beyond Urban
Mitigating urban biases in planning processes in the Mumbai Metropolitan Region

Selina Abraham
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Student Number
4616766
Mitigating urban biases in planning processes in the Mumbai Metropolitan Region

urban

/əˈbɜːn/  

adjective

1. in, relating to, or characteristic of a town or city:  
   *urban population*  
   *urban; town; city; inner-city, densely populated, townified, cliffed, metropolitan, suburban, non-rural, More*

2. denoting or relating to popular dance music of black origin:  
   *hip-hop's traditional urban style*
Acknowledgements

This has been a long year with many ups and downs. But a lot of people have contributed to making this a report that I am proud of.

I would like to thank my parents Sunita and Selva, for helping me with this opportunity to study at TU Delft. Without them, this would not have been possible.

I would like to thank my official mentors, Mike Emmerik and Vincent Nadin. I would also like to thank my advisor, Victor Muñoz Sarz who has been an additional mentor in an unofficial capacity. I am very grateful for him continuing his mentor-ship in his personal time.

Mike has been essential in helping me stay on track and creating a convincing storyline without drowning in a complex context. I am thankful for his role as my research group coordinator and as a mentor; and for his patience with my hectic schedule. He was really helpful in formulating the project definition.

I am very grateful to Vincent for helping me structuring my project considering that I started with variety of interests in my context. With his guidance I was able to narrow the project to a convincing storyline. I am thankful for helping in defining the strategy. He also helped me in getting my terminology straight to make my defence stronger. I am also thankful for him cheering me up when I was having an existential crisis about my project and my general ability to finish it.

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Victor has been very essential to this project; particularly his familiarity with context was crucial to defining the project. And he always has a sympathetic ear to my frustrations with the complexities of the flawed democracy that is India.

His guidance has been wide ranging from complex political issues to opinions on my contents page.

Both Victor and Mike have been insistent that I sketch for the project; I am sad to say I procrastinated this till the last minute. But I really had fun with sketches I did do and I am grateful that they encouraged me to do so. I would also like to thank Fransje Hooimeijer and Diego Sepulveda for providing me time to consult on key aspects of my project.

Lastly, but not the least; I would like to thank my friends who have stood by me during this graduation period. I would like to thank Jesse, Karishma, Kendra, Yue, Johanna, IJsbrand, Kseniya; all who helped with reviewing bits of text or graphics, or just general motivation. I would like to thank my research group, Design as Politics - Gustaf, Gereon, Yue (again), Alejandra, Sarah, Floortje and Jorien; particularly for their support and feedback. And also, we had a really fun trip to London.

I would like to thank my house-mates: Magda and Chris who have been very supportive; often with wine during this period. Especially the time when I lost my voice during P2 and they both translated my frustrated signing and did my groceries when I could not. The simple things make the biggest difference. I would not have been able to graduate without them.

And I would also like to thank Turkuaz, Alois, Gerard and Ahmed for their love and support. I am also grateful to Ellen, my student counselor and Ingrid for being there when I needed them; especially when my OCD moments became a tad counter-productive.
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Introduction

Project Definition

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Sources
1.0. ‘Mumbai is upgrading’. Original Photograph and edited image by Author (2018)
1.1 Abstract

India is urbanizing at a massive rate, and predicted to have 50% of its population classified as urban by 2050. The Mumbai Metropolitan region is an urban agglomerate that represents the emancipatory qualities of urbanisation while simultaneously showing signs of urban decay that reflects a poor urban strategy. This urban decay is however blamed on the city’s rural-urban migrants who are seen to contribute to overcrowding in the city leading to a competition for urban resources. The project attempts to identify these labour migrants through various narratives and historic precedents of migration in the city to form an understanding of the shortcomings of the present Metropolitan regional plan. To understand this rural-to-urban transition in the city, the research project identifies that urbanisation neglects to consider the rural landscape that it seeks to change in present day growth models and seeks to propose an alternative strategy for urban India. Review of literature on the subject indicates that rural change occurs by land acquisition and change in land-usage, rural to urban migration (transference of poverty), reduction in the agricultural production and villages reduced to slum like conditions. The design project seeks to propose an alternative model for urbanisation that incorporates the agricultural economy to improve the edge city sub-region of Vasai-Virar with examples at various scales.

Keywords: urbanisation, rural landscape, urban agglomerate, land acquisition, labour migration

1.2 Project Motivation

A Bollywood anecdote

In their movie Nostalgia for the Future, a documentary on “the architecture of the home, modernity and the making of the Indian citizen” (Kishore & Shivkumar, 2017a), the directors Ajit Mukul Kishore and Rohan Shivkumar use a clip from a 1954 Hindi movie, Amar. They explain this in a discussion (Kishore & Shivkumar, 2017b) of the documentary screening: that the 1954 film can be read as a political allegory. In the movie, Dilip Kumar is a lawyer; alluding to makers of modern India, many who were lawyers like Nehru (the first Indian Prime Minister) and Mahatma Gandhi. Kumar visits a village on business and is smitten by the local milkman’s daughter despite being betrothed himself. On a stormy night, she seeks refuge in his house while escaping the village goon, instead of taking the typical role as a hero, he rapes her in what can only be speculated as a moment of insanity. She does not report the rape, and instead falls in love with him and he spends the rest of the movie torn by guilt (Khan, 1954). It is a bizarre plot, and most Indian movies do not cast an anti-hero in a central role, so it is understandable the directors would want to read this as a political allegory. The directors say that following India’s independence from its colonisers, Nehru set the country on a part towards modernity. Modern India was to be a cosmopolitan utopia, that would save the country from its rural backwardness and its former colonial callowness. And fast-forward to 1992, when our socialist leaning policies failed, a new era of neoliberal economics would benefit the country instead. Throughout all of this, the agrarian roots of the country have been devalued by the urban politics that Kumar represents (Kishore & Shivkumar, 2017b). And despite this, like the village belle (possibly suffering from Stockholm syndrome), rural migrants move to cities looking to benefit from urban cosmopolitanism but struggle to be granted urban citizenship.

Shivkumar speculates that this has resulted in the “guilt of the modern Indian” (Kishore & Shivkumar, 2017b). Architects and urbanists are often products of modernism from last century and the guilt that comes with it. This is possibly a global phenomenon where industrialization and modernism have reduced local systems as inferior or inefficient and not just limited to India. But the consequences in India are pronounced. And as an Indian architect, who has benefitted from the cosmopolitan India that Nehru created in part, I am also a carrier of this guilt. Therefore, it seems apt that an urbanism project such as this would seek to study alternatives for urbanism to ensure that the city does not discredit its rural counterparts.

Notes
[[ Kumar is a famous Indian actor who plays the titular role in the movie.]]

Sources
1.1 Amarnath (1954) movie poster
1.2 [Above] The plot厚镇 - a political allegory for the impact of modern urban values on the rural landscape.

## Introduction

### Background: City, State and Nation

India is a federal nation. As of 2018, it is divided into 29 states and 7 union territories. Each state is marked with different levels of urbanization. States like Bihar, Assam and Himachal Pradesh (see map on p. 6) have lower levels compared to states like Tamil Nadu, Punjab, Maharashtra, Gujarat and the National Capital Region (NCR) of New Delhi. The latter states and the four mega-cities (Delhi, Kolkata, Mumbai and Chennai) have a higher level of per capita income and higher levels of in-migration (Bhagat, 2014).

### Mumbai Metropolitan Region (MMR)

The Metropolitan area of Mumbai (MMR) is India’s most populous metropolitan region together with the National Capital Region (NCR) of New Delhi. The MMR covers a region of 4400 sqkm and houses 21.7 million people. The region consists of 19 municipalities and 982 villages. Mumbai is also India’s financial and entertainment capital. It boasts of GDP of $124 billion, the highest of all Indian cities. It contributes to 40% of the state’s GDP and 6% to the national figure. Onethird of the income tax and 60% of Indian customs duties are generated in India (London School of Economics and Political Science et al., 2007).

Mumbai is the centre of many a crisis. Be it the floods, water shortage, overcrowding, crime, etc. Despite this, a thousand people migrate to Mumbai every day looking for better economic outcomes. Over 50% live in slums and some in makeshift homes, often either straight to landfill (Deonar and Mulund landfills are the largest in Asia) or into the rivers. It is an example of a city that is outgrowing its location and infrastructure.

It is estimated that by 2050 its population will grow to 30 million. The city produces 11,000 tonnes of waste every day which either straight to landfill (Deonar and Mulund landfills are the largest in Asia) or into the rivers. It is an example of a city that is outgrowing its location and infrastructure. Mumbai is the centre of many a crisis. Be it the floods, water shortage, overcrowding, crime, etc. Despite this, a thousand people migrate to Mumbai every day looking for better economic outcomes. Over 50% live in slums and some in makeshift homes, often on pavements (London School of Economics and Political Science et al., 2007).

But Mumbai is also an archetype of the developing world, that represents a more deep-rooted problem. One that seeks to abandon and strain its local systems in the pursuit of economic growth.

### Notes

1. A rough scale comparison of India with Europe, Maharashtra with Germany and Mumbai with the Ranstad. India is a complex federal system with multiple states with their own cultures and languages comparable to the nation-states of the EU.

### Image Sources


### Table: Comparison of India with Europe

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### Table: Maharashtra

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### Table: European Union

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<td>12 provinces</td>
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Beyond urban

Introduction

Mumbai Metropolitan Region (MMR)

Mumbai, formerly anglicized as Bombay, is located next to the intersection of states Gujarat and Maharashtra and is the capital of Maharashtra. Gujarat was formally known for its traditional mercantile community and Maharashtra for its farming.

Sources


1.5. The Metropolitan Region of Mumbai (MMR). Source - Author (2018)

1.6. Location Map of Mumbai with urban hierarchies. Source - Author (2017)

Notes

Mumbai, formerly anglicized as Bombay, is located next to the intersection of states Gujarat and Maharashtra and is the capital of Maharashtra. Gujarat was formally known for its traditional mercantile community and Maharashtra for its farming.
Problem Field
A self-destructing but emancipatory machine

Cities can be a means of emancipation, positive economic outcomes, access to social and physical infrastructure, woman empowerment, and educational possibilities for rural-urban migrants. Labour migrants leave their agricultural vocations, to join the service industry in cities like Mumbai. But how sustainable is this labour movement? While migration increases is a positive factor in the life of migrants, it can simultaneously expose them to economic, social and environmental stressors. For instance, migrants in the city of Mumbai are exposed to many vulnerabilities like disaster and climate change, poor housing security, poor health and discrimination from linguistic regionalism. Additionally, the city’s infrastructure systems are overwhelmed with the increased influx of migrants.

On August 29, 2017, Mumbai received 300mm rainfall in a span of 24 hours, leading to the city flooding. But this is not new, Mumbai floods every year during the monsoon (Nagendra, 2017). The man-made sewer systems are overwhelmed, and the natural drainage systems are clogged. A month later, on September 29, evening rush-hour at Elphinstone train station resulted in a stampede killing 23 people and injuring 38 (Chaubey, 2017). It is an example of how population growth has out-paced the city. But cities cannot (and should not) curb or restrict rural-urban migration for self-preservation. They have a great emancipatory effect. They offer possibilities for better education, social mobility and women empowerment. In a survey of 60 migrants residing in Ghatkopur (a slum in Central Mumbai) by IndiaSpend, a non-profit data journalism initiative, found that each adult earned Rs. 1823 (approx. 24 EUR) per month. A salary that put them above the urban poverty line (Rs 1000 or 13 EUR) by 80% (Waghmare, 2016a). This is the dream that city of Mumbai represents in the mind of Mumbai’s migrants.

At present Mumbai’s solution to the land shortage, is to encroach into its hinterland. What does that mean for the city of Mumbai and its migrants?

<table>
<thead>
<tr>
<th>Emancipatory Machine</th>
<th>Monthly Income and expenditure for a rural-urban migrant household in Mumbai versus their home village.</th>
<th>Centre</th>
<th>Graph showing individual wages with respect to the poverty line. Right</th>
<th>Days of employment of an average labour migrant per month, in comparison to urban and rural life.</th>
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<td>12000</td>
<td>Mumbai</td>
<td>Village</td>
<td>Village</td>
<td>Village</td>
</tr>
<tr>
<td>1000</td>
<td>Average monthly income</td>
<td>Average monthly expenses</td>
<td>Average monthly income per month</td>
<td>Average monthly wage per month</td>
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Urban Catastrophes

1.8.1 August 29, 2017. Flooded street in Mumbai after receiving more than 300mm of rainfall in a span of 24 hours. The natural and man-made drainage systems are blocked leading to annual incidents of flooding during the monsoon season.

1.8.2 September 29, 2017. Evening rush-hour at Elphinstone train station resulted in a stampede killing 23 people and injuring 38. The area around the station has denoted rapidly and the infrastructure has been overwhelmed by the increased footfall.

1.8.3 December 28, 2017 there was a fire accident at the Kamala Mills Compound in Lower Parel area of Mumbai which resulted in the deaths of 14 people. Comptor and overwhelmed authorities have been unable to reinforce building regulations.

Notes

Image Sources
1.8.2. Photograph of Elphinstone Stampede. Photograph by (Sivakumar Kashyap, 2017).
Migration and natural growth of the city has forced it to expand over local eco-systems. Agrarian, fishing communities and forest villages all serve the city providing resources labour etc., The destruction of these local systems also extend to ecologically sensitive areas like wetlands, mudflats, saltflats and mangrove forests. This has far reaching consequences - intensified impact of natural disasters, declining agriculture and food insecurity.

Furthermore, the dependence on Greater Mumbai as the core city for livelihoods has overwhelmed the urban infrastructure.

The negative consequences of this is most visible on migrants as they struggle for formal housing, basic infrastructure and amenities. They form a section of the urban poor who struggle for urban citizenship; they wait in uncertainty for job opportunities in the construction or service industry. Some migrant women seek employment as sex workers as a means of livelihood, which is illegal and unregulated in India; putting them in vulnerable situations.

Planners and developers in Mumbai need to be more conscious of the impact of its urban expansion. Further, Mumbai as the city’s financial capital has far-reaching consequences. It is a role model to smaller metropolises, towns and villages. Urban trends (like construction techniques, (un)sustainable practices can extend to a larger region. Particularly considering the circular nature of migration.
1.5 Problem Statement

The urban bias in the regional planning processes

India is currently undergoing a rural-urban flux and one of the main reasons is that the country is in the midst of a relatively quiet Agrarian crisis. While the 1970s and 1980s were seen as a glorious period for farmers with supportive policies from the national government, successive governments have seen a demise in public sector investments into agriculture. The 1990s saw a decade of major economic liberalization and reforms, resulting in immense urban expansion; with policy makers focused on urban housing, social and physical infrastructure for cities, with less focus on rural development (Sharma & Vora, 2017). Also, there has been a shift in national policy from ambitions of food self-reliance to importing food from African and BRIC countries. But this shift in policy has resulted in high rates of rural unemployment (Sharma, 2017). Additionally, the National Crime Records Bureau has reported high rates of farmer suicide, with 11,458 in 2016 and 12,602 in 2015. Maharashtra, the home-state of Mumbai, has seen the highest rates with 4291 deaths in 2015 (Kedia, 2017).

