



CTBUH 40th Anniversary
1969-2009

"Towards a sustainable urban future"

EVOLUTION OF THE SKYSCRAPER

New challenges in a world of
global warming and recession

CTBUH 2009 Chicago Conference, 22nd - 23rd October

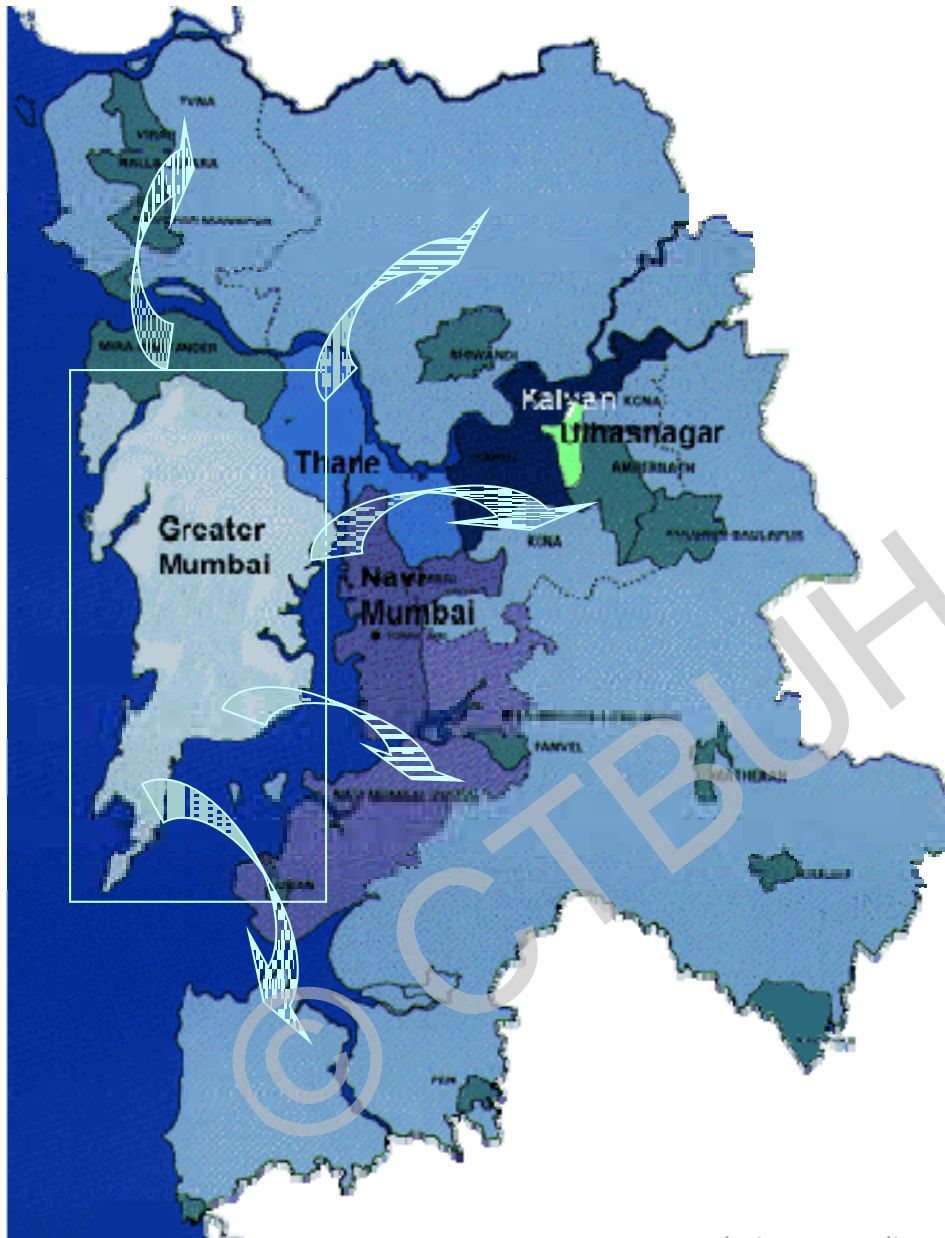
The Remaking of Mumbai in the Sustainable Age

Mr. Ratnakar Gaikwad

*Metropolitan Commissioner,
Mumbai Metropolitan Region Development Authority
Mumbai, India*

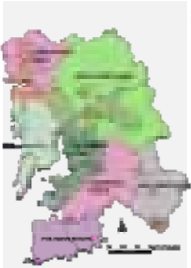


Mumbai Metropolitan Region ...



