regarding environmental conservation is based on the success of the energy consumption reduction policies and of the renewable energy sources development. As regarding energy and resources consumption, the building field is particularly important and economic incentives play a fundamental role to promote environment pollution reduction.

All these incentives concern different technologies and strategies, such as: photovoltaic, thermal solar, biological and sustainable architecture. Recently institutions such as Government, Districts, Municipalities, issued economical incentives and money contributions in favour of those projects oriented towards environment conservation and respect. These contributions mainly regard energy saving and renewable energy use, as well as waste recycling, low emitting vehicles, biological agriculture, water saving, local fauna preservation and so on. Local actions support regional ones in different ways: co-financing, capital account, urbanization and building concession charges; while some Municipalities stress the importance of thermal solar, others point out the importance of ecological materials or energy saving policies.

The aim of this work is to critically present a comprehensive survey of the Italian actions based on sustainable principles which will play an important role in the aspect of our cities.

Keywords: building regulation, sustainability, incentives.

1 Introduction

In 1987, the World Commission on Environment and Development (Brundtland Commission) asked for the development of new ways to measure and assess



progress towards sustainable development. This call has been subsequently echoed in Agenda 21 of the 1992 Earth Summit and through activities that range from local to global in scale. The Sustainable Construction concept aims at the creation and responsible management of a healthily built environment based on resource efficiency and ecological principles. It takes care of environmental and life quality issues, social equity, cultural issues, and economic constraints. Buildings have to integrate environmental quality in each stage of their life: planning, design, construction, use and possible redevelopment, re-use, demolition or deconstruction.

2 The sustainable development strategies in Italy

Pursuing a sustainable development means to try to improve quality of life, encouraging economic assets and consistent behaviours with the resources for next generation. For this reason a lot of efforts have been done as a strategy for national sustainable development.

Starting from the approval in 1993 of the National Plan for Sustainable Development, in Implementation of Agenda 21, by the Interministerial Committee for Economic Planning (CIPE), an Interministerial Committee was set up to monitor progress in the Plan's implementation, to co-ordinate the collection of data on operational projects and to prepare an annual report on Agenda 21 targets related to the 12 priority "Themes" of intervention; Water, Urban Environment, Biodiversity, Biotechnology, Decontamination site, Climatic changes, Electromagnetic fields, Indoor Pollution, Sea and Coasts, Quality of the air, Waste and Territory.

The solution to these urgent problems lies in focussing actions on the more traditional economic sectors (manufacturing, agriculture, tourism), on basic infrastructure (energy, transportation), and on the need to radically alter the attitudes of public and private entities towards waste.

In the building sector, as a reply to the increasing demand of eco-compatible quality, significant efforts to assess performance have been made by corporations, non-government agencies, academics, communities, national organizations.

Crucial, in this sense, the operational contribution of different private organizations (NGO): these are developing indicators to get quantitative measures of the progress towards an environmentally sustainable development, or participate in experimental campaigns and benchmark for the validation of the lists agreed upon international level.

For example, the Annual reports prepared by Legambiente, the "Urban Ecosystem report", the Italian Forum ICITE/CIB, the Working Group for Eco/sustainable construction GL13 activated by UNI (National Standardization Body), the code of self-government for public Authorities on the environmental quality of energy in buildings and open spaces produced by ENEA, the CasaKlima certificate showed by province of Bolzano and every other Quality and Sustainability Marks like CasaQualita, Natureplus, Ecolabel. Not to forget, moreover, that Italy is first in the list of Countries involved in the European



project SHE (Sustainable Housing Europe) to realize 714 “green” lodgings in 4 different Nations.

Nevertheless in Italy, sustainable architecture remains marginalized in the building market and it is still missing a complete picture about the major sources of resistance to sustainable building and about useful methods to lower those resistances. The lack of appropriate incentives or policies and supporting legislation has been identified as major impediments to the implementation of sustainable architecture. In Italy, a national integrated implementation framework is missing and there is a lack of consensus on preferred implementation methods for sustainable architecture. There has also been no agreement on who should be responsible for orchestrating initiatives, and whether measures should be applied on a voluntary or mandatory basis. Actually recent bills for a sustainable building have been proposed by individual town councils or local government but latest experience developed in a regional context, and legislative local adjournment confirm right in the middle the essential processing for national regulation fit to take in the demand-pull for a more and more sustainable building.

3 The body of laws

In Italy, law providing energy certification of buildings (article 30 of Law n. 10/91) isn't enforced yet since enabling legislation has not been passed.

