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Impact of Building Byelaws on Housing: A Comparative Study of Development Control Rules of Jaipur and Pune

K. B. Vaghani, Dr. N. C. Shah and Dr. Krupesh A Chauhan

Abstract

Housing is the prime necessity of human beings. Government has made many policies to encourage the housing activity. Building Byelaws affect housing activities very significantly in terms of its utilization and cost. Building Byelaws control the numbers of dwelling units, in some cases, that can be accommodated in a given parcel of land by implementing the essential clauses such as Built Up Area, FSI/FAR, Maximum Building Height, Margins to be kept open in front and around the buildings, etc. The impact of all these clauses varies to the extent of 200 percent in case of Jaipur and Pune city. Attempt has been made in this paper to reveal the impact of Byelaws on housing. Comparative study has been done for Jaipur and Pune cities for five building forms and impact has been revealed.

1. INTRODUCTION

Development plan of the city or town attempts to evolve scientific and rational policies to meet the functional needs of the city and aspirations of its citizens. Planning of land use and construction activities require control on it by some regulations, which are General Development Control Regulations, may suitably be renamed as General Development Promotion Regulations. In India, it is the field of legislation pertaining to the state government to frame development control regulations. These regulations affect many parameters of urban development like housing, population density, infrastructure requirement, environment, etc. This impact directly depends upon the development control regulations for the city.

In this paper attempt has been made to study the impact of building byelaws on housing by comparing the DCR of Jaipur city and Pune city. To study impact of development control regulations on housing, two cities have been selected as they have comparable population and potential for development, namely Jaipur from Rajasthan and Pune from Maharashtra. This study has been carried out by comparing the DCR of both the cities. The study was limited to residential dwelling units only and for five types of building forms, namely detached bungalows, duplex bungalows, row houses, low rise buildings and high rise buildings type development. Thus, this study is limited to only residential use and five building forms of development type.

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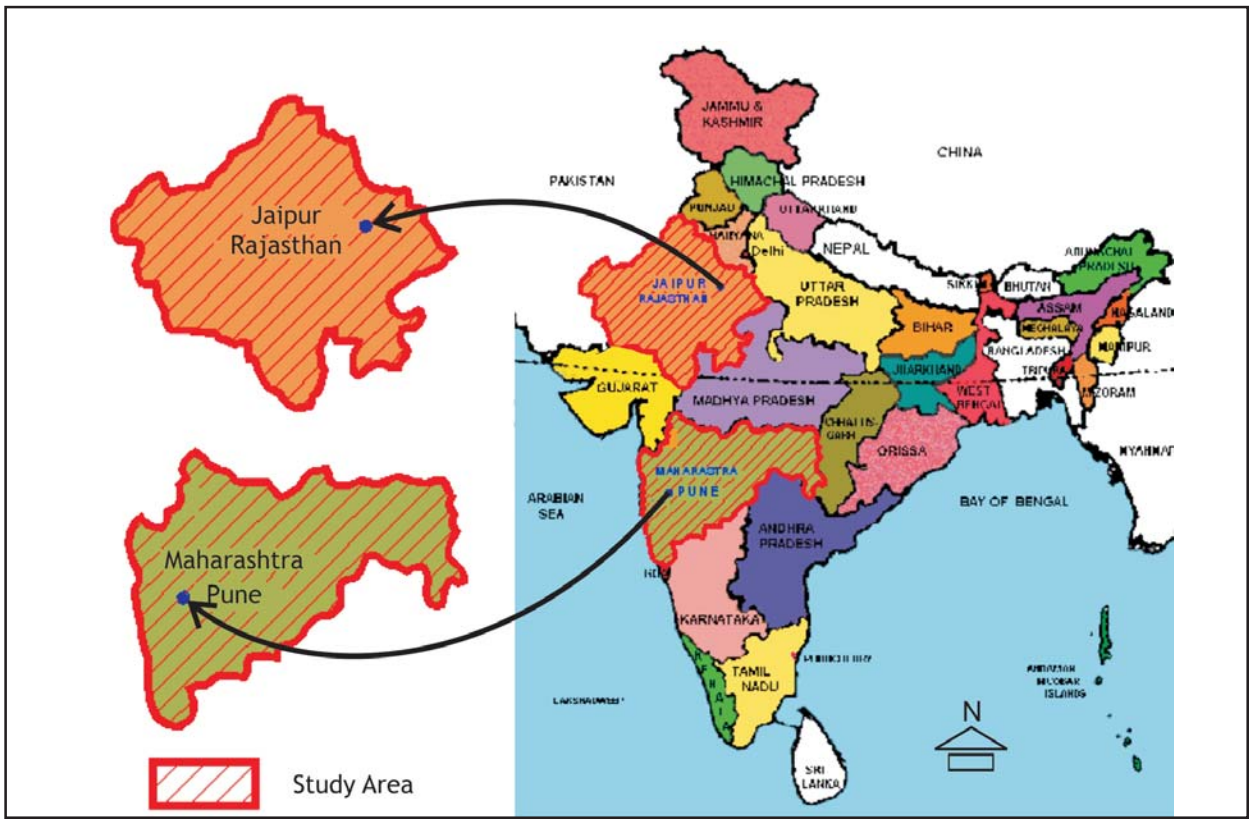
Fig. 1 Study Area Location (Jaipur and Pune)



