



To make the city a better place
to live, work and invest in

Mumbai @75



The Governance Chronicles

Challenges of Governance of Big Cities and response to Covid

MyMumbai & MyBMC

Area

475.47 Sq Km

Population

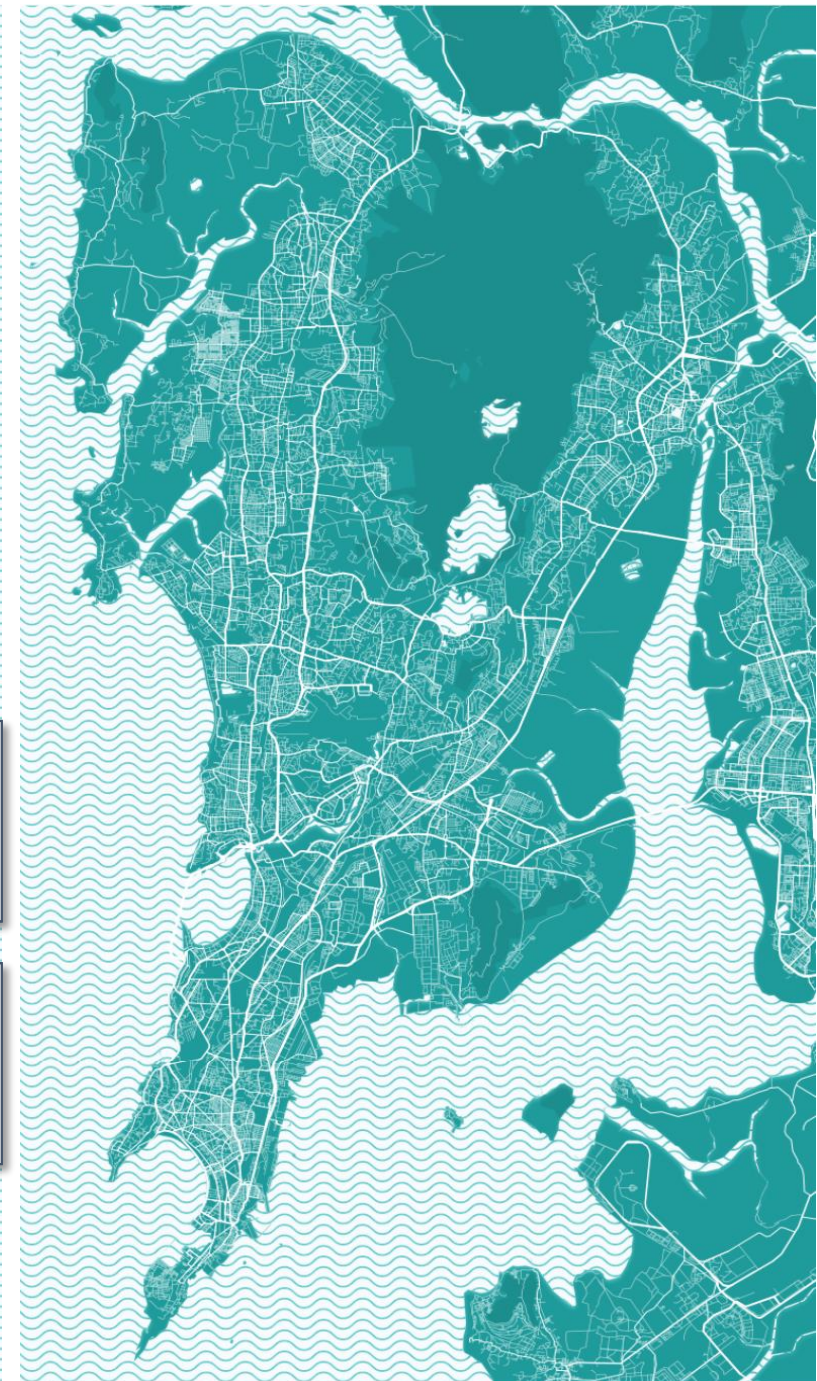
1.4 Cr

(2017 mid year estimate)

Slum Population

70 Lakh

(out of 130 Lakh people)



Governance of Cities

- British carefully drafted Mumbai MC act : long traditions of 150 years of Municipal governance
- Municipal Commissioner's executive authority vs Mayor or Standing Committee : Proactive Vs Reactive
- Great Cities : New York, London and Latin American cities have been transformed by ownership/ and single point accountability of directly elected Mayors Some go on to become Presidents of the nation
- Even Parliamentary Democracies have directly elected Mayors in Cities
- Future Visioning : Climate Change, global benchmarking to Singapore, Hong Kong, Dubai : whose ownership
- Permanent civil society group : Mumbai First , transcending changing governments



Hits and Misses of Mumbai City Governance

Hits

- Revenue beyond property tax : realizing share in unearned escalation of land value via development charges, FSI sale, redevelopment of dilapidated Mumbai Corporation properties
- Decentralized ward governance ; water, garbage, roads, health, education delivery
- ALMS
- Deep technical experience : reservoir based water supply for 15 million people including 50% who dwell in slums, net revenue surplus/ storm water drains IOT to control tidal ingress
- Green/Wild/ Bio/Diverse city amongst very dense human population.. Wonder of good governance and planning success, peoples action



Misses

- Disaster and climate proofing over long time period : Frequent flooding
- Inflexible land use regulations : inability transform and re invent itself : land locked in sick textile mills could not create new fin tech growth engine
- BPT's declining share in global port freightage and underutilized land not replaced by new potential growth sector :Yokohama, Canary Wharf
- British planned suburban railways over 100 years the only mass transport : until ex CM Fadanavis created over 350 KM of Metro, launched Trans harbour link and new Airport :
- No Finality to any decision : small interest groups could hold 4/5 million daily commuters at bay for their perceived interests without respecting the long institutional process of decision making
- Despite lakhs of vacant flats, multiple sra schemes, housing for all /50% in slums
- Leadership which is citizen elected and due to his residence has long futuristic stake in city



[MyBMC - A day in the life of Mumbai's Swachhata
Warrior](#)

Do You a holistic vision for your city ?

Mumbai - Climate Resilient & Circular Economy

Circular
Economy

Climate
Resilience

Governance

Challenge # 1: Mumbai space constraint; hence infrastructure expansion constrained and slums

Mumbai City
Total Area in Sq. Km.