The National Skill Development Council has laid a target of reducing the population engaged in agriculture related jobs from an existing 57 percent to 38 percent in 2022, in the name of economic reform. This is with the belief that it is essential to move the bulk of the population from rural areas to cities for economic growth. Traditional food production would be replaced by corporate farming and food imports (Sharma, 2017). Mumbai is expanding its boundaries, acquiring the villages of its immediate hinterland to be reclassified as “urbanisable” land. The rural landscape is being rewritten without contemplation of the consequences to the social, economic and cultural fabric of these areas.

The problem statement can be defined as follows, there is an urban bias in regional planning in the Mumbai metropolitan region that favours speculative real-estate development and industrial growth that displaces typically non-urban livelihoods (labour migrants, indigenous tribal groups, fishing communities, farmers, etc.,) and encroaches the peripheral ecologies of the MMR leading to an unsustainable future.

This bias is leading to a large-scale urbanisation in India. But, can and should Indian metropolises alone support the aspirations of 1.3 billion Indians? The quality of life that rural-urban migrants can anticipate are abysmal. They transition from rural poverty to urban poverty, with the benefits of a few urban systems. The romanticisation of labour migrants needs to be critically looked at and urbanists should seek to create opportunities for urban livelihoods linked to rural roots.

Sources

1.6 Research Questions

Background

The urbanization of the Indian populace is an ambitious project to provide better economic development for rural dwellers. By 2050, it is estimated that nearly 50% of India's population will live in cities or towns. The future of the Indian village is to become a suburb to the Indian city. This research hypothesizes that the rural livelihoods being urbanized need to be accommodated and not obliterated for effective and sustainable urban change. Review of literature on the subject indicates that rural change occurs by land acquisition and change in land usage, rural to urban migration (transference of poverty), reduction in the agricultural production and villages reduced to slum like conditions.

As defined by the Design as Politics studio, this project can be defined as with terms conflict, position and price. The conflict in this project is the shifting lines between the urban and rural divisions. The project positions itself as a negotiation. It seeks to mediate the emancipatory qualities that the city bestows on the labour migrant, without compromising its own existence. It seeks to mediate the community model of the hinterland without losing the benefits of urbanisation. The price of this mediation is that both the city and its peripheries cannot retain its current state of real-estate driven urbanisation.

Ultimately, this project seeks to address the growth of Mumbai's hinterland to ensure sustainable development of the region and its inhabitants.

Main Research Questions

In what way does regional planning in the Mumbai Metropolitan Region manifest an urban bias in development processes that results in a rural to urban population flux?

How can development and planning processes in Mumbai encourage balanced growth with equal emphasis to agrarian or rural lifestyles?

Sub-research Questions

1) What constitutes the rural conditions in the metropolitan region of Mumbai? And in what way is the rural landscape transforming in the process of urbanization? [literature review – which frames the rural landscape as rural land ownership, rural populace, physical village forms and agricultural production]

2) How does the city of Mumbai facilitate (or disallow) a migrant’s right to the city? [Access to housing and basic services in Mumbai]

3) How does present day urbanisation affect rural livelihoods in the MMR? [Case study of rural-urban migrants from newspapers, journals, documentaries etc, and analysis of urban villages and slums, new “urbanisable” land status for rural areas, speculation and blight, food security and agriculture jobs]

4) How can urbanization effectively transform rural livelihoods to meaningful urban citizenship, without compromising the quality of life in the city? [designing urban typologies with opportunities for rural livelihoods]

5) What is the current form of urban governance in Mumbai, and how must it be redefined to be a more effective facilitator of positive spatial change? [literature review with case studies for policy change]

6) What is the present model of urbanisation as per the development authority plan and what interventions require to improve the effectiveness and sustainability of the master plan? [transport oriented, urbanisable land, etc, should include provisions for stronger civil society, etc]

7) How can urban development marry pro-environment and pro-poor initiatives in a spatial manner? [design strategies]
**Methodology**

**Project Preview**

- **Urban Conditions**
- **Driving Factors**
- **Spatial Impact**

**Themes**

- Looking at the metropolitan region through 9 themes - a study of urban conditions, driving factors and the spatial impact.

**Project Methodology**

- **Problem Definition**
- **Research by Analysis**
- **Policy and Design**

**Design as Politics**

A City of Comings and Goings: a research on cities dealing with issues of migration. Narratives of rural-urban migrants is the starting point for this project.

**Literature Review**

A study of how the rural landscape is affected by urbanisation with respect to the Mumbai Metropolitan Region backed by Seeing Like a State by James C. Scott.

**Policy Review**

The themes identified in the urban system are evaluated against the policies proposed for them or ignored altogether in the regional plan for MMR 2016-36.

A new structure for the MMR.

Supported by strategies at various scales - region, sub-region, local and policies to ensure growth.

The project uses literature review of books, journals, case studies policy documents, newspaper reports, mapping and site visit to establish the basis for the research.

Since we stay just 5 km from Udgir city, the children were getting water to drink through tankers coming from the municipal area [but it] wasn’t enough for my cattle, and I could not see them die in front of me. So, I let them drink our share of water, and came here to earn. After two successive years of drought, Babban Chavan, 25, a farmhand and owner of 10 goats and two cows, left his family (wife, four children and ailing parents) behind and migrated 550 km from his home in arid Latur in southeastern Maharashtra. Working in Mumbai’s construction industry, he earned Rs 900 every day, triple the Rs 300 he earned back home. He moved from an unskilled labourer to a skilled construction worker. He aspires to become a construction supervisor, he hopes the his children will become graduates and find jobs in the city.

(Waghmare, 2016b)
End Products
Identifying and countering the urban bias

Identifying the Urban Bias

1. Collection of migration narratives to understand the city's history of migration from rural to urban areas. It looks at Mumbai's evolution from a collection of fishing villages to its current form. It also looks at narratives of rural-urban migrants to inform conditions of present day labour migration.

2. Literature review of Seeing Like a State by James S. Scott to understand the impact of development models on local tradition systems. Includes supporting literature to study Mumbai's potential impact on its immediate rural landscape. Some literature have a direct correlation, while other literature talks about India in general or the state of Maharashtra.

3. Review of urban conditions, driving factors and the spatial impact based on a set of research themes.

4. Policy review of the metropolitan region development authority's regional plan for 2016-36; reviewed against the research themes including an overview of the authority’s goals, strategies an overview.

Countering the Urban Bias

1. A new strategy that combines urban and rural values for the development of edge cities in the MMR.

2. Developing a policy and design toolkit to implement the regional strategy set around the research themes.

3. Different elements of the policy and design toolkit are tested at various scales
   a. Effects on a hypothetical village at the edge of urban transformation.
   b. The decentralisation of the Vasai-Virar sub-region with defined roles.
   c. Land-use intervention - Redefining a program and spatial realisation of the future of the salt-pans.
   d. Pilot Project to initiate the transition at a local scale.
   e. Define a new role for the metropolitan governing authority.

4. Spatial Impressions to convey experiential qualities of the proposal for Vasai-Virar sub-region project interventions.
2

Migration Histories

Identifying the urban bias through narratives on migration

Historical Background 28
Narratives on Migration 32

Sources

2.0. ‘Bombay and Surrounding Country’ depicting the extents of modern day metropolitan Mumbai between 1924–1926. Published in 1934. Map Source – Calcutta: Survey of India, 1934
To understand rural-urban migration in Mumbai, it is important to contextualize the city and the flow of people in the city's history. Mumbai reigns India as its financial capital. Unlike its political counterpart, New Delhi, it was never an indigenous Indian city (Mehrotra, 1991). It was but a few sparsely populated villages. Mumbai's genesis, erstwhile Bombay, began when Vasco da Gama disembarked on the south-western coast of India, in the city of Calicut. The next two decades followed repeated Portuguese assaults on the western shoreline. In 1532, the Portuguese Governor-General of India assaulted the Fort of Bassein (now Vasai) with a fleet of one hundred vessels, forcing the ruling Gujarat Sultanate to concede Bassein and its surrounding territories.

In 1534, the Treaty of Bassein. 1534 surrendered Bassein (now Vasai) with a fleet of one hundred vessels, forcing the ruling Gujarat Sultanate to concede Bassein and its surrounding territories.


To understand rural-urban migration in Mumbai, it is important to contextualize the city and the flow of people in the city's history. Mumbai reigns India as its financial capital. Unlike its political counterpart, New Delhi, it was never an indigenous Indian city (Mehrotra, 1991). It was but a few sparsely populated villages. Mumbai's genesis, erstwhile Bombay, began when Vasco da Gama disembarked on the south-western coast of India, in the city of Calicut. The next two decades followed repeated Portuguese assaults on the western shoreline.

In 1532, the Portuguese Governor-General of India assaulted the Fort of Bassein (now Vasai) with a fleet of one hundred vessels, forcing the ruling Gujarat Sultanate to concede Bassein and its surrounding territories. The Treaty of Bassein 1534 surrendered Indian claim over the seven islets that constituted Bombay to the Portuguese king. The indigenous people of the island lived by farming, fishing and trade. The conquest did not affect their economic livelihood but were subjected to extreme religious fanaticism (Prakash, 2010). A similar form of fanaticism echoes in present day Mumbai in the guise of right-wing regionalism.

While the Portuguese primarily pioneered for Christianity and trade, they opened the doors for other European maritime travellers (Prakash, 2010). In 1661, the Portuguese gifted Bombay to the British Crown, when Charles II married Catharine of Braganza. The gift came as a "surprise" to the royal family, who initially speculated that the islands were "somewhere near Brazil" (Perur, 2016). By 1668, the Crown leased Bombay to the East India Company who saw to develop the islands as a potential commercial hub to rival neighbouring ports like Surat and Vasai (Gupta, 1999, Karimkar, 2014).

When the British gained control of the islands, it was barely 18 square miles (45 sq. km) of land. In order to make the city more economically viable, land had to be reclaimed from the sea.

In 1668, the East India Company moved its western headquarters from Surat (now in Gujarat) to Bombay, now a fortified walled town. Hindu, Muslim and Zoroastrian merchants from wealthy mercantile communities of Gujarat flocked to Bombay. During this period, the population of Mumbai rose from 10000 in 1661, to 60000 (Gupta, 1999). The city was segregated with the merchants settling in the northern parts of the city as the “native” or “black” town, with the colonisers settling in the south.

During the 18th century, the new port city flourished with the influx of immigrants, with some even setting beyond the fort walls. The growing population needed more space, leading to reclamations of land submerged below the sea. In 1738, the Hornby Vellard, an embankment planned under the government of William Hornby, was completed, protected low lying areas from floods. This allowed for additional reclamations. Despite the demographic and geographic growth it remained a remote British outpost, due to poor connectivity with the rest of India. Following the abolition of the Company's monopoly on the Indian Ocean in 1813, the city grew exponentially with an influx of private European traders. Additionally, the private traders circumvented around the Company's monopoly on Opium trade with China by importing Opium from Malwa in Central India. The high profit margins "strengthened colonial government's monetary reserves, paid for the costs of the empire, and filled the coffers of Bombay's mercantile community". And by 1838 the reclamations had converted Bombay from seven islets to a large island.

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Hindu Banias, Marwaris and Konkan Muslims.

Unlike the Eastern parts of the country, the East India company did not have complete autonomy over the Western region, allowing indigenous businessmen to flourish. This suited the British, who depended on Indian merchants for facilitating cotton and opium exports to China. In 1859, a flourishing port city, Mumbai's population was recorded as 566,000 (Prakash, 2010). It had nearly quadrupled in a span of two decades. Simultaneously, the Indian revolt of 1857 brought to light grave defects in the governance systems of the East India Company, forcing the Government of India Act 1858. The Act called for the liquidation of the East India Company, forcing the Government of India to assume control of the region and introducing governance systems of the British.

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India reverted to the British Crown.

Population of Mumbai was recorded as 566,000 (Prakash, 2010).

In parallel to the drug trade, the American Civil War in the 1860s had led to a shortage of cotton imports in England, allowing the Indian cotton supplies from the region moved through Mumbai’s port to be dispatched to England. The thriving cotton industry contributed nearly 75 million pounds to Mumbai’s wealth, allowing the growth of the stock company, banks, and merchant agencies. The Crown’s commitment to social welfare of the native population was reflected in the resultant plague epidemic of 1896-97. The epidemic threatened colonial and economic order, forcing the British government to Bombay City Improvement Trust in 1898 that would focus on physical infrastructure. The Crown’s commitment to the natives was expected to work in commercial capitalistic institutions or cheap labour all encased in Gothic revival architecture. And simultaneously.

While Mumbai’s elite conform to colonial urban society living in mansions, its poor lived in mud-shanties. The labour migrant cope with the uncertainties of the urban life by maintaining links to the village. Migrants erected shanties and village-structures in the city as a means to resonate social and cultural heritage. This was the origins of Mumbai’s identity as a city of two worlds.

2.2 Timeline Part 2 featuring Mid 19th Century to Mid 20th Century by Author (2018)

Sources
### Narratives on Migration

**Migration in the MMR**

In the 2001 census, 43.7% of the population were migrants (Jha et al., 2015). While the city observes permanent and semi-permanent migration, large parts of Mumbai’s migrants are seasonal migrants. This form of temporary migration occurs amongst the poor and socially disadvantaged groups. It is a “livelihood strategy amongst rural households” (Bhagat, 2014). These migrants originate from the home state of Maharashtra (37.4%), Uttar Pradesh (24.3%), Gujarat (9.6%), Karnataka (5.8%) amongst other states. Most migration data sources are from the 2001 census. Figures for this decade are unclear or are from other private sources. These migrants do not have legal housing arrangements, they appropriate public spaces, pavements or otherwise unoccupied parts of the city (like areas neighbouring landfills). They are often subject to bad weather, lack of sanitation facilities, no access to potable water, no personal security, no education or health services. These migrants are predominantly male, who cite “work/employment/business” as the main reason for migration (Jha et al., 2015). However, national figures show that there is an increase in female migration after marriage. It would seem that men move to the cities for better employment prospects and their wives/children move after the male migrant settles down. Hence, there has been a significant increase in the female migration workforce (Bhagat, 2014).