- **Greater Mumbai**
 - Area – 437 sq. km.
 - Population – 11.91 million
- **Mumbai Metropolitan Region**
 - Area – 4,325 sq. km.
 - Population – 18.89 million
- **7 Municipal Corporations in MMR**
- **13 Municipal Councils in MMR**
- **4 Districts in MMR**
- **> 950 villages in MMR**

Mumbai's strengths

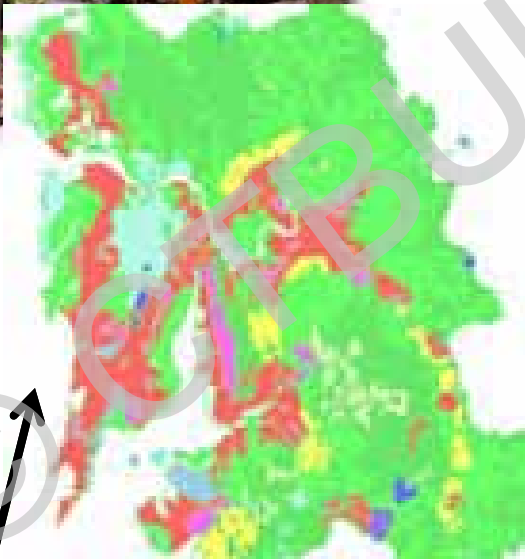
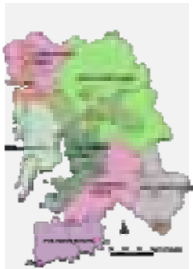


- ↑ **5% of India's GDP**
- ↑ 1/3rd of National Tax revenue Collected
- ↑ **Qualified work force & Excellent work culture**
- ↑ **Cosmopolitan population**
- ↑ **Country's Banking & Financial Centre**
- ↑ Home of major **service sectors**
- ↑ 25% of **Int. & Domestic Air traffic**
- ↑ 2 major **ports**
- ↑ **Bollywood** – Indian film industry

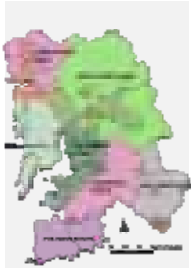


Mumbai's Constraints

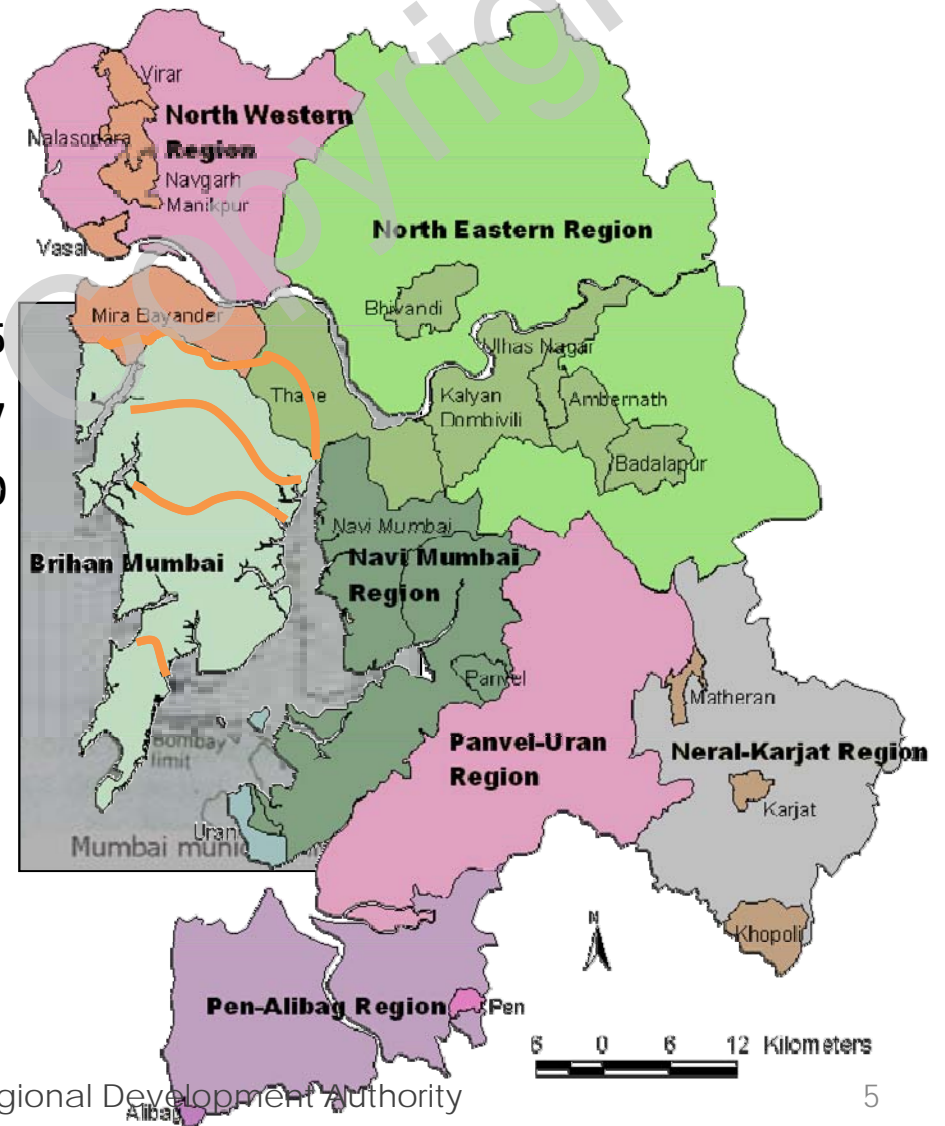
- ↓ **Linear city** constrained by sea three sides
- ↓ Overburdened **transport** system
- ↓ **55% - 60%** population in poor housing (Slums & dilapidated buildings)
- ↓ Shortage of Land for development
- ↓ High **real estate prices**
- ↓ Declining **Quality of Life**
- ↓ **Regulatory constraints**