475.47

Developable Area
in Sq. Km. & %

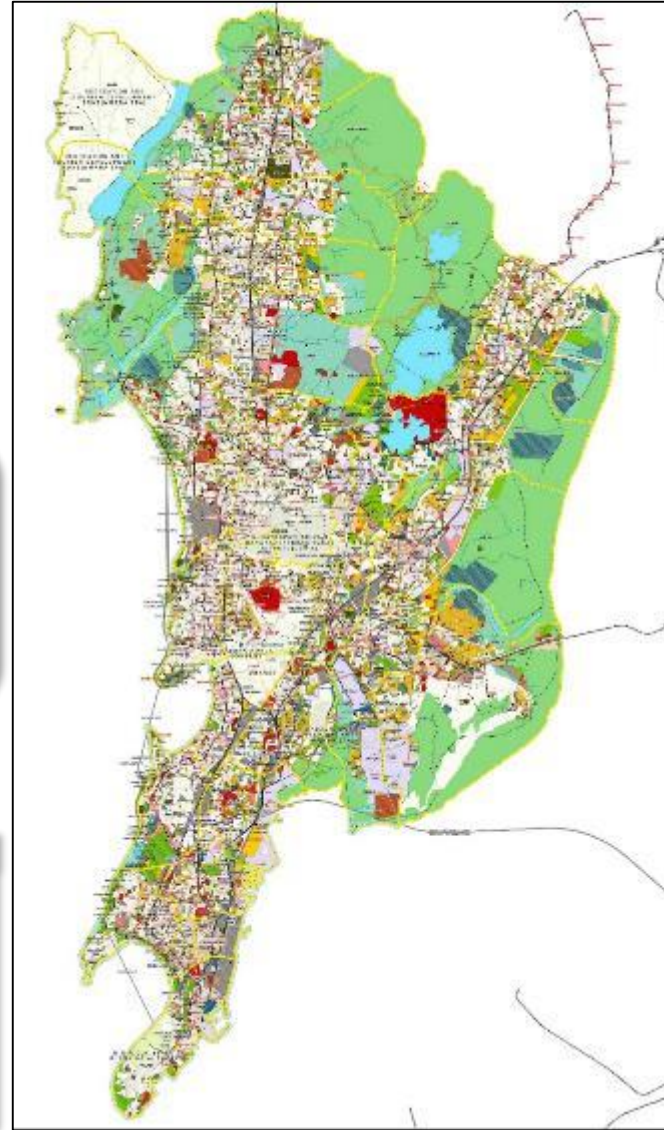
142.57
29.99%

Area which CANNOT be
developed in Sq. Km. & %

332.89
70.01%

Area which CANNOT be developed	Area
Area under Special Planning Authority	43+
Natural Area & CRZ I*	126+
Existing & Proposed Road Area	57+
Designation (Excl. Housing & Offices)	65+
Reservation (Excl. Housing & Offices)	33+
Remaining area of Aarey	8+

*(SGNP + CRZ I + NDZ, TDA, Salt Pan + Natural Water course)



50% of Mumbaikars live in slums – diminishing our ability to respond to demands of nature (rivers), expand infrastructure, disaster management



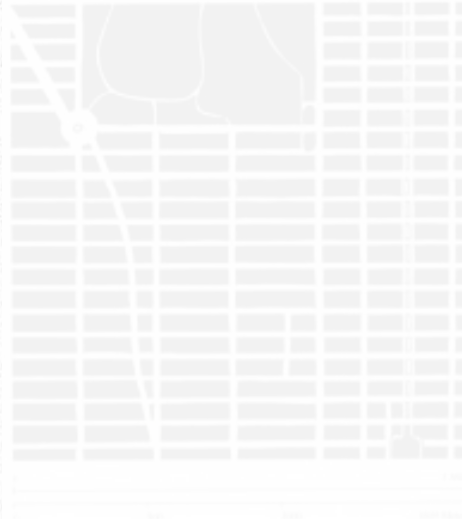
Photo credits: Johnny Miller

Challenge # 2: Less Public Spaces BUT more wasted Private Open Spaces

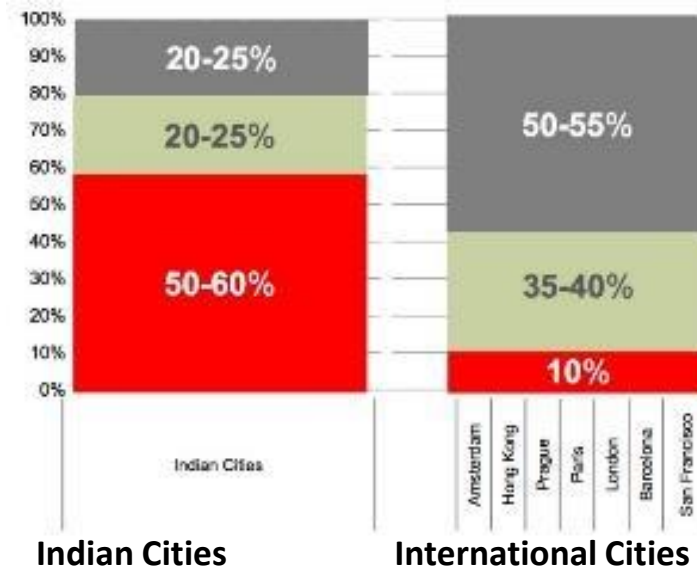
Credits: Dr Bimal Patel (President CEPT University)



Mumbai
Total Area: 259 ha
Streets: 29 ha (11%)



New York
Total area: 259 ha
Streets: 86 ha (33%)



- Building footprints
- Public Spaces
- Private Open Spaces

Public space under streets provides city infrastructure

Create new roads without halting Mumbai

City planning – Coastal roads like done by all major cities



More Public space for streets

More Open Green Spaces

More Speed & Mileage

Barrier to rising sea levels

Public Interest Litigations on NIMBY

Use of Eco Concrete

Approach - Not just save environment, but promote & strengthen it further

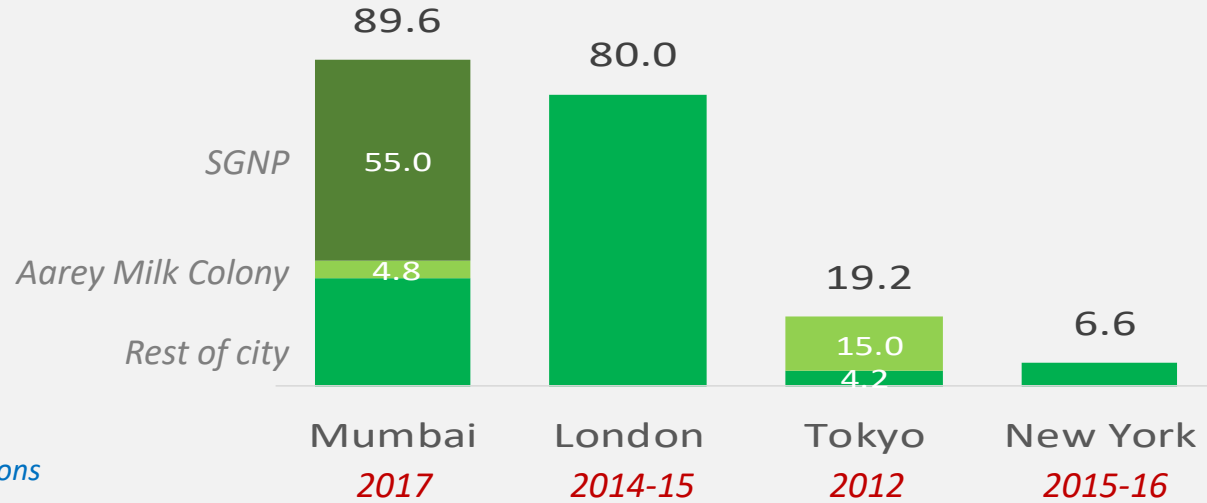
Eco Concrete



Challenge of Air Pollution : First the good news

Mumbai has higher green cover than any other mega city

Trees (in lacs)