A deepening agrarian crisis in the rural areas of India causes these farmers to move. In her book *Street Corner Secrets*, Svati Shah (2014) writes,

“Poor, working-class people who migrate to cities like Mumbai are members of the legions whom globalization has further dispossessed, as evidenced by the rising rates of farmer suicides and malnutrition in rural areas, where neoliberal economic reforms have reduced or eliminated agricultural subsidies and forced farmers to compete in global markets amid unstable prices for commodities like cotton and sugar. Deepening poverty in rural areas has meant that survival for landless workers is increasingly viable, prompting greater numbers of people to migrate for work and contributing to an expanding pool of labor in urban informal economies.” (Shah, 2014)

Until the economic crisis of the 1980s, cities in the developing world comprised of permanent vocations backed by a low-wage service oriented jobs. However, these cities today have dramatically changed, with informal temporary service jobs taking the forefront. These jobs include small unlicensed shops or street-vending sites, domestic work, short term work construction or manufacturing (Saunders, 2011). Many former agricultural workers, now survive through Mumbai’s day-wage labour markets, located in different parts of the city. These are city squares or street crossings with labourers seeking daily wage employment can be recruited by potential employers or contractors. These markets are held in the morning and are called mazdoor nakas. Shah (2014) documents that some of these migrants have been in Mumbai for twenty years, some for a few months. For some, their lives in Mumbai is a part of a circular itinerary, seasonal migration. They all lived with poor or no access to basic municipal services, no water, no stable housing and uncertain incomes. For the women, some negotiations for economic survival included sexual commerce (Shah, 2014).
2.2 Post Card Stories of the Rural-Urban Flux

These stories are illustrative of migrants and the conditions that they are exposed to due to urbanisation.

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“Give us water, only water, my children are thirsting, please give us water now. I can’t bear to see my children die of thirst,” said Babban Chavan, 25, a farmhand and owner of 10 goats and two cows, left his family (wife, four children and ailing parents) behind and migrated 550 km from his home in arid Latur in southeastern Maharashtra. Working in Mumbai’s construction industry, he earned Rs 300 every day, triple the Rs 300 he earned back home. He moved from an unskilled labourer to a skilled construction worker. He aspires to become a construction supervisor, he hopes the his children will become educated and get jobs in the city.

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“I can’t earn enough in Mumbai to support my family. I can’t even buy vegetables in Mumbai. I don’t have money even to buy a shirt. I sell my cows, not to buy anything but to pay my children’s educational fees. In the village, we used to live in an area surrounded by bamboo sticks and two tarpaulin sheets. But here, we sleep in an unhygienic area...” Babban Chavan, 25, a farmhand and owner of 10 goats and two cows, left his family (wife, four children and ailing parents) behind and migrated 550 km from his home in arid Latur in southeastern Maharashtra. Working in Mumbai’s construction industry, he earned Rs 300 every day, triple the Rs 300 he earned back home. He moved from an unskilled labourer to a skilled construction worker. He aspires to become a construction supervisor, he hopes the his children will become educated and get jobs in the city.

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“… Coming from another place always gives you a jhatka (slap). Because of this, one cannot enjoy the city, one cannot work comfortably. If you take a walk, you will feel the fear of being watched. If you go to a movie, you will feel the fear of being watched by others… We are always treated as outsiders (parapranti), because of non-ownership of residence I am an outsider to the city. I never brought my wife to Mumbai, I don’t want to experience this in my life. What is the use of staying in a place that people don’t respect us and do not value us?” Babban Chavan, 25, a farmhand and owner of 10 goats and two cows, left his family (wife, four children and ailing parents) behind and migrated 550 km from his home in arid Latur in southeastern Maharashtra. Working in Mumbai’s construction industry, he earned Rs 300 every day, triple the Rs 300 he earned back home. He moved from an unskilled labourer to a skilled construction worker. He aspires to become a construction supervisor, he hopes the his children will become educated and get jobs in the city.

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“… The land area under cultivation reduced. Earlier, there was a cooperation from the local government to help them with food supplies and etcetera. But now, they have no life at all. They have to spend their hard-earned money for agricultural production, which is totally dependent on the weather. But there are no such facilities provided by the government. They have never had a financial institution that helps them. But now, they have to take money from money lenders in order to survive. …” Babban Chavan, 25, a farmhand and owner of 10 goats and two cows, left his family (wife, four children and ailing parents) behind and migrated 550 km from his home in arid Latur in southeastern Maharashtra. Working in Mumbai’s construction industry, he earned Rs 300 every day, triple the Rs 300 he earned back home. He moved from an unskilled labourer to a skilled construction worker. He aspires to become a construction supervisor, he hopes the his children will become educated and get jobs in the city.

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“With my day labor income, I have to manage the house, put the money back into the business, pay the house rent and etcetera. I have to work hard to manage the house, because there is no help. … The money I get from Mumbai is enough to manage the house…” Babban Chavan, 25, a farmhand and owner of 10 goats and two cows, left his family (wife, four children and ailing parents) behind and migrated 550 km from his home in arid Latur in southeastern Maharashtra. Working in Mumbai’s construction industry, he earned Rs 300 every day, triple the Rs 300 he earned back home. He moved from an unskilled labourer to a skilled construction worker. He aspires to become a construction supervisor, he hopes the his children will become educated and get jobs in the city.

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Notes
2.5. Stories extracted from various journal articles, newspaper articles and documentaries.
Sources
2.5. Illustrations by Author (2017).
2.2 Conclusion: Circular Life of rural-urban flux

As seen with the comparison [2.8] labour migrants leading circular lifestyles between rural and urban areas struggle with both conditions.

Urban livelihoods offer social and economic mobility but expose migrants to harsher physical conditions - small living spaces, flooding, hot summers, poor water management leading to diseases etc.,

Rural conditions offers the potential for a healthier lifestyle (less pollution, clean water, less STDs) but the decline of the agricultural economy has left them with an uncertain future.

But this circular lifestyle of these migrants offers an opportunity for metropolitan planning to undertake capacity building through these migrants. Improving the agricultural economy in the metropolitan region can have transferred effect on other rural areas in the extended region.

Image Sources
2.6. ‘Mumbai’s Circulatory Migration’. Source - (urbz, Echanove, & Srivastava, 2014)
Section References


narratives on migration

38
Abstract

For a variety of reasons, such as globalization, neo-liberal policies, globalised food supply chains, corporate controlled, and mono-crop agriculture has led to the undermining and destruction of self-sufficient agrarian economies in Africa and Asia (Saunders, 2011). The present dominant economic thinking in India supports shifting the population engaged in rural based occupations towards industrial and urban based occupations. This transition model boasts better employment rates, output, exports, investments etc., with two main implications. That is, large scale labour migration and urban expansion. This political redefinition of the rural landscape however does not consider local economic, social and cultural outcomes. Such a large scale social engineering project like urbanization of the population come cloaked in emancipatory ideas, but have potentially destructive consequences (Scott, 2008). This paper is a literature review of structural changes to the Indian rural landscape as a consequence of urbanisation with a primary focus on impact of city agglomerates on adjacent villages. The paper identifies that peri-urban agriculture, adequate and suitable affordable housing for labour migrants, appropriate jobs, change in land acquisition policy, and a civil society are the key aspects towards the development of a new rural-urban paradigm for India that considers sustainable growth of the hinterland and prioritizes the well-being of its inhabitants.

Keywords: urbanisation, rural landscape, urban agglomerate, land acquisition, labour migration

Literature Review Preview

James C. Scott’s book Seeing like a State sets a narrative of how development models seeking to improve the human condition can have an adverse impact.

Similarly, through supporting literature, it was apparent that urbanisation is also a development model that seeks to transform rural conditions as a means of uplifting the countryside. But instead it has an adverse impact on local systems.

Supporting literature shows that city expansion can affect landowners, who are handicapped by the change in land-notification, it affects the poorer non-landowners who take up unpleasant service jobs in cities, it has spatial implications for the traditional village form and it changes agricultural production (with some examples in the MMR).

Notes

3.1 Relevance of the literature review in understanding the urban bias against the rural landscape.

Sources

3.1 Collage by Author.
Introduction

India, like many other developing countries, is urbanising at a massive rate. The urban population grew from 290 million persons in the 2001 census to an estimated 308 million in 2008 (Sankhe et al., 2010). By the year 2050, more than 50% of the Indian population is estimated to become urbanised. At present need for urbanisation is fuelled by conditions of rural poverty, neo-liberal policies impairing traditional agriculture and globalisation. The country’s former finance minister, P. Chidambaram (3.2) has expressed that India must aim for 85% of the population living in urban areas for economic growth.

In India, transformation of the rural heartland can be seen as four types. The first is the revolution of agricultural methods as seen in the Green Revolution of the 1970s and 1980s. The second is through urbanisation by out-migration from rural areas which results in financial remittances that go towards development of the village. This third is institutional in the form of sugar cooperatives or up-stream industries like the wine industry. The fourth is when the government changes land use for SEZs or the wine industry. This rural transformation manifests itself in many ways (3.3). It is, a) the creation of large urban agglomerates (UAs) as seen in Indian cities like Mumbai and Delhi as a result of urbanisation. It also b) represents the urban growth of smaller two-tier towns (Christiaensen & Todaro, 2014). And thirdly, c) the re-organizing of the agricultural systems to increase production with urban systems to accommodate the rural poor who migrate to urban poverty. Furthermore, coupled with global economic policy, agriculture becomes an activity that is no longer viable and de-legitimised. Shortly after the British left India, the United States researching rural development invested heavily in rural areas. Gandhi thought of the time insisted on the negation of everything modern as a western evil and promoted Indian traditional lifestyles. But this line of thinking is a distorted notion of peasant life that disregards general level of health, material well-being and quality of life bolstering archaic elements of traditional structures (Immerwahr, 2015). And it reflects in India’s rural policy even today, often encouraging small farm holdings. The system of land inheritance has drastically reduced the size of farm holdings from pre-colonial era resulting in high unemployment and declining yields (Sathe, 2017; Saunders, 2011). This results in a large part of the population trapped in rural urban limbo. The need for a new inclusive urban lifestyle is paramount. Existing theory on urbanisation in India looks primarily at urban governance, finance, transportation infrastructure, affordable housing and jobs, often in statistical terms (Sankhe et al., 2010). This review seeks to identify literature that deals with the restructuring of Indian rural areas in the face of urbanisation, with the objective of developing parameters for sustainable urban transformation of the rural landscape in India.

Transforming the Rural Landscape

For the purpose of this review, 'rural landscape' implies the agricultural land, the physical village form, agricultural production and rural demographic.

The transformation of the rural landscape is impacted both by urbanisation as a result of migration and urban growth by expansion. But it is important to differentiate between natural urban growth and urbanisation. Tacoli, McGranahan, & Satterthwaite (2015) write that urbanization is the "net result of complex migratory movements between rural and urban areas" and the urban growth is the result of people accumulating in or near urban settlements resulting in the “progressive extension of urban boundaries [with] the creation of new urban centres”. Both rural transition and urban growth are often accompanied by economic growth that is misleading termed as development. This economic growth does not imply social development (Tacoli, McGranahan, & Satterthwaite, 2015). This rural transformation manifests itself in many ways [3.3]. It is, a) the creation of large urban agglomerates (UAs) as seen in Indian cities like Mumbai and Delhi as a result of urbanisation. It also b) represents the urban growth of smaller two-tier towns (Christiaensen & Todaro, 2014). And thirdly, it is also, c) the re-organizing of the agricultural systems to increase production with urban systems (Scott, 2008). The scope of this review and subsequent discussion will be delive into the impact of UAs on the rural hinterland.

Urban Agglomerates (UAs)

Large cities transform the rural landscape by drawing migrants to cities and acquiring land from nearby villages. These either result in urban poverty and poorly organised peri-urban areas. Rural areas in close proximity to large cities and towns are urbanised with landuse patterns changing and increased influx of migration. The following sub-sections

Notes

3.3 (Right) Re-organisation of the rural landscape by urbanisation at different levels inferred from literature:

a) The creation of an urban agglomeration by an expanding metropolis.
b) The expansion of a small town into a two-tier city.
c) The economic re-structuring of rural systems.

The Metropolitan Region of Mumbai fits the first level of urbanisation and is elaborated in this literature review.

Sources

3.2 P. Chidambaram. Source - GC. Edited by Author (2018)
discuss spatial transformation (physical rural forms in the urban fabric), impact of land acquisition policy (change in land use notification), demographic change (migration and vocational change) and conditions of agriculture in the urban landscape.

1) Rural Land Acquisition and Special Economic Zones (SEZs).

As cities expand towards its immediate hinterland, it acquires land for SEZs or industries or real-estate, offering compensation to landowners and jobs for the non-landowners. In India, the right to land is a constitutional right but not a fundamental right. This means that under the system of eminent domain, the government has the right to acquire land from private citizens for providing public goods. Land acquisition laws in India have changed since colonial times, including provisions for resettlement and appropriate compensation.

In last few decades, the growth of stronger civil societies has kept development policies in check, ensuring that various stakeholders are accounted for. However, this often does not translate smoothly to reality. When land is notified for conversion, it results in blight limiting the rights of the land-owners and farmers. With agriculture already handicapped to provide self-sustaining livelihoods for farmers, it inhibits them from taking loans against the land.

In his thesis, *The political economy of land acquisition in India: how a village stops being one*, Sathe (2017) writes about the case of Maan. A village near the city of Pune (a Maharashtrian city in close proximity to Mumbai, known for its booming IT industry) that was acquired by the government for the purpose of industrial development. The village is a prime example, caught in a state of flux. Half the land of the village has been acquired (as of 2016) and the other half is still rural. While compensation of land acquisition has improved ten-times since the establishment of civil societies, it does not compare to the ten-fold profits made by the government in the transfer of land after development of basic infrastructure. This leaves the original land owners cheated of their land, along with being stripped off their basic livelihoods. And despite
monetary increase in compensation, it is still insufficient to reinvest in a competitive market and does not make up for the loss in livelihood. Money acquired is only rarely re-invested in profitable ventures (like housing or businesses), often it is spent on daily expenditures, marriages (rural India has a prevalent dowry problem), cars (replacing land as a status symbol) and gambling or prostitution. Further, men in the household receive the compensation, leaving women dependent and helpless in the management of finances. Resettlement measures are inadequate, and jobs are often are insufficient or inappropriate (Sathe, 2017).

Recent political discourse on land acquisition is bent on changing the government’s strategy towards land leasing. Present policy pits farmers against industries. A land-leasing system would instead enable a landowner and industrial tenant relationship, ensuring that property rights of individual landowners are not compromised (Swaminathan S & Aiyar, 2015).

Notes
3.6.1. Mumbai’s mazdoor nakas are wage labour markets in city squares or street crossings with migrants seeking daily-wage employment. They can be recruited by potential employers or contractors.

3.6.2. For the women, some negotiations for economic survival included sexual commerce (Shah, 2014).

Sources
3.6.2. ‘Gender imbalance and Real-estate district.’ Original image – Getty Images/CC.

3.7.2 Satellite image of Dharavi. Original Image (Kakodkar, 2016)

3.6.1. Daily-wage migrants. Source (Kalatkar, 2016)

3.7.2. ‘Gender imbalance and Real-estate district.’ Original image – Getty Images/CC.