2. OVERVIEW OF THE BYELAWS AND HOUSING

Government has made policies to provide houses to all. It has encouraged this policy in Five Year Plans and through other policies regarding finance and land use. After 62 years of Independence, still government is not in a position to provide shelter to all. Hence, it is high time to think about the ways by which maximum dwelling units can be provided in the available parcel of land for controlling land cost factor and minimizing conversion of land under agriculture use to non-agriculture use. Otherwise, it will create scarcity of other two prime necessity of human needs i.e. food and cloth. At the same time, quality of life should not be affected anyway. One of the best tools to achieve this goal is to make modifications in development control regulations and building byelaws.

In India, building byelaws are framed taking into account the National Building Code as the base and state government acts. However, it is not mandatory for the states to follow the NBC strictly. Each state makes modifications as per their local requirements and traditions. National Building Code has been revised in 2005 but there has been stated nothing about restricting the states by making building byelaws which have adverse affects on housing availability and indirectly affecting land cost and land use conversion.

Building byelaws are the tools in hand of policy makers to control the various parameters affecting the quality of life. It is also helpful for implementing authority to control and carry out systematic development as per policies. These byelaws affect the availability of housing. This is due to the impact of DCR on the planning, which controls the numbers of dwelling units that can be accommodated in a given parcel of land.

Necessary data for planning are common open plot required to be kept, maximum permissible ground coverage i.e. built up area, FSI/FAR, building height, margins required to be kept open from abutting road as well as on other than roadside and between two buildings within same plot. All these data from the DCR of both the cities are collected and noted as shown in Table 1.

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Table 1 Maximum / Minimum Limits of Various Byelaws of Jaipur City and Pune City