The article 30 of the Law 10/91 really introduced some innovation even in the European legislative survey; it provides some operative aspects summarized as follows:

- during renting or conveyance on sale the buyer must take notes of the energy certification of the building;
- the owner or the letter can ask for these certifications to the Municipality.

In order to affect the real market energy, saving strategies should aim at introducing a tax relief system meanwhile reducing urbanization burdens for those buildings whose efficiency will be proved by the certificate. The latter should also report synthetically the main performances of the building, first of all, its energy consumption expressed in an easily understandable unit such as kWh/m²year.

In the meantime, a new EU Directive (2002/91/CE) governing energy efficiency in building sector will have to be incorporated into Member State Legislation by February 2006.

The EU Directive while improving standards concerning energy efficiency at the same time urges the consumer to evaluate energy features of the building itself.

The EU Directive aims at improving the building energetic performances assuring that only energetically efficient and economically conscious enterprises will be undertaken.



In short, the building's energy certification should be mainly:

- a simple way to describe both energy features (such as thermal insulation) and efficiency of the building;
- suggest some action to be undertaken in order to improve the above-mentioned energetic performances;
- to see the building-plant system as a whole from the planning and the design phase of the project as well as the building management.

The energy efficiency of the building should be assessed by some indicators evaluated as a function of the following parameters: thermal insulation, technical features of the HVAC systems, climatic characteristics of the building site, building form and orientation. Probably it will be worthwhile to include even a CO₂ emission indicator.

Even active energy strategies will be included in this evaluation as a lot of European States have been investing in solar technologies and renewable energy (district heating and cogeneration) for some time.

The energy building certification will be adopted by every EU Member State and revised no more than every five years.

4 Incentives for sustainability in buildings

In the last few years, in order to promote environment and human health protection and respect, a lot of Italian Public Institutions (Municipalities, Regions, Ministry) have issued incentives and economic contributions regarding principally energy saving and use of renewable energies in buildings, waste recycling, use of less polluting vehicles, biological agriculture, water consumption reduction and so on.

To all the actions and contributions from central government (Ministry and Regions), like as the Programs "Tetti Fotovoltaici" (D.M. 12/11/2002), Thermal Solar (D.M. 13/12/2002), "Fotovoltaico ad alta valenza architettonica" and "Comune Solarizzato", have been added different actions which distribute in different way (co-financing, capital account funds, urbanisation tax reduction, ecc.) public contributions in order to promote sustainability in buildings by local government (principally town councils).

Some municipalities provide incentives for the use of thermal solar in buildings (Modena, Naples, Caserta, Salerno, Lecce, Cosenza, Catania, Agrigento, etc.), others for the use of non polluting material in buildings (Trent, Calenzano, Nonantola, Vezzano Ligure, Schio, Poggibonsi, Carpi, Faenza, Forli, etc.), others for the use of energy saving technologies in buildings (Bolzano, Udine, etc.). In Tables 1 and 2 some incentives provided by different Italian Public bodies in order to promote sustainability in buildings are reported.



Table 1: Incentives provided by different Italian municipalities.

Municipality	Kind of instrument	Incentives and contributions
Municipality of FAENZA (Ravenna)	P.R.G. - 1996	Incentives of the volume or the useable surface for those projects which use energy saving strategies (building orientation, structures insulation, etc.); glasshouses without heating systems used for solar gain are not charged on the building volume.
Municipality of Nonantola (Modena)	D.C.C. 45/2001	Tax reduction of the urbanisation charge for bioclimatic buildings and for those projects which use energy saving strategies.
Municipality of Cavalese	P.R.G.	Tax remission for those projects which use energy saving strategies or solar energy in buildings.
Municipality of Calenzano	D.C.C. 115/2002	Tax reduction of the urbanisation charge for bio-ecological buildings.
Municipality of Florence	R.E. – D.C.C. 346/2000	Urban parameters concessions and tax reduction of the urbanisation charge for those projects which use energy saving strategies or renewable energies in buildings (glasshouses, etc.).
Municipality of Rignano sull'Arno	D.C.C. 70/2000	Urban parameters concessions and tax reduction of the urbanisation charge for sustainable buildings (extra-thickness of the wall and the floor, thermal inertia, ventilated roofs, etc.).
Municipality of Pesaro	P.R.G. 2003	Clear surface and additional surface increment as far as full 5% of permitted one and full 30% of clear feasible surface, for all new Building and Demolition/ Rebuilding housing projects which use bio-architectural techniques.
Province autonomous of Trent	L. P. 1998	Incentives for those projects which use energy saving strategies (thermal insulation of walls, roofs, windows, etc.), or renewable energies in buildings, or for low energy consumption buildings (passive buildings, etc.).
Province autonomous of Trent (Municipality of Trent)	L.P. 22/1991	Tax reduction of the urbanisation charge for sustainable buildings.
Province autonomous of Trent	L. P. 1998	Incentives for those projects which use energy saving strategies (thermal insulation of walls, roofs, windows, etc.), or renewable energies in buildings, or for low energy consumption buildings (passive buildings, etc.).
Province autonomous of Bolzano	L.P. 04/1993	Tax contributions for those projects which use energy saving strategies or renewable energies in buildings.
Notes: D.C.C. = Deliberation of the Municipal Council; R.E. = building regulations; L.P. = Provincial Law; P.R.G. = town-planning scheme		