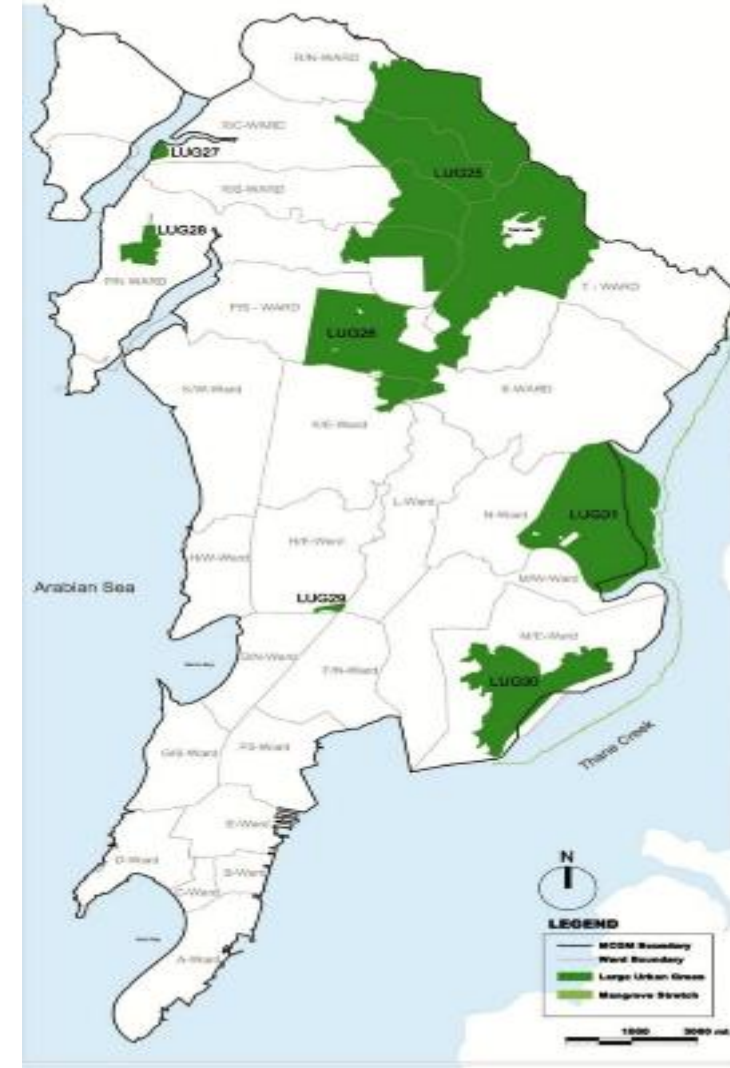
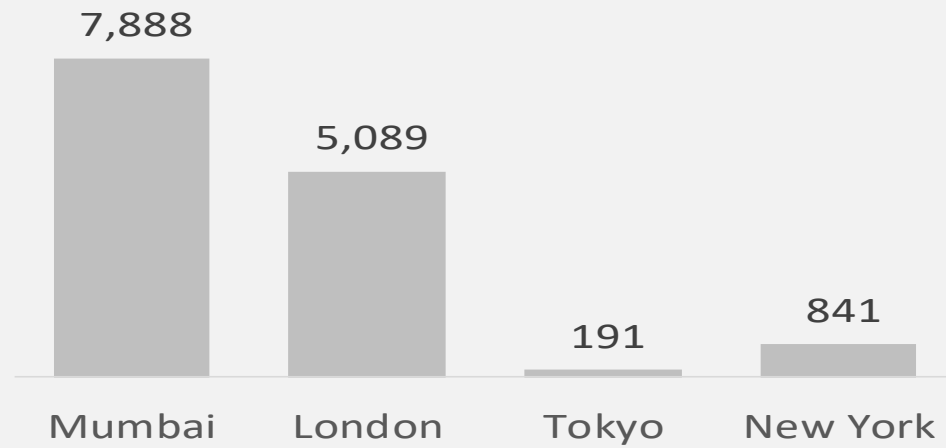
SGNP has ~55 lac mature trees and additional 3.5X saplings & regenerations

Trees per Sq. Km.

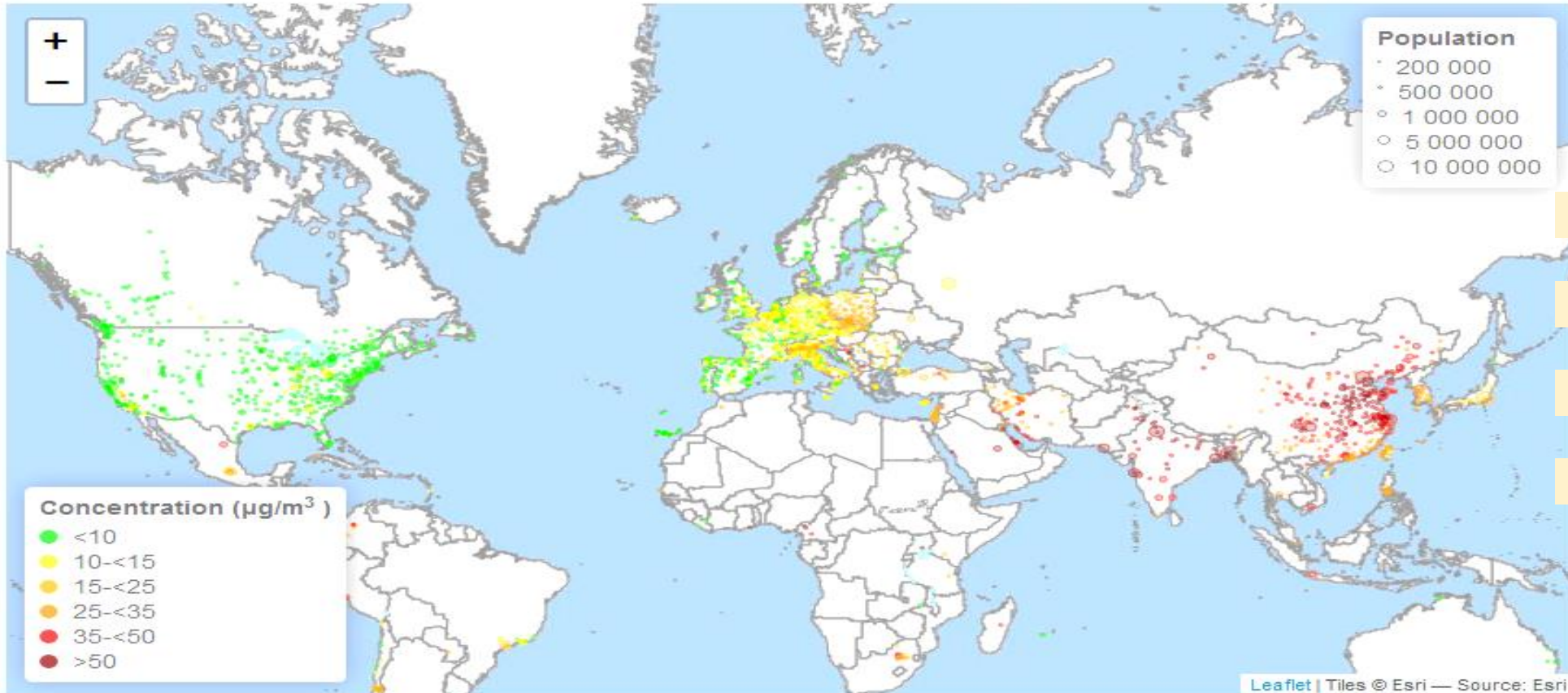
Source:

- Mumbai: Tree census 2017 by MCGM. Article published on Dec, 21, 2017 in Asian Age by Sonali Telang quoting tree census data of Mumbai.
- Article published in The Asian Age dtd 8th Sept, 2019.
- Tokyo: The Urban Forest of Tokyo(Article published online on 27.3.2012 by Sheauchi Cheng, Keizo Fukunari and Joe R. McBride)
- London: Data taken from London Datastore
- New York: Tree count 2015-16 street tree census inf on official web of new york city department of parks and recreation. Nycgovparks.org/trees/treescount.

