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Thesis

Land Value Capture from post-industrial redevelopments of inner-city areas : A case of the defunct Textile Mill lands of Mumbai.

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Executive Summary

The nature of rapid development witnessed by Greater Mumbai post economic liberalization in India, its manifestation in real estate development and physical maturation of the inner-city areas is described in the study. The financial gains viz-a-viz who pockets, who pays and who benefits lies at the crux of the research.

This thesis approaches the subject of value capture from large redevelopments in inner-cities, from a costs and benefits point of view. The motivation to carry out his research was triggered by the interest and need that the author felt to look at the redevelopments projects from a financial point of view as against the social and environmental perspective that has been discussed upon time and time again; also because in a fast growing economy like India, local governments are constantly devising mechanisms to increase financial independence. Hence, the monetary benefits and losses that policy changes engender are demonstrated in the study. The decline of the cotton textile industry and the closure of the mills opened the large land for redevelopment in the heart of the city. The four project cases were thus chosen from amongst these defunct cotton textile mill lands.

The main objective of this research was to study the potential of the existing, legally binding value capture mechanisms, and further asses if they have been designed to mitigate the impacts of the redevelopment process.

This research is framed in three different analytical parts. The first looks at theories of land rent that explain how value is created, the land value practices described introduce the nature of mechanisms adopted to capture this value hence justifying their potential benefits to public authorities. The second section analyses the cases selected by further examining the potential value creation, realization and the value captured thereof. This financial assessment is then undergoes a comparative analysis in the third section by the findings with the help of defined indicators prove the changes in land value trends and hence the need for redevelopment. This section also demonstrates the potential value created, the role and share of primary actors namely the private developers and landowners and the Municipal corporation of Greater Mumbai.
One of the primary findings suggest that the potential value created on account of public sector intervention far exceeds the captured value. However the study also suggests that the mechanisms adopted sketch an irregular graph specific to each case, in-terms of the success to mitigate physical impacts of the redevelopment process.

The final chapter of the study compares the findings to argue that the mitigation of impacts from value capture practices in Mumbai is inconsistent because of the in-tangency of the tools for different land-uses and different stakeholders depending on the degree of benefits created. This section finally summarizes the primary concern of who pockets, who pays and ultimately who benefits from the redevelopment process.

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I consider it a pleasure to thank many people who in one way or another contributed to the completion of this study. First of all my utmost gratitude goes toward my supervisor Carlos Morales Schechinger,(M.Phil., Arch.). His advice and encouragement helped me pull through these not so easy times. My effort in this research has more than often been towards reaching upto his expectations. His interest and enthusiasm in the subject helped strengthen my effort towards conducting the research. Most of all explaining concepts clearly and simply, made learning from him fun for me.

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Abbreviations

CBD - Central Business district
NTC - National Textile corporation
ULCRA - Urban Land Ceiling Regulation Act
JNNURM - Jawaharlal Nehru National Urban Renewal Mission
MHADA - Maharashtra housing and Area Development authority
FAR - Floor Area Ratio
FSI - Floor Space Index
TDR - Transfer of Development rights
OC - Operating Costs
GAR - Gross Annual Returns
NAR - Net Annual Revenue
GDP - Gross Domestic Product
UNESCAP - United Nations Economic and Social Commission for Asia and the Pacific
MMRDA - Mumbai Metropolitan Region Development Authority
ZAC - D'Aménagement Concerté (Coordinated Development Zone)
ZUP - Zone à Urbaniser en Priorité (Priority Development Zone)
TLE - Taxe Locale d'équipement (Local Infrastructure Tax)
PAE - Programme d'Aménagement d'Ensemble (Development Programme)
TIF - Tax Increment Financing
DCR - Development Control Regulation
MCGM - Municipal Corporation of Greater Mumbai
PWD - Public Works Department
BMC - Brihanmumbai (Bombay) Municipal Corporation
IRR - Internal Rate of Return

Chapter 1: Introduction and Background to the Problem

1.1 Introduction

With 16 million inhabitants & a population density around 27,120/square kilometers; Mumbai is spread over 440 square kilometers of land flanked by the Arabian sea on three sides having limited space to grow. One of the primary reasons of the ever-escalating real-estate prices in Mumbai is the acute shortage of land for commercial and residential development. Today, as Mumbai sees the light of Globalization, a radically evident shift towards physical transformation of places of residence and work, to accommodate the post-industrial service-based economic activities is seen. Manufacturing and informal trading elements have moved towards the periphery of the city. One such phenomena occurred with the cotton textile industry located in the heart of the city after 1980s. This sector was the primary creator of jobs and economic growth during the industrial era. This industry occupied a large chunk of land contiguous with the traditional Central Business District (CBD), the commercial centre of Southern Mumbai; as shown in Fig. 1

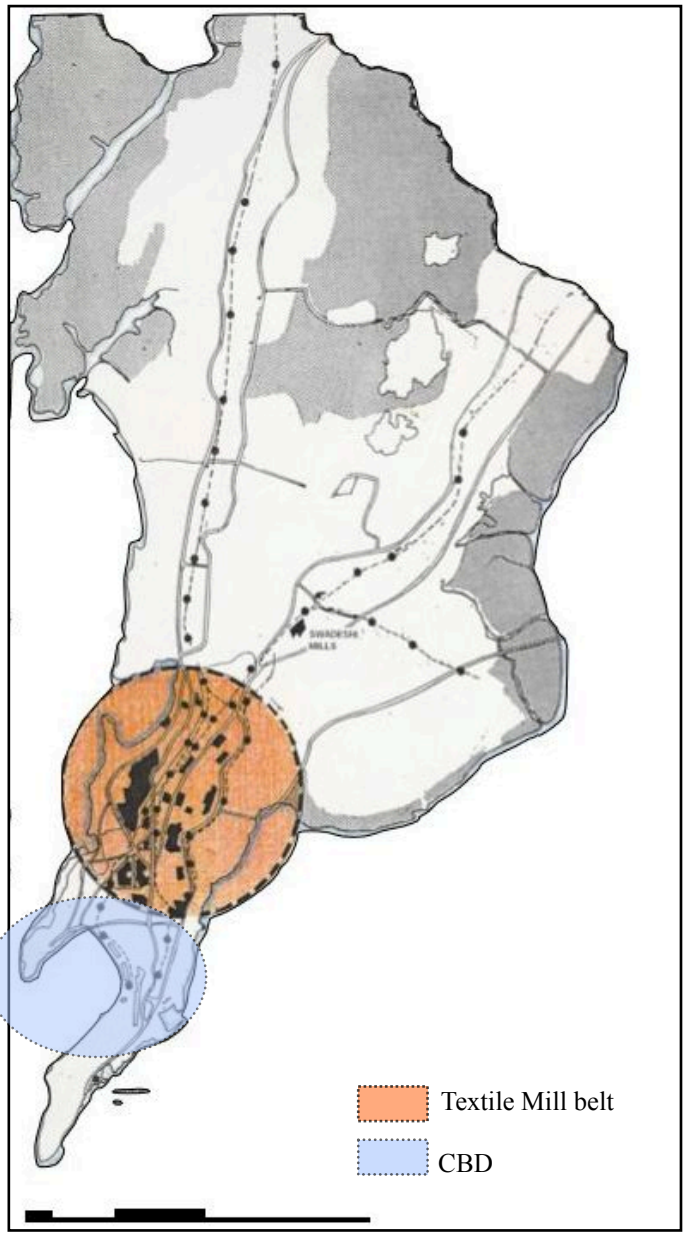

Figure 1 Map of Mumbai showing the Cotton Textile Mills belt and the Central Business district.
Charles Correa Committee report (1996)

The land remained commercially underutilized from the late 1980s for more than a decade. (Dossal,M. 2006). Given the geographical constraints of the city to grow making optimal usage of the land and the opportunity to redevelop these underutilized land holdings lying with the public as well as the private sector have lead to a series of land-use changes since the early 1900s.The area in question is 600 acres of the defunct textile mills. A very economically and politically driven agenda for the city has involved the rebuilding of the city centers and the creation of high-end entertainment and commercial complexes, hotels, malls and multiplexes that cater only to the elite section of society.With the mill lands occupying prime central property in the city, they have also been redeveloped for commercial and residential uses.
Figure. 2 shows the location of the 58 cotton textile mills located in the heart of the city of Mumbai. 26 of these are under the ownership of the National Textile Corporation of India, 1 lies with the Maharashtra State Textile Corporation and the remaining 32 are privately owned.

The potential of high profits laying in the usage of this commercial viable area of the city through real-estate and other service related operations led the mill- owners to find excuses to close down

production in the mills." The modus operandi used was that; the production was outsourced and then the mill's brand name was affixed on the cloth produced elsewhere. Resources from the mills were deliberately drawn out by the owners to other areas in order to declare their mills as sick. The 'sick' mills were then closed down, workers were rendered jobless and the mill lands sold or converted for use in other more profitable areas." (Damodar, 2006). There are important spatial dimensions to these trends. It has lead to an inevitable process of change in land uses. Mumbai currently sees industrial activities of large, medium and small size companies and residences of low density that area being replaced by service oriented commercial set-ups monopolizing these lands, and a visible shift in landscape towards high-end high and average density residential projects.

Charles Correa Committee report (1996) NTC owned mill lands Privately owned mill lands

Figure 2 Map of Mumbai showing location of Cotton Textile Mills.

This new development calls for the need to be supported by adequate infrastructure. Given the persistent insufficient supply of serviced land, the mis-match between the social needs of affordable housing along with adequate physical infrastructure and the tax base, the advantage of service provision by the public and its effects on land value increment tends to generate sizable windfalls to the landowner. Thus on the investments by the public body, that constitute for land value increment, lays the basis for the economic and financial logic behind the need to design instruments that can be used to recapture the value, so as to plough it back into need for urban infrastructure.

1.2 Statement of the Problem

The decline of cotton textile mills in Mumbai, the industrial, commercial and financial capital of India, and the potential redevelopment of the land they occupy in the heart of the city, has become a major urban policy issue. It raises vital questions about the future growth of the metropolis. (D'Monte,D. 2002). Although there is a leverage of international capital it has lead to negligible increase in the land available for housing the poor and the middle class. Land prices have soared up since multinational companies and foreign investors became the dominant players in the market .This has radically transformed the topography of the city and has tweaked every aspect of life. (Dossal,M. 2006).

One cannot completely deny that there have been attempts by the authorities to safeguard the interests of the public at large. One such example is the Urban Land Ceiling Regulation Act. To prevent the absorption of the Urban land by the landlords and to curb the growing power of the

'builders/developers lobby', the Urban land Ceiling Act (ULCRA) was passed in 1976 during a situation of emergency[1].It was passed with an objective of equitable distribution of land. The provision stated that the landowners were not allowed to own more than 500 sq.mts. area. The excess land had to be relinquished to the government for public housing. This ceiling was withdrawn partly in 1999 and then completely in 2007. The developers were allowed to build on the condition that 10% of the newly constructed units were reserved for the low-income class, identified by the state[2]. To keep a check on speculation, there was introduced a provision to tax properties that were left vacant for more than six months. The builders voiced their unhappiness towards the implementation of this act. In the meanwhile, the release of Rs. 28,000 crore earmarked by the Jawaharlal Nehru Urban Renewal Mission(JNNURM)[3]for Mumbai's infrastructural projects, as well as the world bank fund were to be withheld until the Act was annulled. This was looked at as a response to pressure exerted by the international investments which required Mumbai to serve the needs of economic growth more effectively. In 2007 the act was completely withdrawn. (Dossal,M.2009) Opening up to an international market where foreign direct investments seem to be the talk of the moment with firms like Goldman Sachs & Merrill Lynch investing extensively in the real estate developments in Mumbai, the prospects of 'Comprehensive Urban Renewal' becoming reality need to be addressed by the public sector.

The regulatory changes as stated earlier in this section describe the role of the public body in facilitating the redevelopment of the cotton textile mill land of Mumbai, however the opportunities to capture value were lost. The land owners were successful in obtaining windfalls from property values, but the urban policy makers were less than successful in transferring this value created for public good.

The case of the Mumbai mill lands would help identify an abuse, because the claims in values behind these parcels that very created solely by the city do not seem to necessarily have fallen in the pockets of the city. 'The City of Mumbai' who is the biggest stakeholder is being ignored.

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[1] The Indian Emergency of 25 June 1975 – 21 March 1977 was a 21-month period, when President Fakhruddin Ali Ahmed, upon advice by Prime Minister Indira Gandhi, declared a state of emergency under Article 352 of the Constitution of India, effectively bestowing on her the power to rule by decree, suspending elections and civil liberties.

[2] Under amended D.C. regulation 58(1) (b) MHADA gets 50% land share to be utilized for public Housing and 50% of it for mill worker's housing.

[3] JNNURM is designed to meet the Millennium Development Goals, its primary objectives are facilitating investments in the urban sector and strengthening the existing policies to achieve the goals . Most importantly focuses attention to integrated development of infrastructure services in cities covered under the Mission.

1.3 Research question

Main question
How successful has the public-sector been in capturing the value of land to mitigate impacts of redevelopment of abandoned industrial sites of inner-city areas?

Specific questions
1. How does redevelopment increase the value of land & what are the reasons for an increment in value?
2. How does the public-sector influence the increments in value?
3. How much share of the increment in value does the public body capture?
4. Does the value captured help mitigate the impacts of the redevelopment process?

1.4 Hypothesis

The public-sector has not been successful enough since it captures much less value than is required to mitigate the impacts of redevelopment of abandoned industrial sites of inner-city areas.

1.5 Significance of study

It is a common practice in India for regulations and policy relating land and urban infrastructural investments to be guided by national governments and controlled by the state ministry and legislature. In some cities the quasi-monopoly on new land development is in the hands of the city development authorities accountable to the state chief minister. "Land development is practically entirely private and the development authority's role is mostly restricted to planning and to a few discrete land development projects.Municipal corporations exercise minimal power on land-use and infrastructure investments." Some of the idiosyncrasies of Urban development in India can be explained by the nature of this institutional arrangement.(Bertaud,A. 2010, pp. 21-22)

The mobilization of land undertaken by the city development authority or private developers fails to incur substantial benefit to the municipal government. In the case of the abandoned industrial sites that this research focuses on, the high-density development puts tremendous pressure on municipal infrastructural services, the improvements needed for disposal of solid-wastes, supply of water and accessibility improvements are usually taken for granted as the mandatory onus of the municipality. This research through its theoretical framework would identify the need to secure the local government treasury and revenue generation system which is required for funding infrastructure.

Cities use planning tools to influence the density of development, location and type. However it disregards the significant potential effect of revenue-raising tools. Mumbai is know to have stringent restrictions on FAR[4] values, this in-turn creates an enormous scarcity of space for residential and commercial functions.It then "negotiates with private builders to relax some of the FAR restrictions in exchange for segments of infrastructure or for social projects like slum redevelopment." (Bertaud,A. 2010)

This study shows that a rethinking of traditional approaches to urban finance is necessary. By attempting to quantify the revenue lost due to non-applicability of the potential tools to capture the

[4] FAR - Floor Area Ratio, also referred to as F.S.I. - Floor Space Index, in the India system.

value of land this study would bring to light some of the lost opportunities that would prove to be useful for the local governments who otherwise lack fiscal independence in provision of basic infrastructural services.

1.6 Scope and Limitations

The existence of an over-inflated land market, and an era of massive redevelopment projects in Mumbai should have seen the local governments financial position being safeguarded. But a study of historical facts shows us a contrasting picture. The tools to capture the increase in value created by the city by allowing for redevelopment at a massive scale were present. Some of these instruments have been staged out without an analysis of how much value /revenue is being lost. The study will make an attempt at quantifying this value and demonstrating the means it could be used towards public-good. This study attempts to determining this change in value, and the capacity of the local government using existing tools such as ULCRA, property tax bases, development premiums and charges to capture the value increment for provision of public good.

Urban land markets are volatile. This volatility in urban land prices is part of market reality. (Peterson,G. 2009). The section 1.5 on Significance of the study emphasized that an effective approaches to urban finance can lay the basis for good/poor fiscal performance. The socio-political aspect of the redevelopment process, thus though important will be difficult to quantify. Hence in this research the redeveloper-politician-mafia nexus will not be discussed.

1.7 Organization of the research

The study is presented in five parts.

- The first part presents an introduction to the case and the justification for the need of the research.
- The second part lays its basis in understanding the concept based on: Theory and practices of land value capture along with implications or outcomes of value capture instruments used.
- The third chapter discusses the methodology that helps understand the operation of the study. Here, 4 redevelopment projects were selected for research as representatives of the sample according to the selection parameters set.
- The fourth chapter uses parcel data and transaction data to present a quantifiable analysis to understand the quantum of increase in value. Also the expenditure to the public authorities is computed to help make a comparative analysis, that determines the degree of balance / imbalance in the value capture practices.
- The final conclusion and remarks section of the paper recapitulates the discussion, analysis and findings of the study and comments on the intentions and outcomes of the value capture policies and instruments.

Chapter 2: Review of related Literature

This chapter presents the concepts of land markets in a redevelopment process , regulations and the benefits caused thereof according to available literature.The chapter then moves on to assessing the extent to which the increase on land rent could be transformed to mitigate the impacts of redevelopment. The Theoretical framework will help determine the relevance of the concepts studies with respect to the research questions.

Table 1 The Theoretical framework

Questions	Theories	Authors	Key arguments
How does redevelopment increase the value of land what are the reasons for an increment in value ?	Land Rent theories related to 'Highest & best use value'	Balchin, P., Isaac, D., and Chen, J. (2000) Eckert, J. (1990) Alonso W. (1964)	Increment in value is an outcome of market demand The process of redevelopment favors the idea of "Highest & best use value"
How does the public-sector influence the increments in value ?	Benefit capitalization due to regulations.	Bruekner, J. (2009) Peterson, G.(2009) Brown, H. J. (1997) Borrero ,O., Morales, C. (2007) Phillip, B. (2011) Harvey, D. (1973)	public-sector influence the increments in value by investing in **benefits** that can be capitalized. They make the development physically possible by distributing building rights.
How much share of the increment in value does he public body capture ?	Land value capture Objectives and Instruments.	Smolka, M. , Amborski, D. (2000) Bertaud, A. (2010) Bruekner, J. (2009) Walters, Cornia (2008) Borrero ,O., Morales, C. (2007)	The fiscal and regulatory instruments present in the institutional set-up determine the increment in value that the public body is able to capture.
Does the value captured help mitigate the impacts of the redevelopment process ?	Service provision internal & external to development by the public body	Peterson, G.(2009) Waddell, P. (2002) Susnik, A. E.(1997)	Impacts of redevelopment processes are of Social and physical nature and they both need fiscal investments from the public sector.

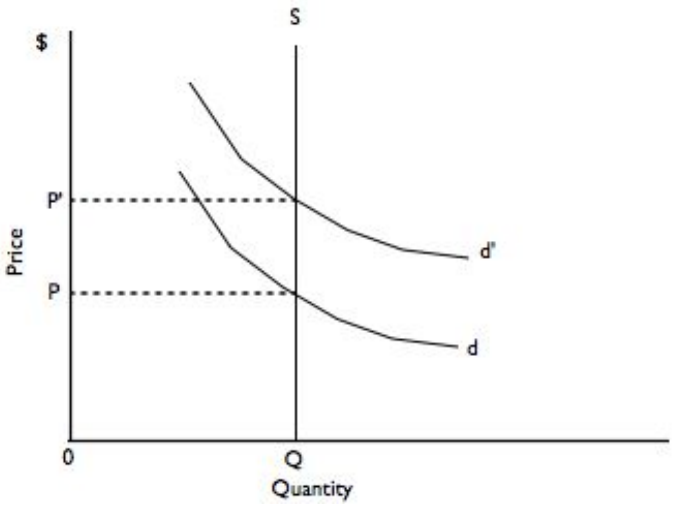
The process of Urban redevelopment is seen as a response to change in demands as per change in requirements of the population of the city. As the economic life of a property comes to an end, the existing stock must adjust to new demands.(Balchin, P., Isaac, D., and Chen, J. 2000) This new redevelopment offers possible advantages to modifying land-uses and densities and introducing new technologies in construction. Balchin emphasizes that redevelopment stems primarily from economic pressure rather than physical deterioration. The need for redevelopment depends on the effects of new urban transportation schemes, expected change of function or use, impact of urban decay as residents and firms come to fear risking capital outlays. (Balchin, P., Isaac, D., and Chen, J. 2000, pg. 279-280) The following literature uses the theories of land rent to understand needs and effects of redevelopment processes.

