

TOWN PLANNING AS A TOOL FOR MITIGATING EARTHQUAKE DAMAGE: AN EVALUATION
OF THE BOLU CASE IN TURKEY

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SUMMARY

Town planning regulations to diminish the risk of earthquake damage and improve post-earthquake salvage efforts are internationally recognized as necessary measures in earthquake zones. While opinion differs on the details of these measures, there is general agreement on their importance in disaster mitigation. While few of town plans include any specific earthquake measures, they traditionally include planning measures for the control of urban development. Is town planning implemented and land use controlled in accordance with town planning regulations in Turkey's high earthquake risk zones? This study examines the extent to which these plans are implemented and serve as a control device.

THE ELABORATION OF THE METHODOLOGY

This paper presents the results of an in-depth study of a single town, Bolu, whose earthquake history and town planning experience make it a sound case for testing a methodology to evaluate the implementation of town planning measures in medium-sized cities of Turkey.

The criteria for selecting the test case were the city's location in the North Anotolian Fault Zone, recently recorded experience of more than one earthquake, the preparation of at least one town plan preferably shortly after an earthquake, and the existence of land-use maps to compare the city's actual development with its planned development. In addition, a sufficient period of time had to have elapsed after the town plan was approved for implementation so that change could be readily measured.

The city of Bolu fulfilled these conditions. The study evaluates the town's plan prepared in 1963 and actual development of the town after its implementation by analysing the town's actual condition in 1976.

Basic planning measures evaluated in this study are the control of urban expansion, density, and land use. In order to measure the extent of implementation of these basic measures, a specific evaluation methodology was developed for this study.

While urban development in Turkey is expected to be regulated by such basic measures, there is general agreement that these measures are not sufficiently implemented. The study thus focuses not on methods of implementation but on the extent of non-implementation.

The first way of circumventing planning decisions for private and public participants is to behave as if no decisions had been taken. Landowners and developers, for example, exercise initiative in deciding the timing of the subdivision and building development of the land once it has been rezoned for urban uses. While urban-fringe land may be rezoned for urban uses by a plan it may remain undeveloped for many years if the landholder holds the land for resale later at a higher price.

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This is also a common way not to implement the positive decisions set out in the plan.

To implement the decisions set out in the plan not in the form which the plan proposed but in a reshaped form is taken up as the second type of the implementation problems in this study. Decisions concerning building heights and densities in the plan are usually changed in Turkey. These changes, however, are not in the nature of updating the master plan but of violating it. Most often amendments to town plans or some other special permits increase densities well above originally proposed levels. These kinds of changes may also be made illegally by landowners or developers. In this study these changes are all evaluated as implementation problems even if some of them are permitted by the planning authority itself.

To implement developments which are not proposed, but are restricted or even prohibited by the plan is the third kind of implementation problem. In Turkey, many hectares of area not included for development in the plan may be taken over and turned into built-up areas illegally or according to the amendments of the planning authority itself.

The three types are classified separately under the assumption that the seriousness of the problem will be different in each case. Not to implement proposals made in the plan may occur for a number of reasons. Shortage of public funds is usually the basic reason of such problems. But developments in spite of restrictions amount to open infringement of the plans.

In Turkey, town planning decisions are usually presented at two different scales for medium-sized cities: 1/5000 and 1/1000. Schemes at the 1/5000 scale are called 'master plans' and the others are called 'implementation plans'. The second type of scheme is expected to be prepared within the context of the master plan scheme and involves detailed information about the implementation of planning decisions. These two compose a statutory whole. In the Bolu case and others, however, they separately elaborate certain differing or even conflicting decisions. This means that more than one decision has been taken for certain parts of urban land in the city of Bolu. Since at most one decision can be implemented for a specific area, implementation at the outset is thwarted. These conflicting decisions give prima facie evidence of the lack of seriousness encountered in implementation.

In Bolu, there is a third, an 'Additional Plan' prepared for some parts of the town in 1968. Although Turkish planning legislation contains no definition of 'Additional Plans', this plan was prepared and passed by the planning authority in 1968. 'Additional Plans' are prepared when the existing master plans fail to meet the "needs" of the town. But Bolu does not present such a case. Hectares of land were added to the development areas of the town by this 'Additional Plan' in 1968 while large parts of the development areas initially proposed still lay vacant. A more serious infringement in Bolu is the violation of use requirements.

In this study decisions set out in the plan for the public and private sector are classified and evaluated separately under the initial assumption that the probability of implementation as planned would be greater for the former than the latter. Services like primary and secondary schools, kindergartens, playgrounds, parks and sports areas, administrative services,

health services are all included among the responsibilities of public authorities. But structures for religious functions such as mosques and buildings for cultural activities such as cinemas are usually handled by the private sector. Commercial facilities, like housing, are also to a large extent privately owned and developed.

In the Bolu case the plan itself raises some peculiar problems. The plan prepared in 1963 did not bring any specific proposals for industrial areas. Thus, industrial activity was located in areas not specified for industry in the plan. This is, of course, evaluated as an implementation problem in the study but not of equal importance to residential implementation problems.

RESULTS OF THE STUDY AND EVALUATION

In 1963 the town occupied 170 hectares. The plan proposed 345 hectares of additional area for development. Of this proposed area 130 hectares still lay vacant in 1976 whereas 70 hectares not included for development in the plan had been turned into built-up areas.

Although 20 hectares of these 70 hectares of additional area were already inhabited in 1963, the plan left them outside the development area. These 20 hectares, located at the north-eastern part of the town, were included in the 'Additional Plan' development area in 1968.

In the 'Additional Plan' 35 hectares of land were adjoined to the previously designated development areas. This area, located in the north-west portion of the town, had been designated earlier as a secondary development district, but detailed implementation decisions had not been made. This means that this area was expected to be opened to residential development only when the primary development areas had been completely developed. But when the new plan rezoned the area as part of the urban area, 95 hectares of the primary development areas still lay vacant.

This problem arises only not from the designation of urban development areas, but also as part of the transportation network of the town. Two basic decisions taken in the plan for the urban transportation network were not implemented at all. Neither the railway nor the ring-road had been built by 1976. Almost no road proposed in the plan for widening had actually been enlarged. And since most of the development areas were not developed as planned, naturally none of the roads proposed for these areas had been constructed.

In 1976, 14 factories were located in the town, some of them outside the limits of the plan and some of them within residential areas. No areas had been rezoned for industrial uses. After this unplanned development, the additional plan rezoned 16 hectares of land for industrial uses and 30 hectares of reserve land at the north-east end of the town.

At the west part of the town nearly all development has taken place outside the limits of the plan and at variance with the initial planning decisions.

The study also shows that the public sector, contrary to our initial premises, did not make its location decisions more in accordance with the plan than the private sector. Private sector buildings such as hotels,

motels, cinemas were not constructed at the locations specified for them in the plan. The only land use designations conformed to by the private sector were in new residential sections built in the development areas of the town. In fact, some sections of the development areas of the town were rezoned for residential use by plan and housing was built there. But an in-depth study shows that even those areas that appear to conform to the plan show implementation problems. Although houses were constructed in those area rezoned for residential uses by the plan, areas designated for neighborhood services, such as schools, to meet the needs of the new population were also used for housing. In the light of these findings, the town plan of Bolu is not an instrument to designate, control or even direct the development of the town. Since most of the areas proposed by the plan as development areas were not developed as planned but remained as earlier in the possession of the original owners, the plan effected an acceleration in the increase of land values, but did not control urban development.

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