Mumbai Metropolitan Region



Year	Mumbai	MMR
1971	5.97	6.71
1981	8.24	9.84
1991	9.93	13.38
2001	11.91	17.85
2005	12.8	21.00
2031		34.00



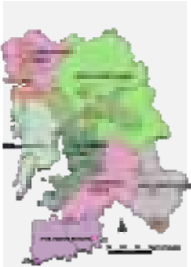
1965
1957
1950

Original
Mumbai

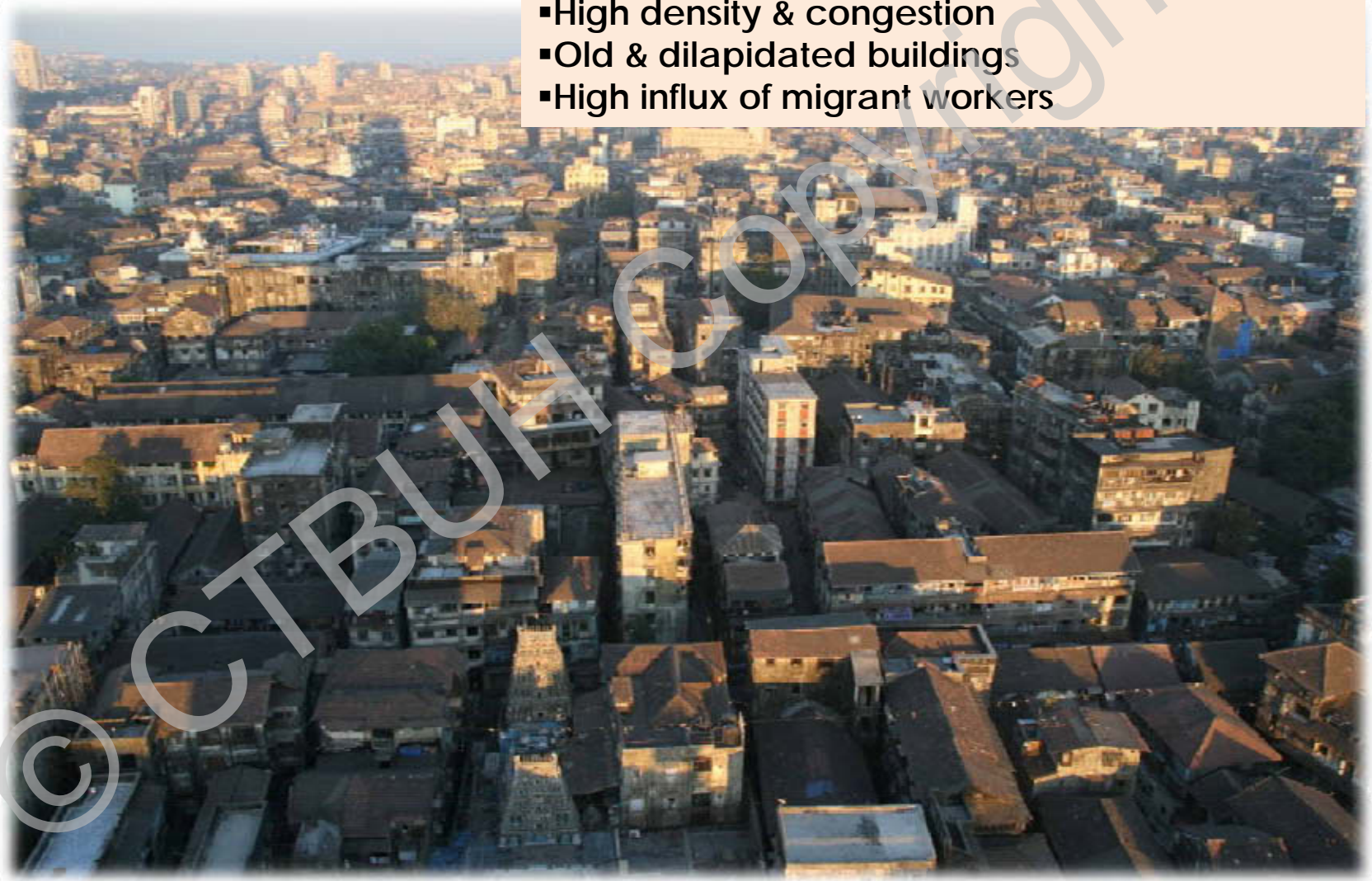
	2005	2031 Proj
Employment	7.5 mn	15.3 mn