2.1 The Theory of Land Rent

Land as described by economists is a resource provided by nature, it does not consist of any improvements. It is limited in supply. A price must be paid to the owners of the land to obtain its use. However it is not always a payment made to overcome real cost of improvements to the land. This price is known as land rent. As any other economic price model suggest, land rent is determined by the intersection supply and demand. The difference is that the supply as suggested

above is fixed by nature.(Eckert, J. 1990).In a diagrammatic representation, the supply curve is a vertical straight line on the supply demand graph. Fig. 3

Figure 3 Supply and Demand for Land



Source: Eckert, J. 1990

The illustration suggest that as the demand for land increases, that is when demand shifts from d to d', price increases from p to p'.However amount of land supplied 's' remains constant. This demonstrates that "It is demand which is the major determinant of rental values, and consequently of capital values." (Balchin, P. 2000)

Alonso in his literature review quotes many other theories on location .He says that according to Von Thunen, "Since value depends on economic rent, and rent on location , and location on convenience, and convenience on nearness, we may eliminate the immediate steps and say that value depends on nearness."(Alonso, W. 1964). According to Marshall's and Hurd's; "Rent appears as the charge which the owner of a relatively accessible site can impose because of the saving in transport costs which the use of his site makes possible". (Alonso, W. 1964)

In case of nonresidential activities, the demand with respect to location of a particular parcel of land may be very high compared to the demand in a less desirable location. Considering the vertical supply curve rapid fluctuations in the price of land in desirable locations is observed. (Eckert, J. 1990). The price mechanism[5] in any consumer related service[6], largely determines the profitability of the goods and services. It dictates the location of the activity and the built environment created thereof. (Balchin, P., Isaac, D., and Chen, J. 2000, pg.188)

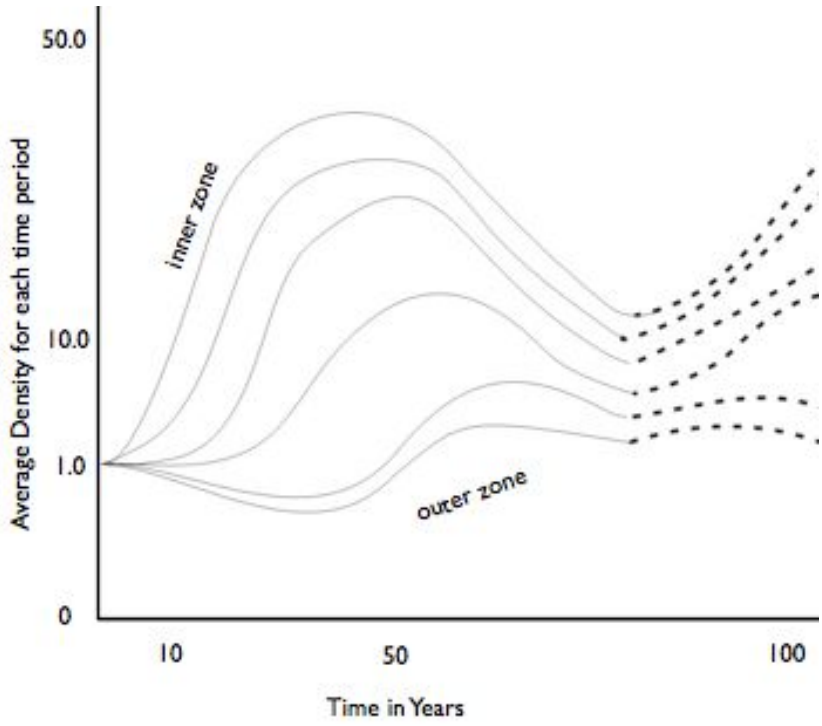
The process of redevelopment which is the primary focus of this study is a resultant of the city's reaction to this mechanism. As the city expands new development on the urban fringe becomes an alternative to redeveloping the existing central area. The outward movement of the city's population can be associated with this phenomenon. Starting from the centre, each zone in succession reaches its average peak density. From here it declines and joins a rhythmic cycle of upward and downward movement. This cycle responds to factors such as economic life of the building.(Balchin, P. 2000). This cycle is illustrated in Fig.4 by Boyce 1966. He argues that; "Redevelopment is largely dependent on the ability to slow down the outward spread of the wave. Redevelopment at the

[5] The terms price is used here in its generic terms , it includes under it the market terms of contract rent, sales price, and cost of ownership.In this section the term price will be used for the amount of money the occupant pays to the landlord for the right to use a unit of land.

[6] Including provision of Land

centre is a better substitute to further new development at the urban fringe." (Boyce, R. 1966) The Fig. 4 suggests that the current development of the central city area could represent a new wave and a repeat of the whole process of redevelopment.

Figure 4 Zonal Undulations over Time in an expanding Metropolitan area



Source: Balchin, P. 2000

Balchin, Isaac and Chen state the example of Britain in the 1950's until the late 1980's; there was a significant increase in property values because of the effect of increased demand for urban property upon a more slowly changing pattern of supply.The increase demand was a product of four distinct factors: inflation, credit availability, population growth and increased affluence.The identification of the factors suggest that; "Influenced by changes in the underlined conditions of demand, land within the market transfers to the user who is prepared to pay the highest price or rent. The time of this transfer is the time ay which demand and supply reach an equilibrium situation." (Balchin, P., Isaac, D., and Chen, J. 2000)

"Equilibrium, a central concept in economics, describes a point of rest, or equilibrium, where the factors of production such as land, labour, capital and management are uses in the production of an array of consumer goods & services that maximize consumer welfare. It is in this sense that resources are used more productively, that is in their highest and best use."-Eckert, J. 1990

2.2 Highest and Best Use

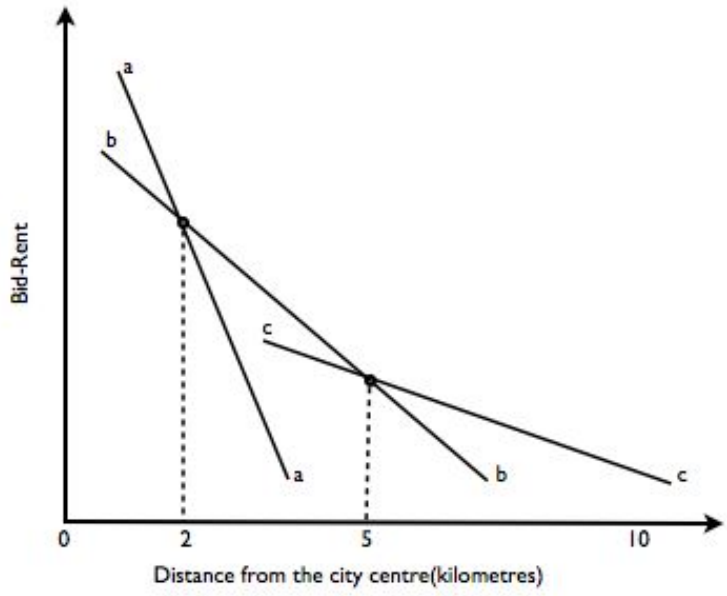
The Highest and best use of land is defined by Eckert as "the most profitable use at a specific given time, given the legal, physical and financial limitations."

Highest and best use is not always the actual use. It lays its basis on the 'Demand Use' and the demand represents the "economic forces that work in the area" (Eckert, J. 1990)

The decrease in rent as one moves away from the city centre is to compensate for drop in revenue and higher operating cost including transport costs(Alonso, W. 1964, pg. 54). Different land uses would have different gradients.(Fig. 3) the use with the highest rent would prevail. "Thus competitive bidding between perfectly informed developers and users of land would determine the

pattern of rents throughout the urban area, and would allocate specific sites between users so as to ensure the ‘ highest and best use’ obtained.”(Alonso, W. 1964) This ensures that the land would be used in the most appropriate way to gain maximum profit.As illustrated in Fig. 5 when the rent gradients intersect the use would change to the function that can afford to pay the higher rent.

Figure 5 Alonso’s Bid rent - Distance relationship



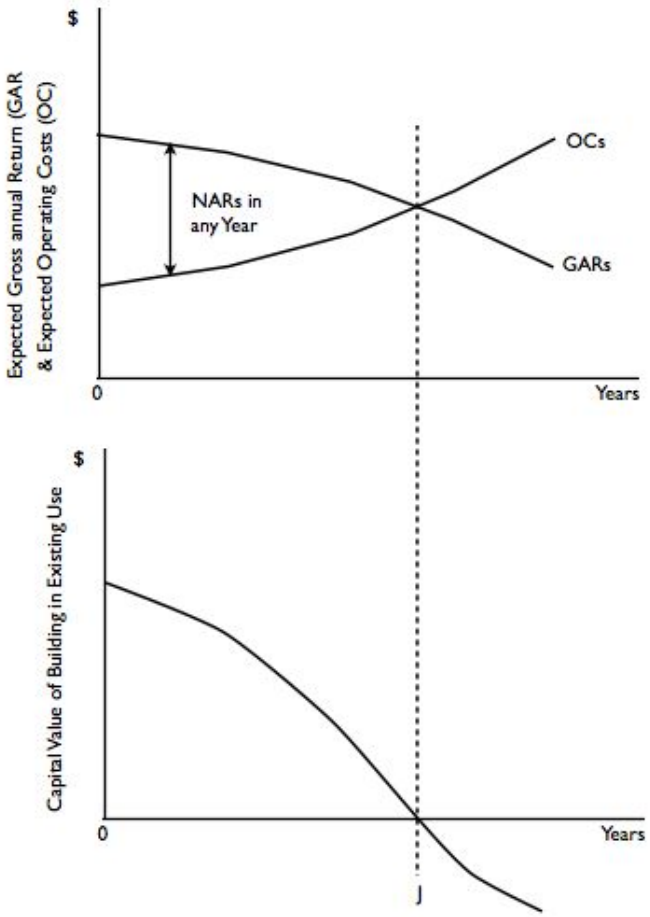
Source: Balchin, P. 2000

The price that this new land-use warrant might be reduced by the risk of unfavorable zoning, the cost of demolition of the existing structure, or by uncertainty of the future rental market. The developer here sees the favorability of change in use. (Eckert, J. 1990, pg. 31-55). For this new development to prove profitable to the developer, his maximum site-bid must exceed the vale of the land and improvements on it, in its existing use. (Balchin, P. 2000) the market demand[7] faced by existing land-use affects its achievable rents and periodic maintenance becomes less cost effective with time.

The effects of Operating Cost(OCs) and Gross Annual Returns(GARs) on the effective benefits in terms of Net Annual Revenue(NARs) are illustrated in Fig. 6 It shows that the OCs rise over time due to the cost incurred towards repairs and maintenance. The gross annual returns fall in accordance with the fall in annual rents.Fig 6 shows the fall in net annual returns over number of years as a result. It is a representation of the difference between OCs and GARs for each year. It is observed that after year ‘X’ NAR falls to zero. This is the optimal redevelopment time(year) because the site would be abandoned and left derelict after this point. (Balchin, P. 2000)

[7] David Harvey defines market demand as “when facilities are working close to capacity, there is an unfulfilled need in the population, which needs to be addressed with allocation of more resources, however this procedure is only acceptable if it is assumed that nothing obstructs demand such as lack of money or lack of access to facilities.”(David Harvey 1973) pg. 102

Figure 6 Net annual Returns and capital value of building in the current use over time



Source: Balchin, P. 2000

Alonso's model explains the nature of land-markets and its response to the usage of urban land. In case of commercial and industrial land use which are the areas that the study focuses on, it is necessary to identify determinants that affect the profitability of these land uses.

To maximize profits commercial enterprises[8] need to be located in an area to benefit from highest possible revenue from the lowest cost. Achieving this in absolute terms in a single location is difficult. "In an attempt to realize maximum revenue, specialized functions and activities serving the urban market as a whole might continue to locate centrally." Many of the features of a city structure and urban land-use seem to arise chiefly from the fact of spatial uniqueness. There cannot be more than one land parcel in exactly the same location. (Harvey, D., 1973pg 167) However considering the size of physical space required firms requiring a larger site might choose to locate in the suburbs in an attempt to reduce costs. In-contrast "firms that wish to benefit from complementarity will incur lower cost because of external economies and enjoy higher revenue because of joint demand." (Balchin, P., Isaac, D., and Chen, J. 2000) Balchin while explaining the case of United Kingdom mentions that in case of offices, location is dependent upon general accessibility and in particular about special accessibility to complementary firms and the offices of clients. This development usually takes place over land that has been economically run-down by

[8] Also referred to as firms in the study

withdrawal of financial support for the existing use market. Here functions which can readily adjust to absorb the cost need to take-over. It is observed as a common practice, " that the highest rent areas in the city are colonized by commercial activities whose productivity cannot be measured-government offices, banks, insurance companies, stockbrokers and various forms of entertainment." (Harvey, D. 1973,pg. 188)

Thus having propagated Urban Redevelopment at the 'Highest and Best Use'; it is important to realize that it requires massive investment by the public or private sectors or both. These investments could lead to substantial benefits. The capital value of the benefits are known to far exceed the investments.
The following section talks about the rationale for this benefit capitalization.

2.3 Benefit Capitalization and Value Capture

Any redevelopment process depends largely on the profitability and marketability of the decisions made.(Leigh, N.) The solution would largely march towards the larger goal of socio-economic development. Leigh through her article posses the question of weather 'economic efficiency is the only criterion by which public investment decisions for such sites should be made'. She suggests that if a monopolistic market-based approach is encourage one can expect a scenario of widening urban ineqality , which could become a cause and concern leading to gentrification.

However the concern that this study focuses on is, 'by whom is the economic efficiency pocketed?' Granting permission for specific types of development on a given parcel helps increase in value of that land. (Johnston & Madison, 1997) This permission can be accounted as change in land use and/ or change in density. These permissions are granted by the public bodies. Here the question arises of ,'Why does the public body need to promote this redevelopment process in-spite of it having to incur administrative cost for planning of new land uses?' The need to renew city centres for service based economies is growing globally. This land-use transformation within the existing built-up area is profitable because, "the land used within a city's core is far more valuable than the land developed at the city's margins. The ability to adapt existing land uses to changing economic conditions is at least as important as the ability to increase developed areas on the periphery."(Bertaud, A. 2010) Moreover, it has been advocated that by reusing existing infrastructure investors and developers can save significant costs instead of installing new technical networks as on greenfield sites.

One of the most common arguments against capturing value is that, 'the charges will be transferred to the consumers through higher prices.'However, "the theory of land economics suggest that the high charges will be capitalized in the price of land, which would have to be payed by the landowner. This happens because the supply of land is constant, and land that is well located, that consist of infrastructure and has the potential for development is scarce. The monopolistic nature of the land owner allows him to collect the highest bid price, this price is the maximum capacity of the developer or the final user of land." (Borrero, O., Morales, C. 2007)

Defining these new land uses is generally assumed to be the task of the urban planning or economic development agencies. This definitely incurs administrative costs and more importantly the cost of provision of services. This following section talks about the outcomes and the ways in which government interventions can affect real estate markets. Once the nature of the actions is clear the economic analysis and their likely effects will be discussed. (Bruekner, J. 2009)

2.3.1 Effects of land use change on land values

Redevelopment projects often act as a catalysts in the process of fast urban change, they affect land values and therefore land use for large areas if not for the entire city.(Smolka, M. , Lungo, Mario 2005) .This land use change requires public investment, and "weather it is because of specific public investments, public grants or social trends, private land values are enhanced ,both of the parcel who undergoes change in land use and the surrounding parcels.This happens without any specific improvement of the affected land" (Walters, Cornia 2008). With regard to the locational advantage of these parcels, better accessibility, visibility, better urban amenities by default add value to the parcels and therefore make it more valuable. This nature of land-use change is know to encourage segregation which is a resultant of, "a minority population of a higher income level remain confined to a small but well-serviced part of the city surrounded by a 'sea of informal / irregular settlements'. This process results in intra-urban differences and associated land prices." (Smolka, M. , Lungo, Mario 2005). It is known to have substantial impacts on profits to the landowners and developers, this phenomenon incentivizes the use of value capture to control land use. This could be achieved by introducing a differential property taxing system for different land uses which in-turn ensure that the development incorporates mixed-functional uses. "This would be an approach whereby higher costs would be imposed in less-desirable areas or types of developments."(Smolka, M. , Amborski, D. 2000)

"The basic rationale for using land-financing techniques to pay for urban infrastructure investment is the principle of capitalization of benefits into land values." (Peterson, G. 2009, pg. 32) This holds good where the costs of infrastructure investments and land development are internalized within the development area. When the benefits or cost spill beyond the development zone or when the benefits are generated by density and planning permissions,(Peterson, G. 2009,) the question arises of 'Who should capitalize the benefits?'
"The rise in land values resulting from public investment must be subject to appropriate recapture by public bodies" was the conclusion drawn in the first Habitat Conference on Human Settlements (UN-HABITAT, 1976)
This discussion lays the foundation for the following literature on Land-Value capture.

2.3.2 The concept of land value capture

"The unearned increment resulting from the rise in land values resulting from change in use of land, from public investment or decision, or due to the general growth of the community must be subject to appropriate recapture by public bodies, unless the situation calls for other additional measures such as new patterns of ownership or the general acquisition of land by public bodies." (UN-HABITAT, 1976)

The principal issue that is going to be discussed through the study is that any new development requires new infrastructure and the notional idea that this development should be able to pay for its own infrastructure. Going one step further the study will propagate that "fiscalization of land-use for capital should join the fiscalization of land-use for revenue".(Chapman, J. 2008) This would require identification of an 'optimal model' That would identify increments in value such as to be able to command share for public good.(Bertaud, A. 2010)

Increase in land value could be attributed at times to certain actions taken by private land owners and developers, but this phenomenon would carry less weightage than the land value enhancements observed due to the permissions granted by the public sector for land-use change and increase in density or through investments in infrastructure, or due to demographic changes and the response to market forces. It is evident that the landowners and developers did not play a significant role in enhancing the value and that " it may be sociably desirable to capture all or part of the increased value for the public sector"(Smolka, M. , Amborski, D. 2000) In light of this private gain, mechanisms of value capture need to be fully investigated for their potential in terms of providing the start-up capital necessary for public infrastructure.

Historically, attempts to capture private gains through land value increments for public purposes has been seen in city examples dating as early as the 1600s (Day 2005). Political economist Henry George advocated the notion that that land value was created solely by public actions and that the public should receive 100 percent of the value thus created (George, H. 1879)

One could argue that the property tax system which is the principal choice of the local governments across the world is an adequate tax on the property assets of individuals. National governments and international organizations have effectively propagated the importance of this tax system. However an account of the revenues that this tax generated shows that it contributes to less than one percent of gross domestic product(GDP) and an average of less than 4% of all tax revenue in developing countries.Hence it might not be as effective in revenue capture and mobilization. Also this tax is a change for using public services and therefore, if value capture tax / fee is introduced, the problem of double taxation would not arise. (Bahl, Wallace 2008)

Introduction of a the public policy or planning regulation "represents a potential modification of the free market situation". Either the type of land use or the density or intensity of land use may be modified.(Alonso, W. 1964;pg. - 117) While explaining the fundamental behind 'Planning Gains' [9]Balchin say that the tax collected while applying for the building permit or while selling of property is used to help finance the provision of associated public works. They are proportional to the volume of building planned. He states the example of some towns in Paris who "are required to pay taxes on the turnovers of commercial firms to help fund the provision of infrastructure. This planning gain is a benefit either in cash or kind, which can occur to a local authority as a consequence of granting development consent to a private developer." (Balchin, P., Isaac, D., and Chen, J. 2000, pg.403) Planning gains could also include the private development of less profitable uses of land for the benefit of the community such as social housing, additional investment in service provision outside of development etc.