Despite excluding 55+ Lacs SGNP trees



PM2.5 Concentrations in cities across the World in 2018 (Source: WHO)



City	PM2.5 Concentration (µg/m³)
Beijing	73
Mumbai	64
Johannesburg	41
Tehran	28
Mexico City	22
Tokyo	17
Paris	16
London	12
New York	7

In micrograms per cubic meter

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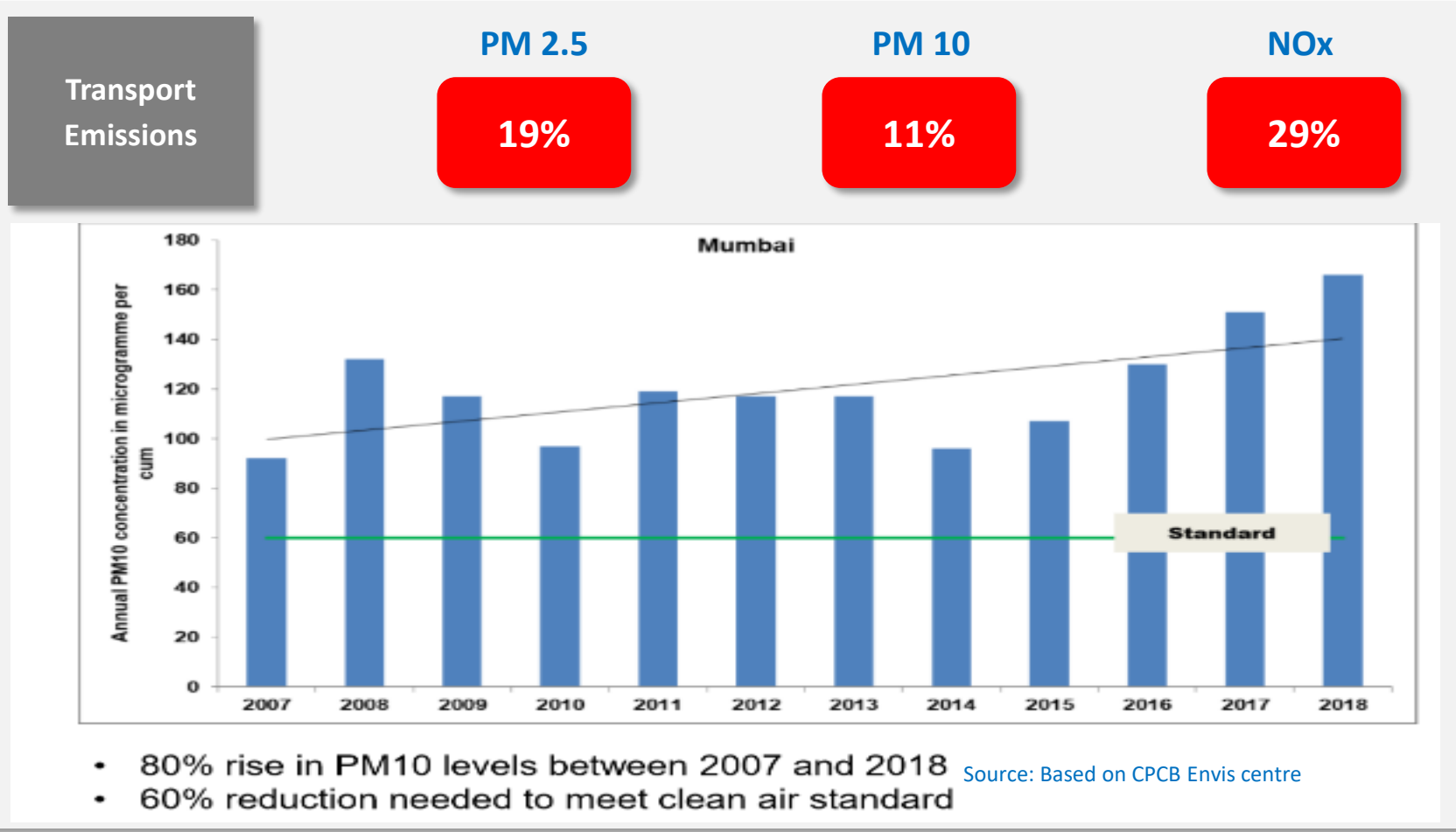


Air pollution & # vehicles in Mumbai have grown rapidly

More vehicles on road > More time to travel due to congestion and long distances > Poor public transport

Year	# Vehicles (lacs)
2016	28.2
2015	25.7
2014	23.3
2013	21.9
2012	20.3
2011	18.7
2010	17.7
2009	16.7
2008	16.1
2007	15.0
2006	13.9
2005	13.0
2004	12.0
2003	11.2
2002	10.7
2001	10.3

Before Ola, Uber Era

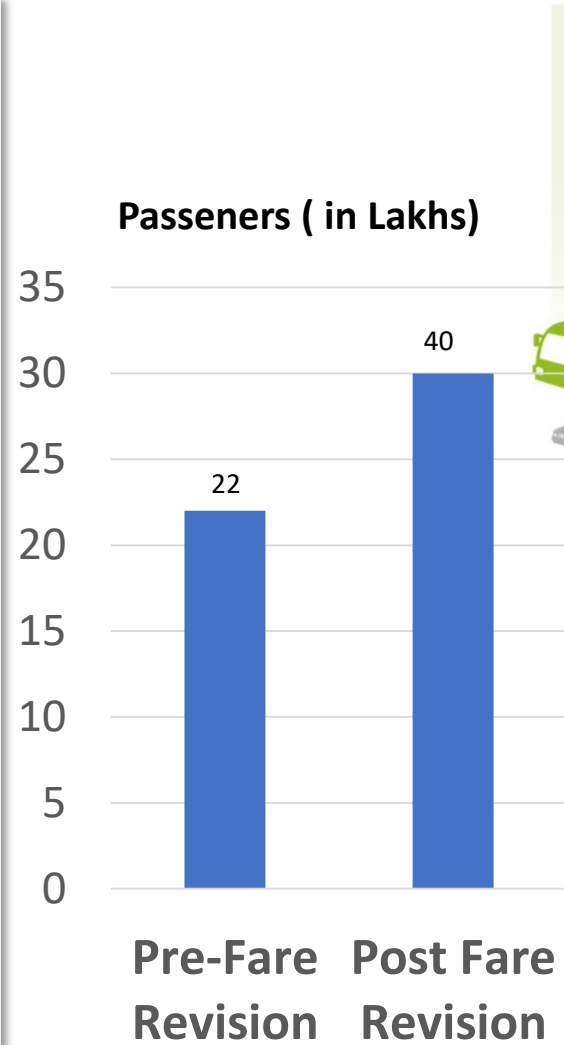


Source: MoRTH Statistics



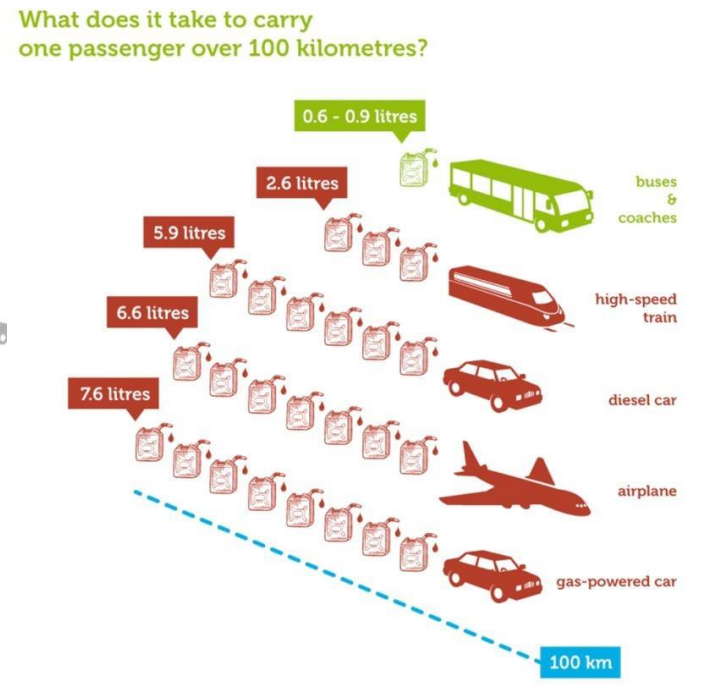
Public Transport – BEST – Growth in Passenger Numbers

- The bus fare slabs rationalized from 16 slabs to only 4 slabs
- Minimum fare is only
 - Rs.5/- for Non-AC
 - Rs.6/- for AC
- Wet leasing of new fleet operating at 15%-20% less price compared to BEST owned
- Added 2000 buses



