

Minimising Accidents in Italian Building Trades by Means of a Preventive Action Plan

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Abstract

Around 90,000 accidents occur every year in Italy to building trade workers. Many of them are fatal. Owing to their recurrence and their severity, a great deal of attention is paid to this issue. In the wake of the first Conference of the Italian National Health Service (Turin, 2007) dealing with "The Promotion of Occupational Health and Safety", a robust action plan to minimize occupational accidents was formulated. It should enable joint intervention in training, popularization of knowledge and supervision by means of common initiatives. The bodies entrusted with the prevention of accidents (ASL – Local health authorities, Local offices of the Ministry of Labour; INPS – National social welfare institution; INAIL – Italian national institute for insurance against industrial accidents) launched cooperative efforts combined with a careful communication plan intended to raise awareness and to inform. They set up a portal (www.prevenzionecantieri.it) that the professionals involved can use as a tool. This paper presents the initiatives launched by Regional governments and Autonomous Provinces by means of action plans intended to achieve this goal. This study aims at verifying, in consideration of the most recent national statistics on accidents at work, the soundness of the National Plan by comparing national data with those collected in the southern regions of Italy. This comparison helps us in the research study we are carrying out in our DASTEC Department at Università Mediterranea. By identifying the deviation from the National Plan we can suggest corrective measures in order to succeed in lowering the number of accidents on construction sites.

Keywords

Building, construction site, safety culture, information, prevention, training, Italy.

INTRODUCTION

In Italy data on accident trends show that the construction industry is the most dangerous with approximately 90,000 accidents every year; it also accounts for more than a quarter of all fatal events. The construction industry, as the majority of productive sectors, showed a reduction of accidents at work but its levels are still high if we consider their incidence and the severity of injuries. Incidence rates in construction industry are considerably higher than those in other industries. In construction industry (classified according to ATECO - Istat Classification of Economic Activities), accidents at work make up 15.1 percent of injuries, 18 percent of major injuries and 27 percent of fatal accidents (twice as much as the figures related to transport, which ranks the second as for fatal accidents). Falls from height (from a roof, a stepladder or a sliding ladder, temporary works).

Last year in Washington we had the opportunity to learn more about the Italian legislative system on Health and Safety at work (Gottfried, Di Guida, Villa, 2011) and about the way in which small and medium-sized construction companies organize to meet the legal

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requirements (Trani, Manderioli, 2011). Trani and Manderioli showed us the guidelines of a research aimed at involving small construction companies in the use of safety management systems.

This study wants to evaluate how initiatives within the framework of the National Plan for Prevention in Construction Industry 2008-2011 can influence the managers in this sector but also on all insiders by wide spreading safety culture to public and private clients. Our fields of observation are the construction industry productive and organizational systems in the southern regions of Italy compared with the most recent national statistics.

The following report first examines the objectives of the National Prevention Plan and then indicates the institutions involved in its management. We then examine the modalities of implementation in the Italian regions and then evaluate the first results achieved.

THE NATIONAL PLAN ON PREVENTION IN CONSTRUCTION INDUSTRY

Promoted by the Italian Regional and Provincial governments, the National Plan was launched in April 2009 to address Health and Safety issues in construction industry by means of a structured and complex plan of measures. Its overall objective is the reduction of accidents, especially the fatal or major ones. The plan showed the pooling of efforts by several institutions and aroused the interest of social partners. It was expected to end by April 1 2011, but it was then extended to April 1 2012.

The plan was implemented all over Italy to put in place counter measures in the sector that is most at risk, owing to the recurrence and the severity of accidents (Table 1).

It is a set of initiatives and activities focused on prevention, thus not limited to control and supervision but based on the global enhancement of health and safety conditions for construction workers, even thanks to the support provided by institutions in terms of information, assistance and training.

The plan proposes to achieve a number of objectives in the field of prevention throughout the system, concerning the entire national territory by means of national and local goals.

Among the national goals, we find:

- improved integrated national system (central institutions, regional authorities, social partners) to plan, execute, monitor and evaluate a targeted National Plan on Prevention;
- improved ability to share general goals based on epidemiological analysis;
- improved training effectiveness;
- the creation of a specific information system, as an element of SINP (Sistema informativo nazionale per la prevenzione di infortuni e malattie professionali, National information system for the prevention of accidents and occupational diseases).