In Mumbai many slums are a reaction to the lack of affordable housing initiatives from the local governments. Srivastava and Echanove (2014) write that, such slums are often built with experienced construction workers built with bricks, steel and cement. They describe these slums as “home-grown neighbourhoods”. These neighbourhoods and urban villages (called Gokhals in Mumbai) are denied basic infrastructure that could make them easily functional and desirable. Instead, they are deliberately kept in a status of precariousness and political dependency to marginalize the urban poor. They write that, the government should instead work with local artisans to improve the way buildings are constructed, with financial and infrastructure support (Srivastava & Echanove, 2014).

4) Agriculture in the urban landscape

As the country moves away from rural-based agricultural systems towards an industrialized model, food production takes a set back. Agriculture is not just a means for survival for the rural poor, it is a means to fight hunger, malnutrition and strengthening food-security. Additionally, it also creates jobs – in farms and markets, and the food processing industry (For Up to 800 Million Rural Poor, a Strong World Bank Commitment to Agriculture, n.d.).

Peri-urban areas in the wake of urban expansion is often the poorest parts of metropolitan regions. They are caught in a state of uncertainty between new urban land demarcation and traditional rural systems. In India, these are frequently very fertile lands, but subject to urban pollution of water, air, etc. Small-holder farming communities are often reliant on recycled wastewater for farming which is increasingly contaminated (Marshall & Randhawa, 2017). This is a reflection of poor peri-urban policy, considering that these areas have high quality natural resources and are in close proximity to urban physical and social infrastructure (Vazhacharickal & Buerkert, 2011).

Peri-urban lands are often ambiguous regions, with conflicting priorities. Land for agriculture must compete with industrial and SEZs, who are powerful stakeholders. They are also very susceptible to speculation and blight (Marshall & Randhawa, 2017). Peri-urban land is also acquired for urban recreational spaces, such as bio-diversity parks or city-forests. These land-use types compete with and displace resources for current and future agricultural uses. Pro-poor initiatives and pro-environmental activists rarely coincide. There is a need for urban policy that marries the significance of agriculture with environmental activism (Marshall & Randhawa, 2017; Priya et al., 2017).

Discussion

“No space disappears in the course of growth and development: the worldwide does not abolish the local!” (Fallon, 2004; Lefebvre & Nicholson-Smith, 2011)

In the process of urbanisation, the transformation of the rural areas by development strategies and those acquired by urban agglomerates (UAs) need to be acknowledged. UAs not only draw rural populations from the hinterland and the rural heartland but also swallows land from adjacent villages for industries, SEZs and real-estate development.

To summarize the review it is apparent that transformation of the rural landscape occurs in many ways by a growing metropolitan city. It affects landowners, who are handicapped by the change in land-notification, it affects the poorer non-landowners who take up unpleasant service jobs in cities, it has spatial implications for the traditional village form and it changes agricultural production. But in India urbanisation is in a fast rate, urban research and development is focused on typical urban issues. A McKinsey Global Institute report published in 2010 advocate that India needs to create a city transformation model along five different areas. These include urban governance, funding, sector policies (transportation infrastructure, affordable housing, job creation, etc.), planning (efficient resource management, economic strategy, etc.) and urban form (size, scale, density, etc).

The report warns that failure to develop concrete urban policy will result to a severe urban vacuum, predicting urban decay, poor quality of life, high unemployment rate, etc. (Sankhe et al., 2010). Cities like India are facing shortages in many aspects which need to be addressed, however the research and planning models fail to account for the rural framework that the urban fabric seeks to supersede.

Additionally, in a highly competitive global network, cities in the developing world are in constant competition to become world-class cities (Marshall & Randhawa, 2017). India’s smart cities program advocated 100 second-tier cities competing for urban financing. But urban models should instead focus on the existing system that it is seeking to transform. The following are key factors to consider in this process –

a) Considering agriculture as a part of urban and peri-urban strategies during urbanisation. Agriculture is not only a means for food security for a populous nation, but it provides a dignified livelihood in the right circumstances. Pro-environmental activism needs to go hand in hand with pro-poor initiatives.

b) Accommodating rural to urban demographic change by providing appropriate jobs, skills development and adequate affordable housing coupled with basic physical and social infrastructure. Local governments should not indirectly discriminate against migrants by not providing shelter for the poor.

c) Land acquisition that does not displace rural land owners. In a democracy, land-ownership is a right that should not be taken away without careful compensation and rehabilitation. Government policy should also consider land leasing as an alternative. Additionally, betterment of land and the improvement of providing public goods for all levels of society should be embedded in development policy.

d) Slum rehabilitation should not be a mass housing project, but instead enabling and supporting the urban poor with support to build better liveable homegrown neighbourhoods. In this manner, governments enable and not destroy local self-build systems to naturally gain legal stature.

e) Policies and programs that enable stronger civil societies. Civil

Notes

Food [in]security: Food production takes a set-back. Agriculture is not just a means for survival for the rural poor, it is a means to fight hunger, malnutrition and strengthening food-security. Agriculture also offers meaningful employment in urban areas for the urban poor.

Sources

3) Food [in]security.

Representative of image. Source - (Hindustan Times, 2017)
Conclusion

To conclude, development models for urbanisation in India have to consider the local conditions and the demographic it seeks to transform. The current model can potentially lead to extreme wealth gap and unbalanced urban communities. While typical urbanisation models might be necessary for urban growth, it must conscious of agricultural systems, land conversions, rural physical form and the changing rural demographic. Furthermore, development models must acknowledge traditional systems that it may override, these models while seemingly unviable, they compensate in resiliency. India is a unique context that needs its own sustainable urbanisation model.

Additionally, James C. Scott (2008) writes in his book Seeing Like a State that development planning with a desire to improve the human condition often has fatal results. Large scale urbanisation policy in India is in line with what Scott terms as a large-scale social engineering project that risks being short sighted. Development planning also risk diminishing the human condition and standardizing citizens. To ensure that such schemes are not disasters, it is important that there are small experimental steps to social change, there are provisions for reversibility, design for flexibility and must be inclusive for entrepreneurial human ingenuity (Scott, 2008).

Scott also advocates that development planning should acknowledge “indigenous technical knowledge, folk wisdom and practical skills”. While traditional systems like poly-cropping and indigenous agriculture methods may not be able to compete with contemporary economic models in production value, they compensate in stability and resiliency. Economic systems lead to harsh consequences like exhaustion of non-renewable resources and reduction of biodiversity while showing profitable margins in short term analysis (Scott, 2008).

Therefore, the model for urbanisation in India must be accommodating of the traditional systems that it over-runs. This can reflect spatially in urban and peri-urban agriculture and in the typology of affordable housing that cities offer to migrants. In policy, it can reflect in the dignity that it provides landowners while changing land use patterns and simultaneously ensuring stronger civil societies.
Section References


Research and Design Themes

Identifying the urban bias through a set of research themes

Research: Urban Conditions
Policy Review: MMRDA 2016-2036

Sources
4.0: Research and Design themes
Images by Author (2018)
4.1 Urban Conditions
Analysis of existing conditions based on design themes

Chapter Abstract

This chapter seeks to identify relevant issues in the Mumbai Metropolitan Region (MMR) based on research tangents from the overview of rural migration in region [Chapter 2]. In this section, the MMR is read as an “urban system” with urban (and typically non-urban) conditions in the region linked to possible spatial impact. Echanove and Srivastava (2014) define an urban system as “a network of habitats of various kinds including rural, urban, tribal, industrial, agrarian or a combination thereof,” defined through movement of goods and services. In current Indian urban discourse, the urban and rural are seen as distinct entities. But deriving on Anthony Leed’s Cities, Classes and Social Order (1994), they argue that “farming is an urban activity, farmers are urbanites linked to urban power centers” (Echanove & Srivastava, 2014). Convention urban design and research themes in India focus on affordable housing, urban landscape, affordable amenities, sustainable mobility and urban aesthetics. But the literature review [Chapter 3] reveals additional factors that urban development models tend to neglect. New design and research themes are proposed based on a combination of both issues.

Notes

Sources
4.2: Conclusions of the Literature Review (Chapter 3), Illustrations by Author (2017).
The Politics (and Conflicts) of Urban Governance

Governance in Mumbai is a complex myriad of four hierarchical governing bodies – central, state, regional and local governance. India is a federal nation with both central, state and local civic institutions making rules for cities. ULBs (Urban Local Bodies) in cities and townships are corporations, municipalities or nagar panchayats (civic bodies for rural areas in transition to urban) (London School of Economics and Political Science, Cities Programme, Urban Age India Conference, 2007) (Figure 5.1). In 1992, with the advent of new era of neo-liberal economic policies, the government set out a process of decentralization. This lead to the 74th Amendment to the Constitution, local governments were empowered financially and politically to govern small towns, metros, other ULBs, and nearly some 1000 villages. Despite this attempt at decentralisation of governing powers, there is an overbearing influence by the state government of Maharashtra in the MMR. For instance, the MMRDA (Mumbai Metropolitan Regional Development Authority) was set up under the Metro Act of 1974 as a local overall governing authority with locally elected representatives from the various ULBs to mitigate issues of coordination. However, the state government is reluctant to relinquish its power over the region. Additionally, there is speculation that a MPC may undermine the decentralised powers of the ULBs as a larger governing body, as with MMRDA, has better resources to govern and develop the region (Pethe et al., 2011). But this could depend on how the MPC is structured with specific regulations and goals set to avoid such a scenario.

Local ULBs – Case of MCGM

To understand the power of ULBs, the following is one case. On paper, the MMR is structured with specific divisions and responsibilities. But this could depend on how the MPC is structured with specific regulations and goals set to avoid such a scenario.

Notes

[1] The organisational structure of MMRDA comprised three bodies – the authority, executive committee and office of the metropolitan commissioner. The authority is at the apex of the structure and has control over all activities of MMRDA. It is made up of 17 members including ministers from the state government, municipal commissioner of Mumbai, councillors from MCGM, MLAs and its chairman is the minister for urban development, Government of Maharashtra. The executive committee is in charge of providing technical guidance and superintending activities of MMRDA and consists of members from the Government of Maharashtra, experts in urban planning and development and has the chief secretary to the Government of Maharashtra as its chairman. The metropolitan commissioner is a bureaucrat appointed by the Government of Maharashtra to head the office of MMRDA which comprises different divisions, such as planning division, town and country division, engineering division and others: (Pethe, Gandhi, & Tandel, 2011).

[2] The MMRDA website indicates that the State Chief Minister is the chairman of the MMRDA.

Image Sources


4.7. Mumbai’s urban identity as a set of contrasts between old and new, rich and poor. 

Regional Identity

Mumbai, as with many cities has a complex urban identity. But it can be described as a city of extremes. It is home to some of the richest people in India and also some of the poorest. It is a city of staggering contrasts. Kidambi (2013) writes, “a vast majority of the population lives and works in abysmal conditions […] making a precarious living in the […] informal sector. On the other hand, its affluent elites pursue lifestyles of calculated extravagance, fit to rival their counterparts in London or New York” (Kidambi, 2013).

This is spatially visible through a mix of slums and sky-scrappers all across Greater Mumbai. It has an old city charm but is racing to become a ‘world-class’ city (Jha et al., 2015). It is harsh to those seeking urban citizenship but do conform to urban elitism; but this does not stop people viewing the city as the place where one be “made and remade” (Kidambi, 2013).

The MMRDA Plan (2016), notes that the boundaries of the MMR is not common knowledge. The MMRDA and its political boundaries were conceived in 1974 which partially coincide with two state districts, Raigad and Thane. Hence, the regional identity is undefined but with the establishment of the metropolitan regional plan; the immediate countryside and the edge cities are being replicated with Greater Mumbai archetypes.
**Reduced Rural Lifestyles and Agricultural Production**

A large part of India is predominantly rural, but India is undergoing a rapid de-agrarianisation with unplanned (or poorly planned) transformation of the rural areas. And while the urban-rural lines are shifting, it will still retain its rural characteristics for another three to four decades (Echanove & Srivastava, 2014). This is due to a variety of reasons, partly because of expanding urban centres (as discussed in Chapter 3) and urban/industrial oriented legislation. But other reasons include inability of farmers and farm-owners to compete in global markets. Low prices and debt accumulation has led to a high rate of suicide amongst many farmers across the nation. Additionally, farmers are dependent on middlemen for selling their produce and do not always have easy access to the right markets because of the perishable quality of food products. This is further aggravated by poor storage and logistic systems. Furthermore, agriculture is extremely susceptible to climate changes. Hence, agriculture is increasingly being associated with rural poverty, leading the national trend for an urban economic policy. This has resulted India’s increasingly reliance on trade for food imports based on trade relations (for example, with BRIC countries) for supply.

Additionally, traditionally land inheritance in India divides land equally between the male sons. This practice has reduced the size of farm lands, making it economically unsustainable for farmers to create a livelihood from farming alone (Sathe, 2017). This makes selling land to real-estate developers and planning authorities as a more feasible solution than pursuing farming as an occupation. Additionally, there has been a decline in the favourability for farming as a lifestyle. Globally, the average age of the farmer is 60 and the figure is rising (Thomas, n.d.).

**Notes**

4.8 The problems of the complex global food supply chain.

4.9 Hereditary transfer of property. The division of farmland ownership has resulted in reduced profitability of farming.

4.10 Policies focussed on urbanisation and De-agrarianisation - debt and inability to compete in global food supply chain systems has resulted in farmer suicides.

Sources


4.10. Screenshot of BBC news article that describes the farmer’s protest and negotiations with the government in Mumbai in March 2018. Source (Rowlatt, 2018).


4.14. Flood diagram in Greater Mumbai. Mapping and analysis showing areas flooding on an annual basis during the monsoons. Outlined in red are government housing sites, over half these sites flood annually. Informal settlements are at high risk due to flooding, particularly the settlements concentrated around the Mithi river and Mahim creek.


4.17. Burnt Farmlands. Farm lands are being used for brick kilns. This is an increase in demand from the construction industry. The lands are used till it is “burnt” and can no longer be cultivated.


Notes

4.14. Flood diagram in Greater Mumbai. Mapping and analysis showing areas flooding on an annual basis during the monsoons. Outlined in red are government housing sites, over half these sites flood annually. Informal settlements are at high risk due to flooding, particularly the settlements concentrated around the Mithi river and Mahim creek.

Sources


Weakened Urban Ecological Systems

Ecollogies of the City

The city has a history of land reclamation from colonial era continued in post-independence era till 1974 when regulations were set to reduce reclamation from the sea. With an overcrowded city and rapid urbanisation within the geographical constraints of the Mumbai peninsula has forced urban limits pushing back against ecologically sensitive areas. Lack of strick regulations leads to illegal land-filling, dumping of garbage and construction rubble in ecologically sensitive area. Ecological illiteracy at various levels - citizens, builders, decision makers.