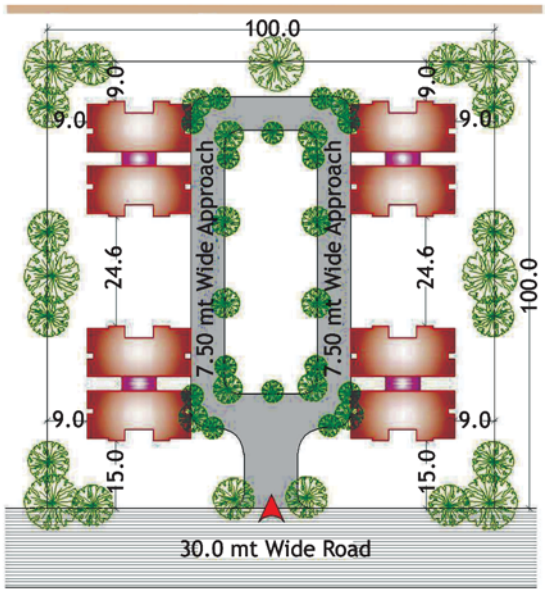
Sr. No.	Building Form	Built Up Area (%)		Building Height (Mt.)		Margins : Road Side (Mt.)		Margins : Other Than Road Side (Mt.)	
		Jaipur	Pune	Jaipur	Pune	Jaipur	Pune	Jaipur	Pune
i.	Detached Bungalows	45	50	12.0	12.0	7.50 -18.0	4.50	3.0-9.0/ 3.0-10.0	3.00
ii.	Duplex Bungalows	45	50	12.0	10.0	4.50 - 6.0	4.50	3.00	3.00
iii.	Row Houses	60	50	12.0	10.0	4.50	4.50	2.50	2.50
iv.	Low Rise Buildings	40	25	12.0	16.0	15.00	4.50	6.00	3.00
v.	High Rise Buildings	35	25	30.0	36.0	15.00	7.50	9.00	7.50

- Permissible FSI in Jaipur is 1.2 for Detached Bungalows, Duplex Bungalows and Row Houses, 1.67 for Low Rise Buildings and 1.8 for High Rise Buildings whereas in Pune, it is 1.0 for all building forms.
- Common Open Plot : Not required in Jaipur City whereas 10% in Pune City.
- Margin between two adjacent buildings within same building unit :
- Jaipur City : Not Specified
- Pune City : (H/2 – 3.0) X 2 for both Low Rise Buildings as well as High Rise Buildings, where, H is Height of Taller Building.

Source : Jaipur Development Authority (Jaipur Region Building) Rules – 2000 and DCR – 1982, Pune.

Fig.2 Layout Plan for High Rise Building as per DCR of Jaipur and Pune City.

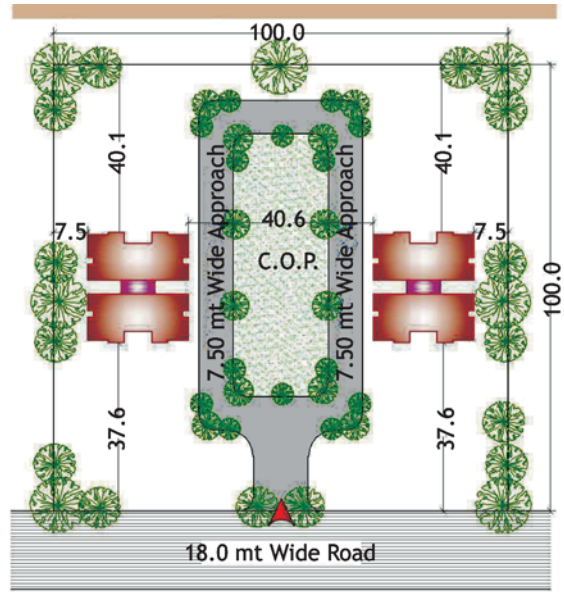
High Rise Building as per DCR of Jaipur City



Calculations:

Description	Permissible/Required	Proposed
Area of Plot	1,000.0 sq.mt.	10,000.0 sq.mt.
Req. COP @ 10%	NIL	NIL
Builtup @ 35%	3,500.0 sq.mt.	1,976.0 sq.mt.
FSI @ 1.80	18,000.0 sq.mt.	17,760.0 sq.mt.
Building Height	30.0 mt.	30.0 mt.
Margin - Road Side	15.0 mt.	15.0 mt.
- Side	9.0 mt.	9.0 mt.
- Between Two Buildings	9.0 mt.	27.61 mt.
Nos. of Dwelling Units	---	160 Nos.
Parking Facility : 1 ECU / 75 sq.mt FAR = (17,760/75)x25	5,920.0 sq.mt.	---
Minimum Width of Abuting Road	18.0 mt.	30.0 mt.