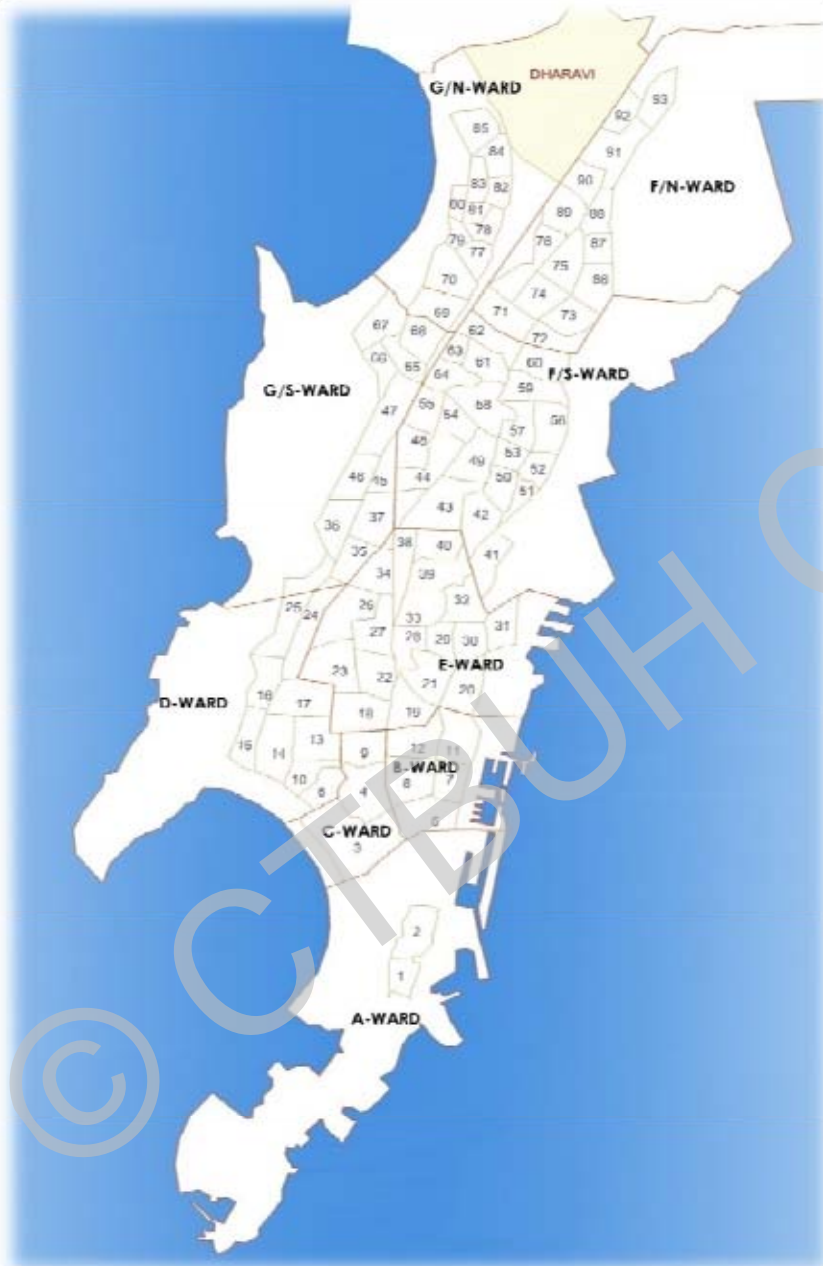
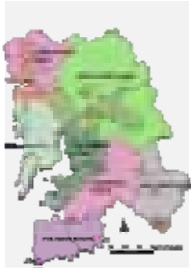
Downtown - Need for Urban Renewal



- Century old development & infrastructure
- High density & congestion
- Old & dilapidated buildings
- High influx of migrant workers



