

METRO RAILWAY TRANSIT DEVELOPMENT AND ITS EFFECTS ON LAND USE AND LAND VALUE

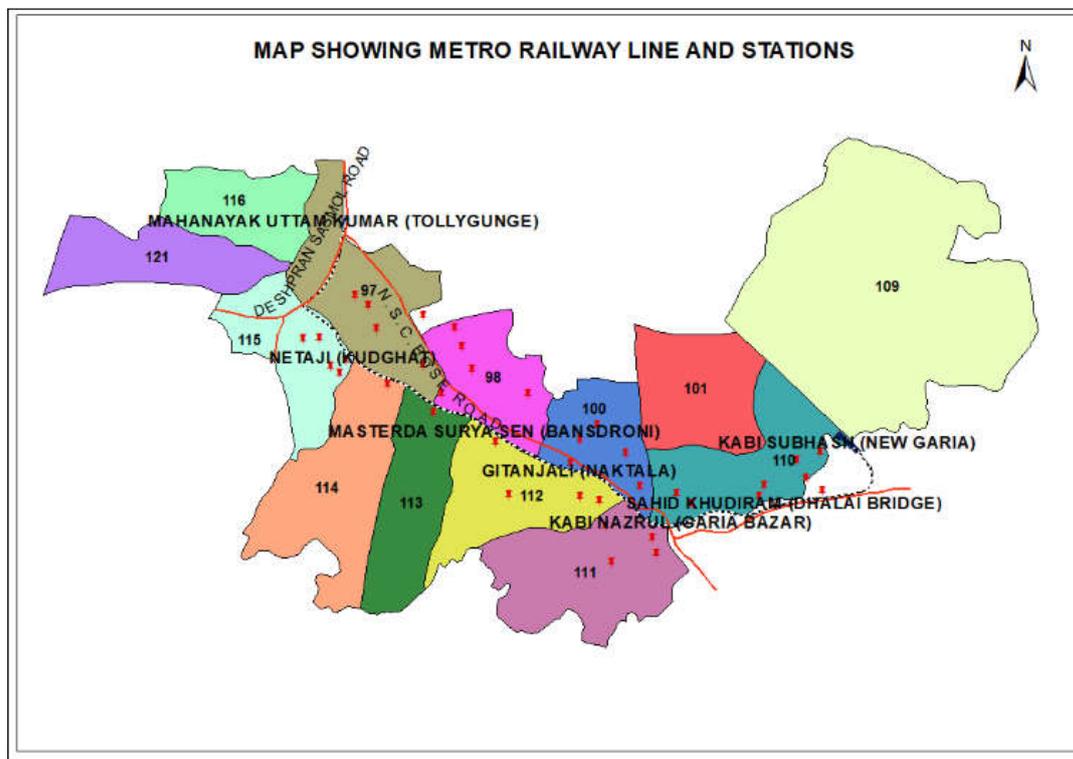
Arpita Mukherjee¹, Dr. Keya Mitra²

¹ Scholar, Dept. of Architecture, T & RP, IEST Shibpur, India,

² Professor, Department of Architecture, Town & Regional Planning, Shibpur, India,

Abstract—Areas located in close proximity to high speed transportations corridors are home to a highly vulnerable population. This study attempts to improve the understanding of vulnerability of this population group and suggest ways for risk mitigation within the larger framework of urban disaster risk mitigation.

Index Terms—Vulnerable, Transportation corridors, risk, land use, urban.