2.3.4 Regulation and Land Values

"Land use intervention is the regulation of development densities." (Bruekner, J. 2009) These regulations more than often have their effects on Densities and Costs.

The zoning regulations usually specify the maximum allowable FARs in different parts of the city. The usually go in accordance with the market demand to ensure that the nature of surrounding development does not greatly fluctuate. However the regulations in some countries provide for extremely stringent FAR values, a commonly cited example being the city of Mumbai in India.here

[9] Planning gains are the British version of Land Value capture practices.

the FAR values are much lower than the free market values. without FAR limits Mumbai would resemble a high-intensity pattern, instead Mumbai is a majorly a low-rise city. This stringent nature of floor space regulation relates to the capacity of the public infrastructure that can be made possible by the government to meet higher density needs."Theoretically, FAR limits tend to raise housing prices in cities in which they are imposed." (Bruekner, J. 2009) Here, the governments intervention takes the form of a cost-increasing measure. the developers in order to construct the required floor area would incur more costs by having to buy additional land. This higher cost of development reduces the price the developer is willing to pay for land and the land rent curve begins to fall down. It has been exemplified in the earlier sections (2.2) that commercial developments often tend to agglomerate in urban centers, pushing the existing living population out. The cost inefficiency of the developments due to FAR restrictions help slow down the process of gentrification. Thus it could be concluded that regulations help stabilize vales and thus control land-uses. Borrero and Morales presented a study on the case of Bogota, Colombia explaining how regulator benefits and charges impact land value. They emphasized the study on, how the povision of a specific regulation in Colombia[10] generates some basic and some extra benefits and how these benefits are charged as basic charges and extra charges respectively. They nature of the benefits stated are primarily based on the increase in FAR which are translated into increment in value and, which the provision in the law facilitates the charges to be asked for in terms of provision of social housing, public parks, roads etc. (Borrero, O., Morales, C. 2007) It has been widely argued that regulations increase benefits, on the basis of these benefits the prices of properties would rise.But when these benefits provided are imposed by extra charges and in cases where the charges outweigh the benefits,the prices are likely to drop. The landowners in Bogota actually asked for higher prices of the development on two premises, firstly because of better zoning and secondly because of the different market conditions that would allow he regulations to change. This demonstrates that regulatory changes has its effects on land values. (Borrero, O., Morales, C. 2007)

United Nations Economic and social Commissions for Asia Pacific (UNESCAP, 2006) conforms the above argument by listing the 'Rationales for Government intervention in Urban Land markets'.the list goes by saying that government imperfections eliminate land market imperfections and failures thus increasing operating efficiencies. The inputs of the government redistribute society's scarce resources equitably amongst the overall population.the provision of public infrastructure and services are better taken care of by government intervention through regulation and other planning tools.

2.3.5 Illustrations of Value Capture Practices

The study starts with an underscore focus on the land component of a large post-industrial redevelopment process, and the mechanisms of land value capture to be used for public-good. The cases presented below illustrate the various natures of value capture instruments being used across the world.

The case of Toronto

This case is an example of how landowners could be obliged to making "in-kind" contributions to the public body in exchange for certain permissions to develop the land[11]. This case was researched

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[10] Colombia introduced a new comprehensive urban law ten years ago, Law 388 of 1997. One of its main principles is "equitable distribution of costs and benefits of urban development." That is, if a landowner wants to reap the benefits of land being developed for urban purposes, he or she should bear part of the costs of doing so.

[11] They have demonstrated the idea of value capture for 'Overall Urban development.'

on by Smolka and Amborski 2000. Their study showed that out of the survey conducted over 100 municipalities in the region 1985, 79%used value capture practices and that they represented a significant source of funding for the local government treasury. In the late 1980's; the Province of Ontario saw the highest growth municipalities in the region finance 70-90% of their capital expenditure from development charge revenue.It is important to note that in this case the local governments opted for the cash equivalent.[12]This was facilitated by the planning act which specifies that 5% of the land area of the new development should be made available for public parks and the local government opted for the contribution to be made in cash.Also the agreement required the developer to install all necessary services adhering to the prevailing municipal standards.

The Água Branca & West Plaza cases in São Paulo City.

This case is popularly know as an Urban Interconnected Operation. It was able to appropriate 20 million dollars in terms of infrastructure investments in and around the Agua Branca operations perimeter. This case specific regulation permitted new land organization and new land-uses in the area which in-turn helped increase the value of land in a depreciated area. Prior to he operation the local government had identified a portion of this area as being served by adequate infrastructure, but had low functional occupancy ratios and hence the depreciated values.The West-Plaza interconnected operation facilitated the funding of 810 social interest houses for an estimated 5000 low-income houses.It was also successful in transforming a proposed vehicular road to a pedestrian street. (Sandroni, P. 2000)

The case of Bandra-Kurla Complex in Mumbai.

This is an example where publicly owned land assets were mobilized to fund major infrastructure investments in the metropolitan region of Mumbai.George Peterson 2009 in his study on 'Unlocking land Values for financing urban Infrastructure', which was a report for the World Bank; mentioned that the Mumbai Metropolitan development Authority ((MMRDA) has started to accelerate sale of its land based assets in the area. "It now derives most of its income and capital resources from these land sales and has begun to focus more clearly on the investment uses to which land-sale proceeds will be put." His study stated that the MMRDA was able to raise US$1.2 billion from the sale of small land parcels through land auctions in January 2006 and November 2007. It equals "10 times total of MMRDA's infrastructure investment in 2004–05 and almost five times total infrastructure investment by the Mumbai Municipal Corporation in 2004–05." (Peterson 2009)

ZACs in France

This decades old set-up was created in the period after the second World war as an urgent need to rehouse the population living in poor conditions in large scale housing developments led by the state.In 1958, an instrument for promoting development, which allowed for expropriation and controlling values was introduced ,called as the zone à urbaniser en priorité (priority development zone; ZUP) The ZUP has been replaced by zone d'aménagement concerté (coordinated development zone; ZAC) which could be used for any form of development or redevelopment. The ZAC allowed the public bodies to recover cost of basic infrastructure such as roads and public spaces.Two other mechanisms for recovering value from development to fund infrastructure were introduced in 1967. One was the pre-emption[13] power given to local authorities to raise a taxe locale

[12] The municipality has the discretion of taking the cash in lieu of the land where there is small development or fragmented parcels that can't provide useful land for parks or open space.

[13] pre-emption rights -is the right y which a party is endowed by the benefit of purchase in preference over others.

d'équipement (local infrastructure tax; TLE) based on the overall value of real estate to be developed within a local plan, to this then has been added the option to create a programme d'aménagement d'ensemble (development programme; PAE) designed to fund the actual cost of infrastructure within a given area. (Phillip, B. 2011) Thus a value based tax translated into public good demonstrates how a process that laid its basis in the legal framework, solely to recapture the value that the state had created, has now become the mechanism for financing infrastructure. Thus France was successful in gaining more benefits from the regulations hat were actually designed to control Urban development.

2.4 Land Value Capture Objectives & Instruments

The earlier sections suggest that public and joint public-private investments commonly result in value enhancements for private land owners. Section 2.3.5 shows us that historically also the public bodies have made efforts to recapture this "unearned increment" in value to fund public services. (Walters, Cornia 2008)
Here the objective lays its foundation in three components of value Capture, namely (a)value capture to deepen land value taxation (b)value capture to finance urban infrastructure (c)value capture to control land use.(Smolka, M. , Amborski, D. 2000)
This section will attempt to give an insight into some potential instruments to land value capture.These instruments could be broadly divided into two categories, i.e. Fiscal and Regulatory.
Value capture policies lay their basis in two broad categories of instruments namely fiscal and regulatory. The public policy actions range from the use of Property taxes to the sale of development or building rights.In addition variances or zoning changes could also help local government recapture some of the benefits they create for developer.(Brown, H.J. 1997; pg. 28)

2.4.1 Value capture with Fiscal Instruments

These could further be categorized into two types, i.e. taxes and fees/levies.
The general purpose of any kind of tax is raising revenue for public goods and services. Betterment tax or levy is one method of accomplishing recapture of the land value increment. these are one time payments made against permission to new land uses and other public improvements that benefit the land-owner. (Day, 2005) These instruments corresponds to a fee that may not be stated in a fee schedule, instead "reflect a payment negotiated on a case-by-case basis." (Smolka, M. , Amborski, D. 2000)
Also, as suggested by Day the effectiveness of this tool relies to a notable extent on the political will of decision makers and administrators.
As suggested by Milton Friedman (1979) whilst speaking of the "economic efficiency of the least bad tax" states that land tax although having similar characteristics as the property tax and the difference in rates might be subtle ,the policy consequences can be remarkable. For instance according to Friedman contributions to efficient land-use is one of the most notable benefits of the land tax. Because of the efficiency implications, it is a tax with strong theoretical support and a substantial list of endorsements from Nobel Prize–winning economists (Cohen, Coughlin, 2005). Although it might be propagated as an effective tool ,there is however a downside which needs to be given a thought.If the buoyancy of the tax base is in question it might not lead to economic efficiency.For example, if the imposition of the tax leads to behavioral changes of the land owners and developers there could be an efficiency loss associated with the tax. (Walters, Cornia 2008)

Tax increment Financing

TIF is an instrument widely used in USA. This instrument is widely propagated to be used for public financing of an Urban redevelopment process.(most often of blighted ares) (Chapman, J. 2008). The development plan for the area is made by the newly formed redevelopment authority of the district. According to the plan the property tax base for each parcel is frozen. In certain terms, after the project actually begins the assessed value of the property increases. This in-turn increases the property tax revenue. The value of tax collected as per the 'frozen' base remains with the jurisdiction whereas, The 'TIF' arrangement allows for the increment value to go back to the redevelopment authority to invest in the establishment district.The revenues thus generated are used in two ways; firstly they can be used for infrastructure provision as they are received, or secondly they can be used to fund the debt services against the bond that was used to fund the redevelopment in the first place.This has been proven to be an useful tool to ensure interest of redevelopers to invest in economically run-down areas, by ensuring that the increment in value remains in the jurisdiction. (Chapman, J. 2008;12; 559)

Developer Exactions and Impact Fees

Developer Exactions and Impact Fees are indirect value capture charges designed to recover cost of infrastructure provision incurred due to additional development. The developers exactions requires developers to install internal infrastructure needed by the development at their own expenses, or at times also pay for infrastructure elements provided by the public inside the development.Impact fees on the other hand are designed to cover external infrastructure costs as a result of the new development. Impact fees and developer exactions are designed to make growth "pay its way" (Peterson 2009)

2.4.2 Value capture with Regulatory Instruments

Regulatory tools include a wide range of implementation options through which land value increments due to changes in Urban regulation could be recaptured by the public sector through some kind of "in-kind" contribution from the landowner inside the development or outside the development.(Smolka, M. , Amborski, D. 2000) These negotiations could translate into many forms, as mentioned by Smolka and Ambroski like (a) land-use change (b) density bonus (c) transfer of development rights (d) land readjustment and many other concessions.These changes when offered are know to enhance the value of the land by increasing the value of the final potential product on the land as over the predevelopment value.the difference between the fiscal instruments and regulatory instruments is that in case of the later, the charge to be paid does not respond to fixed tariffs.

Sale of Development Rights

Development rights could be categorized into the right to convert use and/or the right to build higher densities than allowed by zoning or height restrictions. These rights lay vested with the city government. This approach is widely used in Brazil, and that has been designed to recover land value increments produced by additional development right for specific land. Another practice in Brazil saw the selling of development rights in the for of certificates of building rights in the open market by public auction. also in Brazil the development right were sold in urban linkage operations where obtaining additional development rights by the developer is paid back in the form of construction of public good elements such as social housing inside or outside the development. (Sandroni, P. 2001)

2.5 Mitigating Impact of redevelopment process

Sprawl, congestion, housing affordability, and loss of open space are some of the side effects of growth caused by any development process in the inner city area. (Waddell, P. 2002 pg., 297) The process of redevelopment is indicative of a capital and political impetus, however in redevelopment projects which involve high capital investment and even higher returns, it often lacks a social agenda.(Ho, 1984) The effects of "new investment, new construction, additional employment, additional population, additional school enrollments as a result of the redevelopment need to be accounted for in the Government's budget. (Waddell, P. 2002 pg., 297)
New business enterprises and new residents pay property taxes and fees which add to the tax base of the jurisdiction. But these new business and residents also create new costs for the municipality in terms of provision of public services such as roads, sewer, security, fire protection, public parks. The comparison of new revenues to new costs , tells us if new revenues exceed new costs, the fiscal impact of the redevelopment on the public body responsible for provision of services in positive. If new revenue is lower than new costs impact is negative.

"Municipalities are motivated by fiscal emergencies." (Susnik, A. E.1997) Hence the social problems of reallocation and the impact on immediate physical surroundings in often overlooked. He also mentions that the scale of the project also largely determines how socially viable the project is, because large redevelopment projects become more socially desirable through increased amenity provision and in-situ rehousing.

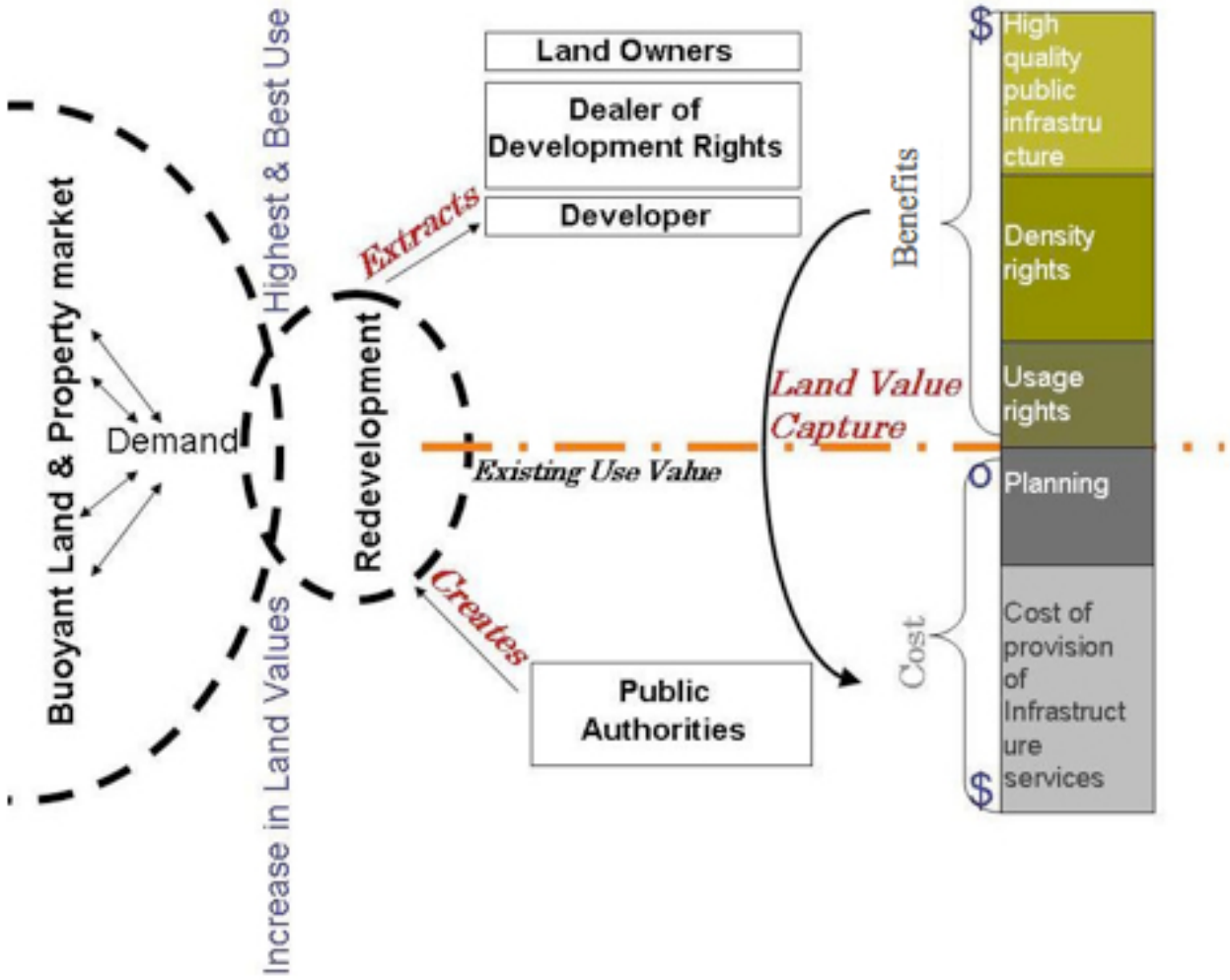
2.5.1 Value capture for provision of Public goods by Local Government

The earlier sections have suggested that investments and actions of public bodies often enhance the value of privately owned property. Recapturing part of this increment in value to fund public infrastructure either inside or outside of the development area has been proven to be not only legitimate but also desirable. The production and provision of public good at all levels of governance requires adoption of certain mechanisms to ensure effective implementation of the idea of land value capture.
The study will focus on two mechanisms that lie at the vortex of effective implementation of the concept, which are (a) The knowledge of land value appreciation (b) Administrative requirements.
<u>The knowledge of Land value appreciation</u>
The study so far concedes in the idea of land value appreciation. However, the pressing question remains of the assessment of the real amount of this appreciation and if and when the value is estimated, the share in redistribution and the identification of the beneficiaries. This revenue generated can be mobilized self-financing the infrastructure improvements in the site or in other areas of the city. "However, we rarely have an acceptable estimate of this land value increment." (Smolka, M. , Lungo, Mario 2005)

The ability to realize any land-based tax system relies substantially on the ability of the institutional set-up and the virtue and nature of governance.(Kelly 2000)

The following chapter on Research methodologies helps throw some light on the indicators that would help determine the acceptable estimate of land value increments based on the literature reviewed so far.

2.6 Conceptual Framework



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Chapter 3: Research Methodology

Chapter three presents the research approach and methodology used for the study and tries to operationalize the conceptual framework towards answering the research questions. It starts off by explaining the relevance of the case to the study. By using the case it makes an exploratory study based on the units of analysis.

3.1 Research Objectives and the case used thereof

The previous chapter concludes by suggesting that, he process of cities undergoing changes over time is inevitable. There are economic and social factors that help explain the physical changes in he patter the city grows and at the same time and some areas re-emerge as locations of renewed economic activity. In this process land uses are reconfigured to suit the best possible economic use. large scale redevelopment projects have the potential to impact the existing property markets.

The study tries makes an attempt to prove this phenomenon by approaching the research question in the following manner;
Main Research question: How successful has the public-sector been in capturing the value of land to mitigate impacts of the redevelopment of abandoned Urban areas?
How does redevelopment increase the value of land what are the reasons for an increment in value?
How does the public-sector influence the increments in value?
How much share of the increment in value does he public body capture?
Does the value captured help mitigate the impacts of the redevelopment process?

Post 1991, cotton textile mill lands opened up potential for large scale development. In this context, this paper analyses the impact of development on mill lands on existing property market in Mumbai.The 58 mill lands in the heart of the city are sprawled over 2.5 sq. kms of land. After the mills were declared sick during the early 1980s, the plan of the owners was to sell the mill lands in expectation of more economically viable industry or commercial enterprises. The ULCRA, Urban Land Ceiling Regulation Act of 1976 prevented the sale solely for real estate development. The last decade has seen the sale of this land for commercial real estate development. This commercial development had created undue windfalls for the land owners. Hence, the objective of this paper is to analyze following issues:

(i) The forces that have operated and caused various phases in mill land transformation.

(ii) The locational characteristics of these parcels that lead to increased demand an a need to optimize the use by increase in economic activities. The economic potential used to a maximum has positive externalities on the surroundings in terms of revenue generation but also leads to added costs for the area. In this context, this study tries to analyze the impact of redevelopment on textile mill lands on physical surroundings.

(iii) After more than a decade of degeneration, since 1991, land use change policies were introduced which have allowed mill lands to be used for commercial purposes. These changes have permitted the addition of huge commercial space close to the CBD. This raises a number of questions:
What happens to the urban form and property market outcomes in a city when a large scale development takes place in the heart of the city? What are its local and spatial impacts?
Is the nature of investment needed for the existing land-uses compromised due to added costs?