And these are the local goals:

- reduced inconsistency of measures for the promotion of health and safety; more stringent control activities on observance of regulations, in order to set common minimum levels to be achieved step by step;
- better ability to intervene in collaboration with territorial structures and institutions in order to increase the effectiveness in achieving health goals by supporting the adoption of best practices and their implementation in the territories, after having tested their implementability and organizational effectiveness.

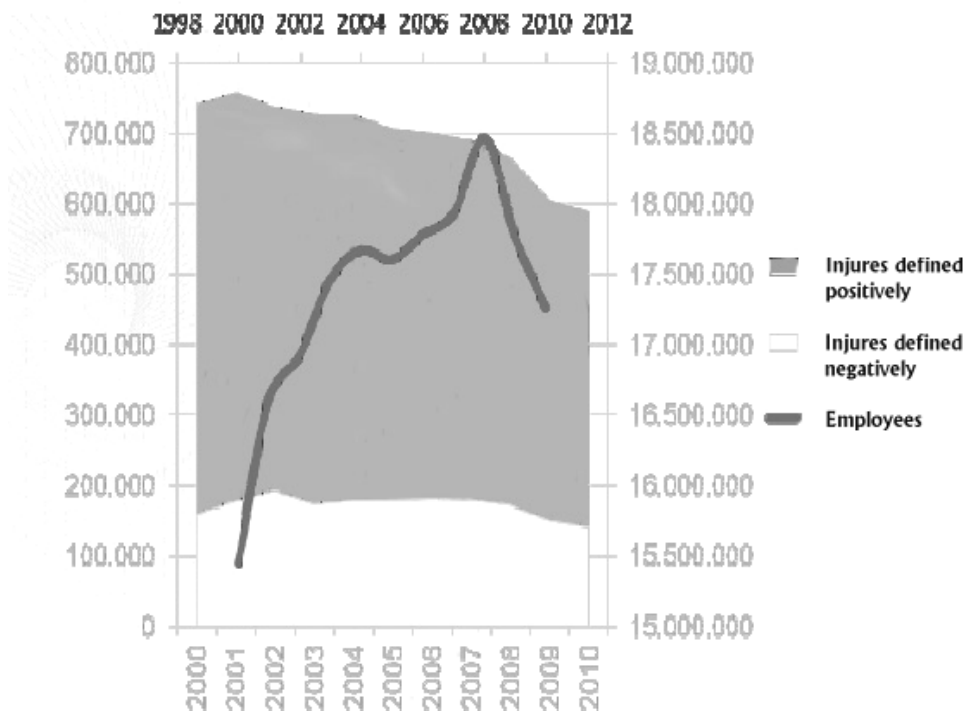


Figure 1. Accidents reported to INAIL in the years 2000 – 2010. Source: INAIL

These are the key points of the National Plan:

- ASL (Azienda Sanitaria Locale, Italian local health authority) supervision and monitoring of compliance with the rules of hygiene and occupational safety based on annual programs to identify the construction sites that are most at risk of accident; to be carried out in collaboration with the Provincial Offices of the Ministry of Labour, INAIL (Italian Workers' Compensation Authority) and INPS (Italian National Social Welfare Institution) to address not only safety issues but also the problem of legality of employment contracts;
- training of actors, providing guidance and useful materials by institutions and social partners, monitoring those key initiatives which are already in progress and setting up a national repertoire of initiatives;
- assistance, in particular to smaller companies, also by disseminating the most significant initiatives and experiences;
- the creation of a database of common solutions for health and safety, which will be the basis for the pursuit of a common technical language between companies, professionals and institutions, to support any measure in the field of training and assistance;
- a sound initiative in the field of information and communication.