Ecollogies of the Peripheries

Peripheries seen to serve the city, there is a limited perception of the hinterland by builders, developers, planners, architects and politicians. At best, they are seen as areas for tourism or recreational activities. Recreational and religious tourism has led the natural environment to be redefined from public to private; from highly bio-diverse environments to manicured landscape gardens. The peripheries are also seen as an opportunity to relocate polluting industries from the urban areas. Additionally, they are seen as a means to serve urban activities for resources - water, sand-dredging and brick kilns; often for the booming real-estate industry.
Affordable Housing

For First and Second Generation Migrants

Missing support system for new labour migrants from areas in search for urban lifestyles. Compromised livelihood with less clean water, temporary shelter and limited access to amenities (like schools and PHCs). Historically migrants found accommodation through gaothans, urban villages in the city. Villagers rent out an extra to generate extra money to compensate losses in farming. However, urban policy has made these gaothans favourable for development, making property prices too high for poor migrants. Another favourable option for rural migrants are chawls, these are historic dorm houses from the colonial era; a typology used to house migrant workers from rural areas looking for work in the Mumbai mills. The chawls today are poorly maintained and in dilapidated conditions, the municipality has invited external developers to demolish the chawls and create mass affordable housing.

For Third and Fourth Generation Migrants

Housing shortages in the region is a big focus for planning in the city. A large part of the population are living in slums, many houses are in a dilapidated condition, unauthorised squatting and homeless families living on the pavements put housing in the forefront (MMRDA, 2016). Nearly, 60 percent of the population lives in slums that take up 6% of the city’s surface area. Slums are a solution to the lack of affordable housing stock in the city. Rural migrants squat on open unused spaces in the city or are an extension of exiting villages (described in the literature review).

State Housing and Private Speculative Housing

A total of 72,936 houses were added to the housing stock in the period 1991-01 and another 289,605 houses in 2001-11. Since 1992, the redevelopment of slums has been incentivized through market interventions by providing private builders additional development rights (like extra FSI) to create free affordable housing. The scheme ideally boasts reduced mortgages (as the delivery is as free houses), offers secured property rights to the slum developers, reduced displacement (in-situ development) and the development of “slum-encumbered” land. But the MMRDA policy is also self-critical, the scheme favours third and fourth generation dwellers, maintenance failures, lack of consent from slum dwellers for rehabilitation, delivery of stock less than expected, poor living environment have plagued the scheme. Similarly affordable rental housing has been a failure. Coupled with pro-ownership policies and stringent first generation rent control schemes in the city of Mumbai, has led to the decline of the most affordable housing market – rental housing. First generation rent control does not allow incrementalisation based on a fixed rate. Formal rental housing only makes up 5% of the housing stock in Mumbai. However, since 2007 the MMRDA has launched a rental housing scheme as an affordable housing option, with rents ranging from private developers were offered additional FSI to provide self-contained dwelling units of 15/30 sqm. However, in 2014 the Rental Housing Scheme was modified into the affordable housing scheme due to several units remaining unoccupied. The failure can be attributed to the location of the projects, many located several hours away from the city. Additionally, such a rental housing requires access to livelihoods, social and physical infrastructure which were inadequate or absent (Deb, 2016).

Speculative Housing

Screenshot of Times Of India reporting 130,000 locked flats in the MMR in 2017.

Notes

Problems with affordable housing in the metropolitan region.

Sources

4.1 Urban Citizenship for Non-urban groups

Indigenous tribal communities (Adivasis)

The urbanisation of agricultural land often impacts tribal indigenous communities, collectively known as Adivasis. There are various tribal groups in the MMR – the Katkaris, the Warlis, the Kokna and the Dubla to name a few. Before the city was established, the region was home to dense forest land. These forest lands have sheltered a large part of the Adivasis. For example, 3% of the sub-district of Thane in the MMR houses 20% of the state’s tribal population. With the advent of the city and British colonial policy, the Adivasi tribal communities were marginalized with criminalisation of traditional tribal activities (traditional forest grazing, harvesting of forest crops, rolling bindis or Indian cigarettes). British legislation ensured that only forest technocrats were eligible for management of forest pushing the Adivasis out of their settlements. This was convenient for the development of the British economy (logging revenues), for the growth of the Indian Railways and the city of Mumbai. Over a century, between colonial legislation and the post-Republic Indian government, the Adivasis have been marginalised as a forest protection measure. However, this is in the financial interest of creating a larger taxable peasantries base; Adivasi have been working as farm-hands on agricultural lands which increases revenue the production of taxable cash crops (Edelblute & Gunnell, 2014). They have since been working on dal lands given by the British to resettle them. But urbanisation has resulted in increasing land conversion and less agriculture venues forcing them to seek alternative work. They are largely engaged in brick-kiln work and agricultural work based on seasonal demand (Krishnankutty, 2018).

Fishing Communities (Kolis)

The Kolis are also an indigenous group but are categorized differently as they maintain an intrinsic relationship with water. These include fishermen, but in some cases also bamboo cutters or water carries. Like the Adivasis, the Kolis have been displaced by the expansion of the city of Mumbai. Traditional Koli settlements, called koliwadas have been reduced to slum like condition to meet the demands of the city’s housing needs (discussed in Chapter 9). Further, the Kolis have been adversely affected by union laws, namely the amendment of the Coastal Zone Regulations (CRZs). The Ministry of Environments and Forests (MOEF) regulates development activities on coastal stretches within 500m of the high tide line land inward based on four levels. Theoretically, the CRZs are formulated to promote healthy eco systems and protect coastal livelihoods. However, poor implementation and rampant violation of the rules have put these at risk.

Agrarian Communities

The Mumbai Metropolitan Region comprises of 994 villages. Some of these villages are tucked away within the dense urban fabric of the city – called gaothans (former villages) and koliwads (fishering community settlements). Mumbai’s urban village are often mislabel as ‘slums’ owing to heavy densification, leading to slum-like conditions. But unlike a slum, urban villages are not squatting settlements on public land and hence require different rules and considerations. But despite this, these villages have entrenched themselves as demarcated as slums by the SRA cell of the MMRDA. However, recently the SRA has reverted on the status of ‘slum’ for gaothans, but is yet to develop a development policy for urban villages. These villages initially fell under a rehabilitation scheme called the Gaotahn Expansion Scheme (GES), that allotted 10% for the villagers from whom the land was acquired, with provisions for non-landowners. A part of the allotted land would be reserved for appropriate social and physical infrastructure. However, the scheme has been poorly implemented citing problems insufficient records, problems establishing inheritance rights, encroachment by other existing gaotahn and other project affected persons (PAP) (Babu, 2015).

Rural-Urban Migrants

Graph indicating land-holding rights of women across the top ten states in India with Maharashtra (highlighted) with 14.1%.

Sources


Gender Imbalance

There is an obvious imbalance of women represented in public spaces in India. In Mumbai, this is partly due to a large number of rural migrants being predominantly male. While this figure is changing over time, Mumbai’s gender ratio is an abysmal 862 females (for every 1000 males). This is well below the national and state averages of 933 and 922 respectively (MMRDA, 2016). This is also due to a cultural preference for sons, which has distorted the national ratio with high rates of infanticide of sex-selective foeticide. Further, women are not encouraged to join the workforce due to culturally regressive mindsets amongst many, coupled with poor rates of female literacy.

Based on an IMF report an article in the Guardian reports that the country has “one of the lowest rates of female participation in the labour force among emerging markets and developing countries, only around two-thirds of women are literate” (Das, Jain, Ancheta, Kochhar, & Kumar, 2015; Graham-Harrison, 2015). This results in less women in public spaces making the gender balance very perceivable. This also makes public spaces unsafe for women, with many cases of sexual harassment reported in cities like Mumbai and Delhi. The government attempts to resolve this by reserving train carriages for women, but it is a quick-fix solution to a systemic problem (Graham-Harrison, 2015).

The fact that only two carriages are reserved in fourteen or sixteen carriage trains reflects the limited participation of women in public and work life in Indian societies (Image). From a legislative perspective, India’s Constitution (Sources?) promises equal rights regardless of caste, gender, religion, class, or ethnicity. But discriminative practices are deep-rooted and manifest themselves in many ways. For instance, it affects access to affordable housing. Single women in the city of Mumbai, despite its cosmopolitan image, struggle to find rentable accommodation due to their marital status. This also reflects in limited rights (cultural, not constitutional) for women to own property. The skewed gender ratio also leads to trafficking of women in the country and prominent red-light districts in cities like Mumbai and New Delhi. Mumbai is also uniquely and famously home to the Dabbawallas (translates literally tiffin-men) who deliver lunch boxes to work places from homes using Mumbai’s vast train network. They are branded with the heartening promise of hot lunches from mothers and wives (Percot, 2005). While the Dabbawallas are celebrated by many as a unique blend of formality and informality (Mehta, 2007), it is but an example of the societal perception of women’s roles – providing hot lunches.

This is also reflected in land-ownership rights for women. On average, 12.9% of Indian women are owners of land holdings, compared to 17% in China. This is critical for the country because it is a crucial step towards achieving sustainable goals to end poverty, ensuring food security, gender balance and improved human development indices. With the decline in agriculture, men in rural households move to non-farming related professions or migrate to cities as labour migrant. Women take on more farm responsibilities due to this shift. However, the lack of land titles deprive them from being recognised as legitimate farmers and are denied credit or government benefits (Tripathi, 2018). While the national government has a policy for joint land titles from the 6TH Five Year Plan (1980-5), it has fared poorly in implementation. This policy was further reinforced in the 9TH Five Year Plan (1998-2002) but women are unaware of their rights or fear retribution from local land owners (Dubchoet, 2013). Policies to address the decline of agriculture need to include women’s land rights for policies to succeed.

Notes

4.27 Two carriages reserved for women as a solution for women safety. The graphic with the train carriage is representative of the amount of women participating in the Indian labour force.

Sources

4.27 Image by Author (2018).


Urban Mobility and Form

FSI and TDR

The creation of Urban form in the Mumbai Metropolitan regions is primarily driven by FSI and TDR Norms. This has led to haphazard urban expansion and high real-estate values in the MMR. Less space for expansion within the city forces the city to increase the FSI to promote growth. The typical FSI for the island city of Mumbai is 1.33, which compared to cities like Hong Kong is not very high. But the MMR allows for TDR or Transfer of Development Rights, which allows developers to transfer land rights from one area to another. These transfer rights are limited within municipalities in the MMR. Mass-market housing projects, which are often speculative investments coupled with extremely high real-estate value. For example, agricultural land or historic buildings can transfer their unused value. For example, agricultural land or historic buildings can transfer their unused value.

The municipality also allows developers additional FSI northward of the island city as a slum-rehabilitation policy. Additionally, a real-estate developer can buy TDR from the municipality to a certain extent and is dependent on the market rates for additional rights (Nallathiga, 2005). This has resulted in high unaffordable real-estate prices forcing a dispersed mobility pattern.

Urban Mobility

The Greater Mumbai Region features the fourth most dense urban area in the world with an estimation of 30000 people living per sqkm (Cox, 2012). Furthermore, nearly 50% of the population live in slums which occupies only 8% of the city’s surface (P. K. Das, 2015). Mumbai has been an attractive home for migrants from colonial times when it was attractive commercial centre. Overtime its popularity as the financial capital with a booming service industry has drawn labour migrants from the rural hinterland seeking jobs. This increase in concentrated density is also partially due to Mumbai’s physically geography, the island city and the immediate suburban area (known as greater Mumbai) occupies only 8% of the city’s surface (P. K. Das, 2015). Mumbai has been an attractive home for migrants from colonial times when it was attractive commercial centre.

The Greater Mumbai Region features the fourth most dense urban area in the world with an estimation of 30000 people living per sqkm (Cox, 2012). Furthermore, nearly 50% of the population live in slums which occupies only 8% of the city’s surface (P. K. Das, 2015). Mumbai has been an attractive home for migrants from colonial times when it was attractive commercial centre.

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While expansion towns have been created away) for work. This is partly because many industries are keen to employ migrants from poorer countries who work more hours for less pay and accept minimal job security. Khopoli also houses a Tata Power Plant, a hydroelectric project that powers Mumbai and Pune (next closest metropolitan city) does not offer much room for expansion. While expansion towns have been created (Navi Mumbai) and transportation links to nearby towns have been established to reduce the pressure on the core city, the service jobs have retained monopoly within the island. This has led to large parts of the metropolitan region travelling to the centre seeking jobs (Fig. 4.33).

Additionally, the peripheral towns of the metropolitan region have poor infrastructure. While there are development projects in these areas, there is uneven growth in different sectors. One example is Kasara, which houses multiple tourist complexes but lacks a hospital for its residents. Or Khopoli, a small industrial town that is seemingly full of job opportunities but still has many residents travelling to the city (2 hours and 30 minutes away) for work. This is partly because many industries are keen to employ migrants from poorer countries who work more hours for less pay and accept minimal job security.

Sources


4.33 Urban Heat Map from OpenStreetMap data. (CC, 2015).
External Urban Influences

While studying Mumbai as a metropolitan region it becomes apparent that the political boundaries of the city only show a partial image of the city. Echanove and Srivastava (2014) in a research on the circulatory lives of rural-urban migrants along the Konkan region of India invoke the concept of "metopolis". The metopolis imagines the city form as a function beyond political boundaries and urban densities. The metopolis is determined by transportation networks and communication infrastructure. It implies globally oriented narratives that transcend political and fiscal boundaries. In the European context, where infrastructure comes at a high operating cost, reducing mobility options for those who cannot afford transport or communication modes. In India, travel fares and mobile communication charges are one of the most affordable in the world. While the train networks lack speed and capacity, the cheap rates ensure that anyone can afford a ticket, promising mobility for even the poorest. For instance, a sleeper-class train ticket for a journey of around a thousand kilometers will cost a little over 5 EUR (Echanove & Srivastava, 2014) [Image 1].

This ensures that Mumbai is an urban system of a complex interaction of various urban networks and nodes. The city of Mumbai is an extension of the immediate metropolitan region, the Konkan region, Maharashtra state, the Mumbai-Delhi Industrial corridor and global systems like the Gulf states, multinational corporations and various other urban systems that contribute the Mumbai Metropolis. For example, the nation Mumbai-Delhi Industrial corridor is an infrastructure project, but it opens the metropolitan region to influences from additional industries and migration from this belt.
Policy Review
MMR Regional Plan 2016-2036

As discussed in the previous chapter (11.b), the metropolitan region of Mumbai is governed under a polycentric governance model, albeit a poorly functioning one (Pethe, Gandhi, & Tandel, 2011). The region is planned under a statutory plan prepared by the MMRDA and revised every 20 years (1971-95, 1995-2015 and 2016-2036) [Fig. 4.38-39]. The 17 ULBs under the region are taken into consideration in the preparation of the plan with 7 areas planned [Image 3] under Special Planning Authorities (SPAs). Ideally, the MMRDA’s regional plan demarcates and regulates urbanisation of the peri-urban areas. However, Krishnakutty (2018) in a reflection of the planning in peri-urban areas in the Mumbai Metropolitan Region, writes that sovereign planning interventions made after a regional plan (SEZ Act of 2005) do not consider the MMRDA regional plans in force. Instead, they usually run in parallel to the spatial plans in place and the changes are incorporated into the subsequent plan. Various infrastructure projects, like a second international airport [Fig. 4.37] were never a part of the regional plan before they were conceived (Krishnakutty, 2018). It can be conjectured from this that the MMRDA does not revise the regional plan at intermittent periods to take into consideration changes in state and union legislation. The current regional plan (2016-2036) is pending approval from the state government as published by newspaper reports from January 2018 (Venkatraman, 2018). The following is an overview and critique of the said document based on the 9 criteria set in chapter 4.1.