1 bus
can replace a minimum of
30 cars

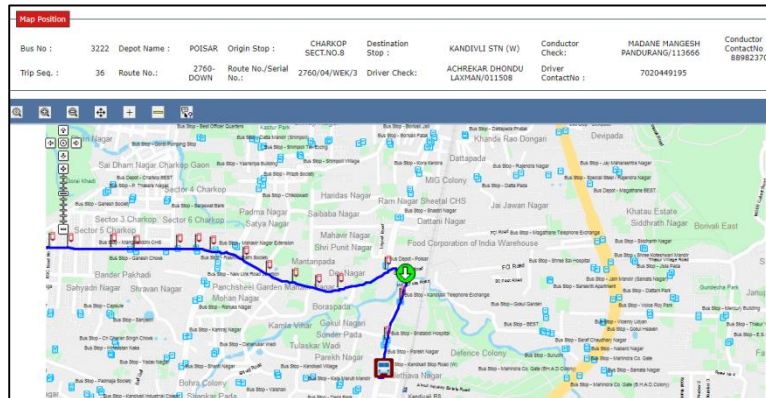
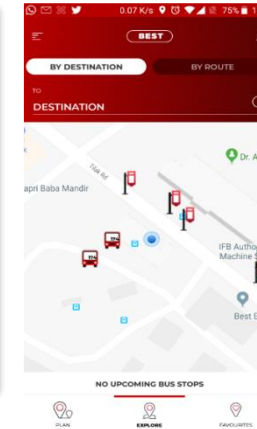
bus & coach
are the **greenest**
modes of transport



Source: Union of Concerned Scientists

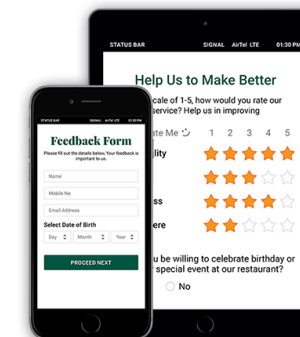
Public Transport – BEST – PRAWAAS

- ▶ Real Time Tracking of buses
- ▶ Availability of ETA on mobile app and on bus stop LED displays
- ▶ Announcement of next stop in a bus.
- ▶ Auto availability of arrival & departure timings of buses at Chowky



- ▶ Monitor Driver's Behaviour
 - Over Speeding
 - Route Diverted
 - Skip / Miss stops
 - Unauthorised stoppage

- ▶ Improve quality of service
- ▶ Real time passenger feedback from mobile application
- ▶ Centralise access of data & applications.



Challenge Space for trees Miyawaki plantation

10x
growth

30x
denser

100x
biodiverse

100%
organic

Low to No
maintain-
ance

More
oxygen

Good
sound
barrier

Promotes
ecology
upgrade



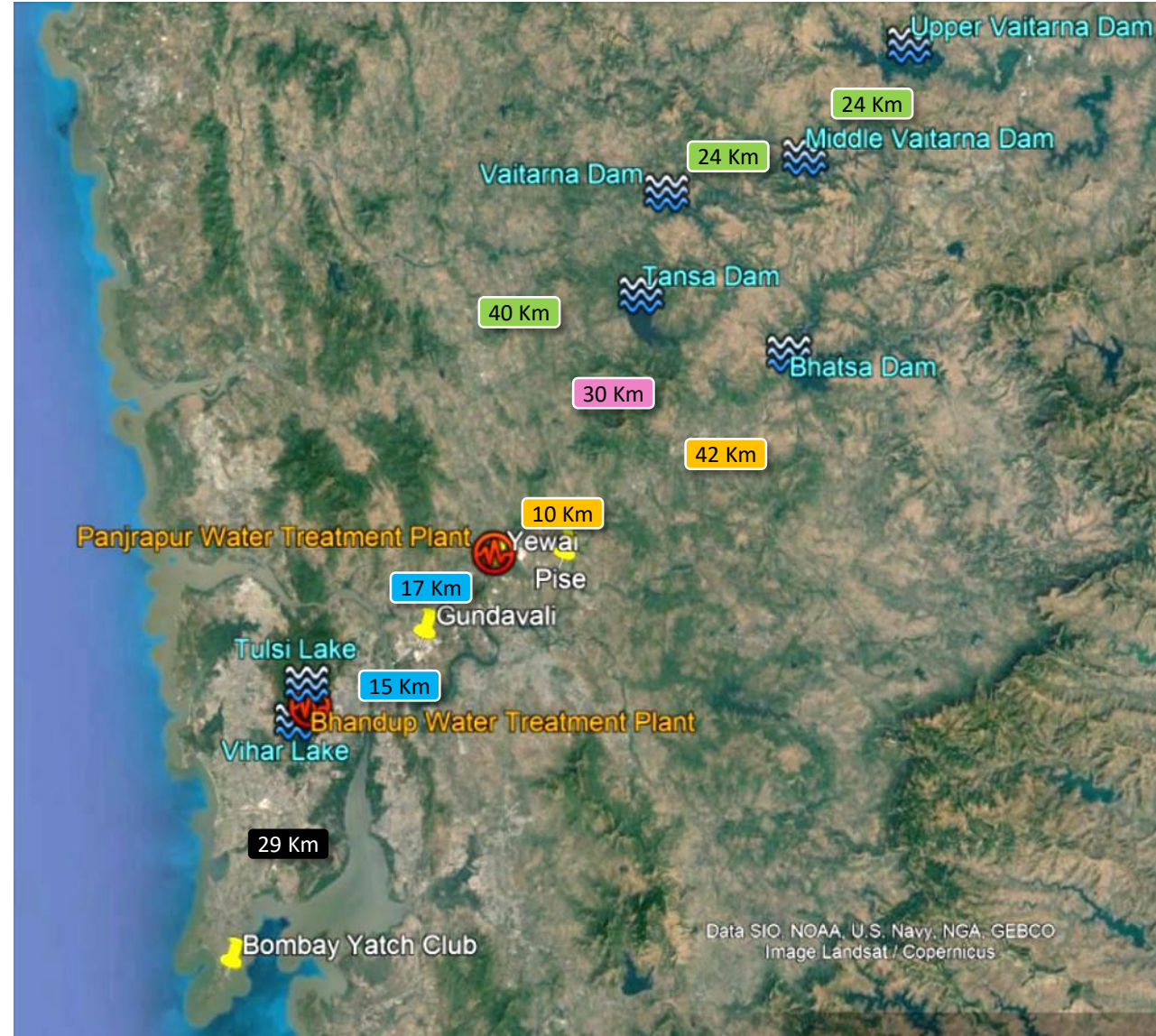
Ground Digging and Preparation to Plantation of Various Trees / Plants

(Ref: Priyadarshini Park)

- Miyawaki Plantation in all BMC gardens
- 80+ plots identified
- More than 4 Lakh samplings to be planted
- 1.4 Lakh + sq. mtr land under Miyawaki
- Move towards Dense Urban forestry instead of paved surfaces or lawns in open areas
- **Miyawaki plantation is compulsory on open spaces for all new >2K Sq. Mt. Real Estate projects**

Challenge : we will run out of water : can we use market to support Circular flow

- 3750 MLD water supplied to Mumbaikars. Daily!
- 6800 Kms long pipelines
- Most modern facility centres, acknowledged by international bodies
- Amongst the cheapest & purest water in any mega city in the world!