THE STEERING COMMITTEE

A Steering Committee was entrusted with the key role of coordinating the measures envisaged by the Plan and the activities of all the concerned bodies, as well. It must pilot, coordinate and monitor the Plan implementation. The Steering Committee must collect and popularize data on control activities whilst verifying the implementation of all envisaged measures such as the best practices database, information campaigns etc. To this end, we should adopt

- a data collection plan making reference to the inter-regional information system on preventive activities by Prevention Departments of Local Health Authorities;
- a process evaluation plan to monitor all planned actions and assess their outcomes by analyzing accident-prevention trends over space and time;

- a program to collect and popularize national and international experiences that showed their effectiveness in the field of prevention;
- some actions to overcome any doubt in interpreting regulations, to address the challenges by resorting to the contributions of external experts who can support ASL operators in updating their knowledge.

In order to implement this demanding program, the Steering Committee involved in its initiatives the manufacturers of building materials, machines and the construction companies, public institutions and professionals.

It launched an action plan dedicated to the producers and the construction companies to raise awareness in the field of safety in building practices. A particular attention was paid to roofing systems: here their assembly instructions go hand in hand with safety equipment to prevent falls from height. The same procedure has been adopted for scaffolding producers envisaging specific indications to achieve the right and safe assembly of components under different conditions.

It also wants to start a program intended to qualify companies; a standing advisory commission is collaborating to its creation in order to train the prospective contractors enabling them to organize safe construction sites. The Steering committee will launch synergic policies among public administration and social partners, trade associations and professional orders to avoid any form of collaboration with those construction sites that are below the minimum safety level, to implement solutions focused on safety, to improve the administration of training and foster the popularization of technological innovations. In our work with experts, we would like to improve the project design so that they can be read more easily in the construction site thus improving their enforceability and their operability. Construction sites, below the minimum safety level, are considered to be those where we notice a poor respect of precautions against the serious risk of accidents and:

- there is a serious and imminent accidents hazard, directly noticed,
 - the situation cannot be remedied by easy and immediate interventions,
- we suggest the radical implementation of repressive tools which can lead to the suspension of works.

By way of example here are some situations, which, however, must always be judged in the real construction site, environment and using all the expertise gained through years of experience:

- A. Work-at-height (> 3 m) without temporary works or with poor protective equipment that cannot be immediately remedied by easy interventions.
- B. Excavation of trenches (> 1.5 m) or open cut having workers near the digging line without any preventive measure (lack of geotechnical studies that clearly indicate that the digging walls will not collapse, the lack of shoring, reinforcements etc.) that cannot be immediately and easily secured.
- C. Works on non load-bearing surfaces (such as cement asbestos) without any type of individual and collective protection that cannot be immediately remedied by easy interventions.

THE ROLE OF JOINT BOARDS

These territorial boards, constituted under the Consolidated Act on Safety in force since 2008, gather the most representative Italian associations of employers and employees.

They must:

- plan all training activities, process and collect procedures deemed to be useful to enhance prevention;
- develop actions aiming to strengthen safety and health at work;

- carry out those functions assigned by law and by collective labour agreements.

They are represented at the local level by CPT (Comitati Paritetici Territoriali - Local Joint Committees) in which we find representatives of ANCE (Italian Construction Contractors' Association), ANAEPA-Confartigianato (Italian Association of Construction Craftsmen, painters, decorators and related activities), the CNA-Costruzioni, FIAE Casa, sectoral trade unions (FENEAL-FILCA CISL, UIL, FILLEA CGIL), cooperative housing associations (Lega Coop, Confcooperative, Associazione Generale Cooperative Italiane) and ANIEM (Italian Association of Building Contractors), association of which members of the most operators of the building sector.

A National Committee (CNCPT) has been entrusted with the coordination of CPTs: it must plan the activities to be carried out within the framework of the national Plan.

In those first years CPTs:

- made periodical inspections in construction sites to provide technical assistance;
- trained and informed workers on specific duties and particular risks noticed during sites inspections;
- assisted companies and workers in disseminating best practices and technologies in organizational procedures;
- informed and updated managers and safety engineers working in construction sites.

As it was exposed in a recent conference held in Lucca in June 2011, periodical inspections rose by approximately 20 percent per year compared to the past. Information activities were carried out in meetings at the site, whereas training (scaffolding, first aid and fire prevention) involved over 30,000 workers.

The work of CPTs, in keeping with the provisions of the Consolidated Act on Safety, aimed at assisting companies in identifying technical and organizational solutions to ensure and enhance the protection of health and safety at work. CPTs also certified the activities and the services performed to support companies. This goal is well achieved by large companies but in small ones, there is still a long way to go, as shown in recent studies by Salomone (2008) and Trani (2011).