Overview

The MMRDA bases its regional plan document [Fig. 4.36] (138 pages not including 42 maps) on an analysis of the state of the existing region, supported by statistical data, spatial growth trends, etc., with respect to population growth, physical infrastructure, housing needs and environmental needs amongst various other issues. Based on existing conditions it speculates relevant issues that require planning intervention; for which, it proposes goals, objectives and strategies based on future needs and projections. This is followed by a detailed proposal for 2036 with regional structure, land-use zoning, development control regulations (for areas not planned under ULBs), expansion of transportation networks, affordable housing, infrastructure and the environment.

Goals for the region is to facilitate balanced growth in the region, promote economic growth through secondary sector development, improve mobility, integrate the metropolitan region and develop location specific strategies for individual cities, earmark and enhance conservation areas, future urbanisation supported by institutional framework for governance, and an integrated regional network of open spaces and infrastructure. Strategies for these goals have been elaborated in the table adjacent.
4.2

Image Sources
4.40: Navi Mumbai City Municipal Corporation Plan by CIDCO
4.41: Bhiwandi Special Planning Area Plan
4.42: Regional Plan for the MMRA 2056. Source (MMRDA, 2016)
4.2 MMRDA’s Current Goals and Strategies

1) Local Development Centres (LDCs) - that would serve as local market centres, enable development in tune with local skillsets, rectify deficiencies in amenities, skill upgradation centres, realisation of government schemes.
2) Encourage Tourism
3) Encourage Primary Sectors

2) Encourage Small & Medium Enterprises (SMEs)

Industrial Zones - Earmarked Industrial Zones but also allows industrial activity in parcels of land in the Urbanisable Zone and the Green Zone-1 (one-fourth of the MMR).

Spatial Consequences
This results in areas marked as green zone, but a closer look of the satellite imagery shows that there are large industrial warehouses in these areas.

4) Connect heritage sites and tourist sites
2) Multi-modal corridor with a dedicated green corridor
3) Buffer around rivers, forests and water bodies

5) Extend Sub-urban Railway with additional sub-urban stations
2) Multi Modal Corridor
3) Transport-oriented development - areas 500 metres from suburban stations and metro railway stations will be treated under the Station Development Scheme (FSI 1).

6) Extend government framework to peri-urban areas
2) Decentralised sub-region offices

The MMRDDA expanding its realm of control through special planning authorities (SPAs).

7) Encourage Manufacturing in the Region

8) Simplified Zoning and DCRs

9) Regional Information Systems (RIS)

Notes
4.43. Summary of goals and strategies of the MMRDA Regional Plan 2016-36.

Sources
4.2 Discussion of Policy with Research Themes

The Politics and Conflicts of Urban Governance

Throughout the document the MMRDA occasionally mention a decentralised model for the region. They also propose the introduction MMRDA offices in sub-regions decentralized from the main office. But despite claims of decentralisation the MMRDA does extend a large influence over the region. 17 towns are planned based on sanctioned plans of the ULB, but there are 7 Special Planning Authorities that fall under the MMRDA (SPAs) managing various sub-regions [Fig. 4.40-.41] in the MMR. The MMRDA regulates the rest of the region through Local Development Controls. The extent of the LDCs have been reducing overtime as the SPAs issue sanctioned development plans to control the region [Fig. 4.44.]. The existence of these SPAs allows the MMRDA to expand the urban limits in the region.

The hatched areas are planned under the ULBs (urban local bodies) or SPAs authorised by the MMRDA, unhatched area governed under blanket rules called local development controls or LDCs.

Urban Identity

The MMRDA Plan (2016), notes that there is a lack of regional identity as the boundary of the MMR is not common knowledge. The MMRDA and its political boundaries were conceived in 1974 which partially coincide with two state districts, Raigad and Thane. But it does not propose any proposals to address the need for a cohesive regional image.

Real Estate driven Urban Form

The document does not delve into FSI regulations for the ULBs and the SPAs. These are presumably detailed out in the respective sanctioned local plans. But it needs to be questioned if useful FSI regulations can be illustrated to help local bodies to better plan for their regions. The document does propose regulations for areas not under sanctioned plans under Local Development Control Regulations. It features special FSI zones in LDC area – TOD (transport oriented development) – additional FSI for 500 m around stations. The GES (Gaonthan Expansion scheme) – additional FSI for 200 m around existing villages (or gaothans). TDR – like with FSI, the document does not delve into issues with TDR as this would fall under the respective sanctioned plans. But housing is an important issue that document prioritises, and issues such as TDR and FSI do affect markets and how affordable housing is delivered to relevant markets.

Urban Mobility

Various transportation networks are proposed across the MMR.

- there is a priority list for most relevant transit projects but information of relevant body to complete the project is missing. Additionally, one can speculate that decentralization of the region should allow local bodies to execute and develop these projects as per needs of the sub-region.
- missing impact of large projects of peri-urban areas. For example, the first project on the priority list is the multi-nodal corridor between the southern most town of Alibag and the northern most town of Virar (in the MMR). The project spans a 129 km stretch of Virar – Alibag and is labeled as multi-nodal transit project. But, the draft plan does not plan or give proposals to mitigate any negative impacts on the peri-urban areas [Fig. 4.45.].
- New roads are planned through notified forest areas without any impact assessment of the project on the integrity of the forest bio-diversity.
- While the entire document does talk of lack of mobility access to some villages in the region, but the transport section only talks of large scale infrastructure projects and does not emphasize the need to connect these villages.

Notes

4.44. Area under Development Control Regulations reducing with more areas planned with detail master plan.


Image Sources

- 4.44. Original Image Source - MMRDA (2016).
Affordable and Speculative Housing
- key focus of the plan is to provide affordable housing. Predominantly reliant on governmental or private agencies to compensate the housing shortage in the regions. Does not look at bottom up approaches and allowing self-development projects.
- Does propose reduce of vacancy by relaxing rental controls and taxation of vacant houses.
- Expanding influence of the SRA in the MMR, despite poor quality of housing provided by the SRA. No reflection of condition of housing provided by the SRA.
- Proposal of an additional body to provide Low-income group (LIG) and Economically Weaker Section (EWS) houses. (Another body?) Might be better to provide tools to allow ULBs to manage housing shortage locally.
- Lack of awareness of rural lifestyles and social structure (as with slums) and instead propagates the same mass-produced housing stock.

Weakened Ecological Systems
- It is the second last chapter of the proposal sections and is more focused on tourism and green networks.
- Afforestation connector projects are contradictory to urbanization and industrialization plans in previous chapters in the document.
- Marks protection of rivers but needs to be explicit about rules on sand-dredging, etc.
- Wetlands and salt pans not mentioned in the section. For example, the beginning of the document shows a plan with salt-pans in the region under threat, but the plan proposing future urbanisation marks a few salt pans as local urban development centres.
- Forest, heritage site, coastal wetlands and waterbodies notified on the plan does not look into encroachment of these areas. Or is depicted after encroachments (the wetlands are marked based on the land-use in 2008 and not as geological depiction).
- Many heritage sites excluded in the notification.
- Vague wording (as with many parts of the plan) – For example “urban creeks have a major role in the health of rivers and need to be appropriately addressed within the cities through appropriate technologies. Watercourses like [...] need focused attention.”

Reduced Rural Lifestyles and Agricultural Production
- one of the goals is to encourage primary sector livelihood opportunities towards a “balanced regional development”. But the plan is unclear on how this goal will be implemented.
- Urban villages that fall under the DCR zone have been specified under the Gaonthan Expansion Scheme (GES). While the research section. However, the Development Control Regulations do propose the Gaonthan Expansion Scheme.

Water Management
- The plan discusses key geographical features under threat from urbanisation in the research section.
- The document does describe water management policies to address the severe water shortages in the region.

Urban Citizenship for Non-Urban Groups in the MMR
- remarks on existence of tribal populations in the region but does not account for them in the proposals.

Gender Imbalance
- The MMRDA acknowledges that the sex ratio in the MMR is 862 (less than the national average of 933 and state average of 922). This is apparent in the skewed representation of women in public spaces, but there seems to be no policy changes to address this imbalance. The assumption is that this is a cultural and national issue that has to be addressed on a larger level.

Lack of awareness of rural lifestyles and social structure (as with slums) and instead propagates the same mass-produced housing stock.
Conclusions

a) The Regional Plan is not without its merits. The road to hell is paved with good intentions. The research undertaken is thorough, the goals and strategies are admirably derived from existing conditions and future projections. However, the proposals and policies for the 2016-2036 plan fail to thoroughly follow up on the goals and strategies set out in the beginning. Furthermore, there is no credible vision for the metropolitan region apart from declarations for economic growth. Considering critical issues like over-population, flooding, pollutions, etc., there is no comprehensive vision to make this region resilient to the extreme conditions that prevail.

b) Environmental concerns and the issue of declining food sufficiency are discussed early on, but the research does follow through to design and policy solutions.

c) The MMRDA plan is multi-scalar. They appoint Special Planning Authorities (SPAs) to plan areas as expansion zones for the city of Mumbai, but at the expense of existing Urban Local Bodies (ULBs) in the region. The MMRDA justifies this citing that smaller government bodies (like village panchayats or village leaders) lack the resources to “handle issues related to urbanisation” (MMRDA, 2016). But by expanding its overreach in the region, it neglects smaller less powerful stakeholders involved. The MMRDA rules and guidelines have to be accessible to various groups of people in order affect effective public participation in urban design processes. For example, an NGO called Namita from Tamil Nadu graphically re-represents CRZ (Coastal Regulation Zone) Rules with the local language to make it more accessible to various groups not skilled in reading legal and scientific terms.

d) Inconsistency in different chapters, afforestation plans in one chapter overlapping with urbanisable or industrial zoning in another. Or new roads proposed in notified forest areas.

e) The problem of a centralised core - the present governance focus is often directly or indirectly in service to the core city. The edge cities are a place where the industries, or airport infrastructure are moved out from the Greater Mumbai to the peripheries to help the core city.

Notes

Illustrations showing the urban bias in the metropolitan region of Mumbai.

4.48: The peripheries are aligned to serve the core city.

4.49: Administration of the MMR is organised as an extension of the core city of Mumbai making the peripheries and the edge cities an urbanBlob of Mumbai.

Sources

4.48-4.50: Illustrations by Author (2018).
5 Physical Analysis

Assessing the physical characteristics of the MMR and VVSR

Physical Analysis - Mumbai Metropolitan Region
Physical Analysis - Vasai-Virar sub-region
Analysis of the Region
Mumbai Metropolitan Region: Introduction

Statistics
The Mumbai Metropolitan Region extends 4355 sqkm and is governed under various hierarchical bodies. The region includes Greater Mumbai and parts of two Maharashtrian districts. Greater Mumbai houses a population of 12.7 million persons and the remaining region accommodates 9 million persons, adding to a total of 21.7 million (TERI, 2014). The metropolitan region is not only a function of its urban form but includes a variety of other land uses as described below (MMRDA, 2016).

Land Use
The land use in the region is only 13% urban with a large part agricultural. The MMRDA looks to reduce the areas dependent on agriculture and focus on skill development to encourage industrial development in the region. Another key land use in the region is forest cover - some of these are protected lands but are under threat from urban expansion. These forest lands are also home to adivasi (or indigenous tribal groups).

Image Sources
Urban Mobility

Mumbai is extremely reliant on the suburban railway (black) with many residents from the periphery traveling to the centre. It is spread over 465km with 2342 train services and carries over 7.24 million commuters per day. A secondary transport line (metro) is planned in parallel to take the load from the rail network. This is the mass rapid transit system of the Mumbai metro rail which spans over 146km. But it is potentially socially divisive - the metro air-conditioned - will ferry more the more well to do middle class, with the poorer communities traveling by the rail system which would be cheaper (TERI 2014).

Vehicular population has increased over time and various sea-links, flyovers and bridges have been planned to de-clogest the roads. Public road transport is provided through buses, taxis and auto-rickshaws. Buses are provided by the state, Maharashtra State Road Transport Corporation (MSRTC) and the Brihanmumbai Electricity Supply and Transport (BEST) (TERI 2014).

Notes

Mobility and travel distances in the MMR.

5.4 Every minute, trains arriving at Chhatrapati Shivaji Terminus and Churchgate Station inject 2,000 people into the southern city core.

Sources

5.4 Mumbai Churchgate station. Source - (Salgado, 1995)

5.5 Map of Metropolitan Mobility with travel distance by the suburban railway line. Map by Author (2018). Data source - Sources: Esri World Street Maps.
Urban Expansion

The MMRDA plans to expand the urban extents of the city by introducing special planning authority zones in unplanned areas. But in its MMRDA 2036 plan it fails to acknowledge other schemes that will result in urbanisation or rural areas. For example, the Gaon (or Village) Expansion scheme that allows additional FSI within a 200m radius (seen as small pockets of urban growth), a legal loophole that will be attractive to small builders.
Urbanisation of the Peripheries

The MMRDA plans to expand the urban extents of the city by introducing special planning authority zones in unplanned areas. The lack of implementation of protection laws leads to the expansion into agricultural lands, wetlands, mangroves, forestlands, etc.

The reduced importance of agriculture in the region has forced the city to expand its hinterland ranging from 200-500 km, making food produce all the more unsustainable (TERI, 2014).

Furthermore, heavy toxic industries are planned in the peripheries without understanding the full ramifications on the impact on the peripheral ecological systems of the region.

Image Sources
The MMR is an extremely large region, with an expanding urban core. There are five edge cities planned under the special planning authorities (SPAs). The project will focus on one sub-region - that falls under the Vasai Virar City Municipal Corporation. The conditions of this edge city is similar to others in the MMR. It is also extremely relevant as it falls under a large national level infrastructure project - the Delhi Mumbai Industrial Corridor. Another project - the Virar-Alibag multi-modal transport project.
5.2 Analysis of the Sub-region

Physical characteristics Vasai Virar

Sub-region: Introduction

Statistics

The Vasai Virar sub-region consists of four municipalities – Vasai, Virar, Navghar, Manikpur, and Nalla Sopara that accounts for roughly 11% of landuse area. The entire sub-region houses a population of 1,222,390 (Census, 2011). It covers an area of 380 sqkm and also includes 67 villages. It is partially planned for by a Special Planning Authority known as CIDCO (City and Industrial Development Corporation of Maharashtra) in accordance with the MMRDA (VVCMC, 2002).

