

6ème conférence internationale 6th International Conference

Espace Underground
et Urbanisme Space and
Souterrains Urban Planning



Actes II
Proceedings

Sous la direction de Sabine Barles

Paris La Villette
26-29 septembre 1995



Ministère de l'Aménagement du Territoire,
de l'Équipement et des Transports

Ministère du Logement



Laboratoire Théorie
des Mutations Urbaines

GDR 1101 Sol urbain



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THE USE OF UNDERGROUND SPACE AS A MEANS FOR SAFEGUARDING THE ENVIRONMENT: AMENDMENTS TO LEGISLATION

L'UTILISATION DE L'ESPACE SOUTERRAIN, UN MOYEN DE PRÉSERVER L'ENVIRONNEMENT : AMENDEMENTS DE LA LÉGISLATION

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Résumé

Le 13 juillet dernier un projet de loi intitulé "Amendements à la loi du 8 juillet 1986, n° 349, concernant la conservation des équilibres environnementaux dans le cadre des grands projets de génie civil" a été présenté à la chambre des députés italienne.

Ce projet montre l'intérêt de l'appareil législatif italien pour la planification et l'aménagement de l'espace souterrain dont la législation est extrêmement fragmentaire et dispersée et souvent obsolète, compte tenu de la demande d'espace due à l'augmentation de la population et de la nécessité de réaliser des grands projets de génie civil en minimisant les impacts sur l'environnement.

Le projet comprend sept articles que l'on peut résumer de la façon suivante :

- 1) la décision de construire en souterrain doit être prioritaire dans la programmation afin d'atténuer les impacts environnementaux ;
- 2) l'évaluation des impacts environnementaux (EIA) sera étendue à des projets qui y échappaient jusqu'alors. Le projet donne une liste d'équipements dont l'enterrement est particulièrement intéressant ;
- 3) pour les travaux soumis à l'EIA, leur réalisation en surface (et non en souterrain) doit être dûment motivée et les autorités concernées doivent soigneusement examiner ces motifs lors de la prise de décision ;
- 4) tous les citoyens sont appelés à se prononcer sur de possibles utilisations du sous-sol.

Le projet de loi invite donc — entre autres — toute personne qui programme ou conçoit de grands projets de travaux publics à examiner les possibilités offertes par le sous-sol et les avantages, notamment environnementaux, qui en résultent. Cette suggestion n'a pas pour objectif de créer des villes souterraines mais de transférer en sous-sol tous les équipements qui sont susceptibles de perturber l'équilibre de la surface, dans l'objectif de créer des espaces libres en surface et de recréer un environnement de qualité.

Abstract

On 13th July this year, a bill was presented to the Italian Chamber of Deputies with the title "Amendments to the Law of 8th July 1986, No. 349, concerning the conservation of environmental equilibriums consequent to the construction of major civil works".

The bill presented reveals the interest of the Italian legislature in the planning and management of underground space. Regulation of this sector is extremely fragmentary and dispersed and often obsolete, given the growing demand for space following increases in population levels and the need to locate civil works with a large environmental impact in a context capable of attenuating it.

The bill consists of seven articles basically stipulating the following:

- 1) the decision whether to construct underground must be given priority, in terms of programming, in order to attenuate environmental impact;
- 2) environmental impact assessment (EIA) is to be extended to works other than those for which it has until now been applied. The bill proposes a list of civil works particularly suited for underground construction;
- 3) for works subject to EIA, express reasons must be given if it is not to be constructed underground and the authorities concerned are obliged to examine carefully such reasons when making decisions;
- 4) all citizens may make observations on the possible uses of underground space.

The bill therefore invites, especially in point 3, anyone who is planning or designing major civil works, though it is not limited to these persons, to sound out the possibilities offered by underground construction and the environmental, and other, advantages that may accrue. This invitation is not intended to incentivate the creation of underground cities but to transfer underground all those works that may create disturbance on the surface, with the aim of creating free surface space and to recreate a liveable environment for the public.

1. THE BILL

On 13th July last the bill "Amendments to Law No. 349 of 8th July concerning the safeguarding of environmental equilibriums consequent to the construction of various major civil works" was introduced to the Chamber of Deputies by the deputies Perale and others.

The bill follows the guiding principles of the Associazione Progetto Quarta Dimensione (The Fourth Dimension Project Association) and is designed to increase awareness and use of construction underground as the best social and environmental method of dealing with an increasingly numerous series of situations. It makes it compulsory to consider underground construction as an alternative for the siting of utilities and major infrastructures.

2. THE ROLE OF THE *PROGETTO QUARTA DIMENSIONE*

The introduction of this bill was naturally of great satisfaction to Associazione Progetto Quarta Dimensione whose activity in studying and promoting the use of underground spaces as a means of improving the quality of life in society was both well rewarded and also encouraged to make future endeavours.