THE ROLE OF VOCATIONAL TRAINING BODIES

Within the framework of training in collaboration with other agencies, the Steering Committee together with Formedil (National Board for vocational training in construction) launched "16 hours", a program to train new construction workers.

In conjunction with this agreement, vocational training bodies revised their training patterns and improved the previous careers in order to enhance the level of professionalism and to lower the number of accidents. In Italy, there are 100 Building Construction courses; here training is administered for the whole career from the entrance in the company, divided as follows:

- 16 hours – initial training and apprenticeship;
- the offer of vocational training and lessons on how to work safely in mandatory field (scaffolding, construction machines and equipment, coordinators for safety and health) set by the Consolidated Act on Safety (Decree n. 81/2008 and subsequent amendments and additions);
- the opportunity to attend life-long learning course thanks to dedicated plans for professional development (PSP) which provide a useful tool that can add a value to one's career.

At this end we have set up the first BDFC, a database on building construction course attendance, which enables all young or adult construction workers who attended an Italian Vocational training course to get a certification of his/her curriculum by means of a personal record. Starting from 2011 this database was enriched by two more tools:

- the trainer's personal record, which will enable Formedil to certify the training administered to students within the system;
- the vocational training body record, which will enable schools to certify the training courses administered to specific companies.

In this key reference frame we find "16 hours MICS" (integrated classes to build safely) which addresses the topic of information, education and training set by legislative decree n. 81/2008, as amended and integrated by legislative decree n. 106/2009, in art. 73, concerning workers using lifting equipments (tower cranes, telescopic loading platforms, mobile cranes, aerial work platforms, forklift trucks) and heavy construction equipment (bulldozers, excavators, loaders, backhoe loaders) with classes lasting 8 hours plus 4 hours "one time, last time".

In 2011 Formedil implemented a National database in which are recorded in real time, all classes and training courses attended by every construction workers in any Italian province. In the first six months of 2011, more than 20,000 construction workers attended these vocational training courses.

THE INFORMATIVE CAMPAIGN

The campaign was intended to disseminate knowledge about the existing Plan to support prevention in construction industry, the existence of a socio-institutional system which bears the sectoral problems (2 million companies, 2 millions construction workers) and tries to provide sound solutions and answers to the requirements of health and safety having a positive impact on the minimization of accidents.

The first step of this campaign supported the launch of the National Plan on Prevention by means of ads on newspapers and magazines, on the radio and in cinemas and the creation of a website (www.prevenzionecantieri.it); we shot some videos on the three major risks (falls from height, collapse of roofs and trenches walls). We tried to combine some aspects that, in the light of onsite experiences, would cover a wide range of skills such as:

- the idea of minimum level of safety;
- the major risks such as falls from height (ladders, temporary works) or because of roofing collapse;
- standard descriptions of major or fatal accidents taken by monitors;
- statistical trends on accidents at work in construction industry retrieved from INAIL databases;
- the most recent National and regional regulations;
- the already implemented best practices.

As for the steps dealing with the territorial implementation, Regional governments, INAIL regional Offices and the Local offices of the Ministry of Labour have put in place some initiatives in conjunction with CPTs and social partners. These measures consider the socio-productive features and the economic pattern of every territorial area, and often are included in general planning of Regional Coordinating Committees.

The Internet website *prevenzione cantieri* is a user-friendly tool; here consultation works are classified in order to allow a targeted research according to the risk, the process and/or the workers who can be affected.

The website contains the following sections:

- safety solutions – solutions that have already been implemented in construction sites and allow to work in a safe environment when building or maintaining roofs, assembling or disassembling scaffolds, pouring pillars and floors, providing planks. Each document contains also some pictures, the legal references, safety provisions and other specific information required by the Safety Plan on site and the Coordination and Safety Plan;
- informative materials – in this section we find about 100 technical papers, brochures, posters and videos to meet the need of different target groups;
- training/ courses – here we present all courses available at Formedil or at INAIL regional offices; among these we find: scaffolding assembly and disassembly; the use of PPEs, heavy construction machines, lifting equipment;
- data on accidents at work – here we record statistical data on accidents at work in construction industry processed by INAIL and data by INFORMO (a national monitoring system on fatal accidents);
- basic regulations, National and regional laws, technical standards and construction standards;
- information campaigns dedicated to construction industry (info campaign on the National Plan to be broadcasted also by local TV channels and YouTube).