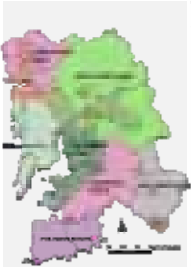
Cluster Development



Mumbai City's Clusters			
Sr. #	Cluster Numbers	Ward	Avg. Area
1	1, 2	A	102
2	3, 4	C	459
3	5, 6, 7	B	107
4	8	B	109
5	9	C	92
6	10,11	B	101
7	12,13,14	D	100
8	15,16	D	105
9	17,18	E	104
10	19,20	E	89
11	21,22	E	101
12	23,24	D,Gs	99
13	25,26	E	100
14	27,28,29,30	E	85
15	31,32	E	127
16	33	E	98
17	34,35,36	Gs	103
18	37,38,39	E	100
19	40,41	Fs	104
20	42,43	FS	110
21	44,45	Gs	89
22	46,47	Gs,Fs	102
23	48,49,50,51,52	Fs	96
24	53,54	Fs	98
25	55,56,57,58	Fs	100
26	59,60,61,62,63	Fs	87
27	64,65,66,67	Gs	98
28	68,69,	Gn	109
29	70,71,72,73	Fn	87
30	74,75	Fn	101
31	76,77,78,79,80	Gn	99
32	81,82,83,84	Gn	99
33	85,86,87,88	Fn	101
34	89,90,91,92,93	Fn	98
Total 93 Clusters in Avg. of 40 acres of area each			



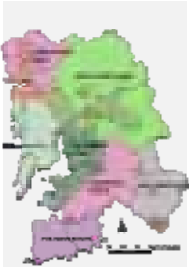
Abundant scope & demand for redevelopment



- Cluster development for better planning
- Incentives for private developers
- Inclusive growth



Mumbai Transformation initiatives



- GoM has taken up the Transformation of Mumbai and the Metropolitan Region to be globally competitive by offering quality life and sustainable infrastructure and high end amenities
- MMRDA is spearheading this mission in partnership with other Government agencies

MMRDA

- Established in 1975
- Planning, coordinating and monitoring the rapid development of the areas in the region
- Executing plans, projects and schemes



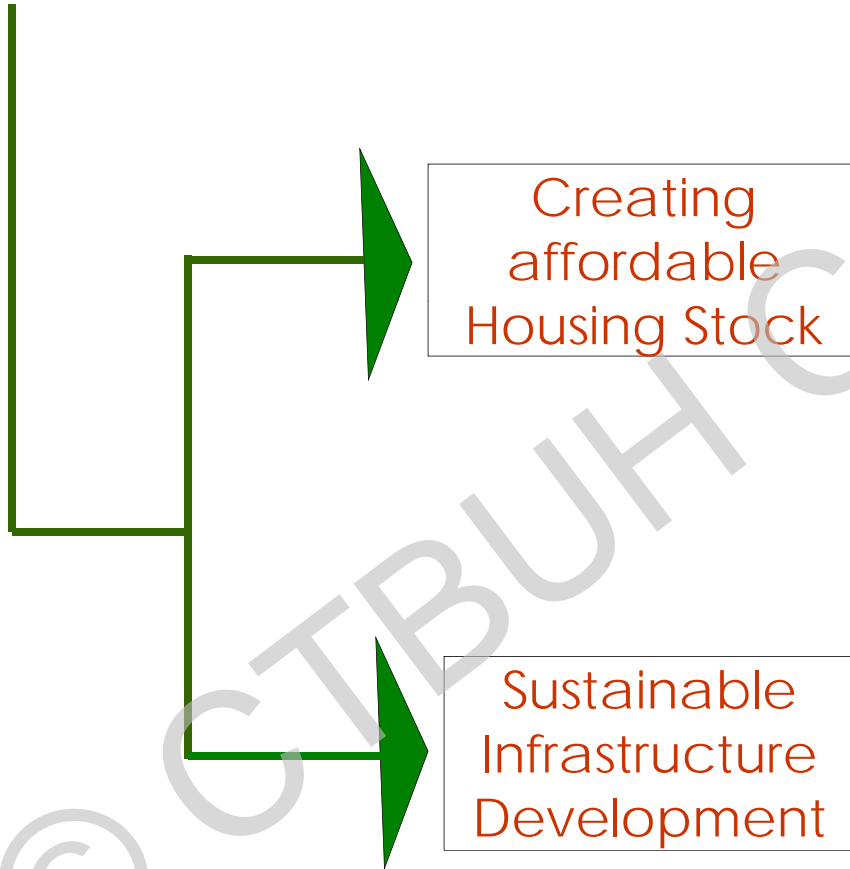
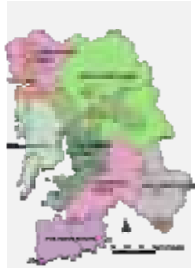
Inclusive Economic Growth

The strategy of Mumbai Transformation revolves around the over-arching goal of **higher, sustained and inclusive growth** in Mumbai and MMR through –

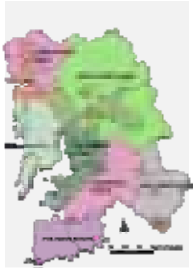
- Developing human resources
- **Access better jobs and self employment opportunities**
- **Promoting** select **manufacturing activities**
- Providing **support to service sector**
- Address **Socio Economic Issues**

Transformation Process

Two main focus areas for transformation



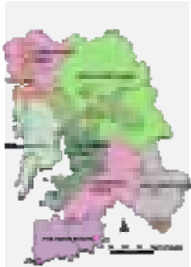
Multiple CBDs; Distribution of "Employment and work places"