Average cost of water incurred by BMC:
INR 15/m³

Average Residential cost:
INR 5.25/m³
(90 % of total)

Average Commercial cost:
INR 35-40/m³
(10% of total)

Water – Circular Economy – Conserve & Treat water Recycle – Blue seas, lakes, rivers

Growing challenges

- 3750 MLD + 2060 MLD water is estimated to be required by Mumbaikars
- Sourcing this water by creating additional reservoirs 150 km away is environmentally unsustainable

Conserve + Reuse

- REUSE, instead of building new Dams
- Rainwater harvesting for toilets flushing & gardening. 5% rebate on property tax. ~1350 MLD water can be saved.
- Volumetric metering of individual flats to incentivize water conservation

Treat + Reuse

- Sewer coverage from 68% to 100%
- 7 WwTFs with a capacity of treating 2000+ MLD
Recycled water to be sold to nearby bulk water user
- STPs mandated while approving building plans for large schemes
- Bulk non-human consumption water to come from treated waste water and rain water harvested

Renewable Energy

- 25 MW hydro power generation plant in the Middle Vaitarna dam
- Installing floating solar panels on 3 reservoirs owned by BMC: Modaksagar, Tansa and Middle Vaitarna

Challenge of Waste Management – Circular Economy

Today's situation

- 6700 MT of waste is collected by BMC and diverted to dumping grounds
 - This is down from the 9000 MT of waste in 2016
- 32,700 Staff
- Vehicles
 - 423 BMC +
 - 1538 Contractors
- 2000 km of roads is swept daily

Discipline – Reduce, Reuse, Recycle – Rewards

- 10% rebate on Property Tax
 - Segregation + Recycling + Composting
 - Farmer Producers Organizations LINKED TO bulk generators of Compost
 - 3 large Dry Waste Processing Facilities
 - 37 small Dry Waste centers under EPR (Coca Cola, PepsiCo, ITC, Unilever, Plastic Manufacturers Assn)
-
- Waste to Energy plant (600 TDP to be expandable to 1800 TPD) is coming up in Deonar Dumping Ground - will generate 4 MW of power
 - Reuse of construction and demolition waste from plant with capacity of 1200 TPD