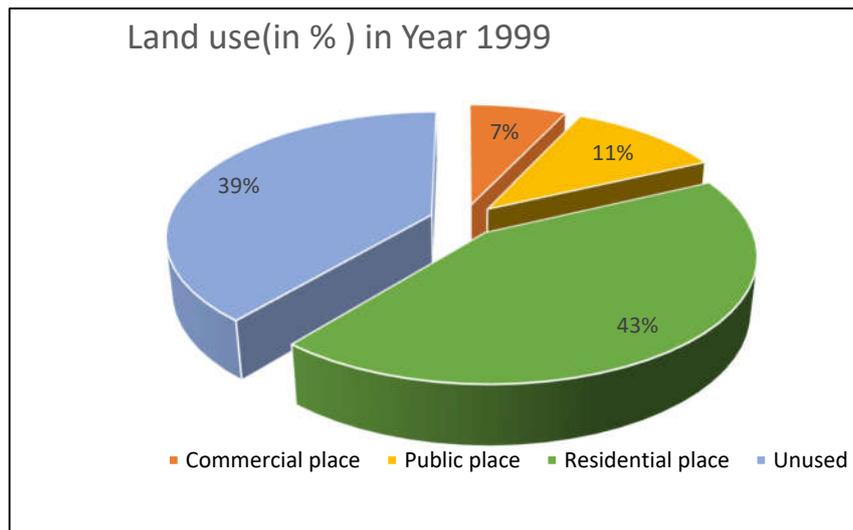


I. INTRODUCTION

The influence of transportation infrastructure such as metro railway, suburban train lines, bus rapid transport on real estate has been researched in different urban centers and the connection is generally viewed as beneficial for real estate development. Further, the strong reciprocal relationship between Urban growth and Railway also correlates with population growth, spatial expansion and land use changes. Studies in this domain also reveal that while population growth as well as land value has increased with the introduction of transport infrastructure, this has also resulted in increase in congestion.