Nariman point / Backbay reclamation



Multiple CBDs; Distribution of “Employment and work places”

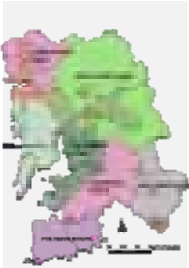


- Higher FSI developments
- Vertical developments

Bandra Kurla Complex &
Andheri-Kurla



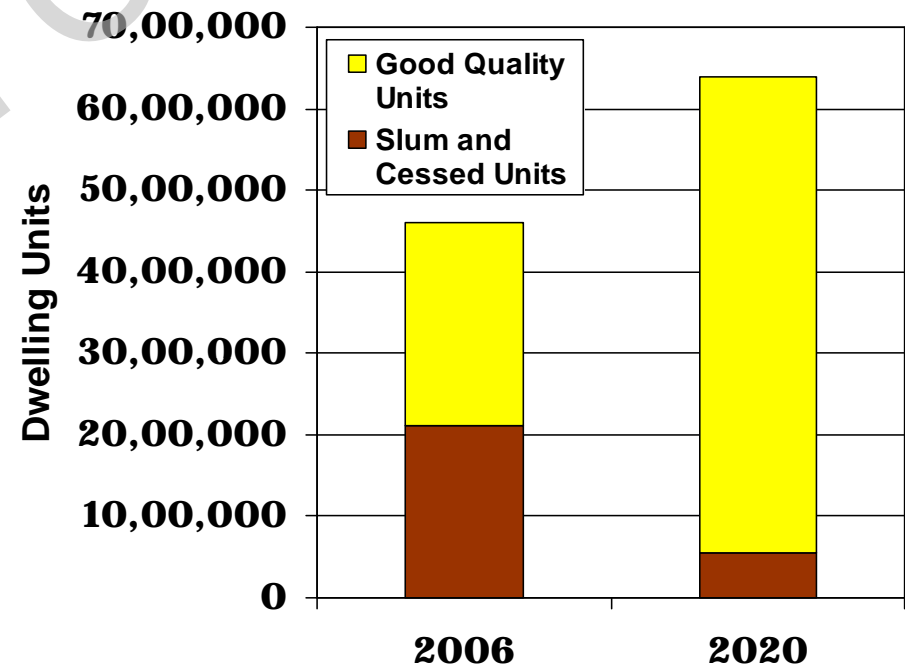
Creating Housing Stock



- Revised "**Housing Policy**" approved
- Urban Land Ceiling Act repealed
- **Urban Renewal** by cluster approach
- **Dharavi Redevelopment** Scheme–
- 50,000 **Low Cost Housing** in MMR
- Govt. **Rental Housing**
- **Slum rehabilitation** strategy

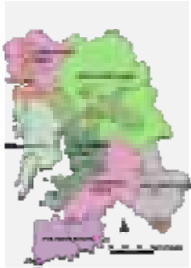


Double the housing stock by 2020 (3mn to 6mn)



Comprehensive transportation plan

Total rail and road length: 2429 km
Estimated cost: US \$ 50.72 Billion



2031 Mass Transit Concept Plan

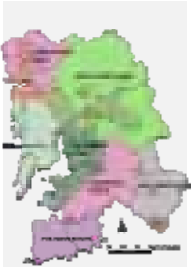


2031 Road Concept Plan

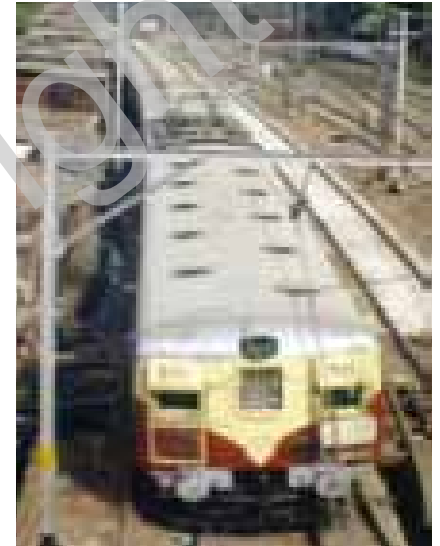


Phase 1 Transport Infrastructure projects

More than \$ 2.0 bn in last 7-8 yrs.