Waste Management - Model Societies - Case Study: Marathon ERA CHS



Challenge : Disaster Management in Climate Change, extreme weather

Dahisar River 12 Km

Poisar River 7 Km

Oshiwara River 7 Km

Mithi River 17.9 Km

**26 July, 2005
Mumbai flood**



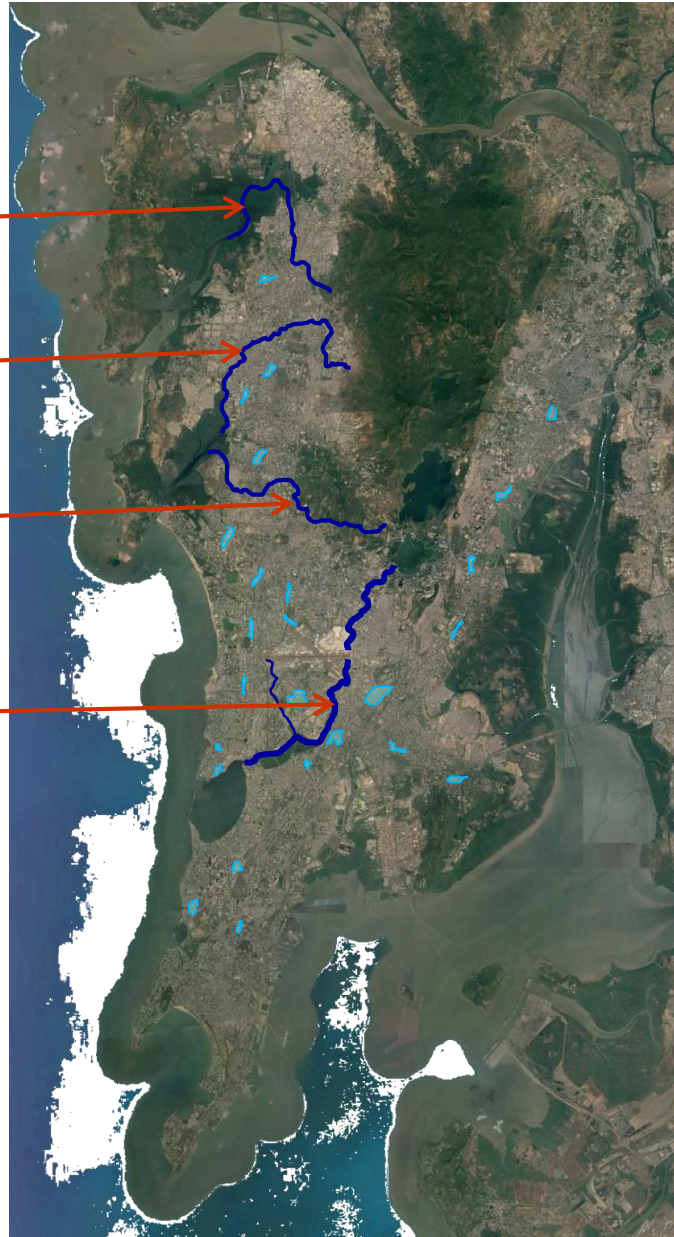
Flooding

Dahisar River 12 Km

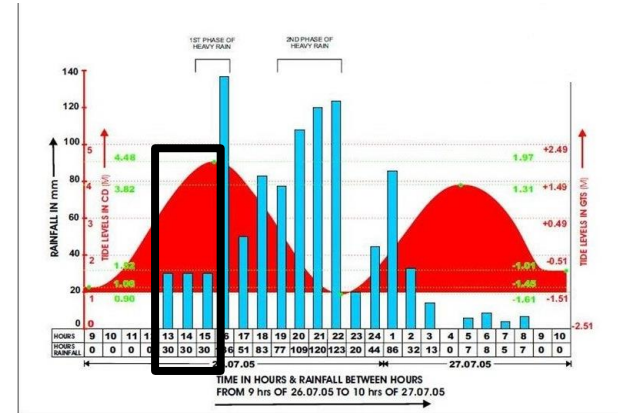
Poisar River 7 Km

Oshiwara River 7 Km

Mithi River 17.9 Km



**26 July, 2005
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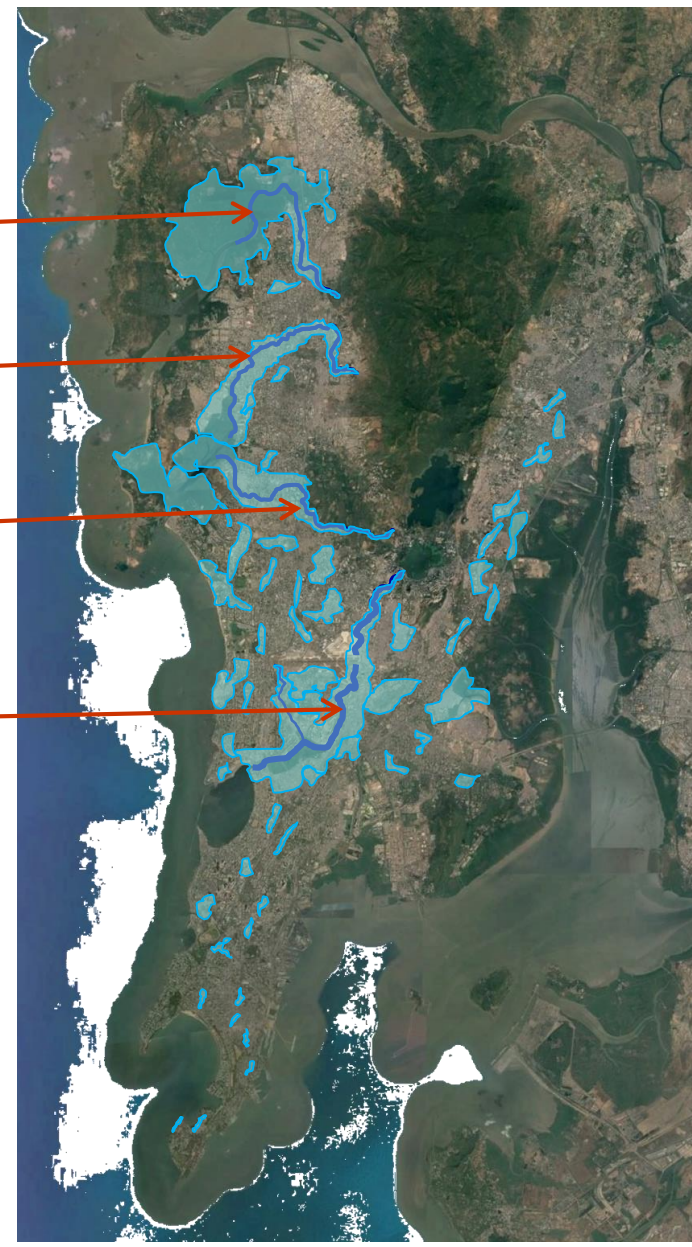
Flooding

Dahisar River 12 Km

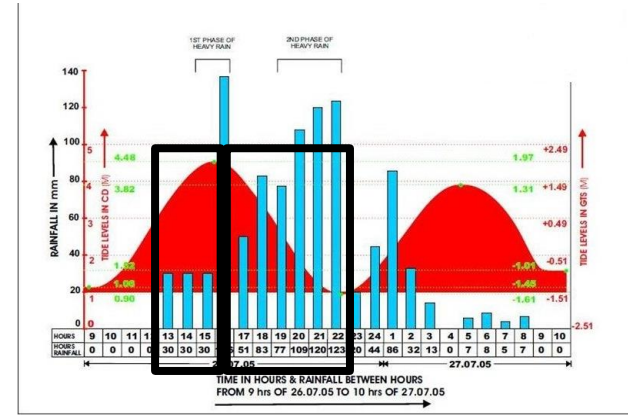
Poisar River 7 Km

Oshiwara River 7 Km

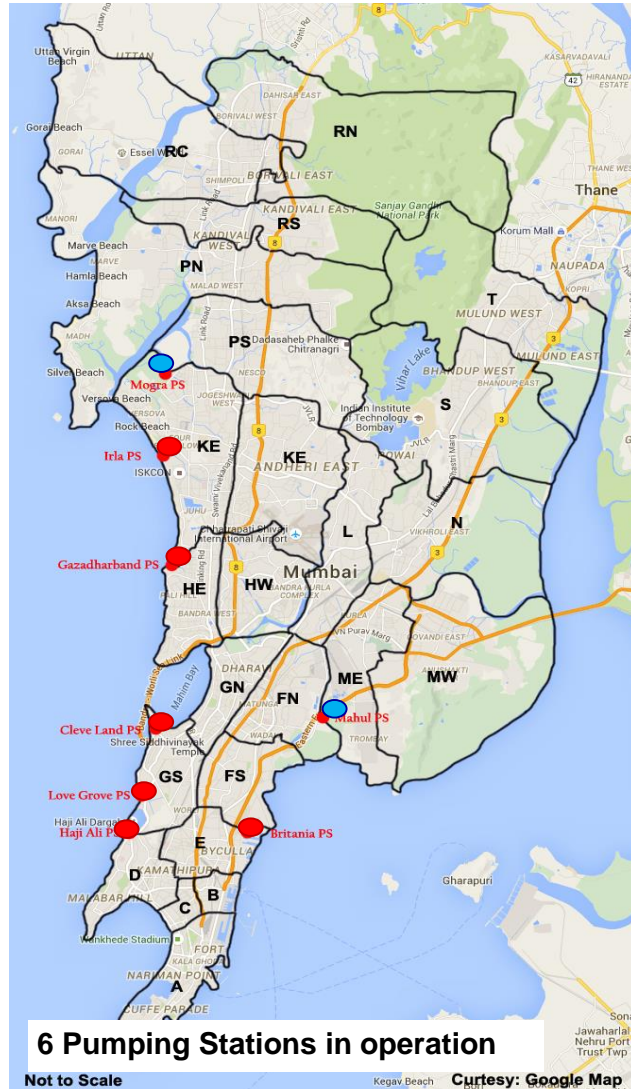
Mithi River 17.9 Km



**26 July, 2005
Mumbai flood**



Flooding – Traditional solutions overwhelmed by pace of Global warming



Measures taken post 2005: Prevention & Mitigation

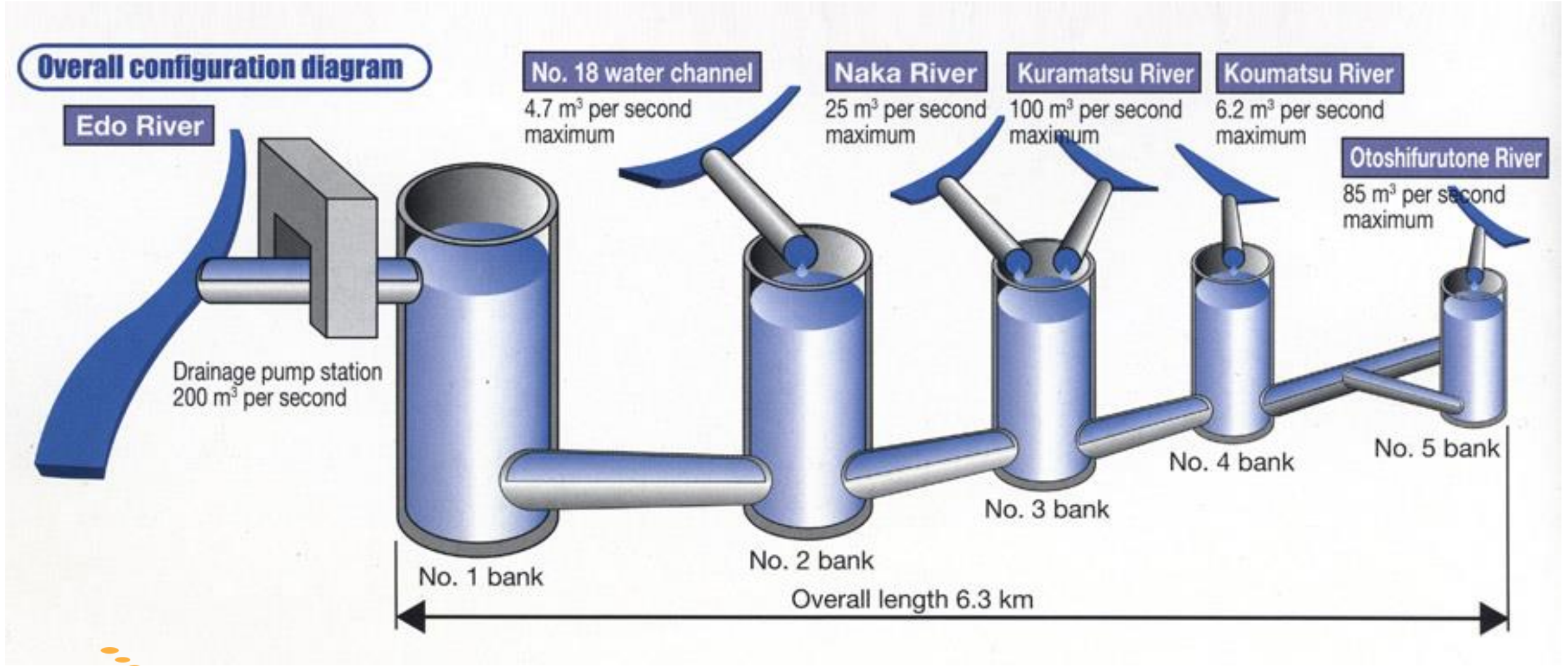


Despite these interventions, flooding in Mumbai happened in 2019

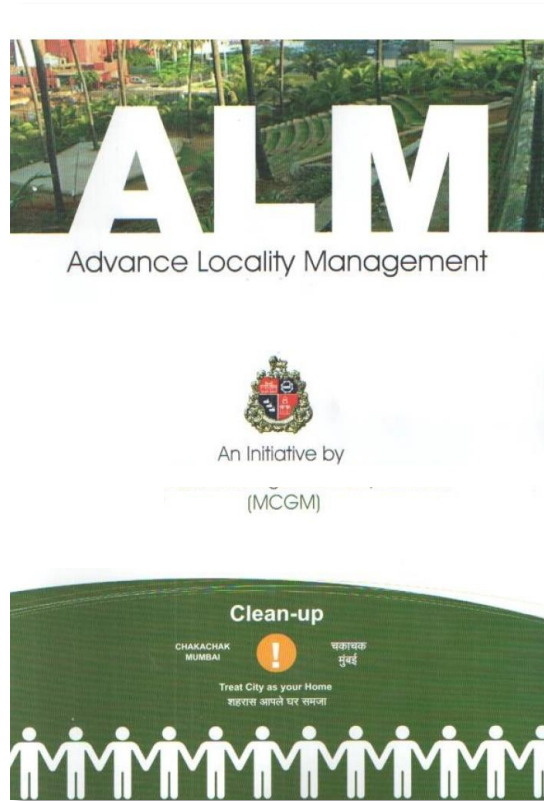
40% of rainfall in 2019 in Mumbai was received in just 3 rainfall events
CLMATE CHANGE is leading to greater intensity of rainfall in very few rainfall events



Flooding – Solutions built in Tokyo



Challenge of Citizen ownership : ALMs & Empowered Ward teams : substitute for directly elected leadership ?