History and Ecological Transformation

Historically, Nalla Sopara was an ancient trading port and the capital of an indigenous Middle India kingdom called the Gujarat Sultanate. Located between two estuaries, continuous flow of water permitted the movement of early ships. However, the dept of the creek reduced with gradual silting and with the advent of larger vessels, Sopara lost its significance in the region. Two islands – Sopara Agar and the Vasai Agar gradually merged with the mainland. The siltation was accentuated by the loss of dense forests due to agricultural farms required to support the settlements (Sawant, 2014). In the 16th century Vasco da Gama’s discovery of a sea route to India opened the region to Portuguese rule and eventually British colonization. Under the Portuguese ruled from the Bassein Fort (now called Vasa). There were changes in the social structure, Hindus and Muslims were persecuted under Catholic propaganda. The region of Greater Mumbai (formerly the islets along the Salset, Thane and Mahim) was signed over to the Portuguese from the Gujarat Sultanate in the treaty of Bassein (MMRCHS & CRIT, 2005). The Portuguese ceded the region to the British East India Company in the 17th century. There was an overlap with the Maratha kingdom rule during this period.

The establishment of the port in Mumbai eventually made the sub-region insignificant in trading routes. Eventually, the region regained significance with the introduction of the railway line; improving connectivity to Mumbai (Jacob & Aneerudha, 2017). But, it has predominantly remained as a region of dormitory towns serving the main city (VVCMC, 2002).

Image Sources

5.14. Photograph by (Author, 2018)
5.15. Topographic change over time. Image Source – (Sawant, 2014)
5.2 Topographic and Geological Overview of the sub-region

The region is bound by two rivers to the north and south, the Tungareshwar forest and mountains to the east, and the Arabian sea to the west. It geologically falls under the Deccan Lava plateau with coastal deposits and majority of the region is a dissected basaltic plateau. The Deccan traps are dissected joints that allow ground water to flow from one place to another (Sawant, 2014).

Topographically, the region is predominantly low lying, with a few parts reclaimed from the sea bed. Some of these low-lying lands are extremely fertile, called khazan lands. The other low-lying lands, predominantly in the south and the centre that are marshy wetlands some of which are used for salt cultivation. The 5km western belt features coastal uplands, these have historically been created by natural sand accumulation by Arabian sea drift and short winds (Sawant, 2014). Older settlements were traditionally built on these uplands which are 1.5m to 2m above sea level. The topography is extremely varied with small local variations in the form of small hillocks and isolated peaks (Jacob & Aneerudha, 2017; WCVMC, 2002). It also features low height mangrove forests towards the south, the massive root system dissipates wave energy and the tidal influx. The rich topography with wetlands and mangroves attract many water birds (a total of 163 migratory birds species) (WCVMC, 2002).

The climate is hot and humid with small variations of humidity and temperature over the year. It has three seasons – summer, winter and monsoon (WCVMC, 2002).

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5.2 Land-use Analysis of the Vasai-Virar sub-region

Urban - The urban zone has predominantly been seen as dormitory towns for residents who work in Greater Mumbai. Changes in the MMRDA development guidelines have opened the region for additional urban development since the second regional plan. The 2016 plan has further expanded the urbanisable zone and opened the area earmarked as green zone for additional urban and industrial activities. The close proximity to the city has increased the real estate value, resulting in speculative housing (as seen with the rest of the metropolitan region) by private developers and government agencies. However, the physical infrastructure has not been able to keep pace. Increase in urban zones has resulted in many ecologically sensitive zones and plantation areas being used for dumping of waste (Rao, 2006).

Plantation zone - The coastal belt spans 5km of rich alluvial soil and is engaged multi-crop production. The produce comprises of grains, bananas, coconuts, flowers and vegetables. The produce is popular and highly price, Vasai-Virar features one of the more successful agrarian economies in the metropolitan region. Vegetables are grown in agricultural fields and farm-houses, they are cultivate by small farmers who sell to local markets directly and big farmers who transport it by suburban rail. They capitalize on the demand for organic produce in the city. Additionally, horticulture is profitable source of income (Jacob & Aneerudha, 2017).

Agriculture - Agrarian activities takes place in the eastern parts of the region where the lands are very fertile due to rich fresh water sources from the mountain (Rao, 2006). While the plantation zone on the west is clearly demarcate, the agricultural lands on the east are under threat of urban expansion; illegal and legal.

Salt pans - The wetlands in the low-lying lands hold a number of salt pans. The surrounding communities are invested in salt production.
They are also a natural buffer to the rise in water level in the monsoon. However, the work is labour-intensive and the extraction is manually undertaken by migrant workers from neighbouring states.

**Cattle Sheds** – The reduction of agricultural activities in Mumbai has pushed the cattle-sheds to the peripheries. In Vasai-Virar the cattle sheds are concentrated in Kaman only accessible by a single road from Bhiwandi. But the relocation of cattle shed has been profitable with a 100% expansion of the industry. Migrant workers from Northern parts of India work in the cattle shed. (Rao, 2006).

**Fishing** – There are three primary fishing centres – Naigaon, Vasai and Arnala. These are organised by fishing cooperatives based around traditional koli communities – Christian Kolis, Hindu Kolis and Koli Mangela. The fishing industry is divided by coastal fishing and inland fishing in brackish water.

Coastal fishing villages have settlement areas with houses, drying yards and fishing infrastructure (boat repair, storage) owned by the co-op societies. Inland fishing does require a lot of maintenance but is extremely productive. It is controlled by local contractors and is based around artificial environments and is less dependent on climate conditions. Fishing communities have collective settlement ownership rights that are protected by laws preserving indigenous people (Jacob & Aneerudha, 2017).

**Forest land** – These are lands occupied by Adivasis who work as farm hands in the plantation and agricultural lands. The notified forest features a wildlife sanctuary.

**Industrial Zone** – there are two industrial zones in the sub-region.

**Tourism** – With the reduce in agricultural jobs, the tourism industry has grown with many coastal resorts and restaurants appearing on this landscape. It does have an adverse affect on the local ecologies, with many resorts maintaining exclusive swimming pools despite water shortages in the region. There are a few cases of agro-tourism as well.
5.2 Mobility in the Vasai-Virar sub-region

While the sub-region is separated by a wide creek, it is well connected to Greater Mumbai through the suburban railway (direct Western Line) and state highway network. There are four railway stations in the sub-region – Virar, Nalla Sopara, Vasai Road and Naigaon – each roughly spanning a travel distance of five minutes by train. The railway stations are connected to the national highway on the east (NH8) and coastal villages on the west through local primary and secondary municipal road networks. The coastal villages on the west are also connected from a north-south primary municipal road connection. Virar Railway station also connects to Gujarat (northern neighbouring state to Maharashtra) bound shuttle trains (VVCMC, 2002).

Road Network: The existing local road networks are in poor condition, insufficient and are in need for maintenance. The responsible bodies are CIDCO (the SPA for VVSR) and the respective municipal corporations; neither have initiated attempts to repair the road network. The national highway is a four-lane carriageway and connects the sub-region to Mumbai in the south and Ahmedabad (Gujarat) in the north. State highways connect the city to the national highway (VVCMC, 2002).

Railway network: VVSR is connected to the city through the western railway that runs more than 150 commuter trains north-south in the MMR. The line is extremely overcrowded during peak hours and makes travel very unpleasant for commuters (VVCMC, 2002).

Buses: Additionally, there are intercity buses that are provided by the state transportation department (MSRTC). MSRTC buses run at a frequency of around 10 minutes to the railway stations (VVCMC, 2002).
Hydrological Analysis of the Vasai-Virar sub-region

As described previously in this chapter, the sub-region is framed by two rivers – Vaitarna and Ulhas on the north and south with the Arabian sea on the east. The following are key issues regarding water supply and management.

Problem of water supply - with the fast pace of real-estate development, the water supply management has not been developed with the same pace. This impacts both the rural and urban parts of the sub-region. There are severe water shortages and the water has a very high salt content (Fernandez, 2011). Only a portion of the population is served by municipal water, and the rest are dependent on private water suppliers, wells or borewells and free resources (Angueletou, 2006).

Saltwater content is high in the region due to an imbalance in the mixing of salt water from the estuaries and fresh water the Tungareshwar range. This is due to blockage by the railway line, reclamation of land in some parts and embankments that result in the sweet water leaving the system before reaching the western lowlands; this leads to water stagnation (Sawant, 2014). Additionally, unregulated tube wells make lead to an ingress of salt water due to close proximity to the sea (Jacob & Aneerudha, 2017).

Traditional water systems are bhowkals and talavs. Bhowkals are shallow water wells that are rainfed aquifers and are created from tidal clay deposits. Water from these wells can serve 8 HAs of land and provide for 40 families. They are used to cultivate paddy in rainy season and water is stored for vegetable cultivation in the winter (MS Gopal, 2011; Sawant, 2014). Talavs on the other hand, are often associated with a temple, dargah or church. These are used by agrarian communities for agricultural and domestic purposes (Sawant, 2014).
The following are recommendations derived from the analysis of the region

**Metropolitan Regional Scale**

1) Urgent need to decentralise planning and development focus from the core city to ensure more effective management.

2) To help marginalised groups like migrants, indigenous communities and women are considered during the planning process.

3) Involve agriculture as a part of urban development and help improve metropolitan food self-sufficiency.

4) Strengthen preservation of ecologically sensitive areas. The MMR like other urban areas houses a huge population, and the consequences of ecological encroachment can result in more lives lost due to resultant disasters.

**Sub-Regional Scale**

The regional recommendations apply to the sub-regional scale with additional context specific conditions.

1) Change the narrative of the sub-region as a dormitory city to a self-sustaining region (with respect to job creation).

2) Address the future of salt-pans in the face of land use notification change.

3) Agricultural land is under threat to urban expansion and new infrastructure/industrial development projects and needs to be addressed.

4) Change focus from conventional tourism to agro-based tourism.

**Metropolitan Regional Scope**

The current regional plan (as described in Chapter 12) proposes a detail land-use strategy for 2036, supported by detail mapping and special panning authorities to implement the changes. It looks at the region through various aspects – urbanisation, industrial growth, housing, water and waste management, infrastructure, tourism, etc. But based on shortcomings of the project and lack of attempts to govern the region in a decentralized manner, the project proposes a regional strategy as opposed to a regional plan (as seen in the MMRDA Plan 2016-2036). This scope of this project is limited to the studying and designing for the region with respect to categories described in Chapter 11.

**Sub-Regional Scope**

The Vasai-Virar is one five expansion zones for the city of Mumbai. The project attempts to address proposals of the regional strategy at a sub-regional scale based on the physical characteristics of the VVS. The same limitations of scope at the regional scale apply to this sub-regional scale. It also details out two projects towards the realisation of the regional and sub-regional strategies.
Research Conclusions
Summary of the urban biases in the metropolitan planning processes

The “problem” of migration

Following the narratives of migration through personal stories, historical trends and its most visible impact - right to housing revealed that there is an inherent struggle for urban citizenship for non-urban groups. Additionally, it also revealed a trend of urbanisation that changes the rural landscape that triggers rural-urban migration. This led to a literature review to understand this phenomenon.

Literature Review - Transformation of the rural landscape in the shadow of urbanisation

James C. Scott’s book *Seeing like a State* sets a narrative of how development models seeking to improve the human condition can have an adverse impact. Similarly, through supporting literature, it was apparent that urbanisation also transforms the rural landscape without being conscious of its impact. It affects landowners, who are handicapped by the change in land-notification, it affects the poorer non-landowners who take up unpleasant service jobs in cities, it has spatial implications for the traditional village form and it changes agricultural production.

Visiting the MMR

The visit to the region resulted in a few relevant conclusions that helped determine the scope of the project.

1) The relevance in the local professional and academic discourse was confirmed
2) Experience of the vast regional scale reinforced the need to decentralise the planning processes
3) Narrowing a suitable sub-region - Vasai-Virar based on speaking to professionals and a visit to the site.
4) Experience of a skewed gender ratio in public spaces reflected a major urban issue in the region.

Analysis of Urban Issues

Compilation of relevant urban conditions, their driving factors and the potential spatial impact. These are the issues addressed in the analysis -

- Conflicts of Urban Governance
- Urban Identity
- Real Estate driven Urban Form
- Affordable and Speculative Housing
- Weakened Ecological Systems
- Reduced Rural Lifestyles and Agricultural Production
- Water Management
- Urban Citizenship for Non-Urban Groups
- Gender Imbalance

Policy review of the MMRDA

An evaluation of the goals and strategies of the MMRDA policy plan in the policies outlined. Additionally, these are evaluated against the issue detailed above.

Region and Sub-region Analysis

Evaluation of physical characteristics of the metropolitan region and the Vasai-Virar sub-region with recommendations that might be relevant to understanding the context before responding with design solutions.
Strategy and Framework

Addressing the urban bias through policy and design

Project Goals - Urban and Rural Values for Balanced Growth
Regional Strategy - Agro-urbanism for the MMR
Policy and Design Framework - with A Quick guide to the Toolkits
Policy and Design Toolkits
Policy and Design Toolkits - Summary

Notes
7.0. ‘Spatial implication of policy’. Graphic shows various villages under the broad development control regulations set by the MMRDA. 200m (red offset line) from the boundary of the villages are open to urbanisation through additional FSI.

Sources
Project Goals

Defining important values for the project and identifying core goals

This project seeks to address the urban bias in the metropolitan regional planning system. The hypothesis is that by correcting this bias, the vision for a region with intersecting urban and rural values to create a more sustainable metropolis is possible. To realise this vision, it is important to acknowledge and define the values of urban and rural/non-urban constructs that are important to preserve.

Urban/Cosmopolitan Values

Urban Density

Technology

Urban Secularism

Urban Mobility

Access to Amenities

Non-urban/Rural Values

Agriculture - co-existence with ecological systems

Accommodating traditional societies

Sharing of Resources

Community Gathering Spaces

Open Spaces

Notes

7.1 - 7.2. Visualisation of Rural and Urban Values that are relevant to promote balance urban development.

7.3. Illustration of core goals for the region.

Sources


7.3. Illustration by Author (2018)

Core Goals

1. Decentralisation of Metropolitan Region

Refocussing planning priorities in the region by redistributing roles to and empowering smaller urban or rural groups and strengthening the impact of development projects.

2. Capacity Building

Empowering non-urban communities – agrarian, fishing, rural migrants and indigenous communities to be self-sufficient. This will counter the rural-urban flux that puts pressure on the core city. This will include providing social and physical infrastructure in non-urban areas with low growth as a priority.

3. Reducing Speculative Land Acquisition

By improving the capacity of non-urban regions in the metropolitan region (above goal) and countering unmoderated land acquisition in the region as a means to protect rural regions and their values.