- World Bank funded Mumbai Urban Transport project taken up in 2002 ;
- 65% - investment in Public transport
- 15% - Rehabilitation & resettlement
- 20% - Highway & Road traffic improvements
- MUIP to supplement MUDP - emphasis on road network improvements
- Worli -Bandra Sea link & other Highways



Phase 2 Sustainable Infrastructure Development

Focus on Public Transport

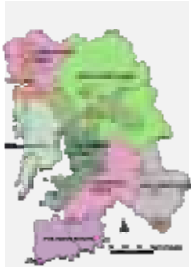
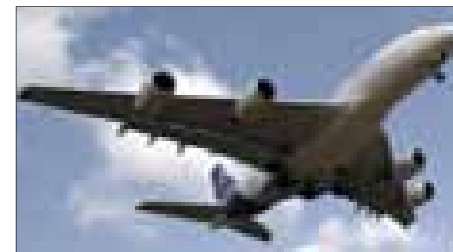
1. Public Transport

- Metro Rail Project
- Mumbai Urban Transport Project
- Monorail Project
- Bus Rapid Transit System (BRTS)
- Water Transport Projects

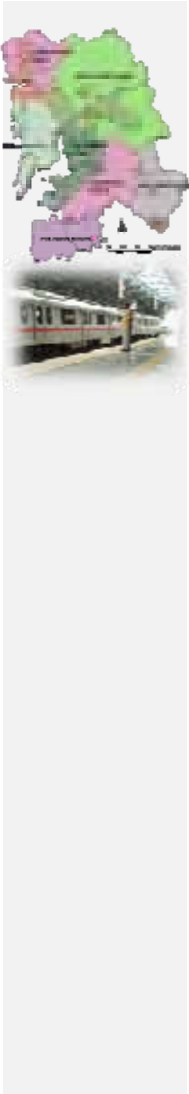
2. Roads, Freeways and Sea Links

3. Improve Water supply Sanitation & SWD

4. Modernization of existing Airport and new Airport at Navi Mumbai



Mumbai Metro



- To provide a rail based mass transit connectivity to people within an approach distance of 1 to 2 k.m
- To serve the areas not connected by existing Suburban Rail system

Key features:

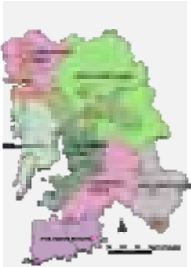
- Total length 146.5 kms in 9 corridors
- Implementation in 2 phases by 2015



Cost: 9.5 bn USD



Mumbai Monorail project



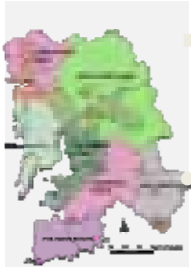
- 2 Corridor in implementation- Expected Completion by April 2011
 - Section 1 = 11.28 km (Jacob circle – Wadala)
 - Section 2 = 8.26km (Wadala – Chembur)
- 2 more lines of 25 km in suburbs



Cost: 2.0 bn USD



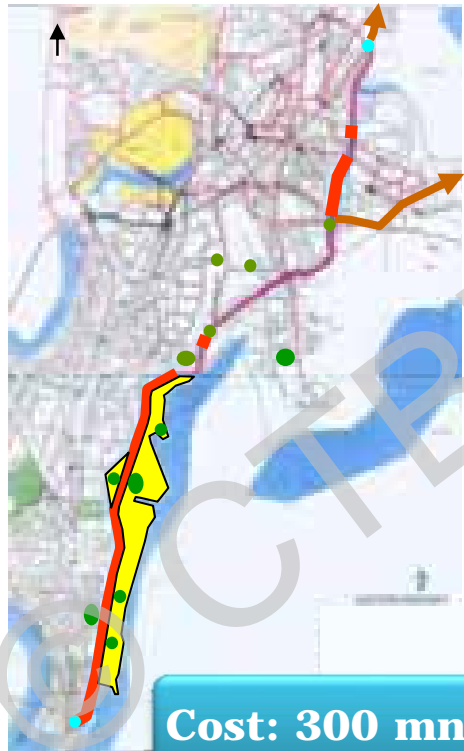
Major projects



MUIP- Eastern Freeway & New international Airport Airport link

30 .00 km elevated road system

Completion : 2011



Cost: 300 mn USD

To provide world-class airport facilities
Enhance passenger capacity to 40 mn./yr



Cost: 2.25 bn USD

Mumbai Trans Harbour Link

Improve connectivity of Mumbai to hinterland
Promote housing and economic development

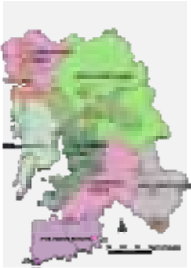
- 22 km, 8 lane bridge
- Construction period 4 years through PPP basis.