II. STUDY AREA

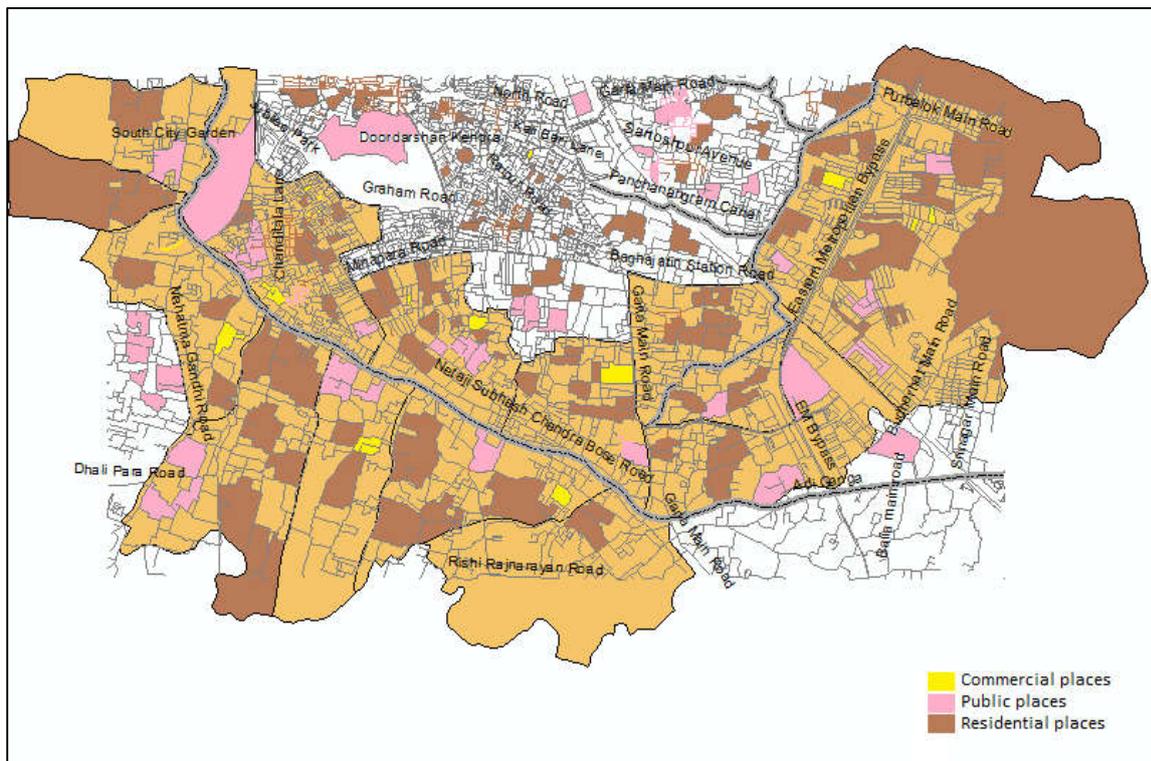
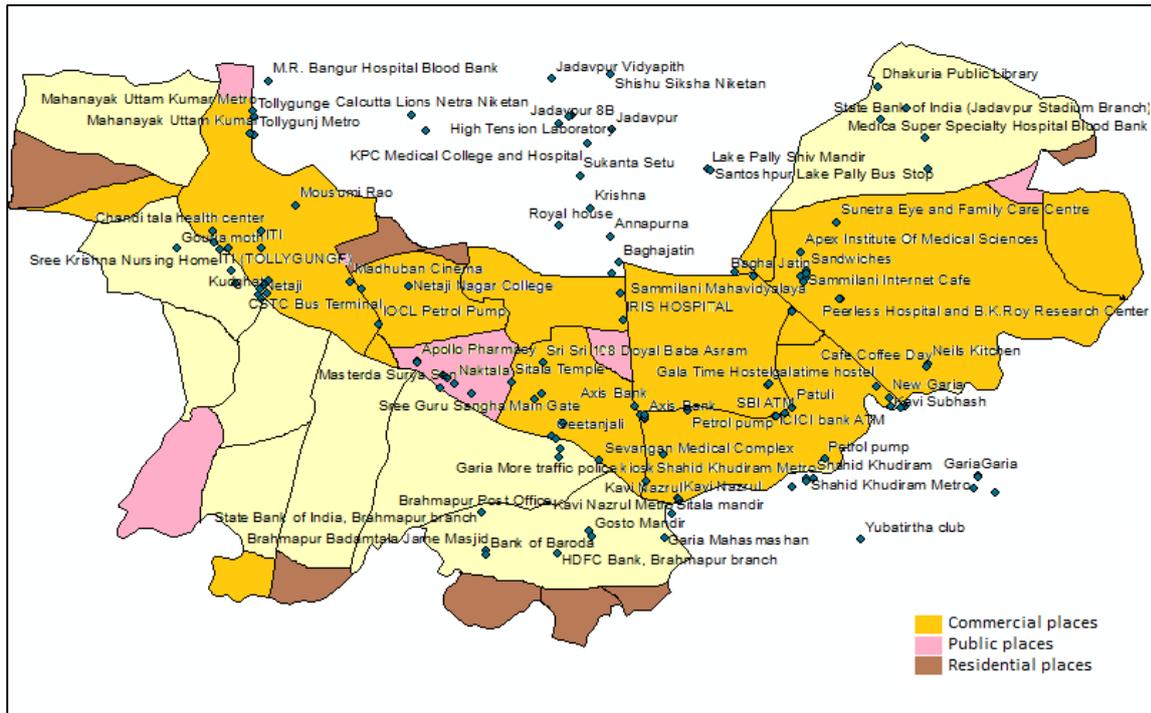
The broad domain of inquiry in this study is on the influence of Metro Railway Transit on spatial temporal expansion and land use changes in a part of the Kolkata Municipal Corporation area, a five to ten kilometre strip of land on either side of the Metro Railway expansion from Tollygunje to Garia, in Ward No. 97,98,100,101,109,110,111,112,113,114,115,116 and 121 within the jurisdiction of the Kolkata Municipal Corporation area.



