

REGIONAL PLANNING AND CONSTRUCTION CONSULTANCY – MITIGATING DISASTER

Vedrana Milicic BSc, Civil Engineering

Regional Center for Assistance and Disaster Relief¹

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Abstract

Regional planning is a part of the continuum in disaster management and it is one of the important segments in mitigating consequences.

Regional planning officers, that is to say, the decision makers in regional planning need to keep emphasizing the importance of the relationship between regional planning and protection. Such an issue shouldn't be taken into consideration only after a natural or man-made accident with disastrous consequences had taken place.

This paper will try to describe the importance of the town-planning protection measures in regional planning that would, as bordering parameters in making regional plans, contribute to the enhancement of living conditions and protection of the inhabitants.

GIS systems and IT modelling as a significant support to crisis management provide outstanding possibilities of determining and application of the town-planning measures of protection within the phase of regional-plan making. They provide a background made of seismic maps, maps of the river flooded areas, areas potentially endangered by accidents taking place in technical and/or technological processes or traffic, maps of the areas pointing to the subterranean river flows and spring water sources with special protection treatment, etc.

Examples will also show by way of illustration that drawing up plans and object construction can effect an increase or a decrease in disaster consequences. Studying the afore-mentioned issue should be a continuous process especially in the areas where time span between disasters is long and there is a possibility of disregarding it.

Introduction

A disaster represents an abrupt interruption in functioning of a community caused by a natural or technical / technological event that results in great human and material losses or environmental damages going beyond the capability of the stricken community to solve the problem by using its own resources.

Disasters have always been happening but it seems that they are becoming more and more frequent and more serious. New hazards created by people, on one hand, and, greater area exposures, on the other, (an increased number of inhabitants, that is, greater population density) influence greatly on society's increasing vulnerability.

It would be an illusion to expect that development can be stopped. Therefore, every community has to decide on acceptable risk types. It should also, through its activities, influence a part that might be changed, that is, direct its development toward reducing area vulnerability.

¹ RCADR, 21221 Divulje, Vojarna Knez Trpimir 4, Croatia, e-mail: vedrana.milicic@rcadr.org

In this way we are faced with a constant, continuous and interdisciplinary work known as disaster management. Within the framework of disaster management we deal with different mitigating activities aiming at risk reduction, either by reducing hazards or eliminating them, by reducing area vulnerability or by combining both factors.

Through hypothetic situations and measures undertaken, this paper will try to point out the importance of regional planning and civil/construction engineering, which, together with the area's development, might ensure reduction of an area's vulnerability.

Regional planning changes living conditions and protection of people

Old industrial plants

In the few last decades many towns and settlements have grown so certain industrial plants, once having been built at the outskirts of town, found themselves surrounded by apartment blocks. Because of not being informed about the problem or neglecting it, the tenants of such apartment blocks faced a problem of living in the midst of the endangered area, that is, an area prone to possible accidents.

In today's world, each community should put efforts into finding a solution to such a situation.

Each community should, by monitoring the situation in the area and for the sake of the already constructed part of the town or settlement, pinpoint all the potential accident spots, old plants or similar facilities, warehouses holding hazardous and explosive substances. Plants and warehouses that are not necessary for the city functioning should be closed down or moved outside the residential area.

New industrial zones

Through precise town or settlement development plans, industrial zones are becoming separated from the residential zones.

Disadvantages of planning the industrial zone location might be in the fact that in the planning phase the type of plant to be built in that very zone is usually unknown and all that is being identified at that stage refers to some general standards to be satisfied by the future plants. The choice of location also usually depends on the existence of favorable conditions for connection to the already existing infrastructure.

It turns out that the location of the industrial facility is not based on the risk assessment or on the consequences of a possible accident. On the other hand, being pressured by the investors, certain industrial zone standards that were identified previously, later on, during the phase of obtaining building permits for the individual facilities, are often violated or neglected.

Areas that should be exempt from construction

Taking into consideration certain natural conditions or man-made ones and protection of its residents, we come to the conclusion that there are areas that should be exempt from construction. Although, generally speaking, construction is prohibited in the areas where it is not allowed, such areas should be specifically pinpointed and defined.

Areas that do not meet the standards for construction in terms of natural hazards are: fault zones, areas prone to flooding, torrents, avalanches and strong winds.

This includes land-slide sites as well because they are expected to become active under earthquake activity and heavy rain, while a settlement might be constructed above or under the land-slide site. They represent a dangerous zone for the inhabitants of the settlement in both of the above-mentioned cases.

Areas threatened by volcanic eruptions are also considered inappropriate for construction.

Areas for construction considered inappropriate because of the actions of humans are the zones in the vicinity of industrial plants that are identified as dangerous and harmful in cases of an accident. An inappropriate area may also be endangered by the eventual collapse of a hydro-electric dam on rivers.

In all such areas, the already constructed settlements may be kept in its existing framework but should be stopped from spreading by implementing certain measures.