Cost: 1.5 bn USD



Civic infrastructure projects



Cost: 800 m USD

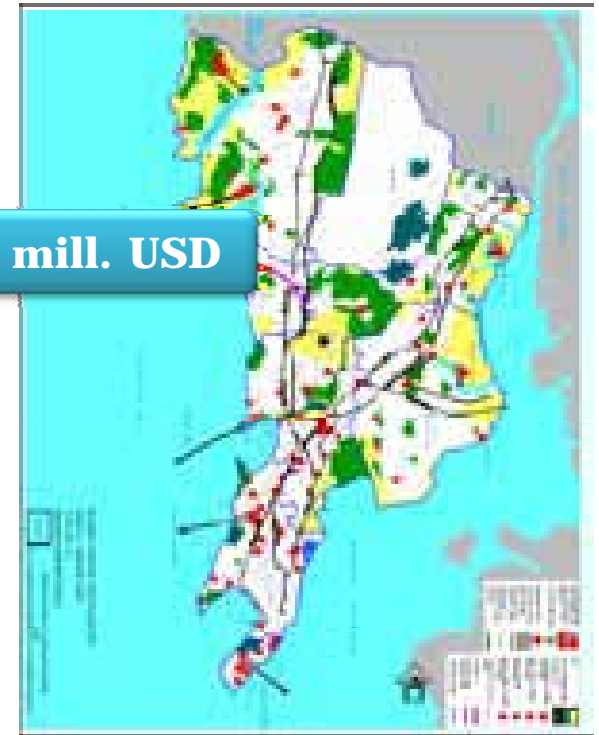
- Augment **Drinking Water Supply** to region
Middle Vaitarna, Kalu Poshi Dams to

- Mumbai **Sewage Disposal** Project
- Brihan Mumbai **Storm Water Drainage**
(BRIMSTOWAD)-



Cost 400 mn USD

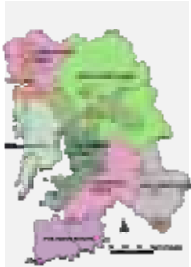
Cost: 472 mill. USD



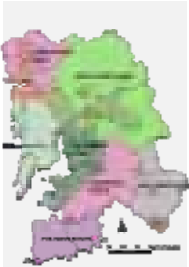
Capital investment in Infrastructure by 2021

1 USD = 50 INR

S.No	Sectors	Investment by 2021	
		Rs. in Cr.	US \$ bn.
1	Port Development	14,437	2.89
2	Airport Development	14,400	2.88
3	Regional Water Resource Development	14,110	2.82
4	Transit Development	108,764	21.75
5	Metropolitan Road Development	15,901	3.18
6	Regional Drainage	2,000	0.40
7	Electricity	54,521	10.90
8	Local municipal Infrastructure	27,875	5.58
9	Land Real Estate & Housing	4,533	0.91
	Total	256,541	51.30



Govt. Initiative in High rise Buildings



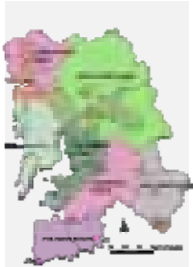
- Create an iconic super tall –structure that will define the City of Mumbai in new millennium.
- To be developed along with Multimodal Transport hub specially ISBT
- The development shall be made possible through public-private partnership

Proposed land area for development	14.0 0 ha. (65.0 ha)
Built-up area proposed for tower (FSI 4)	5,60,000 sq.m
Proposed Habitable floors	80-85 floors
ISBT, Parking other service floors	20 floors
Total height of the structure	531 m

**ISBT-Iconic Building included as Golden jubilee project
 Similar project proposed at Nariman point (size 74 ha)**



Connectivity



Well connected to rest of city and Region by existing & proposed Linkages :

Existing connectivity:

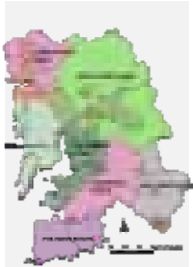
- Eastern Express Highway
- Existing Airport - 6 km.
- Proximity to 4 Suburban station

Proposed connectivity:

- Eastern Freeway
- Mumbai Trans Harbor Link
- Metro-Rail
- Monorail Corridor
- New Airport 25 km by MTHL



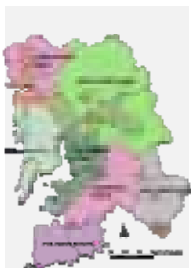
Current scenario of high rise development



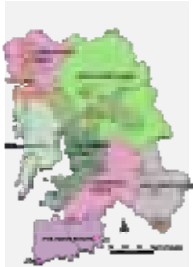
Existing Tall buildings – 958
Under Construction – 270
Planned - 70



High rise growth – nearly 200 high rises proposed in MMR



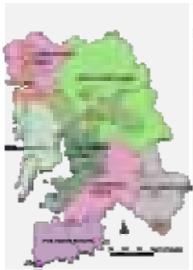
Vertical development



To create more per-capita
Living & working spaces
Open spaces
Transport & Infrastructure



New developments



421 m – 80 floors



320 m – 76 floors



301 m – 85 floors



MUMBAI

Sky line is Changing

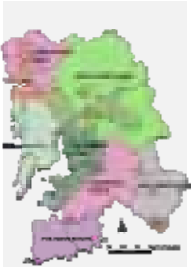
City is now ready to accept sustainable high rise buildings

And

there is a great opportunity

for

Global technical expertise



CTBUH 2010

World Conference – INDIA

Remaking Sustainable Cities in the Vertical Age

3rd – 5th February 2010, Renaissance Hotel & Convention Centre, Mumbai

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