3.2 Approach to answering the research question

The key arguments of the theories studied in the literature review helped identify the indicators that in-turn identified the factors of the process of the redevelopment of textile mill land of Mumbai. The questions asked thereof triggered study of theories related to the indicators and variables as identified in Table 2.

Table 2 Determining Variables and indicators

Arguments/Concepts	Variables	Indicators
Increment in value is an outcome of market demand	Locational effects	Demand for office space and specialized shopping areas in high density areas.
		Distance from a high density city centre.
The process of redevelopment favors the idea of "Highest & best use value"		Proximity to CBD's
		Proximity to other highest and best uses
The public-sector influences the increments in value by investing in **benefits** that can be capitalized.	Benefits due to regulation	Laws regarding bundle of rights.
They make the development physically possible by distributing building rights.		Changes in density allowances
The fiscal and regulatory instruments in the institutional set-up determine the increment in value that the public body is able to capture	Financial gains	Property tax
		Urban Land Ceiling Regulations
Impacts of redevelopment processes are of Social and physical nature and they both need fiscal investments from the public sector.	Impact-Cost of Investment	Due to increase in impacts
		Resources available to take care of increase
		Determining the cost of impact

3.3 Scheme of research methodology / research framework

The research uses a qualitative & quantitative approach which includes interviews with official of institutions who have been active in the process of sale and redevelopment of the textile mill lands in Mumbai and quantifying value and expenditure related information from secondary documentation of the redevelopment projects. The study of current trends of redevelopment of the area is done by direct observation and by desk studies. Information regarding regulations and instruments used by the public body will be collected form institutional records and reports of the projects.

3.3.1 Data Collection

Having determined the primary indicators, the sources of data and their respective units of measurement were identified in the following manner.

Table 3 Operationalization of the research variable and indicators

Indicators	**Units of analysis**	**Source of data**		**Unit of measurement**
		Primary data	**Secondary data**	
Demand for office space and specialized shopping areas in high density areas. (Translated into prices)	City of Mumbai	Interviews with real estate brokers & valuers in the area.	Cushman & Wakefield Property valuation Report ,Mumbai	∆Value (increment) / sq. mt. of land.
Distance from a high density city centre.	City of Mumbai	Cross checking with satellite imagery.	City development plan, Municipal Corporation of Greater Mumbai	Distance in Kilometers
Proximity to CBD's	City of Mumbai			
Proximity to highest and best uses	Selected ward (Ref. section 3.4)		List of registered commercial set-ups in the Ward (Ward offices) (Annex 1)	Distance in Kilometers
Laws regarding property rights that define the usage and size of development.	Development Project	Interview with officials of -Municipal Corporation of Greater Mumbai.	Regional plan for MMR 1996-2011, Mumbai Metropolitan Regional Development Authority	∆Value / right
			Old-National Textile Corporation Archives & New- Projects report from developers	∆Value / right
Density Regulations	Development Project	Interview with officials of -Municipal Corporation of Greater Mumbai.	City development plan, Municipal Corporation of Greater Mumbai	∆Value / right
Property tax	Development project	Interview with officials working with the developers	Projects report from developers.	Indian Rupees (Rs.)
Urban Land Ceiling Regulations	City of Mumbai	Interview with officials of Mumbai Metropolitan Regional Development Authority & Property lawyers	Reports on DCR-58 of the Brihanmumbai Municipal Corporation	Indian Rupees (Rs.)
Due to increase in impacts	Ward 'G-North' & Ward' F-South'	Interview with public works department.	(Public works departments) PWD's ward-wise reports	Kilometers
Resources available to take care of increase		Interview with official from the Public works department	PWD's ward-wise reports.	Indian Rupees (Rs.)
Determining the cost of impact		Interview with Urban roads contractors	Chalans(project balance sheets) from the contractors office.	Indian Rupees (Rs.)

The reliability of the data sources mentioned could be discerned by understanding the roles and responsibilities of each of these sources.

Table 4 Institutional responsibilities of Data Sources

Institutions	Roles	Responsibilities	Nature of primary Information to be gathered	Nature of secondary Information to be gathered
MCGM - Municipal Corporation of Greater Mumbai	Single regulatory local government body consisting of 42 departments	MCGM is responsible for the civic and infrastructure needs of the city of Mumbai.	Terms of financial covenants between MCGM & developers	Cadastral maps before and after redevelopment.
			Ad-hoc allowances (land-use & density)	FAR Values pre & post development (pre development & as per development plan)
NTC - National Textile corporation	Central Government enterprise under the ministry of textiles	Setting up and modernizing textile mills across the country		Physically bound regulations of the old textile mills.
MMRDA - Mumbai Metropolitan Region Development Authority	Appointed by the state government as an apex body for planning and co-ordination of development activities in the Mumbai MetropolitanRegion	The MMRDA prepares plans; formulates policies and programmes; implements projects and helps in directing investments in the Region.	Views on potential value capture instruments. (Property Taxes, ULCRA &TDR)	Reports on DCR-58 & DCR-33/7 of the Brihanmumbai Municipal Corporation
PWD - Public Works Department	Govt. Of Maharashtra enterprise, with regional offices.	Entrusted with construction and maintenance of roads and other allied infrastructure projects	Budget allocation details	Length &Cost incurred for urban road projects in the area.
Real Estate brokers	Middlemen in a property transaction in he sample area.	-	Unrecorded history of property prices in the area pre-post redevelopment	Sale value related information of the selected sample.
Real Estate valuers	Local real estate valuation agency recognized at a national / international level	Publish periodic reports on the land market trends.	-	Property sale are rental market of commercial properties in the area.
Developers	Selling party in the property transaction.	Buying land from landowners, acquiring building rights, construction & sale	Nature of In-kind payments made in return for development rights	Physically bound regulations of the new development projects.
			Benefits from TDRs if any.	
				Tax liabilities

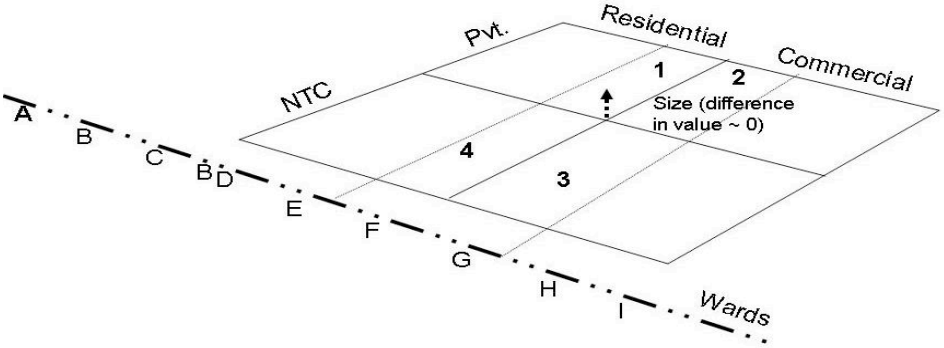
3.4 Data Sampling

After changes to the development control regulation DCR- 58 (Maharashtra State,2001) of the Municipal corporation of Greater Mumbai, commercial and residential development began on the Mumbai mill lands. Out of the 58 mills in Central Mumbai; the representative samples included a random sample of four "Completed Redevelopment Projects" on the mill lands in the central Mill lands belt (Ward GN & FS(see Annex-1). The completed redevelopment projects were already on he public body's tax register, and hence the tax/ fees base would have been clearly defined. Moreover the cost towards physical impacts would have been accounted for. The selection of rest of the variables would be done on the basis of the fig. 7. Here 4 variables are identified namely (a) the NTC owned mill land (b) Privately owned mill land (c) Residential development (d) commercial development. Therefore the finally selection will be made as :

ac = Residential development on NTC owned mill land
ad = Commercial development on NTC owned mill land
bc = Residential development on Privately owned mill land
bd = Commercial development on Privately owned mill land

The former cotton textile mill land being industrial use land were all observed to be a fairly large area hence the differentiating parameter of size was not applied.

Figure 7 Criteria for selection of data samples



During the open auctions for the sale of NTC owned mill lands the highest valuation obtained was the price of that under commercial use. The top ranking sales have been for the central mill lands belt. The focus of the study is the usage of value capture practices that would help mitigate the impact of the redevelopment process. Therefore idea behind Value capture is to recoup the financial gains that the public body facilitated for private developers to be translated into public good. This is the rationale used behind selecting privately developed projects. Many of these projects have been implemented in-spite of legal restrictions imposed on the said developments, this implies that the benefits of the increment in value have been pocketed by the developers without clean legal consent, but nonetheless the Municipal authorities are liable to provide for basic infrastructure which incurs costs.

The primary data as listed (Table. 5) will be collected from a larger sample and then sorted on the basis of the above listed parameters.

Table 5 Sample related raw data

Project	Location	Land Area	Nature of land use	Details of Transaction			
				Date	Sale price	Previous FAR	New FAR
1							
...							
4							

3.5 Reliability and Validity

“Reliability is the consistency, dependability and stability of response; and validity is the degree of agreement between actual measurement and proposed measurement, that is if we measure what we intend to measure then the measurement is said to be valid”(Joshi, P.R. 2010) The data will be collected from both primary and secondary data sources which would provided accurate data of the research area, thus ensuring consistent data gathering by cross-checking information. This would conform the reliability of the sources selected. In-order for the validity of the data to be secured, the purposive sampling parameters have been set and directed towards institutions and respondents known to provide accurate data.

3.6 Data processing strategy

Physical data collection related to development plans and satellite imagery

The physical attributes of the samples collected from the Development plan help make a comparative evidence of property transaction in an area undergone redevelopment but without the danger of an in-valid sample, that is without inflated prices and speculation. This data was then verified by the valuers to explain the rationale behind the demand for redevelopment in the area.

Table 6 Demand for redevelopment

Location	Price/ sq. mts. of Land Values in city of Mumbai					
	2006	2007	2008	2009	2010	2011
A						
...						
G						

The changes in value were tracked as shown in the adjacent graph to determine the increase or decrease in demand.

Investigating regulations for each sample selected

The additions alterations in the regulations to facilitate the redevelopment and the value additions that each right gave to the private developers will be calculated by estimating the monetary benefits that the regulatory changes facilitated.

Table 7 Benefits due to Density and Usage Rights

Particulars of development	Existing	As per plan	Ad-hoc	Total	Increment in value
1					
...					
4					

Gathering costs related information

An account of the payments made and received by the private developers and the Municipality respectively, either one time or as periodic installments help gauge the share of increment in value. The cost incurred either by private developer or by the Municipality in provision of infrastructural

facilities to the surrounding development as a result of the redevelopment project will help determine the financial feasibility of the redevelopment project for either parties.

Strategy for processing data

The data will be processed in-order to prove each sub-question hypothesis, It is therefore necessary o revisit each sub-question hypothesis and plan analysis and assessment models for the data gathered.

In-order to prove that redevelopment is demand driven and it depends on the need for future land uses as against present land uses. It would be required to make a calculation of the rent that would in-turn be transformed into capital value. The study will approach the idea of value as - "market value of a subject property is equal to the sale price of a comparable property plus adjustments to the sale price for differences between the attributes of the comparable and subject properties."(Eckert, 1990)

Expressed as an equation as ,

MV = Sc +/- ADJc,

where MV is the estimated market value of the subject property, this study will use the value per sq. mts. of rental space per month in redevelopment area; Sc is the sale price and ADJc is the total amount of adjustments to the sale price of the comparable property which for the purpose of the case study will use the value per sq. mts. of rental space per month in non-redevelopment area

"All models estimate the present value of the future benefits of a piece of property.The sales comparison approach uses sales price as evidence of the value of similar properties.The price at which a property sells is the price at which supply and demand meet at the time of sale." (Eckert, 1990)

The study will use a time line to prove that the office space was demand driven indicator.

Public sector influences increment in value by introducing regulations & by investing in benefits that can be capitalized. They make the development physically possible by distributing building rights. The analysis of this increment in value can be done by assessing the Benefits due to changes in regulation. This would require (a) measurement of density changes categorized as pre-development, in accordance with the development plan and the additional allowances given by the Government. (b) A scaled definition of land use changed from less profitable to more profitable.

The fiscal and regulatory instruments present in the institutional set-up determine the increment in value that the public body is able to capture. This can be proven through a qualitative and quantitative evaluation of the potential land value capture practices in context of the city of Mumbai. It would broadly evaluate three categories of instruments, namely

(a) Property tax - assuming that his data will be available with the developers office, the payment liability for each financial year will be measured which will in-turn be capitalized into the market rate. The average Internal Rate of Return of the nationalized banks over 30 years will have to be determined.

Here the Capitalized Value = $\frac{\text{Annual Taxes}}{\text{Rate of Return of the nationalized banks}}$

(b) Urban land Ceiling Regulation - Although partially abolished by Law the study will calculate the potential that lay in this instrument for capturing the undue increment in value to the private developers. The main feature of the ULCRA is the cap on the maximum allowable plot size that can be privately owned and everything in excess has to comply with regulation that distributes the land as One-third to be Municipal Corporation of Greater Mumbai formerly known as Brihanmumbai Municipal Corporation (BMC) for open spaces, One-third to the MHADA and the rest to be used

by owner/developer for commercial development. The value of 2/3rd of each parcel of land that became a part of the governments treasury would in-turn be the potential value that could be captured.
It is important to note that another potential instrument that will be omitted from the study is the Bombay Rent Control Act, 1947 which was formulated with the intention of making affordable housing available to the urban population. Since the study focuses on commercial properties and the Rent Control Act does not cover this type of land uses. It can be looked at as a market price control instrument and not as a land value capture tool.

Table 9 Fiscal liabilities

Particulars of development	Annual payment towards property taxes**	In-kind payment made towards development rights		Total
		Allowances	Payment	
1				
...				
4				

*** In cases where data regarding the property taxes paid is unavailable the same will be gauge through a calculation made based on the tax base.*

Impacts of redevelopment processes are of Social and physical nature and they both need fiscal investments from the public sector. Given the industrial nature of the textile mill land of Mumbai, the social impact of rehousing the existing population is present. The other employment & livelihood related social impacts although existent are difficult to measure in terms of value and are hence excluded from the study. The physical impact towards additional infrastructure inside of development is assumed to be taken care of and paid for by the developers. However the physical infrastructure cost outside of development need to be catered for by the public authorities. The construction and alterations in the urban roads outside of the development is an obvious impact of the redevelopment process. In summary , the overall building related costs are computed.

Table 10 Impact related costs

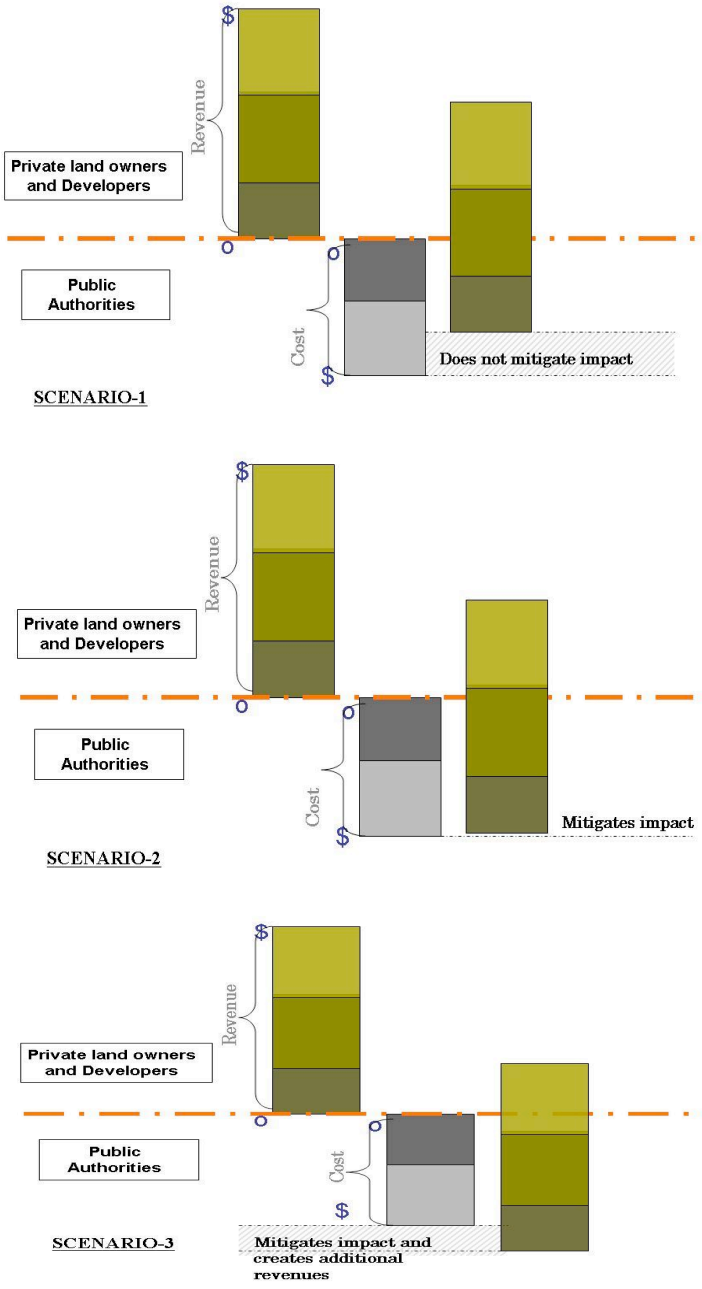
Physical Impacts outside the redevelopment area.

Description	Costs incurred
roads	
payments	
storm water drains	
...	

3.7 Analyzing the processed data to find the economic logic behind value capture practices

The analysis would look at the 4 sample projects selected and anticipates cost impacts based on consistent variables and indicators.The increments in value determined through the process described in section 3.6 would be compared with the cost related to mitigation of the impacts.
The remainder of the difference of the increment in value to the private owners and developers and the cost of mitigating impacts to the public body will in-turn show weather the fiscal impact is a positive or a negative figure for the treasury of the public authorities. (Fig. 8)

Figure 8 Determining Fiscal Impact



mean of surplus (for public authorities)
ΔValue < 0 ~ Hypothesis is proved

mean of surplus (for public authorities)
ΔValue = 0 ~ Hypothesis is false

mean of surplus (for public authorities)
ΔValue > 0 ~ Hypothesis is false

The hypotheses will thus be proven by conducting an analysis using the mean of the results for each of the samples selected. The surplus value generated or each of the parties will be used as an indicator. This analysis could generate three possible results as illustrated in Figure.8 . As demonstrated in fig. 8 three scenarios could arise:

(i) Cost of provision of basic physical infrastructure in the redevelopment area is more than that was captured by the public authorities.

(ii) Cost of provision of basic physical infrastructure in the redevelopment area equals the amount that was captured by the public authorities.

(i) Cost of provision of basic physical infrastructure in the redevelopment area is less than that was captured by the public authorities.

Chapter 4: Data analysis

4.1 Difficulties & Limitations of the felid-work

- The information and documentation required as supporting data for the research were in the scope of work of different government departments. Upon Interviews it was observed that contradictory information was emerging.
- The executive post for the specialized mills department was dissolved one and half year ago in 2009, hence the retired executive officer who now works as a private liasioning architect was traced.The duly dated and stamped circulars were found in the private archives as against the public bodies archives as stated in the methodology.(the liasioning architects can order copies of the circulars at a cost from the MCGM)
- The private developers were reluctant to share financial information hence the new computation method had to be devised for the cost and value related information.
- The information on how many mills out of the total of 58 were redeveloped / sanctioned permission/ on waiting could not be gathered from the officials as access to the updated cadastre (Development plan) was denied.Hence the information of 18 Mills in total that have completed construction and are in an operational condition with the new land uses, was obtained form the newspaper archives.
- Ward(Area)-wise budget receipts from the roads projects was missing. In this case standard set for the city for each civil infrastructure had to be taken into consideration.
- The information on construction cost received from the architects office was different in the case of 2 projects as that from the valuers. Since in the other two cases it matched with that of the valuer, the study considers the cost stated by the valuer.in leu of the development rights. The issue of illegal monitory and in-kind payments was largely discussed in the interviews . It was also stated by the both the private and public officials that the particulars of value were distorted.
- None of the private developers admitted on making in-kind payments to the Municipal corporation.
- Information regarding registered commercial set-ups in the wards could not be gathered.