Table 2: Incentives provided from different Italian regions.

Regions	Kind of instrument	Incentives and contributions
Emilia Romagna Region	D.G.R. 849/1998 D.G.R. 21/2001	Tax reduction of the urbanisation charge for bioclimatic or bio-ecological buildings.
Veneto Region	L.R. 21/96	Urban parameters concessions for those projects which improve the indoor human comfort and the energy saving (extra-thickness of the wall and the floor, thermal inertia, etc.).
Friuli Venetia Julia Region	L.R. 04/1999	Tax contributions for the use of energy saving strategies or renewable energies in buildings.
Tuscany Region	L.R. 45/97	Tax contributions and promotion for the use of energy saving strategies and renewable energies in buildings and the development of new energy saving technologies.
Tuscany Region	D.G.R. 03/03/2003	Tax contributions for thermal solar in buildings.
Latium Region	D.G.R. 1329/2002	Tax contributions for the construction of low emission buildings.
Umbria Region	Law 61/1998 D.G.R. 5180/1999	Increase of the contributions for the reconstruction of the buildings damaged by the earthquake of the 1997, for those projects using bio-ecological or bioclimatic strategies, energy saving techniques and materials recycling.
Umbria Region	L.R. 38/2000	Urban parameters concessions for those projects which improve the indoor human comfort and the energy saving (extra-thickness of the wall and the floor, glasshouses, etc.).
Umbria Region	D.P.G.R. 374/1998	Tax reduction of the urbanisation charge for those projects which use energy saving technologies (solar panels, electrical energy production using renewable sources, thermal insulation, etc.).
Marches Region	D.G.R. 579/2003	Increase of the transfer price of those houses (subsidised building) built according to sustainable principles
Notes: L.R. = Regional Law D.G.R. = Deliberation of the Regional Council D.P.G.R. = Deliberation of the President of the Regional Council		

5 Conclusions

The present government structure and division of responsibilities is a primary obstacle; implementation is inhibited by the lack of leadership and coordination between various levels of government, agencies and industry groups.



This may be the result of different priorities and the lack of clarity or consistency of initiatives for all levels of government, so conflicting objectives and strategies need to be solved.

Actually fragmented actions exist at different level of government, but it is necessary an 'harmonization', through a global action plan for sustainable building or a shaping of packages related to the sustainable building at national level.

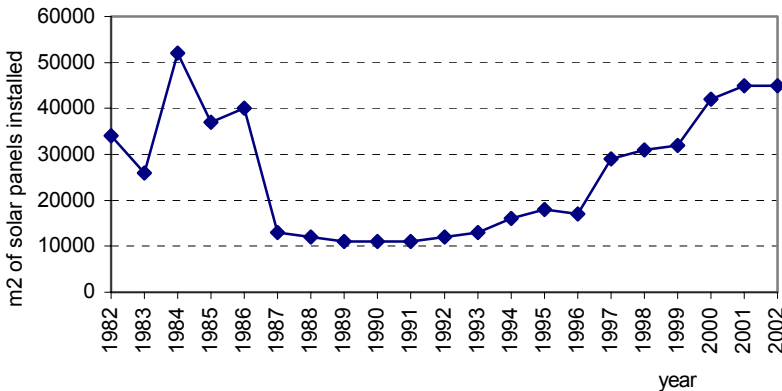


Figure 1: Italian market of thermal solar in the last twenty years.

One of the actions in this direction should be, for instance, to prepare a 'set of measures for Sustainable Building' in order to harmonize different sets of local authorities requirements used until now. The set would be a collection of criteria, indicators, measures and recommendations that can be taken in the field of sustainable building. It could work as an instrument on sustainable building for local authorities because they could select appropriate measures for their policy on sustainable building.

Broad consensus in construction industry, product manufacturers, developers and government should be achieved on the definition of these sustainable measures. The sets of indicators are now used to define criteria for ambitions in new project developments, to create agreements in project consortiums and to define eligibility for green financing schemes.

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