Tackling the potential from below

Italian Municipal Building Codes as concrete implementation tools for the EPB Directive

Gianluca Ruggieri

DASS - Dipartimento Ambiente-Salute-Sicurezza
Università degli Studi dell'Insubria

Annalisa Galante
Giuliano Dall'Ò
Dipartimento BEST - Politecnico di Milano

gianluca.ruggieri@uninsubria.it

What We Talk About When We Talk About Italian Building Enterprises

- 800 000 enterprises, 1 900 000 employees (average 2,4 each)
- More than 15% immigrants
  - Very complicate procedures to obtain residence permit (employers are responsible)
- Problems concerning occupational safety issues
- Late payments, especially from public clients
- Estimates: 270 000 workers not registered and 4 billion euro annual fiscal fraud
  - Recently more than 5000 enterprises unknown to the fiscal authorities were uncovered, although they were handing out invoices to their clients asking for tax allowances...

gianluca.ruggieri@uninsubria.it

What We Talk About When We Talk About EPBD in Italy

- 1991 Law 10 concerning rational use of energy, energy efficiency and renewable sources of energy
  - Energy certification was introduced, still missing the technical regulations
- 2002 EPBD
  - Energy certification and minimum standards to be introduced “at the latest on 4 January 2006”
- 2005 Legislative Decree n.192/2005
  later modified by Legislative Decree n.311/2006
  - Once again the Decree introduces general criteria, and defers most of the technical issues to following decrees that still have not been published

gianluca.ruggieri@uninsubria.it

What We Talk About When We Talk About Energy Delegated to Regional Governments

- The regional Governments (19 regions plus 2 autonomous provinces) are responsible for the actual implementation of the Directive (in particular the provisions concerning methodology of calculation of the energy performance of buildings and energy certification)
- The current situation in Italy varies depending on the region:
  - Some regions (e.g. Lombardia, Liguria, Piemonte, Emilia Romagna) have completed the implementation;
  - Some regions have started the implementation process, but the mechanism is still not effective;
  - Some regions have not yet started the implementation process.

gianluca.ruggieri@uninsubria.it

The context

1. Multi level legislative context: not clear what is mandatory (verification and sanctions in most cases are not provided for)

1. Small enterprises with more urgent problems than energy performance

1. If we consider the whole sector (and not only best practices) entrepreneurs are in and out from grey economy: spread illegality

gianluca.ruggieri@uninsubria.it

Role of Municipalities

- Building companies have frequent contacts with the municipal offices, that represent the closest level of the administration
  - For example most of the mandatory communications must be directly handed to the Municipal Technical Offices
- Since 2003, municipalities have started acting on three levels:
  - Municipal building code, to enact some mandatory provisions regarding energy efficiency and integration of renewable energy sources
  - Financial or volumetric incentives to stimulate voluntary action to increase energy efficiency
  - Inspecting and monitoring the projects and the building site, to ensure that the process is having an impact

gianluca.ruggieri@uninsubria.it

National Observatory on Municipal Building Codes

- Set up by CRESME and Legambiente
- Research involving 1000 municipalities
- 188 municipalities are active in energy efficiency promotion through the MBC
  - in 103 municipalities the MBC includes at least one mandatory provision concerning energy efficiency (7.6 million inhabitants, 40 000 new unit annually, around 13% of the Italian total)
  - in 85 municipalities the MBC includes only incentives

gianluca.ruggieri@uninsubria.it

Success story: Municipality of Carugate, 15.000 inhabitants, Milano Province

- Participative approach on community planning
  1. analysis of the status quo: criticalities were highlighted organising discussions with local stakeholders
  2. all technical experts of the different departments the municipality were involved to define the new MBC layout aiming at a global harmonisation with other land planning instruments
  3. intervention of the councillors (politicians), which can suggest some modification
- After the adoption, meetings were organised with building designer associations and with building companies association
  - In these meetings it was calculated an extra cost of less than 3% of total costs, originated by the new obligations

gianluca.ruggieri@uninsubria.it

Mandatory and suggested energy efficiency measures

The mandatory measures included in the Carugate MBC are:

- More restrictive envelope U-values than those required by the national law
- Solar thermal systems for domestic hot water production
- Application of thermostatic valves to radiators or individual regulation systems
- Individual heating metering systems and gas-fired condensation boilers installation
- Low-energy electricity devices (e.g. standard digital lighting control systems) and high efficiency lamps
- Collection and storage system for gathering rain water

The suggested measures included in the Carugate MBC are:

- Green roofs
- Low temperature radiant panels
- Natural materials and bio-compatible furniture
- Centralized heating systems
- Solar greenhouses

gianluca.ruggieri@uninsubria.it

Success story: Municipality of Carugate, Results obtained after the implementation

- Results obtained before the new Regional regulation
- Between 2004-2006, 57 checklists were completed and delivered to the Municipal Technical Offices
- An analysis of the checklists shows how the practice of the building companies changed
  - the wall insulation was finally taken seriously and U-values fulfil the MBC requirements
  - 26 new solar heating plants were developed, for a total 456 m^2
    - More than sixfold the Italian average in the same period
  - 111 m^2 additional PV installation
    - Almost fivefold the Italian average in the same period

gianluca.ruggieri@uninsubria.it

After the new regional regulation, do we still need MBCs to promote energy efficiency?