4.2 Alterations in methodology

The physical and bureaucratical limitations required some adjustments to be made in the methodology of the research.

- The area defined for the selection of the sample was widened than the assumed Ward G-north and F-south due to access to information.
- It was also stated by both the private and public officials that the particulars of value were distorted, hence it was decided to change the strategy to computing the values based on the physical information available, also this would fall into the mandatory legal framework , which is the core question to be answered in the study.
- The cost had to calculated from the physical data available and rule of thumb was adopted by architects in filing the proposals.
- Since 3 of the 4 selected sample projects had existing access roads with lengths following the norms of the Development Control Regulations, but the width of the road before and after he redevelopment projects were observed to be variant, hence the width of the access roads became a determinant.
- It was observed after the interviews with the public and private officials that, the social impacts of the redevelopment of the mills land in terms of Housing constituted to a size-able amount. Hence

it was decided to include the value of mill workers housing. Some officials considered this expenditure as a burden towards the public body treasury.

4.3 Assumptions and considerations

- In-order to determine need for redevelopment based on value changes, Commercial would be an average of retail & offices.
- Majority of the redevelopment projects on the mill lands commenced post 2007 hence, land values would be observed from 2007 onwards.
- Market values of the properties are values obtained form real estate valuers , for both purchase and sale price, this was done because the sale price related information from the primary source that is the developers office was unavailable.
- Ready reckoner (also known as cadastral values) values were used for computing development and other municipal charges related information.
- The BEAG (Bombay Environmental Action Group) had lost the battle against the owners on preserving the trees and water bodies in the mill lands in 2006, hence the data on the environmental impacts of the redevelopment was not present.
- For each of the redevelopment projects all purchase and sale related information is considered as the value in the year of purchase and completion of project respectively.
- The width of the access roads became a determinant and the budget allocated for upgrading civic infrastructure as against provision of infrastructure was taken into consideration.
- The quarter yearly reports of the market values of different areas in Mumbai was gathered form two valuation firms namely 'Cushman and Wakefield' and 'Trammell Crow Meghraj', both of whose regional offices have been set up in Mumbai. These were then verified by the local valuers and hence considered to be valid. Even thought it was observed by the valuer for the values to be slightly on the higher side the consistency of the raise in-terms of areas(South/Central / suburbs) and years(2006-2010), it was decided to regard the values as fit for the research.
- In-order to calculate the 'Total Expenditure' by the public body on each project the standards for cost/ unit mention in the registers of the Public Works Departments have been used.
- According to the developers office the payment in terms of gratitude far exceeded the legal limits. The value of which was not disclosed by the private officials.This research although makes an attempt at only making an assessment for the legal and existing value capture instruments.

4.4 Historical insight on the case-study

Total Land potential of Mumbai - **870 hectares**
It includes:

1. NTC Mills - 109 hectares (National Textile Corporation Owned Mills - semi-government organization tied up with the Central government)
2. Private Mills - 128 hectares
3. BMC land - 316 hectares (Open spaces in the possession of the Bombay Municipal Corporation)
4. Railway Land - 115 hectares (Land adjoining the local railway lines reserved for future expansion)
5. Port trust land - 202 hectares (the land available with the Old Sea port Trust and the Indian navy)

The land in question here constitute to 27% of the potential that has been made ready[14] to be explored. A historical insight into the changes in the value of land due to public intervention will help determine the potential value created and instrument adopted for the value to be captured.

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[14] made ready- released by the court of law to be developed/ redeveloped

A SWOT analysis of the changes in policy help compute the potential created and changed in the course of time due to policy changes. An analysis of these policy changes help show the gains to the private body created by the public at the cost of losses to the cities social public amenities. In the process 54 hectares of potential open space lost and 18,225 families less will be housed. The later sections then analyze the value trends in the area post the dates stated in the timeline.

Table 11 Changes in Development control regulations and its implications.

YEAR	Early 1980's	Late 1980's	1991	1991 - 2000
Causes	Majority of the Cotton Textiles mills in mumbai declared sick	Workers fear being rendered jobless and go on strike.	State Government amended Development control rules in consonance with the country's economic liberalization policy. DCR 58 (I) & (II) came into force	Action on the Rule 58 (I) & (II) of the DCR saw
Effects	Shifting of the industry to the towns outside the city limits.	BIFR (Board for Industrial and Financial reconstruction) intervene to help sick mills. Nationalization of 32 mills takes place. the 32 mills are now owned by the NTC. The sale of all the mills was banned as security towards workers dues.	Rule 58 (I) of the development control regulations for Greater Mumbai permits the sale of land subject to the plan ratified by BIFR. according to the rule 1/3 rd ***entire*** land to be handed over to MHADA for public housing and another third to BMC for open space, the surplus (handed to BMC) FSI can be used in the way of TDR in the suburbs. Rule 58 (II) the owner can sell 15% of the total land incrementally without observing the 1/3 rd formula.	The mills saw piece meal sale of less than 15% of plot area at a time. No share handed over to the public authorities.
Effects of policy changes for different stakeholders				
	(1) The potential value of land could be realized. (2) The social aspect of workers loosing jobs needed to be tackled. (3) The land value changed and land became available for redevelopment . (4) To the Private sector: Financial losses due to compensation to be paid to the workers	(1) Redevelopment that was needed to accommodated the growing population could not be started. (2)The textile industry could be partially revived and the unemployment problem could be tackled. (3)Social unrest in the area.	(1) The redevelopment potential could be explored by the owners The city would gain land for amenities and other public infrastructure. (2) The Housing authorities could use a part of the land to house the low income population. (3) The allowance of less 15% sale saw piece meal sale taking place and the city did not get its share from the development. (4)Land use change would be permitted . Hence the existing FSI of 0.5 would be raised to 1.33 . 2/3 rd which would account to 0.89. The owner used : FSI - 0.443 - existing site FSI - 0.443 - TDR in suburbs FSI - city - 0.443 MHADA -FSI - 0.443	Share to BMC: 1% Share to MHADA: 1%

Source: Author (Interview with Government officials and Charles Corres Committe Report)[15]

[15] Charles Corres Committe was appointed in 2006 by the Maharashtra State govt. to recommend the amendments in DCR 58.The recommendations of which were however discarded

	2001	2001- 2004	2005	Early 2006	Late 2006
Causes	Section 37 of the Maharashtra State Regional and Town planning act allowed for the State government to make minor modifications in the DCR of Greater Mumbai.	Amended DC rule 58	• BEAG (Bombay environmental action Group) along with other NGO's filled a Public Interest litigation against the sale of Mill lands.	• The owners of the mills appealed to the supreme court and it lifted the stay on the sale of the land.	
Effects	• DC Rule 58 amended. • It now permits the owner to surrender only 1/3 rd of existing vacant land and not land that becomes vacant on demolition of existing structures.	• Sale of Private Mill land begins slowly.	• The Bombay High Court ordered a stay on the sale of mill lands.	• NTC auctioned 7 mills. • Private mills were sold to developers at a very high price.	• Sale and development of Cotton Textile Mill land continues.
Effects of policy changes for different stakeholders					
	(1) Total land made available to city for amenities- 13 hectares instead of 67 hectares - open space 10 hectares instead of 65 hectares. It now would make provision for 3375 families instead of 21600 families.	(1)Rapid redevelopment of the area took place. (2)**54 hectares** of potential open space lost. (3)**18,225 families** less will be housed. (4)The city received revenue it terms of development charges and premiums . (5)Real estate prices shot up that lead to gentrification in the area.	(1)Many fresh water tanks and reservoirs present in the mills have already been lost. (2)Ideal open space ratio for a city : 1.6 hectares per 100 persons (3)Existing ratio in Mumbai is : 0.006 hectares.	(1)The social aspect of rehousing the mill workers was at-least partially taken care of. (2)The commercial businesses in the redevelopment projects would provide livelihood opportunities to the mill workers . (3)leading to increased demand that would put less pressure on housing costs for the Govt. (4)The parcels of land made available to MHADA and BMC were too small of any housing or open space project to be implemented (5)Additional FSI for MHADA ensured more affordable housing to be accommodated. (6)The nature of industries to be set up were required highly qualified personnel for service oriented jobs , this could lead to loss of livelihood opportunities.	(1) The mill lands become an economically viable and desired property that attracts huge capital investment .

Source: Author (Interview with Government officials and Charles Corres Committe Report)

4.5 Provision of Land Value capture (in-kind) in Development control Regulation for Cotton Textile Mills Land in Mumbai.

- Regulation 58 (8) and (9) state that fruits and benefits of the development and redevelopment cannot be retained by owners but they have to be passed on to those legitimately entitled to the same. The utilization of these funds is for an earmarked purpose for open spaces and public amenities as set out in regulation 58 (8) (b) .
- The Development control regulation required developers to include green open spaces in the redevelopment proposal; however the specification of 'public green' or 'private green' areas is missing.
- DCR 58 (7) requires for the mill owner to provide for a minimum of 225 sq. ft (approx. 21 Sq. Mts.)houses to the displace mill workers. However the building proposals submitted do not include them within the new redevelopment site plans.

4.6 Potential increment in value due to regulations

The value calculations show us that the increment in value due o relaxation in regulations lead to an ***8 fold*** increase in the potential area for development and an even higher ***22 times*** increase in the value of land. This value has been calculated for a hypothetical property measuring 10,000 sq. mts. given the land value trend in the area in 2011.The factors responsible for this change in value are the land uses changes from Industrial to residential to commercial[16] and the change in density regulations . Considering the land value trends in the area high end residential and commercial development is observed on these properties. the monitory benefits that each of these different land uses receives is different and the permissible nature and type of construction also adds to the value.

Table 12 Changes in density allowances

FSI	Industrial	~ rest of the city	Including allowances in Section 33/16 of DCR	Including allowances in section 33/24 of DCR
	0.5	1.33	2.66	4.0
Plot Area (sq. mts.)	10,000	10,000	10,000	10,000
Total Built Up area permissible (sq. mts.)	5,000	13,300	26,600	40,000

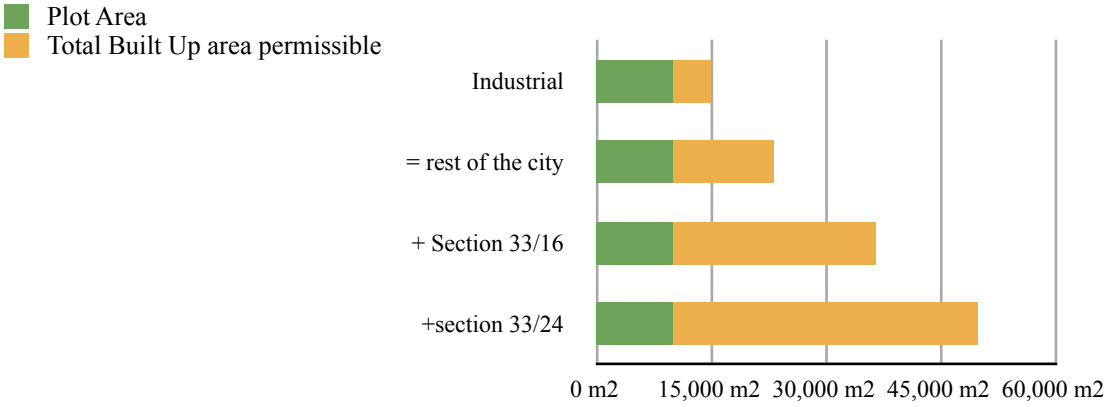


Figure 9 Determining Increment in density allowances

[16] Industrial = land only
Residential & commercial = land + building.

Table 13 Increment in value in accordance with existing regulations

INCREMENT IN VALUE IN ACCORDANCE WITH	Industrial	~ rest of the city	Including allowances in Section 33/16 of DCR	Including allowances in section 33/24 of DCR
Total Built Up area permissible	5,000 sq. mts.	13,000 sq. mts.	26,600 sq. mts.	40,000 sq. mts.
At existing use	Rs 2,20,000.00	-	-	-
Amended DC rules	-	Rs 8,58,000.00	-	-
Additional land use allowances	-	-	Rs 32,18,600.00	Rs 48,40,000.00

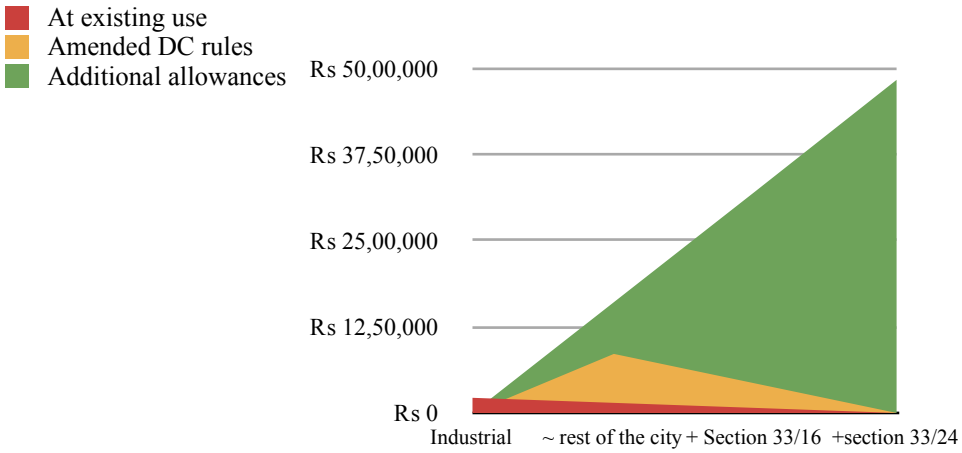


Figure 10 Increment in on account of increase in density and land-use allowances

The changes in value in accordance with changes in density and land use allowances although are primary reasons for the increment; the change in overall trend in land values in the city including the mill areas was also observed to be a factor contributing to thee increment.

4.7 Land value trends in the cotton textile mills area

A survey of the capital value of the Central Business district located in the south of Mumbai , the central area on which the cotton textile mill lands sit and the suburbs of the city show that the trend in the residential market in the city has changed. The values have been corrected for inflation on the basis of the housing price indexes for each year. The south being regarded as better desirable to the current residents and the corporate employees who seek proximity to the workplaces. The centre which has always been popular with the residential segment of buyers saw a slight reverse trend in the year 2007 pertinent to the relaxation in regulations. The year 2008 (the year of the global economic crisis) has been purposefully omitted from the calculation as it would distort the graph.[17]However this has less affected the residential market as the prices in year 2010 are ***4 times*** higher in the south and twice as high in the suburbs, than that of the year 2006.

The commercial land market saw a definite change in trend post 2006 of the central areas, this was the outcome of the large upcoming supply in the centre and the developers anticipating a hike in demand for properties in these areas. Large scale commercial developments had the potential for agglomeration economies to spurge as Mumbai continue to climb up the economic ladder. Post

[17] The actual capital / rental value related information is however available in the annexure.

economic crisis the trend seems to be to tread carefully; but still continues to be ***3 times*** higher in year 2010 than that of the rates of year 2006.[18]

Figure 11 Residential market values in Mumbai [19]

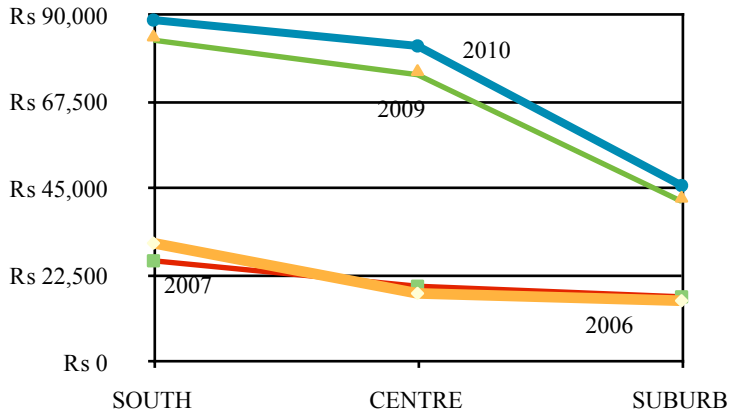
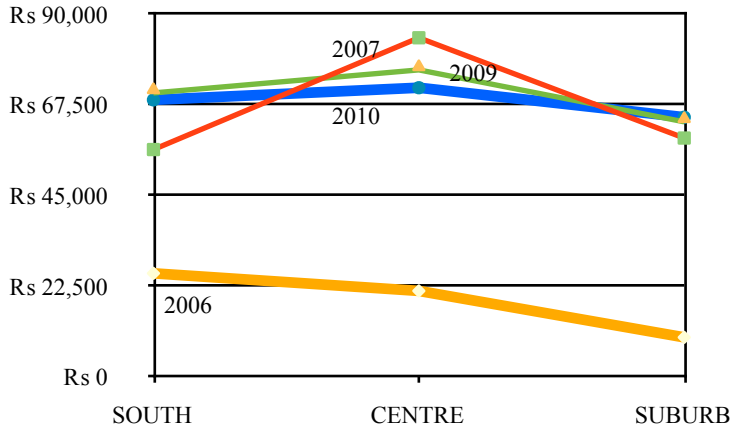


Figure 12 Commercial market values in Mumbai



Source: Author(based on quarter yearly market-beat reports on Cushman and Wakefield)

The Amendment in the Development Control Regulation Section - 58 had a significant effect on the area most affected namely the Mill lands belt (Ref. Figure 1). In the absence of potential for large land to be developed the centre now open (post 2006) for redevelopment seems to be the most desired.(Refer table 5, causes and effects of changes in development control regulations)

4.7.1 Demand for redevelopment

The statistics of 18 already completed completed redevelopment projects on mill lands in 4 years testifies the willingness in capital investment that the developers are making in this area of the city. The high occupancy rates of the properties in these area suggest the high demand. These projects show an absorption trend of more than 75% even before the completion of the projects.[20] This

[18] Values are average prices for the respective areas The above values for typically include units of 3,000 sq.ft. to 6,000 sq.ft. for South, for Central and Suburban Mumbai typically include units in range of 1,800 to 4,000 sq.ft.

[19] Key to the Locations: South – Colaba,CuffParade,NarimanPoint,Churchgate . Central – Worli, Prabhadevi, Lower Parel / Parel . Suburbs – Bandra (W), Khar (W), Santacruz (W), Juhu

[20] As demonstrated in Cushman and Wakefield market-beat report

makes it desirable for the investors, which in turn ensures revenue for the city authorities in the form of development charges and fees and property taxes in the long run. For realization of the latent value of the vacant lands in the area it is imperative that the land undergoes redevelopment. The potential increase in market value also increases the potential for value capture.

4.8 General Characteristics of the sample

As described in Chapter -3 Metropolitan Region of Greater Mumbai is divided in to wards 'Ward A - Ward - T' . The samples selected lay in G- north, G-South and F-North Wards .
Project A,B and C belonged in the ownership of the Textile Corporation. Project C was formerly owned by a private land owner.

Table 14 Summary of the samples selected

Project	Owner	Land-use	Status
A	NTC	Commercial	Completed
B	NTC	Residential	Under construction / Sold
C	NTC	Commercial	Completed
D	Private	Residential	Completed

In case of Projects A B and C the land consisted of workers housing hence it was the lability of the mills owners to rehabilitate them. However out of the total need of 5,028 houses of Sq. mt area 21 sq. mts. each that had to be built; the high court had approved housing for 3,978 worker houses. This led to 79 % of the total demand for worker housing to be taken care of by the developers.The above table shows the share of housing that needed to be constructed by the developers. The Amendment in the regulation DCR-58 however allowed for the developers to share the land for housing as per norms set but were exempted form constructing them. The provision and construction of these units now are considered to be the liability of the Housing Development Authority.