REGIONAL PLANS ON THE PREVENTION OF ACCIDENTS AT WORK

In its operational guidelines for regional plans on the prevention of accidents at work, the Ministry of Labour included among the most important risk priorities the one concerning accidents trend recorded in the construction industry. We also stressed the need to increase the training opportunities and the assistance to all workers employed in construction sites (workers' representative entrusted with safety, site managers, coordinators for safety and health) keeping also in mind the needs of foreign workers.

This advice was accepted by almost all Italian regional governments which in their plans fostered the implementation of supervision activities together with the local offices of the Ministry of Labour, INAIL and INPS to tackle the problems of risk prevention and illegal work, as well, without neglecting the good measures put in place in different cases, for example the great public works.

The role played by Regional governments in the implementation of the National plans consists in:

- surveillance – every year they must inspect a number of construction sites calculated on specific criteria such as inhabitants, major accidents, number of construction workers, preliminary notifications: every year 50,000 construction sites must be inspected, i.e. 1/5 of the preliminary notifications issued;
- training – creation of a database containing all training initiatives to promote a National repository of vocational training courses;
- assistance – experts available to help clients, coordinators for safety and health and construction companies, in particular SMEs, providing them with information, informative materials and professional updating.

The 2010 – 2012 planning of prevention measures in workplaces carried out by Regional governments considered the institutional framework defined in the agreements between central governments and regional governments, which can be summarized in the Compact for health and safety in workplaces.

The overall goal to be achieved: the total provision of essential assistance (i.e. inspection in 5 percent of local companies employing construction workers) by focusing the activities of local health authorities on health issues and the countermeasures against the major risks, whilst setting aside those practices whose effectiveness is poor.

Within this framework, Regional Plans on Prevention 2010–2012 are specifically targeted tools to lower the number of major and fatal accidents at work and professional diseases by increasing the effectiveness and the efficiency of preventive measures.

As for the southern regions of Italy, Sicily and then Calabria passed specific implementation regulation for the adoption of the National Plan.

In April 2010, the Sicilian Regional government passed a Regional Plan for the Protection of Health and Safety at Work; it formulated several key goals to promote health and safety at work. The Regional Plan shows the guidelines of regional planning aiming at achieving higher standards of safety at work thus representing a model in which prevention is an essential component for a gradual enhancement of health and safety at work.

This Plan aligned Sicily with other important regional experiences all over Italy; it also is really responsive to a urging social problem needing a structured but common solution.

The Plan on Prevention in Construction Industry set by the Calabrian Regional government in 2010 aimed at reducing by 10 percent the fatal accidents and those leading to disabilities (Table 2).

The Plan involves INAIL, INPS, the local offices of the Ministry of Labour and the local health authorities is focuses on:

- supervision
- training
- assistance
- database of common best practices
- information and communication campaign.

The Regional government worked hard to promote the availability of experts to help clients, coordinators for safety and health and companies (above all the smaller ones) to provide them with informative material and the necessary updating.

Table 1. Inspection activities in Italian regions

Region	Notifications in 2005	Inspections in 2005	Sites inspected in 2005	Share sites to be inspected by 2008-2010 plan
Abruzzi	6689 (2.6%)	2538	1311	1301
Bolzano	3338 (1.3%)	1938	1221	1263 (with TN)
Calabria	4258 (1.7%)	1947	1253	1370
Emilia Romagna	27274 (10.6%)	5832	3395	4662
Friuli	8198 (3.2%)	1195	692	1209
Lazio	13189 (5.1%)	12032	6377	3540
Liguria	8913 (3.5%)	2622	1440	1606
Lombardia	46722 (18.2%)	9437	5912	8669
Marche	8692 (3.4%)	2259	1395	1527
Molise	922 (0.4%)	258	127	263
Piemont e	24664 (9.6%)	4341	2513	3995
Puglia	12359 (4.8%)	728		2694
Sardegna	5671 (2.2%)	2229	929	1431
Sicilia	7977 (3.1%)	1330	919	2917
Toscana	20986 (8.2%)	6124	3376	3909
Trento	4604 (1.8%)	490	319	1263 (with BZ)
Umbria	7734 (3.0%)	2402	1842	1092
Valle Aosta	1282 (0,5%)	866	250	215
Veneto	28392 (11.1%)	4987	2947	4669
Basilicata	2000 (0.8%)	-----	-----	491
Campania	12500 (4.9%)	-----	-----	3179
Total	256,364 (100%)	62822	36881	50000

