

**EFFECT OF URBAN REGULATIONS ON URBAN FORM
(GIS System Prototype to Achieve Urban Form Sustainability)**

by

**Shaimaa Ahmed Magdy Amin
Department of Architecture Engineering
Faculty of Engineering
Cairo University - Fayoum Branch**

**A Thesis Submitted to the Faculty of Engineering at Cairo University
In Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE
In
ARCHITECTURE ENGINEERING
(URBAN PLANNING)**

Under the Supervision of

**Prof.Dr.Mohamed Mohamed El Barmalgy
Department of Architecture Engineering
Faculty of Engineering, Cairo University**

**Assist.Prof.Dr. Hesham Mahmoud Aref
A.A. Head of Department of Architecture Engineering
Faculty of Engineering
Cairo University - Fayoum Branch**

**Dr. Mohamed Nada
Lecturer of Architecture Engineering
Faculty of Engineering
Cairo University - Fayoum Branch**

**Faculty of Engineering- Cairo University
EGYPT
MAY 2004**

EFFECT OF URBAN REGULATIONS ON URBAN FORM

(GIS System Prototype to Achieve Urban Form Sustainability)

The issue of the character and urban composition of Egyptian cities has become the mind of many urban professionals. The loss of urban identity has been extended to the new cities, although it has been established on sound planning bases. It has lacked a clear and specific urban formation adapted to the Egyptian environment.

The research is therefore concerned with the issue of continuous change in the features and causes of urban formation and discusses the assessment of the impact of urban legislation as the most important element of urban control to achieve sustainable formation.

The main problem of research is the analysis and measurement of the impact of legislation and laws governing urbanization on urban formation as an integrated system with a view to proposing a model of a geographical information system linking urban legislation to urban formation.

The research is divided into 4 approaches: chapter I is based on the theoretical approach that reviews elements of formation and urban legislation through concepts of historical significance, and the results of previous research, to infer the components of the physical and non-physical urban formation system and elements of urban legislation and to document their relationship theoretically.

chapter 2 analyses Arab and global legislation and its impact on the control of urban formation (Syria experience, America experience and Canada experience), compared to Egyptian age legislation, to determine the usefulness of past experiences, and this is towards proposing a geographic information system for urban legislation that controls the formation urban areas Chapter 3 monitors the features of the change in the urban composition of local areas, including (Nasr City and Garden City areas), with a view to reaching the most important legislative basis for controlling the urban composition.

Chapter 4 contains the proposal of a model of a geographical information system for Egyptian legislation to achieve the sustainability of urban formation, so as to provide a more effective means for legislators and urban planning (Legislators - Planning, Architectural and Architectural Design) To preserve the formation of existing and new areas, through the possibility of spatially linking elements of the formation of areas and elements of urban legislation with constructive requirements with the possibility of amending legislation in the framework of preserving the endemic visual image.

One of the research findings of the theoretical study is the identification of the basic concepts used in the research, namely the concepts of formation, legislation and sustainability, and the study of the relationship between its elements historically, including the extraction of elements of the physical formation system and the factors affecting them, the most important elements of the age legislation.

From a comparative analytical study of Arab, Western and Egyptian legislation, the most important elements of legislation that have a direct impact on the elements of urban formation have been extracted. It has emerged that reliance on urban legislation and constructive controls are among the most important reasons for the existence of a specific age formation in Arab experiments. (Syria), Western experiences (America-Canada), and that the failure of the governing legislation is a reason for the lack of a local identity for urban formation.

From the analysis of Egyptian legislation and comparison with previous experiences, it is clear that the absence of a clear age formation of cities and local areas is due to: Local building codes,

however, do not target specific age formation at any level (prefecture-city-neighbourhood-building level). The law ▪ be disseminated at the level of the Republic, as this is not compatible with all the climatic and social conditions of different cities, neighborhoods and regions.

- lack of standard elements (e.g. no minimum limit for road shows - depth of plots for residential use in planning law) Urban legislation ▪ be incompatible with elements of the local socio-economic and climatic environment.
- opposes articles of the Urban Planning and Construction Act (e.g. the adoption of organizational lines by governor's decision has not yet existed planning law and the abolition of organizational lines)
- values of infractions and ease of reconciliation after infractions are not commensurate with the economic return of infractions.

From the field study, the distinction of the studied areas (Nasr City - Garden City) was demonstrated by the existence of a specific and clear urban formation at the beginning of construction as a result of adherence to construction requirements and urban controls established by Nasr City Construction Company. However, the urban situation has varied since the beginning of the 1980s and the two regions have lost their visual and urban features, especially the Nasr City area, where they are considered less bound by legislation than the Garden City area. They are characterized by violations of buildings that amount to more than 78% of the total buildings are irregularities of construction ratios, altitudes, front rolls and garages.

One of the most important recommendations of the research is the need for definitions and concepts of physical elements identified by specialists to facilitate the necessary legislative processes.

The determination of levels of control over the formation of the building (existing or proposed) through criteria for elements of legislation (which may depend on elements of formation derived from the theoretical and analytical curriculum) used by the Neighborhood-level requirements: to control maximum permissible heights, construction ratios, and binding responses, slot ratios of facades, parking area flats, open areas. Requirements at the neighborhood and district level (several different models) are different configurations of facades (architectural style) - permissible colors of buildings - preferred openings formations - permissible materials - site coordination elements of density and types of afforestation – types, and colors of floors - lighting elements.

The system proposed in section IV is based on these criteria and connects the planning, legislative and executive bodies of the legislation (geographic information system proposed in section IV). The most important recommendations of the proposed organization are: The appointment of a technical committee under the supervision of the Ministry of Housing and Reconstruction to characterize the needs of this system at the local and national levels and the preparation of an action plan to begin its implementation. Interest in using these systems at the level of..