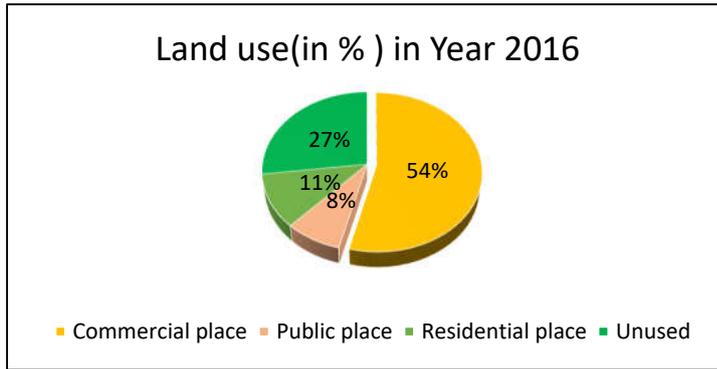
III. IMPACT OF METRO IN LAND USE CHANGES¹

The landuse map shows that how was the land places were used and distributed in 1999 from Tollygunj to Garia. As before vast development of metro the land was more used for residential purpose, public places and commercial places were less occupied at that time. As we discussed

with percentage ratio in fig. 2, 43% is of residential places, 11% of public places and 7% of commercial purpose and 39% were unused.



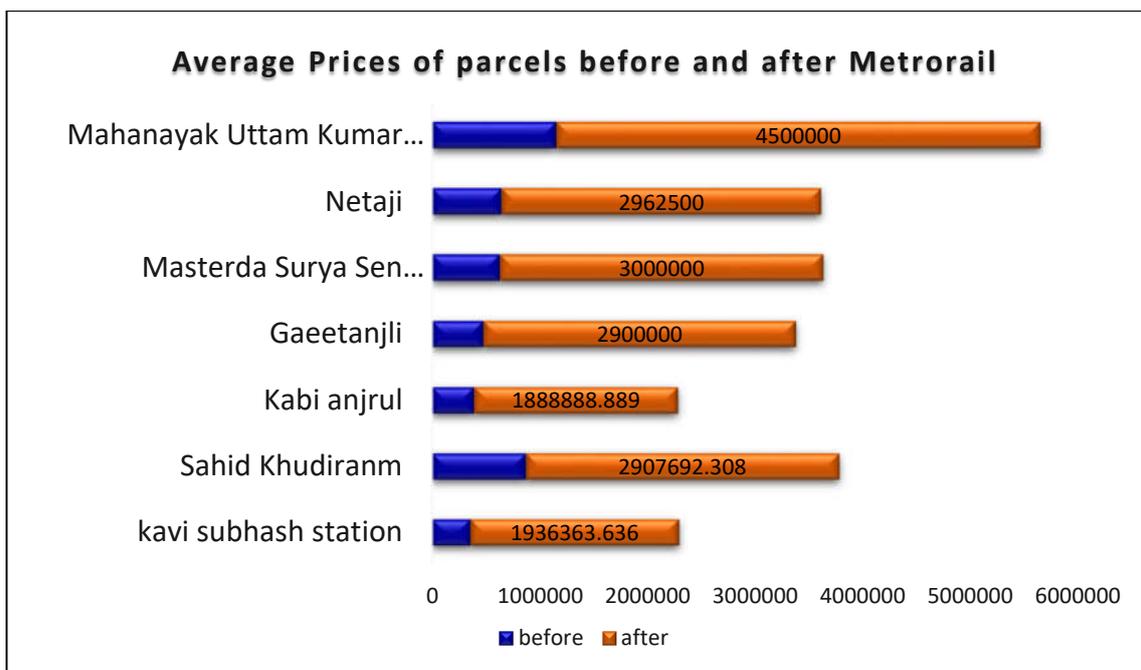
Map showing the landuse changes after the development of Metro Railway Transit from 1998 to 2016



The landuse map of 2016 shows that how is the land places are use and distribute in 2016 from Tollygunj to Garia. As after, vast development of metro the land use detection changes are very high as commercial places are increased with decreasing ratio

of residential places and public places. As we discussed with percentage ratio in fig. 4, 54% is of commercial purpose, 11% is for residential places, 8% of public places and 27% of are unused. It indicates that after the induction of metrorail the area become more business place than before.