High Rise Building as per DCR of Pune City



Calculations:

Description	Permissible/Required	Proposed
Area of Plot	1,000.0 sq.mt.	10,000.0 sq.mt.
Req. COP @ 10%	1,000.0 sq.mt	1,000.0 sq.mt
Balance Plot Area	9,000.0 sq.mt.	9,000.0 sq.mt.
Builtup @ 25%	2,250.0 sq.mt.	912.0 sq.mt.
FSI @ 1.0	9,000.0 sq.mt	8,640.0 sq.mt
Building Height	36.0 mt.	30.0 mt.
Margin - Road Side	7.50 mt.	7.50 mt.
- Side	7.50 mt.	7.50 mt.
- Between Two Buildings	(H/2-3)x2=24.0mt.	40.60 mt.
Nos. of Dwelling Units	---	80 Nos.
Parking Facility : 19.30 per Dwelling Unit = 12.5+2x(2+1.4)x80	1,544.0 sq.mt.	
Minimum Width of Abuting Road	9.0 mt.	18.0 mt.

The layout plans are prepared in a hypothetical plot of an extent of one hectare i.e. 100 m X 100 m for all five building forms. Layout plans for high rise buildings are shown in Fig. 2 consuming full permissible FSI available as per building byelaws in force for both the cities. Number of dwelling units that can be accommodated in layout for each building form by applying the byelaws of both the cities separately have been obtained. It is noted as shown in Table 2.

Main affects of byelaws are maximum permissible ground coverage i.e. built up area, maximum permissible FSI or FAR, maximum permissible height of the building, the width of the road on which the building unit i.e. plot abutting, minimum margins to be kept open on all sides of the building, etc. All these byelaws ultimately used for controlling the population density and to create comfortable environment for achieving best possible quality of life. It also takes care of the safety of occupants. In DCR of Pune city, one more parameter is used to control the population density,

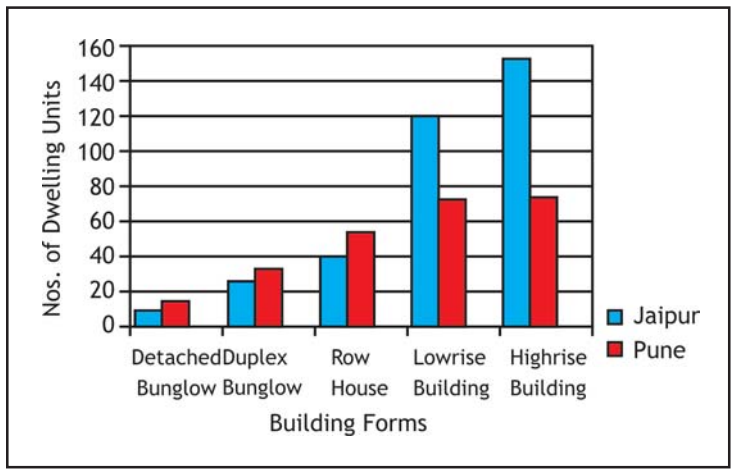
Table 2 Numbers of Similar Size Dwelling Units as per DCR of Jaipur and Pune.

Sr. No.	Building Form	Permissible Total Built Up Area (FSI)		Consumed Total Built Up Area (FSI)		Nos. of Dwelling Units		Ratio : Pune (%) Jaipur v/s.
		Jaipur	Pune	Jaipur	Pune	Jaipur	Pune	
i.	Detached Bungalows	9,638.40	6,879.60	8,836.80	4,844.70	16	21	76.19
ii.	Duplex Bungalows	9,408.00	5,818.00	6,986.88	3,480.00	32	40	80.00
iii.	Row Houses	8,409.60	5,466.00	8,395.20	5,362.80	48	60	80.00
iv.	Low Rise Buildings	16,700.00	9,000.00	12,416.00	8,640.00	128	80	160.00
v.	High Rise Buildings	18,000.00	9,000.00	17,760.00	8,640.00	160	80	200.00

is tenement density i.e. permissible numbers of tenements per hectare of land. This rule controls the numbers of dwelling units that can be permitted in a given parcel of land. It also controls the size of dwelling unit indirectly.