Clear policy & rules based approach

ALMs to be local problems solution providers & catalysts

Decentralized decision making and Empowered Ward teams – more spends budgets with tight monitoring by ALMs

More staff at Wards – Water & Jr Engineers now aligned to Ward teams instead of respective verticals

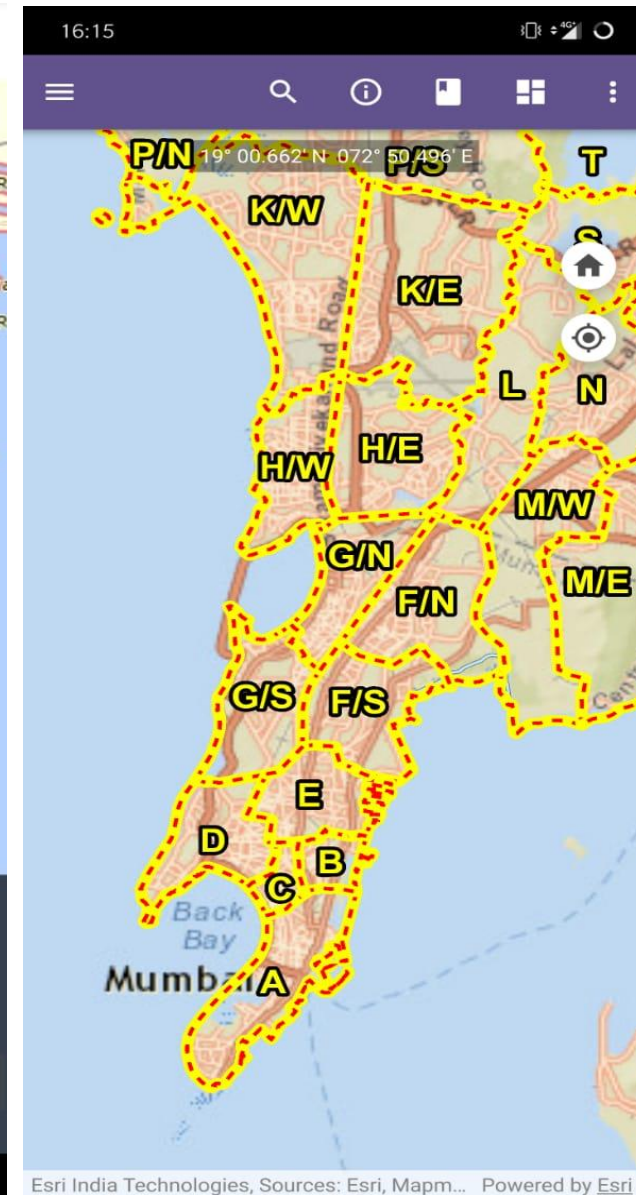
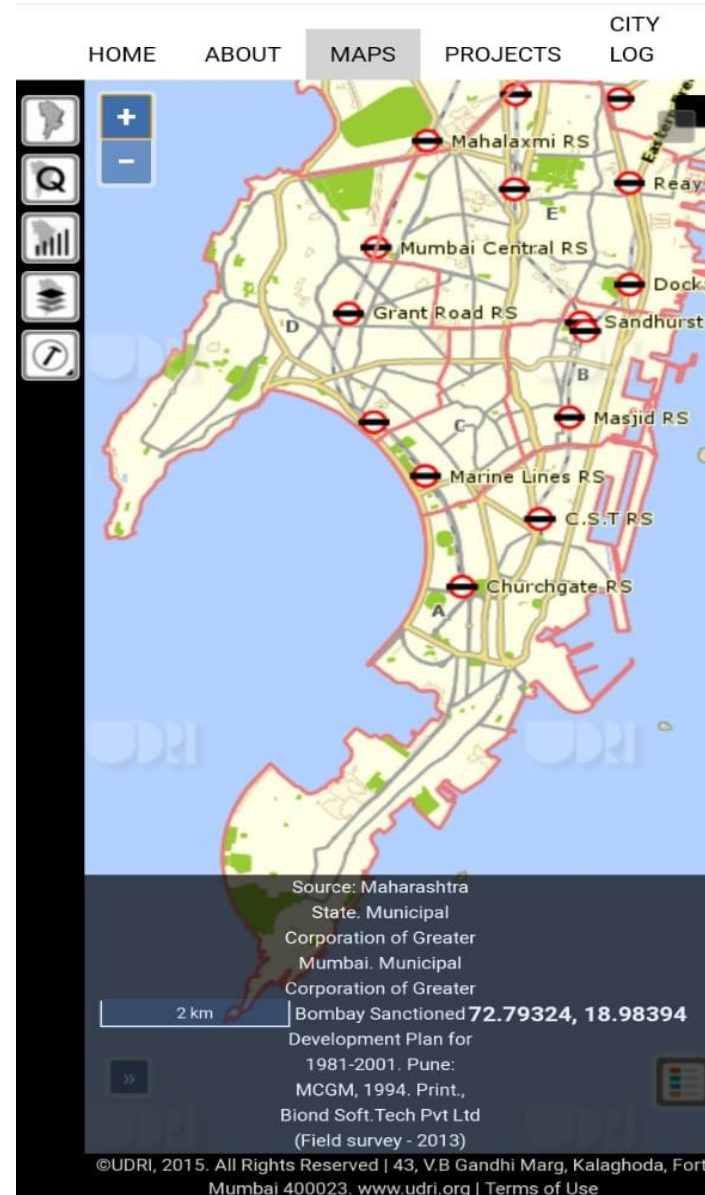
Improving citizen connect, transparency, accountability

...and also create a sense of “empowered ownership”

Citizen Centric Governance: using GIS

Data available in public domain on Development Plan App and BMC website

- MyBMC Twitter
- MyBMC Facebook
- MyBMC 24X7 App



Some Principles

- Have 'dream' vision , work with your team and larger external stakeholders to align your vision with their ownership
- Work with elected representatives to share common developmental vision and coordinate and share actions being taken to give them ownership
- Partnership with all opposing forces before they become opponents : NGO, civil society groups, press
- Knowledge driven, counter intuitive approach to policy making rather than routine incremental approach
- Problem solving approach with juniors rather than instruction and order giving approach
- Can work with Judiciary for common developmental goals