Safeguarding of the environment has been one of the major objectives of Progetto Quarta Dimensione since it was founded. It has promoted activity to make public opinion, government administrations and national institutions both in the European Community and internationally more aware of the need to make systematic use of underground space conceived of as a "fourth dimension" and almost unlimited reserve of space.

The bill focuses attention on works of major importance such as major transport infrastructures and utilities in general. Deposits for dangerous materials, power stations, plants for water treatment and waste disposal are installations which, although necessary, no one would want near their homes because they cause profound and radical modifications to the surrounding environment. Locating such works underground has advantages that are not limited to reducing the environmental impact alone. Thorough cost benefit analysis does in fact show that location underground is frequently a competitive economic alternative to siting works on the surface.

3. GUIDING PRINCIPLES

The guiding principles upon which the decision, as far as construction itself is concerned, to site underground should be made are as follows: climatic conditions do not interfere with work and cause delays with the result that construction times are shorter and costs lower; there are savings on the expropriation and compulsory purchase of land; and finally there are savings on the costs incurred from the temporary interruption of the normal juridical, economic and social functions of the area concerned. As far as the service life of an underground construction is concerned, it lasts longer, maintenance is not affected by climatic conditions and there are energy savings on heating and conditioning due to the insulating properties of the ground. These considerations should suffice to destroy the myth according to which underground construction is too costly since from a long term viewpoint the lower operational costs and above all the lower level of environmental impact make underground construction very much more economical.

The bill reveals the interest of the Italian legislature in the planning and management of underground space. Regulation of this sector is extremely fragmentary and dispersed and often obsolete, given the growing demand for space following increases in population levels and the need to locate civil works with a large environmental impact in a context capable of attenuating it. The lack of adequate regulation of underground space is often noted by government administrators, engineers and business men. The best way to formulate the necessary legislation would be in a wider context of revision and reorganisation of regulations in which the surface-underground dichotomy is eliminated (the drafting of one single law on planning is to be hoped for). Nevertheless the bill that has been introduced does make recourse to underground engineering as a solution to environmental problems possible.

It is important to emphasise that the goal set by the introduction of this bill is not the construction of underground cities, although this has been done in other countries that suffer extreme climatic conditions for long periods of the year. The intention behind this law is to transfer underground all those utilities and infrastructures (beginning with the largest number possible of motorised means of transport) that broadly speaking cause pollution and deterioration of the environment and our natural and artistic heritage so as to improve the quality of life of individuals and society in general.

4. THE CONTENTS OF THE BILL

The general contents of the bill do not provide any radical innovations to the situation, which, as a whole, is already quite delicate, but just makes simple amendments to Law No. 349 of 8th July 1986.

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5. FUTURE PROSPECTS

The question of the environment has now become an inescapable part of the debate on planning and the construction of public infrastructures. Discussion of conservation and recovery of the environment has, however, taken place predominantly in academic and political spheres. This has been echoed loudly in the media each time there has been one of the numerous environmental crises caused by accidents and when decisions have had to be taken over the construction of major works.

Unfortunately it cannot be said that any consensus has yet been reached whereby environmental problems can be dealt with calmly and seriously. On the one hand there are those with no regard for the environment whatsoever and on the other dogmatic environmentalists who reject outright, solutions to many of the unavoidable problems that afflict modern society.

The result is that while in the recent past infrastructures that caused serious damage to the environment were designed and constructed, today indispensable works which sometimes have even been already financed are paralysed by the protests of environmentalists. Furthermore these situations are the cause of dramatic hardship and worry to those working in the construction industry and to society in general, especially if one considers the economic crisis the construction industry is going through.

The parliamentary bill constitutes a valid contribution to the debate on the quality of the environment. The legislation it proposes facilitates the construction of works that are compatible with the environment and which provide an acceptable answer to the demand for infrastructures. It is certainly not by chance, as can be seen from the above, that the bill moves in harmony with EIA legislation with references to some of its most important articles.

One part of the bill in particular was felt to be fundamental. This is the reformulation of art. 6, subsection 9 of Law No. 349, 1986 concerning the involvement of citizens who may present "petitions, observations or opinions". It makes it possible to try to achieve a situation of "environmental democracy" that is one of the most marked characteristics of those countries that are most advanced in this field.

A recent example in Italy is provided by heated debate over the routes for the new Italian state railway's high speed lines which must pass through various cities.

After long discussions between local government bodies, representatives of pressure groups and the state railways it was decided to construct many stations and sections of the line underground; this was the case with the Bologna railway node.

There are many other cases in which the bill could bring benefits. In urban areas, for example, the transfer or construction from scratch of infrastructures underground could solve many of the problems that are becoming more and more acute in the last few years of the century.

The conclusion one draws is that while in the past policies on how underground space should be used were sterile and banal, it now seems reasonable to hope that with the new parliamentary bill they will become much more concrete. It represents a genuine and considerable change in terms of approach that is capable of affecting the attitudes and practices of engineers, architects and urban planners leading, as a consequence, to a more organised and co-ordinated use of underground space.