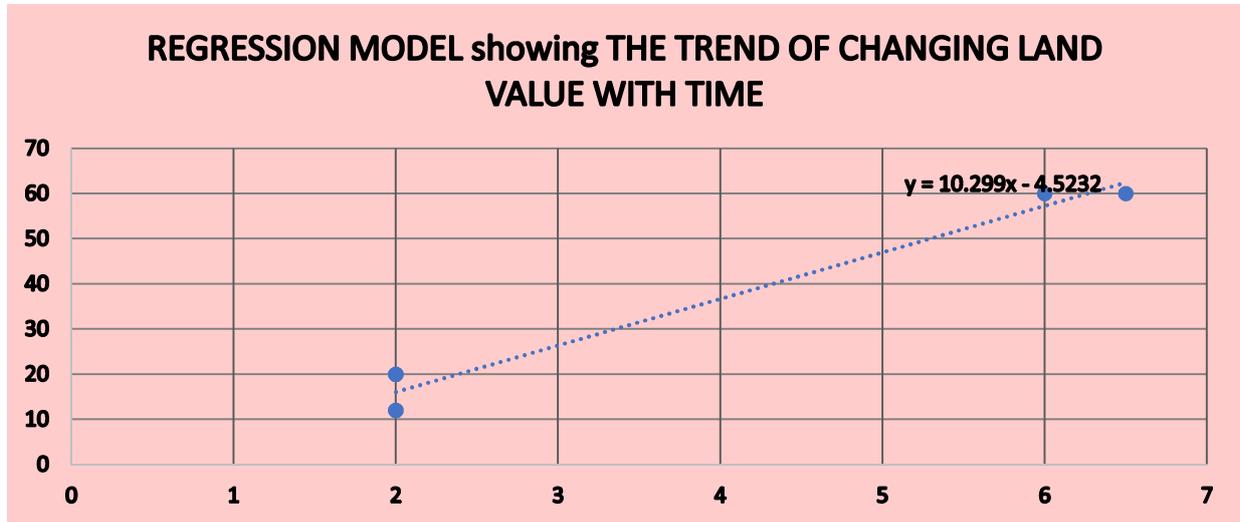
IV.IMPACTS OF LAND VALUE CHANGES



The graph clearly shows that the prices of the lands are very high after metro rail on the go. The data shows that Mahanayk Uttam Kumar metro station has highest price among all the stations considered followed by Sahid Khudiram metro station.

- The impact of Metro Railway on Land Value increased by **31.44%** per year.(data calculated from **1994-2020**)
- Increase of land value is consistent and higher after the construction of Metro Railway.
- The land value changes is highly dependent on the income group of people residing here.

- The rate of increase varies from Station to Station . Eg The land value near Tollygunge metro area increases **15.3%** per year where as the number is **19.23%** near Garia and Naktala.



- Development of Metro Railway has great impact in terms of conversion of residential to apartments, to mixed use and residential or mixed to commercial
- New residential development has also been found development on open/vacant land.
- Land parcels have amalgamated to take leverage of permissible higher development opportunities in terms building heights.
- Land use densification has emerged in terms of increased building heights. Due to increased demand of commercial & retails spaces, land scarcity for horizontal expansion and favourable development opportunities higher usage of FSI is observed in the immediate vicinity of metro station.

REFERENCES

1. Robert .Knight ,Transportation volume 9, pages3–16(1980) Rail investment's effect on urban structure is less where as it is more important in assessing the role it could play in an overall strategy for reaching larger urban goals.
- 2. [Bajic \(1983\)](#) Toronto, Canada, The complete shift in the implicit prices in the Spadina from 1971-1988, corridor was not caused by the opening of the new subway line, for the same shift occurred in the rest of Metropolitan Toronto, where the impact of the subway would not have had any effect.