- Still important factors of importance for MBC:
  - The link with municipal financial (or volumetric) incentives
  - The role of the accompanying measures: when a MBC is implemented, the accompanying measures (information campaign, training, public debate, incentives, ...) constitute a learning process that promotes a positive framework
  - Municipality is the closest level of the administration
  - The chance to adapt the national or regional legislation to local conditions
  - Even if the provisions are the same as those applicable at national level, including them in the MBC, makes them stronger

gianluca.ruggieri@uninsubria.it

Success story: Municipality of Lodi, 45.000 inhabitants

- The process for the development of the new MBC
  - All the municipal departments dealing with energy were involved, profiting of the consultancy of the Milan technical University
  - The local associations of architects, engineers and surveyors were also involved in this phase
  - In November 2007 the municipal council adopted an annex to the existing MBC focused on energy efficiency, renewable sources integration and water management
    - Some professionals highlighted some problems concerning the dimensioning of mandatory rainwater collectors
    - A solar thermal company also asked to change a provision that obliged to put the solar heater water storage under the roof
  - In February 2008 the final text, accepting the observation was approved

gianluca.ruggieri@uninsubria.it

Success story: Municipality of Lodi, Additional requirements include

- In all residential buildings including 4 or more apartments, a centralised heating system is mandatory
- A dual water system is mandatory, with a collector for rainwater that must be utilised for irrigation and other uses
- Stricter requirements are defined for the summer comfort such as higher values of thermal mass (especially of the roof) and the heat transfer coefficient, solar protection measures
- Active cooling systems installation is possible only when passive or low energy measures are already in place (heat gains reduction, free cooling)

gianluca.ruggieri@uninsubria.it

Success story: Municipality of Lodi, the implementation phase

- When a new project is prepared, a meeting is organised with the designer, in order to help him/her to fulfil the obligations: in most cases the meeting ends up to be a real consultancy
- There is a double check: first the internal coherence of the project is checked, before the start of the construction site
- If any problem arises (as in most cases) the designer is asked to change the project, and a second meeting is organised
- In this case the construction site is stopped, or does not begin at all

gianluca.ruggieri@uninsubria.it

Success story: Municipality of Lodi, on-site check

- The second check is performed directly onsite to verify if the buildings are erected according to the checklist and the project layouts that have been delivered to the Municipal Technical Office
- All the verification process is conceived more as a helpdesk to the designer and the building company, rather then an inquisitorial activity
- In some cases designers don't even know the regional law or the Municipal Building Code, they don't know the standards they are supposed to fulfil
  - The municipality is preparing a technical guide in order to clarify which standard must be fulfilled in which cases

gianluca.ruggieri@uninsubria.it

Success story: Municipality of Lodi, Results

- In the first months of implementation a total of 50 new projects
  - In most cases modification to the design were asked
  - Only 5 onsite inspections were performed (“even with only 10% of buildings inspected, the companies know that there is someone that may check them”)
- Roofing thickness was typically around 30 cm, while now it is increased up to 46, 50 or 52 cm
- Solar thermal collectors are widespread as well as condensing boilers.
- In most cases, however, the changes are implemented because of the obligation, only some part of the puzzle changes, not the general design
- Some designers try also more ambitious strategies, such as the introduction of geothermal heat pumps integrated with a photovoltaic system

gianluca.ruggieri@uninsubria.it

Success factors for a MBC

- The revision must be intended as a process, a continuous work in progress, that can be constantly updated
- The process must include all stakeholders and in particular building designers, building companies, technologies providers, associations
- Provision must be defined according to the state of the art
- An economic cost-benefit assessment should be carried out in order to select cost effective measures that can be included as mandatory
- A number of accompanying measures must be implemented (information and training, technical support, incentives)
- The implementation of the measures must be verified during the construction of the building.

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Conclusions

- All the local planning instruments must be seen as a support instrument, and not an additional restraint, towards innovative design strategy
- A systemic approach is needed to melt different levels of analysis
- Municipalities should seek a possible interaction between the land planning instruments and the plurality of actors and of social behaviours
- A prominent role will be played by the Municipal Technical Office

gianluca.ruggieri@uninsubria.it

Conclusions - 2

- New provisions, if the process does not involve local actors, may beget only an increase in the formalization of paper files: in this case probably the market actors will fulfil only procedural contents of the provision, but the wider objectives will not be achieved
- Promoting new MBC including new obligations might be a part of a winning strategy, provided that all the actors are involved in the process, rather then being only spectators of an increase of the countless impositions they must face

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