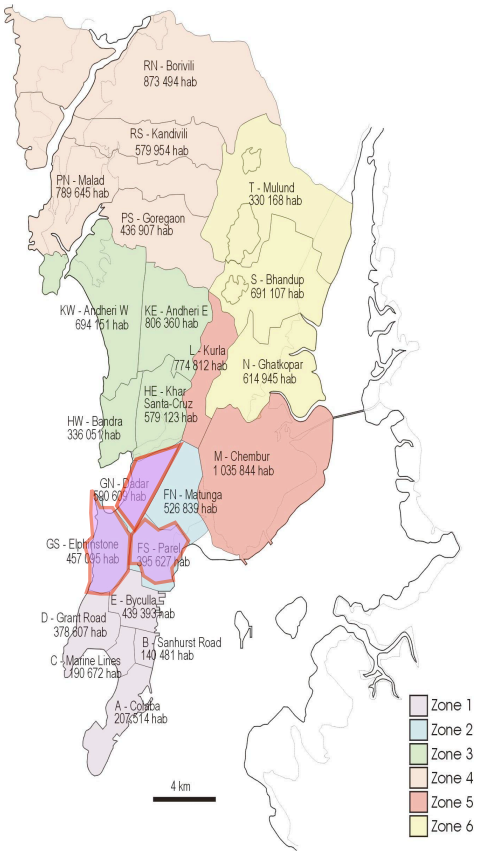


Figure 13 Location of Mill land area under study

Source : www.archidev.org/IMG/jpg/wards.jpg

Table 15 Social housing considerations

Project /former Cotton Textile Mills	No. of workers	Share of Housing
A	737	583 Units
B		
C	602	476 Units
D	1436	-

4.9 The Redevelopment projects

4.9.1 Project A - One India bulls Centre, Lower Parel, Mumbai.

Development Profile - Project A
Owned By - NTC
Pervious Land Use - Industrial (Cotton Textile Mills)
FSI of original Land Use : 0.5
Plot Area : 39086 sq. mts.
Land Purchase Price: $ 58,959,417
Built up area of new development- 103,968 sq. mts.
FSI of Proposed Development: 2.66
New Land Use - Commercial (Information Technology)
Infrastructure Improvements outside of development - Upgrading Road infrastructure

The information gathered for this project was obtained from the Pro-forma from the Project Architects. The Purchase/Sale and Value related information was obtained from the interview with the officials of the Developers Office.

Value Creation

The vale of land of the former Jupiter Mills was enhanced by granting permission for commercial development 5.3 times that of the former use of the plot. Maximizing land potential due to the need for redevelopment saw the auction of this land by the National Textile corporation which had bought the land after it being declared sick in the early 1980‘s. Jupiter Mills, the first of the National Textile Corporation (NTC) mills to be auctioned, attracted bids in 2005, with the highest tender of Rs 276 crores equal to $ 66,966,251crore being received from financial service company Indiabulls. The portion of land separated for Commercial development accounts to $ 58,959,417 after correcting for inflation. The construction started shortly after the Supreme court lifted the stay on the development of mill lands in late 2006.

Figure 14 Images of Project A - One India bulls centre

Old Jupiter Mill (2005)
Source: Google Earth & Author- July 2011

One India bulls centre (2011)

One India bulls centre (2011)

Value Realization

The development strategy revolved around acquiring the maximum FSI. The key factor in achieving he target of maximizing the allowable Floor area ratio was the regulation DCR 33/16 that allowed for a double FSI than the already available 1.33 for any Information Technology related land use development in the Island city area. The developers were now able to construct given an FSI of 2.66. The construction started in the year 2007 and was completed in 2010.

The lease and sale transactions of the property according to the developers office was completed by the year 2009. An analysis of the land market trends in the area allows us to assume that the property due to its locational advantages sold at rates higher than those in the Central Business Districts. The developers hence were able quote sale prices of high segment properties as against the medium segment properties prevailing in the area. The profit gained on the basis of grant of development rights alone accounts to 4.8 times that would be gained at the current market value for industrial use in the area.

Table 16 Indicators for Value Gain for Project A

Particulars	Values
Plot Area (sq. mts.)	39,086
Sale-able Area (sq. mts.)	1,03,968
Sale price ($/ sq.mt.)	$ 39,04,41,427
Land Cost (USD)	$ 5,89,59,417
Construction Cost (Rs./ sq.mt.)	1,14,36,480 @ $110/ sq. mts.
Value Gain (USD)	**$ 32,00,45,530**

Value Capture

The Municipal Corporation of Greater Mumbai were able to collect a total charge of $ 1,50,68,449 .The charges were collected in the form of premiums[21] towards areas free of the floor area ratios and in terms of development charges. The area that was handed over to the Housing Development Authorities (MHADA) was 419 Sq.mts. and that to the Municipal corporation for building civic amenities was 513 Sq.mts. This share constitutes to the total share of the plots for project A and B since the plot was later subdivided for 2 development projects.[22]

Table 17 Indicators for Value Capture practices for Project A[23]

Description	Norms. as per DCR	AREA	RATE	TOTAL
Premium on areas free of FSI	RR(Ready Reckoner) value * 0.50	15,595	$ 768	$ 1,19,91,149
Development Charges	$ 11.55/ sq.mts for IT related commercial building	1,03,968	$ 11.55	$ 12,00,830
Total				**$ 1,31,91,980**

Plot area handed over to MHADA for Affordable Housing		419 sq.mts.	
Plot area handed over to MCGM for provision of Amenities		513 sq. mts.	
Value of the total area shared		**$ 18,76,470**	**TOTAL- $ 1,50,68,449**
Collection in Property tax per year-	$ 1,28,918	**Capitalized Property Tax**	$ 8,62,903

Note : The data on the basis of which the property tax is estimated, is an assumption made on the basis of the average rates payed in the vicinity and are not the actual rates payed by the developers.

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[21] Premiums are payments towards specific exclusively defined allowances.

[22] The National Textile corporation plans to cumulatively had over the area for Housing and amenities out of the sale of all the Mills in their ownership, hence although the sale-able area and FSI calculations adhere to the rule in reality none of the land inside the plot had to be handed over.

[23] The charges are calculated on the basis of Ready recokner rates (also known as Cadastral values) fro the year 2011. See annex 9 for reference.

- In this case the Premiums on areas free of FSI are the payments made towards the floor area calculations of circulation and open spaces in the building such as staircases, lift wells, balconies up-to a certain width, rescue areas for fire fighting and other public utility areas.these areas are exempted in the Floor area ratio calculations. However a payment based on the cadastral value of the property is levied on the developers.The strengths and weaknesses of which shall be discussed Chapter 5.
- The Development charges are flat rate charges that are based on the specialized land-use definition for (e.g. Commercial Office / Information Technology commercial / Commercial Retail / Residential / High-rise Residential etc.)
- An analysis by comparison of the total value gain for the developers and the amount collected by the MCGM in fees and charges helps determine the percentage of land value capture. This projects analysis suggest that the Public body is able to capture 4.71 % of the total increment in value. A further analysis of the methods and means in which this value is recycled will help answer the main research question.

4.9.2 Project B- India bulls Sky, Lower Parel, Mumbai.

Development Profile - Project B
Owned By - NTC
Pervious Land Use - Industrial(Cotton Textile Mills)
FSI of original Land Use : 0.5
Plot Area : 4,719 sq. mts.
Land Purchase Price: $ 80,06,834
Built up area of new development- 18,876 sq. mts.
FSI of Proposed Development: 4.0
New Land Use - Residential High-rise
Infrastructure Improvements outside of development - Upgrading Road infrastructure

The project is a high-rise residential development undergoing construction. However according to sources in the developers office the sale of the units in the tower has already been completed as of July 2011. The developers office provided the sale, project commencement and completion and market absorption related details. The project architects office shared information regarding the physical data such as the area and gave access to the pro-forma of the project.

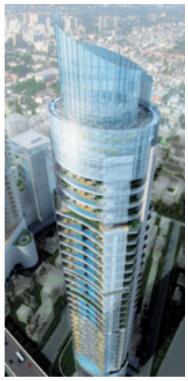
Value Creation

The value of land of the former Jupiter Mills on which the current redevelopment project sits was enhanced by granting permission for residential development 8 times that of the former use of the plot. The financial service company bought this land at a price of Rs. 33 Crore which accounts to $ 80,06,834 after correcting for inflation.

Figure 15 Images of Project B - India bulls sky

Old Jupiter Mill (2010)
Source: Google Earth & Author- July 2011

India Bulls Sky Under-construction (2011)



Artists impression India Bulls Sky- Company brochure

Value Realization

The density rights we obtained by an attempt to capitalize the Development Control Regulation DCR 33(24) , This regulations allows the developers to avail of an FSI of up-to 4.0 by building a public parking facility. The exact nature of operation of the public parking facility is however undetermined. The construction started in the year 2009 and is due for completion in 2012. The lease and sale transactions of the property according to the developers office was completed in on/ before July 2011 . An analysis of the land market trends in the area justify the reasons why the developers were able to quote prices of high-segment residential apartments as against the mid-segment residences that were traditionally prevalent in the vicinity. The profit gained on the basis of grant of development rights alone accounts to 8.01 times that would be gained at the current market value for industrial use in the area.

Table 18 Indicators for Value Gain for Project B

Particulars	Values
Plot Area (sq. mts.)	4,719
Sale-able Area (sq. mts.)	18,876
Sale price ($/ sq.mt.)	$ 6,43,67,160
Land Cost (USD)	$ 80,06,834
Construction Cost (Rs./ sq.mt.)	22,83,996 @ $121/ sq. mts.
Value Gain (USD)	**$ 5,40,76,330**

Value Capture

The Municipal Corporation of Greater Mumbai were able to collect a total charge of $ 13,92,718 .The charges were collected in the form of premiums towards areas free of the floor area ratios and in terms of development charges.

An analysis by comparison of the total value gain for the developers and the amount collected by the MCGM in fees and charges helps determine the percentage of land value capture. This projects analysis suggest that the Public body is able to capture 2.58 % of the total increment in value. By scrutinizing the investment by the public body made towards a project of this nature quantifies the capacity of the value capture instruments used in-order to mitigate the physical impact of the redevelopment project.

Table 19 Indicators for Value Capture practices for Project B

Description	Norms. as per DCR	AREA	RATE	TOTAL
Premium on areas free of FSI	RR (Ready Reckoner) value * 0.25	2,831	$ 441	$ 12,47,373
Development Charges	$ 7.70 / sq.mts for Residential building	18,876	$ 7.70	$ 1,45,345
Total				**$ 13,92,718**

Plot area handed over to MHADA for Affordable Housing		0 sq.mts.	
Plot area handed over to MCGM for provision of Amenities		0 sq. mts.	
Value of the total area shared		**$ 0**	**TOTAL- $ 13,92,718**
Collection in Property tax per year-	$ 19,834	**Capitalized Property Tax**	$ 1,32,759

4.9.3 Project C- Lodha Excellus, Mahalaxmi, Mumbai.

This commercial development; is constructed on an plot area of 32,090 sq. mts. The liasioning architect of the developers office along with he civil engineer who had worked on the project provided information regarding the commencement and completion of the project along with the fiscal liabilities related information.

Value Creation

The value of land of the former Apollo Mills on which the current redevelopment project sits was enhanced by granting permission for commercial (Information technology) related development 7.56% times that of the former use of the plot. The real-estate development company company bought this land at a price of Rs. 113 Crore which accounts to $2,48,89,664 after correcting for inflation.

Development Profile - Project C
Owned By - NTC
Pervious Land Use - Industrial(Cotton Textile Mills)
FSI of original Land Use : 0.5
Plot Area : 32,086 sq. mts.
Land Purchase Price: $ 2,48,89,664
Built up area of new development- 85,359 sq. mts.
FSI of Proposed Development: 2.66
New Land Use - Commercial (Information technology)
Infrastructure Improvements outside of development - Construction of new roads and upgrading

Figure 16 Images of Project C - Lodha Excellus

Old Apollo Mill (2005)
Source: Google Earth & Author- July 2011

Lodha Excellus commercial centre(2011)

Lodha Excellus (2011)

Value Realization

The allowable Floor space area ratio of 2.66 was obtained under DCR 33(16). This regulation allows to construct twice floor area that is allowed by the development control norms which is 1.33 for the island city of Mumbai. The criteria for granting these density rights are that the developer earmark the ale or lease of these properties to the information technology sector related enterprises. This was not a difficult task considering the current trend of setting up service and information technology consultancies in Mumbai. The construction started in the year 2007 and was completed in year 2009. The increasing demand from global commercial enterprises ensure market values equal to that of the higher segment.The profit gained on the basis of grant of development rights

alone accounts to 6.95 times that would be gained at the current market value for industrial use in the area.

Table 20 Indicators for Value Gain for Project C

Particulars	Values
Plot Area (sq. mts.)	32,090
Sale-able Area (sq. mts.)	85,359
Sale price ($/ sq.mt.)	$ 41,38,90,659
Land Cost (USD)	$ 2,48,89,664
Construction Cost (Rs./ sq.mt.)	8450581 @ $99/ sq. mts.
Value Gain (USD)	**$ 38,05,50,414**

Value Capture

The total charges collected by the Municipal Corporation of Greater Mumbai were $1,84,18,287 . The charges were collected in the form of premiums towards areas free of the floor area ratios and in terms of development charges. The value captured from the share of land given for housing and amenities for the city accounted for $ 61,50,806 which is approximately 33 % of the total value captured. This value captured accounts for 4.84% of the total increment in value that the developer benefits from due to allowances of the development rights.

Table 21 Indicators for Value Capture practices for Project C

Description	Norms. as per DCR	AREA	RATE	TOTAL
Premium on areas free of FSI	RR(Ready Reckoner) value * 0.50	12,804	$ 881	$ 1,12,81,525
Development Charges	$ 11.55/ sq.mts for IT related commercial building	85,359	$ 11.55	$ 9,85,901
Total				**$ 1,22,67,426**

Plot area handed over to MHADA for Affordable Housing		3,094 sq.mts.	
Plot area handed over to MCGM for provision of Amenities		2,760 sq. mts.	
Value of the total area shared		**$ 61,50,860**	**TOTAL- $ 1,84,18,287**
Collection in Property tax per year-	$ 1,05,844	**Capitalized Property Tax**	$ 7,08,457

4.9.4 Project D- Dosti Flamingos, Sewree, Mumbai.

This is residential project of approximately 475 apartments. of area 85 sq. mts each.The purchase of land and the proposal submitted for this project are dated in the year 2003. These are the years prior to the hike in land and property values in Mumbai. The completion of this project however took 5 years, the property was available for sale in year 2008.The information gathered for this project was obtained from the Pro-forma from the Project Architects Archives. The Purchase/Sale and Value related information was obtained from the interview with the officials of the Developers Office.

Development Profile - Project D
Owned By - Mafatlal Group (Private)
Pervious Land Use - Industrial(Cotton Textile Mills)
FSI of original Land Use : 0.5
Plot Area : 29,958 sq. mts.
Land Purchase Price: $ 1,28,59,461
Built up area of new development- 39,844 sq. mts.
FSI of Proposed Development: 1.33
New Land Use - Residential
Infrastructure Improvements outside of development - Upgrading and widening of roads.

Value Creation

The sale of land of the former Standard Mills(popularly know as China Mills) was enhanced primarily because of the strategy of the developer to hold sales of the property till the year of hike in rates of housing .The market shift of this area becoming more desirable during the sale of the houses as against when the land was purchase allowed the developer to maximize profits.The purchase of this land was done at Rs. 58 Crore after correction for inflation which accounts to $ 1,28,59,461 by the real estate development company.

Figure 17 Images of Project D - Dosti Flamingo

Old Standard Mill (2003)
Source: Google Earth & Author- July 2011

Dosti Flamingo (2008)

Dosti Flamingo (2011)

Value Realization

This is the sole project of the selected sample that was unable to gain additional density rights than those specified in the DCR 58 before amendment in 2006. However the comparatively low cost of land allowed the developers to cash-in on the then allowable FSI of 1.33 for residential developments in the area. The construction started in the year 2004 and was completed in 2008.

The sale transactions of the property according to the developers office was completed by the year 2008. An analysis of the land market trends in the area prove that the property due to its locational advantages sold at rates higher than expected as the in the year of completion of the project the market rate shot up by 3 times.. The developers hence were able quote sale prices of high segment properties as against the medium segment properties prevailing in the area. The profit gained on the

basis of grant of development rights alone accounts to 2.17 times that would be gained at the current market value for industrial use in the area.

Table 22 Indicators for Value Gain for Project D

Particulars	Values
Plot Area (sq. mts.)	29,958
Sale-able Area (sq. mts.)	39,844
Sale price ($/ sq.mt.)	$ 8,53,78,023
Land Cost (USD)	$ 1,28,59,461
Construction Cost (Rs./ sq.mt.)	$ 29,00,231 @ $73/ sq. mts.
Value Gain (USD)	**$ 6,96,18,331**

Value Capture

The Municipal Corporation of Greater Mumbai were able to collect a total charge of $ 30,60,534 .The charges were collected in the form of premiums towards areas free of the floor area ratios and in terms of development charges. The area that was handed over to the Housing Development Authorities (MHADA) was 1525 Sq.mts. and that to the Municipal corporation for building civic amenities was 1247 Sq.mts.

An analysis by comparison of the total value gain for the developers and the amount collected by the MCGM in fees and charges helps determine the percentage of land value capture. This projects analysis suggest that the Public body is able to capture 4.40 % of the total increment in value. A further analysis of the methods and means in which this value is recycled will help compute if the value captured was enough to mitigate the impacts of the development.

Table 23 Indicators for Value Capture practices for Project D

Description	Norms. as per DCR	AREA	RATE	TOTAL
Premium on areas free of FSI	RR(Ready Reckoner) value * 0.25	5,977	$ 302	$ 18,07,928
Development Charges	$ 7.70/ sq.mts for residential building	39,844	$ 7.70	$ 3,06,800
Total				**$ 21,14,728**

Plot area handed over to MHADA for Affordable Housing		1525sq.mts.	
Plot area handed over to MCGM for provision of Amenities		1247sq. mts.	
Value of the total area shared		**$ 9,45,806**	**TOTAL- $ 30,60,534**
Collection in Property tax per year-	$ 35,133	**Capitalized Property Tax**	$ 23,35,160

4.10 Local Value recycling and the share of the redevelopment projects.

This section analyses the projects with the idea that lay its basis in the literature reviewed. It demonstrates the practice of re-investing the acquired monetary contributions and charges from the private sector in the redevelopment and/or areas affected by the development scheme. This re-investment in a way benefits the private sector who has consolidated the value gains that were already created for them. In case of the selected sample redevelopment projects an analysis of the monetary benefits from the existing legal value capture practices and its comparison with the expenditure incurred towards provision of physical infrastructural investemnt made by the Municipal Public Works Department out of the local government budget.

- It was observed that Project -A required the Municipal corporation to invest $ 35,15,653 towards provision of physical infrastructure hat included upgrading ad widening of roads as per the norms of the new land uses. 391 mts. of 3 lane roads and pavement on one side were constructed, Upgrading of a 4 lane road of 309 mts. was also carried about. This newly constructed roads required Storm water drains, Water mains and Sewerage lines to be laid. The redevelopment

Table 24 Total expenditure incurred by public authorities

	Cost of provision of physical infrastructure	**Cost towards Mill workers housing**	**Total ($)**
Project A	$ 35,15,653	$ 9,29,390	$ 44,45,043
Project B	$ 13,96,796	$ 0	$ 13,96,796
Project C	$ 59,37,250	$ 7,59,149	$ 66,96,399
Project D	$ 33,76,138	$ 0	$ 33,76,138

Project-A sits on the land that housed the former textile mills and the mill workers housing (also known as ‘Chawls’) DCR 58 required the developers to share plots for housing and in addition also provide of a minimum 21 sq. mt housing unit for each mill worker displaced. This provision post the amendment in the regulation however became the liability of the Maharashtra Housing and Regional Development Authority. The cost of provision of these housing units account to an additional pressure of $ 9,29,390 on the public authorities.