In DCR of Jaipur City, required size of plot for various building form varies from 45 sq m for row housing to 1,000 sq m for high rise buildings. Similarly, permissible built up area, FSI, margins, maximum permissible building height and requirement of width of road on which plot shall abut gets changed. Thus, when the building form is changed, and the entire requirement is changed. For Jaipur City, only one byelaw remains same for all building forms under consideration, which is requirement of COP – not required to be provided.

Fig. 3 Impact of DCR on Housing



Ground coverage varies from 35 percent for high rise buildings to 60 percent for row houses. Height varies from 12 m for detached bungalows, duplex bungalows, row houses and low rise buildings to 30 m for high rise buildings. Minimum width of road on which plot shall be abutting for high rise buildings is 24 m in Jaipur city for getting full height of 30 m whereas it is only 9 m in Pune city. In Pune city DCR, required size of Plot for various building forms varies from 50 sq m. for Row House to 1,000 sq m. for high rise buildings. Byelaws remain same for all building forms considered in study are requirement of COP and permissible FSI, which are 10 percent of plot area and 1 respectively.

Ground Coverage is 50 percent for detached bungalow, duplex bungalow and row houses whereas for low rise buildings and high rise buildings, it is 25 percent.

Maximum permissible height varies from 10 m for row houses to 36 m for high rise buildings. Requirement for margins is correlated with extent of plot and width of road on which the plot abuts for all type of building forms. Distance between two buildings on a single plot is {(½ H – 3) x 2} meter for both low rise buildings as well as for high rise buildings.

3. MAJOR FINDINGS

From the study, it is found that by applying the DCR of Jaipur city and Pune city, there is not much impact of DCR on detached bungalows, duplex bungalows and row houses type development. By applying DCR of Pune city, 31.25 percent more dwelling units can be accommodated in case of detached bungalows type development and 25 percent in case of duplex bungalows and row houses type development than by applying DCR of Jaipur city. In case of low rise buildings and high rise buildings, by applying DCR of Jaipur city, 128 and 160 dwelling units can be accommodated respectively instead of 80 dwelling units for both type of development in the same parcel of land in Pune city i.e. 60 percent and 100 percent respectively more as shown in Fig. 2. Hence, the DCR of Jaipur city allows 1.60 times the dwelling units in low rise buildings and 2 times in high rise buildings than that in Pune city. Thus, DCR affect availability of numbers of housing units that can be accommodated in a available parcel of land. The development can be categorized in four categories considering different philosophy:

- High Rise with High Density;
- High Rise with Low Density;
- Low Rise with High Density; and
- Low Rise with Low Density.

The study supports the first notion that high rise with high density particularly for high land cost with sound infrastructure available.

4. CONCLUSIONS

The impact of building byelaws is significant on housing as parcels of land are sold on available FSI on that parcel of land. DCR of Pune city are favorable in case of detached bungalows, duplex bungalows and row houses as more numbers of dwelling units can be accommodated in Pune than Jaipur by applying its own DCR. Its effect is up to 31.25 percent for detached bungalows and 25 percent in case of duplex bungalows and row houses type development. Effect of DCR is tremendous in case of low rise buildings and high rise buildings, which is up to 60 percent in low rise

building and 100 percent in high rise building type development due to wide difference in available FSI. It means 60 percent and 100 percent more dwelling units can be accommodated in Jaipur city than that in Pune by applying its own DCR respectively. DCR of Jaipur city is favorable for these two building forms.

DCR of Jaipur city for low rise buildings and high rise buildings are favorable for housing compared to DCR for Pune city. DCR shall be made such that maximum number of dwelling units can be accommodated in the available parcel of land to optimize the use of land without affecting adversely the quality of urban life.

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