Protection of drinking water reserves

Society's attention has already been directed toward protection of drinking water reserves. Attention should also, in this respect, be paid to the areas that might have an effect on the underground drinking water reserves, that is, on the underground flows supplying river heads with drinking water. Special construction conditions should be provided for such areas. Especially vulnerable parts should be exempt from construction altogether.

Wrong choice of a location for town spreading

People sometimes tame nature and construct by determination where construction is not possible because of the non-existence of favorable conditions. It may turn out to be a bad decision.

New Orleans can serve as the best illustration of the afore-mentioned because its inhabitants went through a true disaster as a direct outcome of one of the bad decisions made in the past.

Geographical features of the area, with the Pontchartrain Lake and the Mississippi River at the coast of the Gulf of Mexico on one hand, and an area known as the origin of many hurricanes on the other, proved that a city of these dimensions, as the present day's New Orleans is, shouldn't have developed in such a location. Even though the first constructors established the settlement on the highest point of the bay, vulnerability was obvious already at the point when apartment blocks started to be built on the lower hills. Seasonal inundation of the Mississippi River and Lake Pontchartrain during the hurricane seasons have been the cause of frequent flooding. River and lake embankments represented a good solution for some time, but it also had a direct negative outcome: the town started spreading over the area that was situated under the level of waters that were surrounding it. The city became dependent on its embankments or levees.

In 2005, hurricane Katrina showed why New Orleans had been thought for decades to be one of the most threatened American cities.

Infrastructural facilities

Facilities being built on roads (bridges, viaducts, tunnels) are at its most vulnerable parts. There should always be alternative roads on one level. Water and electrical power supplies should be brought over from different directions, that is, different sources, which is very important for the big cities.

Protection elements in big cities

Cities, because of a high population density, are particularly vulnerable to possible accidents having disastrous consequences. For this reason, efforts should be made by taking certain measures in order to reduce the vulnerability. The vulnerability in the city area that has already been constructed should be reduced, wherever possible, by an adequate spatial reconstruction, that is, by not allowing an increase of interpolation. The new city parts should be planned bearing in mind the elements that would render the area's vulnerability acceptable.

Some elements reducing vulnerability:

- an interspace among facilities having to do with a demolition zone and fire prevention
- facilities constructed far away from the main city roads so as to leave free passage to emergency services in the case of them being pulled down

- not-constructed areas, out of the demolition zones, in all city quarters, where people might find shelter in a case of an earthquake and where, in a case of major demolitions, camping-sites might be organized for them

If we imagine a major earthquake having disastrous consequences, when, along with facilities' demolition and cracking roads, there are also a number of fires breaking out all at the same time, and when accidents in various plants and warehouses are also likely to happen as a secondary result of the earthquake or the fire, then these safety precautions become more and more acceptable.

Area for light planes landing and a heliport

Settlements, smaller and bigger cities should allocate an area for light planes landing and a heliport, because such an area would eventually render it easier for evacuation or emergency intervention. Such an area is also of a great importance for the zones being struck by frequent forest fires.

Sea

The sea has always been thought of as an infinite area where all the waste of the land life can be discarded. There is a growing consensus on how land and sea are interconnected.

The direct consequences of previous thinking that ignore human impact on the sea are clearly visible today and special attention should, therefore be paid to this problem in particular.

A lot would be done if the sea and coastal space had been treated just as the land space, by organizing zones reserved for certain activities such as: tourist zones, zones for maritime cultures, passages – corridors for passage of tankers and other vessels. The activities should also be well set apart, as on land, in order to reduce the influence of one activity on another one to the maximum or to make it impossible altogether.

Environment pollution can be categorized as belonging to a group of disasters having slow effects, but more questionable ones because its impacts become visible only after a longer period of time when an intervention in trying to improve the current state seems impossible.

For this reason, sea pollution should be paid more attention to and certain precaution measures should be undertaken, e.g.: land waste should be previously purified and treated, municipal services should be organized and included in treatment of all the waste produced by vessels, protection from the sudden sea pollution caused by sea accidents should be provided for.

Conclusion

Regional planning is a part of the continuum in disaster management and it is one of the important segments in mitigating consequences.

Regional planning officers, that is to say, the decision makers in regional planning need to keep emphasizing the importance of the relationship between regional planning and protection. Such an issue shouldn't be taken into consideration only after a natural or man-made accident with disastrous consequences had taken place.

This paper tried to describe the importance of the town-planning protection measures in regional planning that would, as bordering parameters in making regional plans, contribute to the enhancement of living conditions and protection of the inhabitants.

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This situation in regional planning must inevitably, be constantly improved. In the communities in which the correlation between regional planning and protection is neglected or which are not aware of the importance of that correlation, it is necessary to initiate primary activities by producing legal regulations and other legal measures of protection in regional planning and by increasing awareness of the community about the correlation between after-effects and construction.

About the Author

Vedrana Milicic, graduate civil engineer; worked for 11 years in Civil Protection management dealing mostly with activities related to urban protection measures in regional planning.