Table 2. Process and outcome indicators for the Plan of Calabria

Indicators	Source of verification	Indicator value at december 31, 2010	Indicator value at december 31, 2011		Indicator value at december 31, 2012	
			expected	observed	expected	observed
Percentual of annual reduction of fatal injuries and disabling outcomes in construction	INAIL	193 injures causing permanent disability n.3 mortal events (INAIL 2009)	-5%		-10%	
Percentage of compliance with respect to alleged violations in the record high in the site inspection	Verbal communications and reports of crime to the Prosecutor's Office		75%		80%	

Table 3. Comparison of results of inspections in the three regions of South Italy

National Plan – SUPERVISORY ACTIVITIES YEAR 2010						
Inspected companies	Companies irregular	Undocumented workers	Illegal workers	Other subjects	Total workers regularized	Incidence % irregular/inspections
BASILICATA						
255	244	703	115	308	818	95,6
CALABRIA						
1394	971	676	428			69,6
SICILIA						
1212	1027	2001				84,7

Source: Regional Offices of Labour

IMPLEMENTING THE NATIONAL PLAN

At the end of the implementation period (December 2012) we can assess the expected outcomes as defined by the initial planning. Although the outcomes have not been released yet, by collating the collected data by means of process followers the first elements confirm a decrease in accidents even if data are influenced by several factors such as the current economic situation that reduced the number of sites.

The most effective assessment of the outcomes will be done through the monitoring of accident trends in construction industry in different Italian regions and by comparing those outcomes with the expected results set by the National Plan for this sector. An important indicator will be the accident rate based on severity and occurrence per region or even per construction company.

In the first two years, the Plan implementation allowed a better coordination between the boards entrusted with safety control; this led to achieve some positive outcomes:

- we have inspected more construction sites than expected;
- every Regional government launched a Regional Plan on Prevention in Construction industry containing the goals set by the National Plan;
- in those Regions where there was a lack of staff to be employed in these inspective activities experts have been hired to meet the need;
- all departments entrusted with inspection activities share the same ideas about the importance to monitor the territory and to supervise sites to avoid hazards;
- improved synergies with INAIL and the local offices of the Ministry of Labour in cross checks or joint inspections on safety at work and regular employment contracts;
- we already launched some interesting initiatives and tests on the adoption of notifications to plan measures and identify those sites that are more at risk;
- Local health authorities and local offices of the Ministry of Labour improved their collaboration with Joint Boards and Vocational training institutions;
- the workers of local health authorities entrusted with prevention activities attended refresher courses carried out with educational methods and content consistent all over Italy.

CONCLUSIONS

The planning effort made in some public sectors and in some bodies was immediate; whereas in other sectors we could not reach professionals and small construction companies.

Control boards and professional boards should increase their collaboration with professionals (coordinators for safety and health, planners and designers) in order to implement some procedures and practices to build safely and improve planning with an eye to safety, which still is a hot topic.

We must make an effort to train site managers and coordinators for safety and health by involving SME, since they will profit the most.

By comparing the different regional realities, we realize that the regions having an effective regional government can ensure the measures set by the National plan will be implemented; on the contrary there are some regions which did not enforce their measures to lower the occurrence of accidents at work. There's a lack of surveillance consistency (extensive inspection on the territory, periodic inspections in collaboration with the local offices of the Ministry of Labour, INAIL and INPS).

The implementation of the Plan, however, compares with the crisis time in construction sector due to the economic situation that has caused a drastic reduction of sites. This condition, however, facilitates the implementation of safety measures and improvement of coordination between the various institutions involved.

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