- Project-B although a part of the same mill land as project A, was designed to gain access and other infrastructure from different roads. Provision of which required the public works department to upgrade , widen roads and lay additional water and sewage infrastructure for the density proposed. The road that the development drew access from also lead to a nearby railway station which required pavements 3.0 Mts. wide to be laid al along the stretch of the road. This required for a total of 303 Mts.. of urban roads to be upgraded including two 4 lane roads and one 3 lane road. The cost of provision of which was computed as $ 13,96,796. Since the land of the redevelopment project was a part of the plot of project A , their liability in terms of workers housing was nil.
- Project-C was liable for an investment of $ 7,59,149, which was borne by the public authorities towards mill workers houses.This was the cost borne towards rehabilitating 476 mill workers of the former Apollo Mills. This development demanded the construction of new access roads of

369 Mts. Along with widening of a major 4 lane road of 488 Mts.. The collective cost of roads, storm water drains, water mains and sewerage lines connections cost the public works department $ 59,37,250. Total expenditure of $ 66,96,399 was borne by the public authorities towards the impact of the redevelopment project C.

- Project-D , in this case the mill workers housing was situated outside of the boundaries of the Mill land and hence the plot did not see any displacement of the workers. The social housing cost therefore was nil. The cost of provision of basic infrastructure related to water and sewerage however had to be taken care of by the public authorities. the project in order to gain access to the plot for 475 apartments required and investment of $ 33,76,138. These were cost incurred towards widening of a 243 mt. road and upgrading of 156 mts. long road all from 2 lanes to 6 lanes.

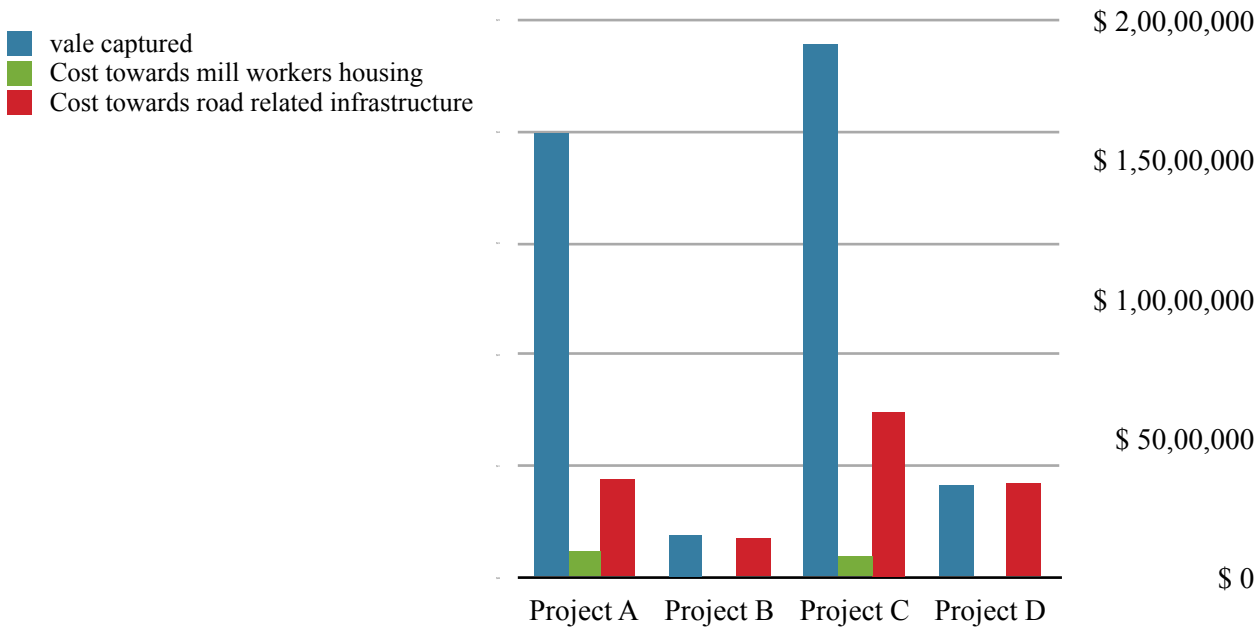
4.11 Comparison analysis of the sample projects

This section makes and attempt to examine the revenue for the public authorities and their expenditure for each project together.
Table 17 helps compare the benefits created (for the private body) and the costs incurred (by the public authorities).

Table 25 Comparison between value captured including property taxes and public sector investments to mitigate impacts

	Project A	Project B	Project C	Project D
Value captured	$ 1,59,31,352	$ 15,25,477	$ 1,91,26,744	$ 32,95,694
Cost towards mill workers housing	$ 9,29,390	$ 0	$ 7,59,149	$ 0
Cost towards road related infrastructure	$ 35,15,653	$ 13,96,796	$ 59,37,250	$ 33,76,138

Figure 18 Comparison between value captured and public body expenditure



As stated in section 4.3, the gratitude payments made by the developers and landowners were considered by the private body officials as significant amount in the book records, however the author was unable to get access to the confidential data. The research methodology suggests that there area parameters such as market demand, increment in value, gains from value capture practices and the expenditure by the public body that would help prove the hypothesis. The comparative analysis made in figure 18 suggest that the level of mitigation of impact differs substantial with each project.

The relevance of each of the research variables to the nature of study that the research is inclined towards, will be discussed in Chapter-5.

Chapter 5: Conclusions and Recommendations

5.1 Results of the analysis and answers to the research questions.

This section presents an inter-indicator analysis that helps answer the main research question.

I. The demand related study of the area suggest that the city overall saw the ***need for redevelopment*** both in the residential and commercial sector ***post 2006.*** This was observed by analyzing the rise in property values that played the key indicator in determining the need.

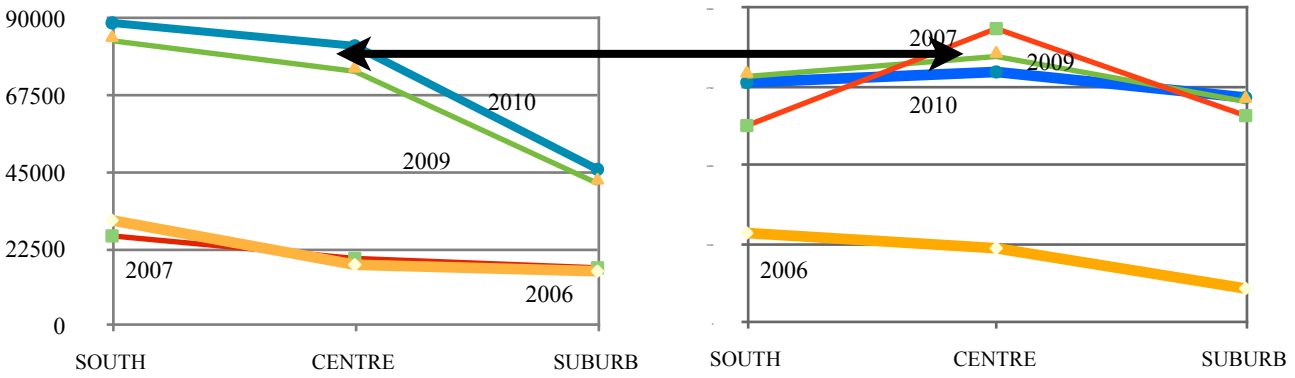


Figure 19 Comparison between residential and commercial prices in the centre.

A comparison of the ***residential and commercial prices in the centre*** of the city which is also the area for the study show that the capital values for both of these land uses in the region have ***remained at par*** since 2009.

II. It is imperative to know that this research concentrates on impacts on immediate physical surroundings alone and its effects on the public authorities treasury.

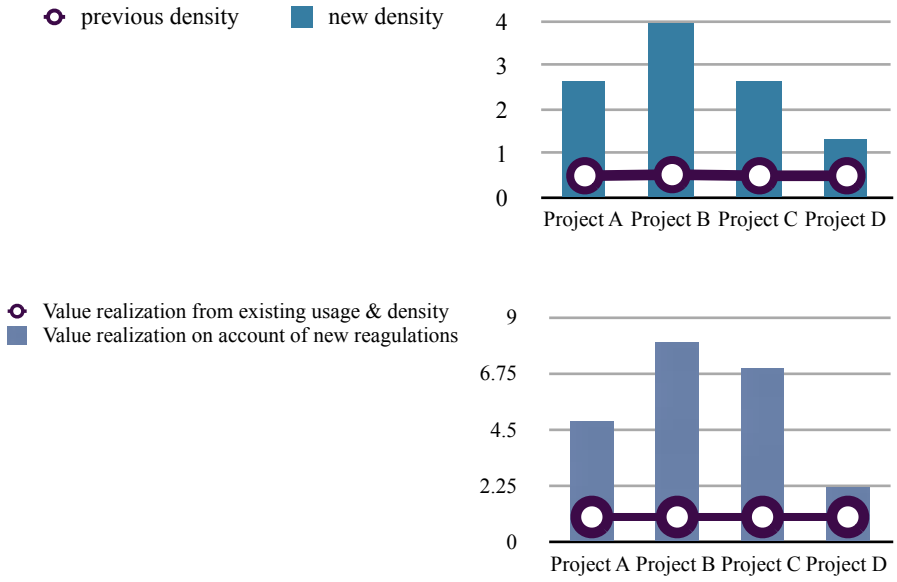


Figure 20 Increment in density and corresponding increment in value

In the case of industrial sites in the inner-cities the relaxation in the Development control regulations and the benefits due to changes in density and usage rights post decline of

industrialization was the primary driving force which shows that the area was developed from 2.66 times to 8.0 times per redevelopment project. The ***increment in value*** that the regulations and benefits create are a result of the ***land use changes and the allowances in density rights.*** The amendment in the development control regulation Section-58 of the Maharashtra Regional and town planning act 1966 . Section-33(24) for information technology related construction and Section 33(16) for additional density rights for including public parking in the premises are the ***3 sole indicators*** that helped the private sector realize the potential value of the sites. A comparison shown in Figure 20 shows that the usage and density regulations teamed with the demand for residential and commercial properties create an increment in value ranging from 2.17 to 8.01 times the value at former industrial use of the sites.

III. "Value capture refers to the process by which a portion of or all land value increments attributed to the collective effort of the area are recouped by the public sector either through their conversion into public revenues through fees, exactions, taxes and other fiscal means, or more directly in on-site land improvements for the benefit of the development area." (Smolka, M. , Amborski, D. 2000). In this study the recouping of value increments have been conducted on the basis of existing instruments within the legal boundaries of the Municipal authorities. Also, as the name suggests the instruments that include the market value component in calculation of the charges or fees or the tax base have been included. Table below helps identify why the charges and fees / taxes were considered as value capture instruments.

Table 26 Share of the value Capture practices of increment in value

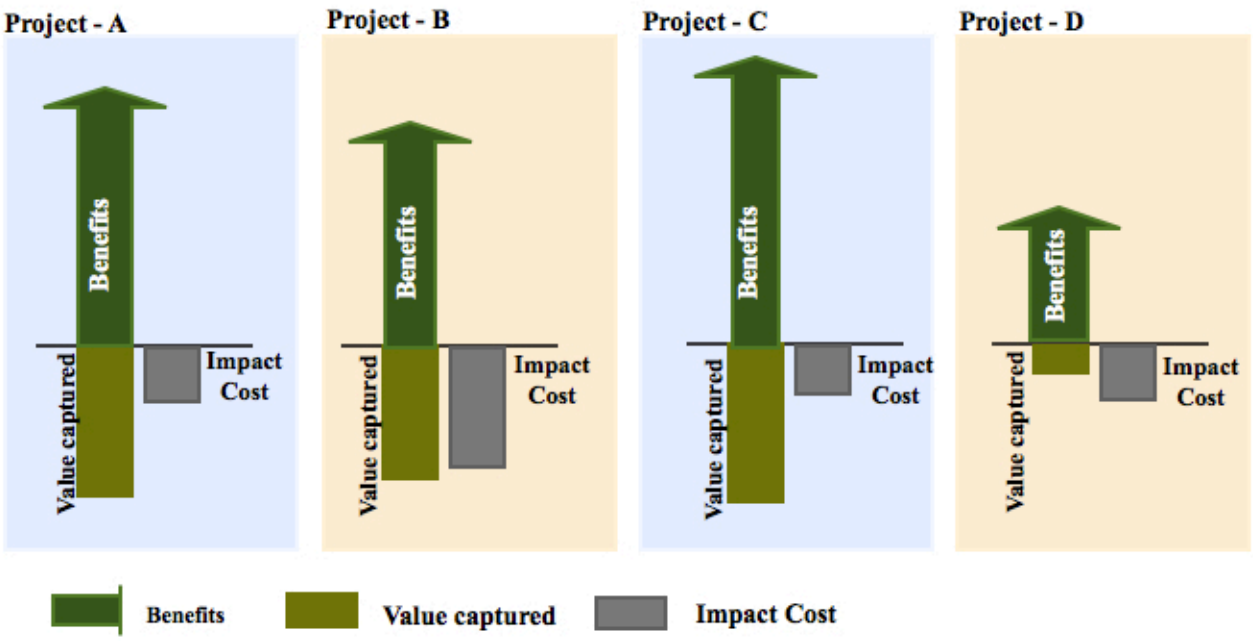
Charges During the process of redevelopment	Levied on	Based on	Share of Increment captured
Development charges	Property Developer Beneficiary of the development rights. Indirectly on the investors	1.Ready Reckoner (Cadastral Value) 2.Area 3.Land Use	Project A - ***4.21%***
			Project B - ***2.58%***
Premiums on area free of FSI			Project C- ***3.22%***
			Project D- ***3.04%***
Land share for open space	Landowners who are the indirect beneficiaries of the Development rights. Who benefit form the high bids on the land that hold potential for redevelopment and hence increment in value.	1.Ready Reckoner (Cadastral Value) 2.Area 3.Nature of Land Use permissible	Project A - ***0.59%***
Land share for public housing			Project B - ***0%***
			Project C- ***1.62%***
			Project D- ***0%***

As suggested in the above Table 17, an analysis of the individual on whom the charges are levied show that the ***property developer*** who has already paid a higher price to acquire land pays more in development charges in fees than the ***land owner*** who are also indirect beneficiaries because they were able to anticipate demand and quote a higher price & who benefit form the high bids on the

land that hold potential for redevelopment and hence increment in value for the land to be developed. Also, ***Occupiers*** of the residences / office, although have already paid the true price for enjoying the facilities of the development such as locational and infrastructural advantages in rents and capital purchase prices; pay a ***negligible share in property taxes.***

IV. The illustrations in Section 4.11 suggest that in case of the direct nature of the value capture practices that are levied on the primary beneficiaries that is, the landowners and the property developers. The results in terms of mitigation of the Impact related costs are ***case-specific***. However in a more generalized analysis it was observed that the Direct value capture practices helps mitigate impact for large scale commercial set-up but does not mitigate physical infrastructure related impacts for residential setups. The figure 21 below suggest that the value captured from Projects A and C far exceeds the investment in infrastructure required by those projects. Value captured from Projects B just about manages to balance the equation, and that from Project D on the other hand fail cover the cost of the investment needed. It was observed that the charges on premiums to be paid in terms of residential developments was 50% lower than that for commercial properties. Furthermore the infrastructural investments that need to be made for residential setup are higher than that of the commercial setups on these industrial lands.

Figure 21 Levels of mitigation of impact of Project A B, C & D



It is imperative to note that the market values of the residential properties in the area are on par with the market values of commercial properties. This factor indicates the mis-match in the value capture practices for residential and commercial set--ups.

In conclusion the residential and commercial market seem to be on par in terms of the market value but the value capture rates and practices differ which is one of the factors that causes the mis-match in increment in value and value captured . This affects the degrees in which the value capture practices are able to mitigate the impacts.
Therefore, the study suggests that the success of the public body in mitigating impacts from post-industrial redevelopment of inner-city areas is case-specific.

5.2 Recommendation based on research.

The study argues that the increment in the value of land are kept either by the landowner/developer or government, but institutions (public / private) that has control over the use is capable of extracting a portion of such increment due to the power of such control, and if an authority has that control through granting a license or decided the specific location of infrastructure, it will be able to collect part of such increment in value.

- Purely market value based value capture instruments are observed to fetch more revenues that instruments that adopt a flat rate and in-kind payments.
- As in the case of mumbai although the public authorities regard development charges as a value capture practice the nature of these has remained unchanged with the change in policies and regulations. The market value reflect the changes in regulation, hence value capture based on an updated market value will ensure buoyant revenue.
- Earmarking of the revenue generated form the value capture practices will ensure that the impacts of the development / redevelopment are mitigated.
- The case study help us realize that variables added to the value capture practices through type of construction and land-use create a large impact on the revenue generated for any kind of development / redevelopment. Hence to make the charges equitable the weights as against being a flat rate variable could be a % of the market value.
- These efforts collectively will help stabilize market values, as the developers, end users and public authorities will share the burden of the development collectively.

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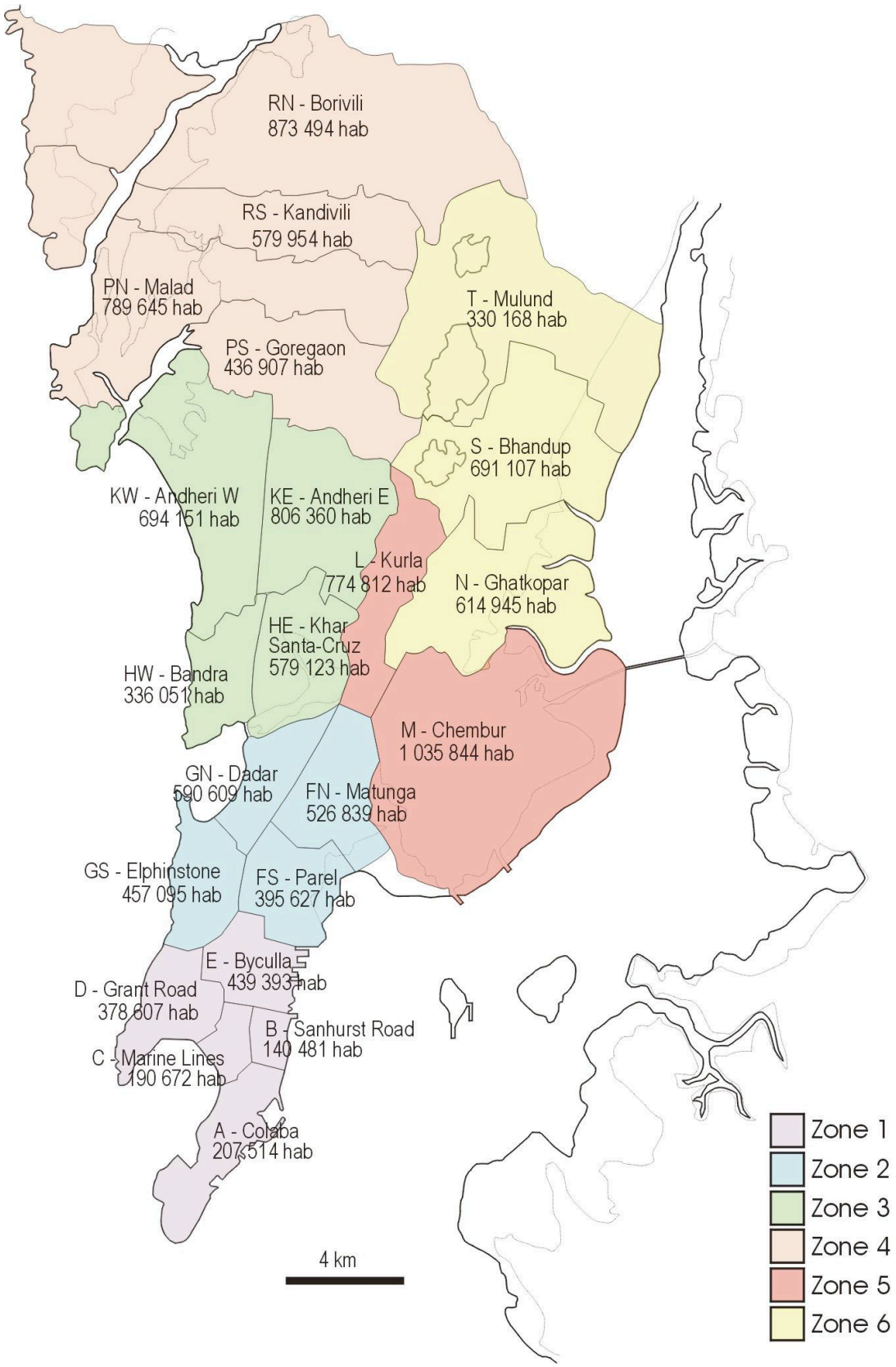
Annexes:

Annex 1: Map showing Wards of Mumbai.



http://
www.archidev.org/IMG/jpg/wards.jpg

	AREA / COST		VALUE	
Plot Area (sq. mts.)		39,086		
Sale-able Area (sq. mts.)		1,03,968		
Sale price (Rs./ sq.mt.)(ready Reckoner 2011)	Rs 1,70,700	$ 3,755	Rs 17,74,73,37,600	$ 39,04,41,427
Land Cost (INR)			2,67,99,73,510	$ 5,89,59,417
Construction Cost (Rs./ sq.mt.)	Rs 5,000	$ 110	Rs 51,98,40,000	$ 1,14,36,480
Potential Sales proceeds			Rs 14,54,75,24,090	$ 32,00,45,530

			Value/ sq.mt.	Value
Development Charges and Premiums	Rs 59,96,35,440	$ 1,31,91,980		
Plot area handed over to MHADA for Affordable Housing		419	61256	Rs 2,56,66,156
Plot area handed over to MCGM for provision of Amenities		513	61256	Rs 3,14,24,196
Value of the total area shared	Rs 8,52,94,079	$ 18,76,470		Rs 5,70,90,352
Impact Fees	Not realised since 6 years			Rs 50,00,00,000
TOTAL	Rs 68,49,29,519	$ 1,50,68,449		

	Cost of entire plot	Cost per sq. mt.
	Rs 2,76,00,00,000	Rs 61,256
Counting inflation	Rs 3,04,39,20,530	
	$ 6,69,66,252	

	Value
	59,96,35,440
	2,56,66,156
	3,14,24,196
	5,70,90,352

Total percentage of profits	Percentage of profits from land share	Percentage of profits charges and fees
4.71%	0.59%	4.12%

DESCRIPTION	RATE	AREA	RATE		TOTAL	
Scrutiny Fees	Rs= 66/-per sq mtr for comm.	1,03,968	66	$ 1.45	68,61,888	$ 1,50,962
Premium on areas free of FSI	Rs. 69900(RR) * 0.50 Per Sq. mt.	15,595	34950	$ 768.90	54,50,52,240	$ 1,19,91,149
Development Charges	Rs. 525 for IT Commercial	1,03,968	525	$ 11.55	5,45,83,200	$ 12,00,830
Layout Scrutiny fee	x 13000/- Per 1000 Sq.mtrs. (min.Rs-13000/=)	39	13000	$ 286.00	5,08,118	$ 11,179
Textile Mills Scrutiny Fee. Provisions of regulation nos. 58 of DCR 91	x Rs. 23/- per sq.mtr. Or Min. Rs. 9750/-	39,086	23	$ 0.51	8,98,978	$ 19,778
Proposal for grant of permission for development Scrutiny fee. Under regulation no. 67 of dcr 91. clearance from Heritage Conversation Committee.	Lumpsum Charge of Rs. 3000/- per proposal				3,000	$ 66
					Rs 59,96,35,440	$ 1,31,91,980

Property Taxes

Gross annual rent	Rs 5,20,87,968	
Rateable Value (10% of Gross annual rent)	Rs 52,08,797	
112.5% of rateable value	Rs 58,59,896	$ 1,28,918
Capitalised Value	Rs 3,92,22,867	$ 8,62,903

	AREA / COST		VALUE	
Plot Area (sq. mts.)		4,719		
Sale-able Area (sq. mts.)		18,876		
Sale price (Rs./ sq.mt.)(ready Reckoner 2011)	Rs 1,55,000	$ 3,410	Rs 2,92,57,80,000	$ 6,43,67,160
Land Cost (INR)			Rs 36,39,47,020	$ 80,06,834
Construction Cost (Rs./ sq.mt.)	Rs 5,500	$ 121	Rs 10,38,18,000	$ 22,83,996
Potential Sales proceeds			Rs 2,45,80,14,980	$ 5,40,76,330

			Value/ sq.mt.	Value
Development Charges and Premiums	Rs 6,33,05,385	$ 13,92,718		
Plot area handed over to MHADA for Affordable Housing		0	61256	Rs 0
Plot area handed over to MCGM for provision of Amenities		0	61256	Rs 0
Value of the total area shared	Rs 0	$ 0		Rs 0
Impact Fees	Not realised since 6 years			Rs 50,00,00,000
TOTAL	Rs 6,33,05,385	$ 13,92,718		

	Cost of entire plot	Cost per sq. mt.
	Rs 2,76,00,00,000	Rs 61,256
Counting inflation	Rs 3,04,39,20,530	
	$ 6,69,66,252	

	Value
	6,33,05,385
	0
	0
	0

Total percentage of profits	Percentage of profits from land share	Percentage of profits charges and fees
2.58%	0.00%	2.58%

DESCRIPTION	RATE	AREA	RATE		TOTAL	
Scrutiny Fees	Rs= 33/-per sq mtr for comm.	18,876	33	$ 0.73	6,22,908	$ 13,704
Premium on areas free of FSI	Rs. 80100 (RR) * 0.25 Per Sq. mt.	2,831	20025	$ 440.55	5,66,98,785	$ 12,47,373
Development Charges	Rs. 350 for Residential	18,876	350	$ 7.70	66,06,600	$ 1,45,345
Layout Scrutiny fee	x 13000/- Per 1000 Sq.mtrs. (min.Rs-13000/=)	4.72	13000	$ 286.00	61,347	$ 1,350
Textile Mills Scrutiny Fee. Provisions of regulation nos. 58 of DCR 91	x Rs. 23/- per sq.mtr. Or Min. Rs. 9750/-	4,719	23	$ 0.51	1,08,537	$ 2,388
Proposal for grant of permission for development Scrutiny fee. Under regulation no. 67 of dcr 91. clearance from Heritage Conversation Committee.	Lumpsum Charge of Rs. 3000/- per proposal				3,000	$ 66
					6,33,05,385	$ 13,92,718

Property Taxes

Gross annual rent	Rs 1,07,97,072	
Rateable Value(10% of Gross annual rent)	Rs 10,79,707	
83.5% of rateable value	Rs 9,01,556	$ 19,834
Capitalised Value	Rs 60,34,508	$ 1,32,759

	AREA / COST		VALUE		% of entire plot		
Plot Area (sq. mts.)		32,090			57%		
Sale-able Area (sq. mts.)		85,359				Cost of entire plot	Cost per sq. mt.
Sale price (Rs./ sq.mt.)(ready Reckoner 2011)	Rs 2,20,400	$ 4,849	Rs 18,81,32,11,760	$ 41,38,90,659		Rs 1,80,00,00,000	Rs 31,967
Land Cost (INR)			Rs 1,13,13,48,350	$ 2,48,89,664	Counting inflation	Rs 1,98,51,65,563	
Construction Cost (Rs./ sq.mt.)	Rs 4,500	$ 99	Rs 38,41,17,300	$ 84,50,581		$ 4,36,73,642	
Potential Sales proceeds			Rs 17,29,77,46,110	$ 38,05,50,414			

			Value/ sq.mt.	Value		Value	
Development Charges and Premiums	Rs 55,76,10,281	$ 1,22,67,426				55,76,10,281	
Plot area handed over to MHADA for Affordable Housing		3,094	31967	Rs 9,89,05,823		9,89,05,823	
Plot area handed over to MCGM for provision of Amenities		2,760	31967	Rs 8,82,30,042		8,82,30,042	
Value of the total area shared	Rs 27,95,84,564	$ 61,50,860		Rs 18,71,35,865		18,71,35,865	
Impact Fees	Not realised since 6 years			Rs 50,00,00,000	Total percentage of profits	Percentage of profits from land share	Percentage of profits charges and fees
TOTAL	Rs 83,71,94,844	$ 1,84,18,287			4.84%	1.62%	3.22%

DESCRIPTION		RATE	AREA	RATE		TOTAL	
Scrutiny Fees		Rs= 66/-per sq mtr for comm.	85,359	66	$ 1.45	56,33,720	$ 1,23,942
Premium on areas free of FSI		Rs. 80100 (RR) * 0.5 Per Sq. mt.	12,804	40050	$ 881.10	51,27,96,596	$ 1,12,81,525
Development Charges		Rs. 525 for Residential	85,359	525	$ 11.55	4,48,13,685	$ 9,85,901
Layout Scrutiny fee		x 13000/- Per 1000 Sq.mtrs. (min.Rs-13000/=)	39	13000	$ 286.00	5,08,118	$ 11,179
Textile Mills Scrutiny Fee. Provisions of regulation nos. 58 of DCR 91		x Rs. 23/- per sq.mtr. Or Min. Rs. 9750/-	39,086	23	$ 0.51	8,98,978	$ 19,778
Proposal for grant of permission for development Scrutiny fee. Under regulation no. 67 of dcr 91. clearance from Heritage Conversation Committee.		Lumpsum Charge of Rs. 3000/- per proposal				3,000	$ 66
						55,76,10,281	$ 1,22,67,426

Property Taxes

Gross annual rent	Rs 4,27,65,059	
Rateable Value (10% of gross annual rent)	Rs 42,76,506	
112.5% of rateable value	Rs 48,11,069	$ 1,05,844
Capitalised Value	Rs 3,22,02,605	$ 7,08,457

	AREA / COST		VALUE	
Plot Area (sq. mts.)	29,958			
Sale-able Area (sq. mts.)	39,844			
Sale price (Rs./ sq.mt.)(ready Reckoner 2011)	Rs 97,400	$ 2,143	Rs 3,88,08,19,236	$ 8,53,78,023
Land Cost (INR)			Rs 58,45,20,971	$ 1,28,59,461
Construction Cost (Rs./ sq.mt.)	Rs 3,309	$ 73	Rs 13,18,28,691.02	$ 29,00,231
Potential Sales proceeds			Rs 3,16,44,69,574	$ 6,96,18,331

% of entire plot		
53%		
	Cost of entire plot	Cost per sq. mt.
	Rs 53,00,00,000	Rs 9,413
Counting inflation	Rs 58,45,20,971	
	$ 1,28,59,461	

			Value/ sq.mt.	Value
Development Charges and Premiums	Rs 9,61,23,988	$ 21,14,728		
Plot area handed over to MHADA for Affordable Housing	1,525		10381	Rs 1,58,30,690
Plot area handed over to MCGM for provision of Amenities	1,247		10381	Rs 1,29,44,833
Value of the total area shared	Rs 4,29,91,182	$ 9,45,806		Rs 2,87,75,523
Impact Fees	Not realised since 6 years			Rs 50,00,00,000
TOTAL	Rs 13,91,15,169	$ 30,60,534		

	Value
	9,61,23,988
	1,58,30,690
	1,29,44,833
	2,87,75,523
Total percentage of profits	Percentage of profits from land share	Percentage of profits charges and fees
4.40%	1.36%	3.04%

DESCRIPTION	RATE	AREA	RATE		TOTAL	
Scrutiny Fees	Rs= 33/-per sq mtr for comm.	39,844	33	$ 0.73	13,14,857	$ 28,927
Premium on areas free of FSI	Rs. 55000 (RR) * 0.25 Per Sq. mt.	5,977	13750	$ 302.50	8,21,78,539	$ 18,07,928
Development Charges	Rs. 350 for Residential	39,844	350	$ 7.70	1,39,45,449	$ 3,06,800
Layout Scrutiny fee	x 13000/- Per 1000 Sq.mtrs. (min.Rs-13000/=)	39	13000	$ 286.00	5,08,118	$ 11,179
Textile Mills Scrutiny Fee. Provisions of regulation nos. 58 of DCR 91	x Rs. 23/- per sq.mtr. Or Min. Rs. 9750/-	39,086	23	$ 0.51	8,98,978	$ 19,778
Proposal for grant of permission for development Scrutiny fee. Under regulation no. 67 of dcr 91. clearance from Heritage Conversation Committee.	Lumpsum Charge of Rs. 3000/- per proposal				3,000	$ 66
					9,61,23,988	$ 21,14,728

Property Taxes

Gross annual rent	Rs 1,91,25,187	
Rateable Value	Rs 19,12,519	
83.5% of rateable value	Rs 15,96,953	$ 35,133
Capitalised Value	Rs 1,06,89,111	$ 2,35,160

Annex 6: Property capital and rental values

RESIDENTIAL	2007		2009						2010			
Capital Values	Sep	2007	1Q	3Q	4Q		2009	1Q	2Q	3Q	4Q	2010
South	29,090	24000	55000	55000	58000		56000	58000	60000	60000	60000	59500
Central	17072	18000	40000	55000	55000		50000	55000	55000	55000	55000	55000
Suburb	14545	15500	27000	27000	30000		28000	30000	31000	31000	31000	30750

OFFICE	2007		2009						2010			
Rental value /	Sep	2007	1Q	2Q	3Q	4Q	2009	1Q	2Q	3Q	4Q	2010
South	385	385	350	300	300	300	313	300	300	300	300	300
Central	460	460	250	250	250	250	250	250	250	270	275	261.25
Suburb	362	362	280	225	225	240	243	240	250	252	260	250.5

RETAIL	2007		2009						2010			
Rental value /	Sep	2007	1Q	2Q	3Q	4Q	2009	1Q	2Q	3Q	4Q	2010
South	300	300	370	350	360	360	360	360	360		360	360
Central	675	675	480	480	480	480	480	480	480		480	480
Suburb	400	400	400	400	400	400	400	400	400		400	400

RESIDENTIAL	Average Capital	ADJUSTED FOR
South (2007)	24000	26411
Central (2007)	18000	19808
Suburb (2007)	15500	17057
South (2009)	56000	83665
Central (2009)	50000	74701
Suburb (2009)	28000	41833
South (2010)	59500	88894
Central (2010)	55000	82171
Suburb (2010)	30750	45941
South (2011)	28,090	30980
Central (2011)	16272	17946
Suburb (2011)	14545	16041

COMMERCIAL	Average Capital value	ADJUSTED FOR INFLATION TO YEAR 2011
South (2006)	23400	25807
Central (2006)	19440	21440
Suburb (2006)	9000	9926
South (2007)	51360	56519
Central (2007)	76560	84250
Suburb (2007)	53952	59371
South (2009)	47232	70566
Central (2009)	47040	70279
Suburb (2009)	42432	63394
South (2010)	46080	68844
Central (2010)	48096	71856
Suburb (2010)	43200	64542

OFFICE			
Rental value / mnt.	2006	annual rent per sq. ft.	Capitalised value
South		2925	23400
Central		2430	19440
Suburb		1125	9000
	2007		
South	385	4620	36960
Central	460	5520	44160
Suburb	362	4344	34752
	2009		
South	312	3744	29952
Central	250	3000	24000
Suburb	242	2904	23232
	2010		
South	300	3600	28800
Central	261	3132	25056
Suburb	250	3000	24000

RETAIL			
Rental value / mnt.	2006	annual rent per sq. ft.	Capitalised value
South			
Central			
Suburb			
	2007		
South	300	3600	28800
Central	675	8100	64800
Suburb	400	4800	38400
	2009		
South	360	4320	34560
Central	480	5760	46080
Suburb	400	4800	38400
	2010		
South	360	4320	34560
Central	480	5760	46080
Suburb	400	4800	38400

RESIDENTIAL			
	SOUTH	CENTRAL	SUBURB
2006	30980	17946	16041
2007	26411	19808	17057
2009	83665	74701	41833
2010	88894	82171	45941

COMMERCIAL			
	SOUTH	CENTRAL	SUBURB
2006	25807	21449	9926
2007	56519	84250	59371
2009	70566	76279	63394
2010	68844	71856	64542

Annex 7: Calculation showing expenditure on mill workers housing

	No. of workers	Share of housing	AREA approved per house (sq. mts.)	Construction Cost/ sq. mt.	Construction Cost	Total Construction cost including circulation areas	
Kohinoor Mills 3	16	13	21	Rs 3,000	Rs 7,97,499	Rs 9,17,124	$ 20,177
Elphinstone Mill	702	555	21	Rs 3,000	Rs 3,49,90,260	Rs 4,02,38,799	$ 8,85,254
Jupiter Mill	737	583	21	Rs 3,000	Rs 3,67,34,789	Rs 4,22,45,007	$ 9,29,390
New Hind Mill	875	691	21	Rs 3,000	Rs 4,35,48,750	Rs 5,00,81,063	$ 11,01,783
Mumbai Mill	794	628	21	Rs 3,000	Rs 3,95,75,878	Rs 4,55,12,260	$ 10,01,270
India United Mills 2 and 3	1,302	1,030	21	Rs 3,000	Rs 6,48,96,465	Rs 7,46,30,935	$ 16,41,881
Apollo Mill	602	476	21	Rs 3,000	Rs 3,00,05,893	Rs 3,45,06,776	$ 7,59,149
	5,028						
Total no. of. approved mill worker housing	**approved housing per mill**						
3,978	0.79						

Annex 8: Calculation showing expenditure on upgrading physical infrastructure

India bulls One	Roads Impact cost calculation	No. of kms.	Width of Road (mts)		Rate / sq. mt.				Cost		
			3 lane	4 lane	Road	SWD	Water Mains	Sewerage line	Roads		
	New roads	-	-		Rs 15,695.00	Rs 7,022.00	Rs 23,250.00	Rs 31,117.00			
	Upgrading	309		18.00	Rs 5,935.00				3,30,10,470		
	Pavements	391	3.00		Rs 830.00				9,73,590		
	Widening	391	13.50		Rs 15,695.00				8,28,46,058	**TOTAL COST**	
	TOTAL ROAD	700			cost=	Rs 49,15,400.00	Rs 1,62,75,000.00	Rs 2,17,81,900.00	11,68,30,118	Rs 15,98,02,417.50	$ 35,15,653.19

India bulls Sky	Roads Impact cost calculation	No. of kms.	Width of Road (mts)		Rate / sq. mt.				Cost		
			3 lane	4 lane	Road	SWD	Water Mains	Sewerage line	Roads		
	New roads		-		Rs 15,695.00	Rs 7,022.00	Rs 23,250.00	Rs 31,117.00	0		
	Upgrading	191		18.00	Rs 5,935.00				2,04,04,530		
	Pavements	303	3.00		Rs 830.00				7,54,470		
	Widening	112	13.50		Rs 15,695.00				2,37,30,840	**TOTAL COST**	
	TOTAL ROAD	303			cost=	Rs 21,27,666.00	Rs 70,44,750.00	Rs 94,28,451.00	4,48,89,840	Rs 6,34,90,707.00	$ 13,96,795.55

Lodha Excellus	Roads Impact cost calculation	No. of kms.	Width of Road (mts)		Rate / sq. mt.				Cost		
			3 lane	4 lane	Road	SWD	Water Mains	Sewerage line	Roads		
	New roads	369	13.50		Rs 15,695.00	Rs 7,022.00	Rs 23,250.00	Rs 31,117.00	7,81,84,643		
	Upgrading				Rs 5,935.00				0		
	Pavements	488	3.00		Rs 830.00				12,15,120		
	Widening	488		18.00	Rs 15,695.00				13,78,64,880	**TOTAL COST**	
	TOTAL ROAD	857			cost=	Rs 60,17,854.00	Rs 1,99,25,250.00	Rs 2,66,67,269.00	21,72,64,643	Rs 26,98,75,015.50	$ 59,37,250.34

Dosti Flamingo	Roads Impact cost calculation	No. of kms.	Width of Road (mts)		Rate / sq. mt.				Cost		
			6lane	4 lane	Road	SWD	Water Mains	Sewerage line	Roads		
	New roads				Rs 15,695.00	Rs 7,022.00	Rs 23,250.00	Rs 31,117.00	0		
	Upgrading	156	27.00		Rs 5,935.00				2,49,98,220		
	Pavements	399	3.00		Rs 830.00				9,93,510		
	Widening	243	27.00		Rs 15,695.00				10,29,74,895	**TOTAL COST**	
	TOTAL ROAD	399			cost=	Rs 28,01,778.00	Rs 92,76,750.00	Rs 1,24,15,683.00	12,89,66,625	Rs 15,34,60,836.00	$ 33,76,138.39