4. Protecting ecological sensitive areas

Promoting ecological identity for the region and protecting sensitive areas from further urbanisation.
The strategy for the region to change the trajectory of real-estate driven urbanisation to one of agro-urbanism. Various design projects and policies will be developed that various sectors of the MMR can contribute to or be protected to promoting the agricultural economy.
### Design Framework

**A Guide to the Regional and sub-regional Design Strategies**

#### Core Goals

- Decentralisation of Governance
- Reducing Speculative land acquisition
- Capacity Building of non-urban areas
- Protecting Ecologically Sensitive Areas
- Reduced Rural Lifestyles and Agricultural Production
- Regional Identity
- Weakened Ecological Systems
- Gender Imbalance
- Urban Citizenship for non-urban Groups
- Affordable Housing
- Urban Mobility
- Politics of Governance

#### Research and Design Themes

- Politics of Governance
- Reduced Rural Lifestyles and Agricultural Production
- Regional Identity
- Weakened Ecological Systems
- Gender Imbalance
- Urban Citizenship for non-urban Groups
- Affordable Housing
- Urban Mobility

#### New Roles

Regional Strategy - Defining Roles
For example, The MMRDA will coordinate policies at higher parastatal levels and set goals for the region.

Sub-regional Strategy
Sub-regional Strategies that can realise the goals and objectives at a regional scale, elaborated through nine themes.

Sub-Region Land-Use Definitions
Redefining the land-use definitions to realise the goals and strategies defined at the regional and sub-regional scales.

Local Level Project Implementation
Pilot projects that start the paradigm change and interventions that realise the land-use definitions.

#### Policy and Design Toolkit

A basic description of the policy and design proposal with case study examples if necessary.

**Policies**

1. Regional Scale
2. Sub-regional Scale
3. Sub-regional Scale

**Projects**

Projects that can be paired with the policy at different scales for execution. Could be a timeline for implementing a policy of a physical project that can kick-start institutional change to achieve the core goals.

**Images**

- 7.6: Design Framework for the project that consolidates the core goals, scales and the research/design themes.
- 7.7: A Quick Guide to the Design and Policy Toolkits
- 7.8: Policy Toolkit for Urban Governance

**Sources**

- 7.6-7.8: Illustrations by Author (2018)

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**Toolkit Title**

Primary goal addressed by the theme

- Primary Goal Addressed
- Research and Design Theme

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**7.6**

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**7.7**
Urban Governance

Decentralisation of the planning powers of the MMRDA and refocusing its role as a coordinator for a sustainable vision for the region’s growth. And by redefining the roles of smaller urban and rural entities, this will primarily address the first goal of empowering small development authorities for balanced development.

Decentralisation will refocus the planning strengths to edge-cities/sub-regional authorities and smaller urban/rural bodies. Defining their roles and strengthening their planning prowess will also ensure accountability of these planning authorities due to less overlap of roles. The MMRDA will redefine itself as a facilitator of decentralisation and focus on a regional vision for sustainable growth.

Description of Policy Toolkit

Decentralisation will refocus the planning strengths to edge-cities/sub-regional authorities and smaller urban/rural bodies. Defining their roles and strengthening their planning prowess will also ensure accountability of these planning authorities due to less overlap of roles. The MMRDA will redefine itself as a facilitator of decentralisation and focus on a regional vision for sustainable growth.

Policies

Coordination of Different Authorities

Creation of a new Metropolitan Planning Commission (MPC) that will account for various national, state and municipal interests. The MPC will facilitate coordination and implementation of regional level infrastructure projects. The MPC will meet alternatively at various sub-regions, to ensure equal emphasis of all representatives.

Defining Planning Roles at Different Scales

Ensuring specific planning roles at different scales - regional, sub-regional, municipal, village panchayats, etc. The higher planning authority will monitor and check progress of development projects and positioning them with respect to larger goals.

Projects

Coordination of different authorities

Creation of a new Sub-Region Planning Commission (SRPC) that will account for various sub-regional interests - municipalities, towns and village panchayats.

Guidelines for sub-regions

Guidelines published for various sub-regions based on a variety of themes.

Policy toolkit for affected communities

Creation of a manual to help minority communities to read policy and establish scenarios of how they will be affected.

Time-line for Decentralisation

Defining new roles and autonomy at different scales

2020 2025 2030 2035 2040

Phase I

Autonomy for the Vasai-Virar sub-region (close proximity to Mumbai city, part of future national level industrial corridor)

Phase II

Autonomy for Thane and Navi Mumbai (existing edge cities)

Phase II

Autonomy for Bhiwandi and Panvel (emerging edge cities)
Regional Identity

Regional Identity that sets a vision for the region. This would brand the identity of the development authority as ecologically conscious and setting the sustainable values (that combine positive rural and urban elements) for the region. This is a key step towards achieving the goal of protecting ecologically sensitive areas.

Strategy Description

Branding the metropolitan region with a regional strategy with goals to be sensitive to the needs of agro-urbanism and the protect areas of ecological value.

Policies

PR Campaign

Public information project that informs various stakeholders of the consequences of urban projects areas of ecological value. For example, a campaign explaining the over extraction of sand will weaken sand beds, causing damage to bridges, increasing flooding. Or a campaign explaining the importance of mangroves to prevent flooding. All explaining the damage to livelihoods, property value, etc.

Setting a benchmark for other MPCs

The MMRDA will work with other Metropolitan Planning Commissions to counter national policy that is counter-productive to or insufficient to protect densely populated metropolitan areas. As the financial capital the metropolis will act as a role model through policy and design initiatives.

PR Campaign through Spatial Design

PR projects that use pop-up art, working with contemporary and traditional artists to spread information creating a network of graphic projects in a sub-region.

CASE Example: Scott Pruitt v. California

California setting the benchmark for auto emissions in the US and is leading the country in the protest against the pullback of regulations under Scott Pruitt’s EPA.

Notes

7.9. Policy Toolkit for Regional Identity

Image Sources

7.11. LA Downtown in 2002, cloaked with pollution, this forced the state government to enforce stricter emission laws. Source - (McNew, 2002).
Agricultural Production

This policy toolkit helps authorities in developing policies and spatial design techniques that will enable the region to achieve its goal for improving the agricultural economy and building capacity for non-urban groups and region.

Strategy Description

As with many cities, there is a disconnect between the urban areas and food production. According to Carolyn Steel (2013), cities used have an intricate relationship with agriculture, with interlinked tax system, exchange of goods, visible markets. But now, the average urban consumer is separated from agriculture through an invisible gigantic food supply system (Steel, 2013). This disconnect adversely affects policy making and popularity for promoting the agricultural sector. To encourage and protect the food-based economies in the region, policy toolkit uses technology to reconnect agriculture to the city.

Policies

Setting a Regional Strategy for Agro-urbanism

Framing a regional strategy around agro-urbanism with supporting policy templates that deal with the protection of agricultural land for sub-regional authorities to follow.

Block-chain Technology (BCT) for Agro-urbanism

Inviting various IT companies to invest in R&D for BCT to support and improve the self-sufficiency for the agro-economy.

CASE Example: Rabobank on BCT for the Food supply chain

A schematic diagram showing physical connections in the standard blockchain - to be improved through access to data/ information by BCT

CASE Example: JD.com exploring block chain to change the food supply chain

By empowering food producers in Mongolia to track the production and delivery of frozen beef that tended to 1. It was slaughtered on July 2, and packaged on July 5 in Torgol city in Inner Mongolia. 7. It was put in the storage house on July 11. 8. The steak went through a series of tests to check whether it was contaminated with certain bacteria, and water content. (Quartz)

Image Sources

7.13. Physical Commodity Movement and potential sharing of data through blockchain. Source - (Rabobank & Lefroy, 2017)
7.14. JD.com and BCT for the food supply chain. Source - (Huang, 2017)
Policies

**PR Campaigns for Agro-based Urbanism**

At a regional level, the project will set a public information campaign to inform people about the region’s strategy. This will inform various stakeholders how they can participate in contributing to the strategy. Opportunities will range from private to public to individual stakeholders.

**Agricultural lands as a No Development Zones**

The sub-region authorities will define agricultural land as no development zones to protect them from real-estate driven urbanisation. Urban activities like small-scale commercial activities, hotel and catering, agro-based tourism, cattle and dairy farming, pottery, etc.

**Agro-ICT Centres**

A network of Agro-ICT centres that are implemented as physical interventions to enable farmers to access block chain technology to improve the local agricultural economy.

**Spatial Visibility of Agriculture in Urban Areas**

By relocating some parts of agricultural processes with visible proximity to dense urban areas, so that it gives more exposure to problems farmers face.

**Urban Surfaces for Urban Farming**

The sub-region authorities will start a campaign on unused roof planes or vacant buildings for rooftop and vertical farming. This will also include unused railway yards or industrial lands.

**CASE Example: Urban Farms along the suburban train-line in Mumbai**

A policy of the central railway ministry to use buffers along train lines as an added economic opportunity for urban farmers.

*Sources*

7.12 Railway line pocket farms for urban farming (Wildschut, 2013)
Affordable Housing

In the race to become a ‘world-class city’, slum dwellers are being relocated into mass produced housing that often resemble vertical slum and are in the periphery making forcing long daily commutes for work. This blueprint recognizes the organic development of this typology that is atypical in the design process of the planning profession. This is critical to agro-urbanism as a design strategy as it empowers the labour migrants and their families who often work as farmhands in peri-urban areas by granting them urban citizenship through housing.

Policies

1. **Legitimisation of “Slums”**
   Providing legal validity to urban pockets defined as slums. Changing the terminology to “home-grown neighbourhoods” or “urban villages” in policy documents to validate this form of urban citizenship.

2. **Facilitating land-ownership**
   Establishing systems where planning authorities at the regional level work with government (state & national) authorities and private land-owners and sub-regional planning authorities to negotiate transfer of land ownership.

3. **Promote ICT Industry**
   Promote ICT industry through incentives to encourage the development of technology that can be used across the region to facilitate and maintain land ownership.

CASE Example: Applewood mobile homes community in Midvale, Utah

For example, a mobile home community in Utah collectively bought land to prevent eviction through a co-op collective and the help of an NGO (Mars, 2018).
**Policies**

**Legitimation of ‘Slums’ through policy**
Providing legal validity to urban pockets defined as slums. Changing the terminology to ‘home-grown neighbourhoods’ or ‘urban villages’ in policy documents to validate this form of urban citizenship.

**Legitimation of ‘Slums’ through infrastructure and financial support**
Sub-region and municipal authorities will implement physical and social infrastructure for these urban villages without discrimination.

**Improving Housing Quality**
MMRDA can change the architectural profession to enable them to be non-profit architects financially enabled through public-private partnerships. This can be made feasible by linking such projects to construction companies which use sustainable local material and techniques to make it profitable. For example, making bricks from plastic waste. Working with locals create ideas and enable re-structuring homes.

**Adapting the Chawl typology for climate migrants**
The new MMRDA also proposes the adaptation of Mumbai’s chawl typology for first generation migrants who are often climate refugees from drought affect rural India. But it is important that the chawls are supported by social and physical amenities.

**CASE Example: Urbz’s Homegrown Cities Initiative**
NGO working to improve local construction knowledge in the slums of Mumbai.

**Image Sources**

7.18 Policy toolkit for Affordable Housing - Part 2 Illustrations by Authur (2018).
Strengthening Ecological Systems

Protecting ecological systems resulted in the protection of urban and agricultural lands. The consequences of weakened ecological systems affects non-urban groups the most. Conservation efforts are also a meaningful employment opportunities and means of capacity building.

Description of Policy Toolkit

This policy uses conservation/ protection efforts of various ecological areas as a means to strengthen these systems and create employment for non-urban groups (like forest tribes and fishing communities). Their indigenous knowledge with the infrastructure support from authorities can lead to balanced conservation efforts.

Policies

1. Protection of lands

Sub-regional authorities will reinforce laws to protect the ecologically sensitive lands like wetlands, mangroves, coastal mudflats, coastal sand dunes, river beds and forest land. Additionally, this will also include the protection of agricultural lands to reach the goal of food self-sufficiency in the region.

2. Capacity Building through Agro- and Eco-Tourism

Sub-regional policies to favour Agro-tourism and eco-tourism over regular tourism through tax incentives or loans for capacity building. Means to create local awareness and meaningful employment.

3. Including Indigenous communities for conservation

For example, sub-regional authorities will include forest communities in afforestation projects. This will help legitimising these indigenous communities and also restoring the bio-diversity of these forests. Creating a knowledge bank to empower indigenous about their legal rights and gain indigenous knowledge about protecting sensitive ecologies that their livelihoods have been intertwined with.

Water Management

Agro-based urbanism requires efficient water management systems. Metropolitan regions are often given priority to cities when it comes to water supply. Real-estate developers use bore wells to increase the salinity, reducing agrarian water supply systems.

Description of Policy Toolkit

This policy toolkit reinforces the use of traditional water management practices. It seeks to potentialise on the high annual rainfall and regulate excessive underground bore wells. These are predominantly sub-regional/ local interventions.

Policies

1. Urban Water Management

Municipalities and authorities offer incentives to re-inforcing simple techniques like making rain-water harvesting compulsory in the region. The MMR is on the coast and receives high amounts of annual rainfall and should be conserved. Also, incentives to ensure semi-permeable surfaces in urban areas to ensure that ground water is replenished.

2. Restoration of traditional water systems

Sub-regional authorities invest in talav and bhowkal restoration programme. Increasing cathment zones throughout the regiona will be a priority.

3. Regulation of bore wells

Strict regulations to prevent bore wells being dug, they reduce groundwater and increase salinity of the soil. All new urban projects will require municipal water approved by the authorities.
Urban Mobility

While agro-based urbanism and urban mobility is not obviously linked, the movement of people has an important role in the functioning of the metropolitan region. At present, edge cities are struggling to create jobs, forcing migrants to find service jobs in the core city, resulting in an overwhelmed transport infrastructure.

The current policy is a centralised development of urban infrastructure with multiple state and city level transport authorities. Secondary transport system to support the primary network should be decentralised to ensure equal development of local mobility. Focus on current transport system will prioritise the connection of smaller villages and towns. This policy toolkit links housing policies to ensure core issues with urban mobility are addressed.

Decentralisation of mobility system

Regional transport network takes up same level of priority as connecting local roads, secondary networks through decentralisation.

Improving local economies

The sub-regional policy supports housing projects that have flexible layouts to encourage entrepreneurship and leisure activities.

Gender Balance

While agro-based urbanism and facilitating gender empowerment may not be obviously connected, research shows an increasing amount of women taking responsibility for agriculture jobs due to men in the household migrating to non-farming based jobs.

The current policy does not look at gender empowerment policies at a metropolitan scale and are often national policies that are difficult to implement. This policy toolkit looks to decentralise this role to local level municipalities focused around land rights and mapping to achieve a regional strategy for agro-based urbanism.

Dual household registration

Land holdings to compulsorily be registered as dual household when applicable. There is qualitative and quantitative data that shows that there is a relation between women’s land rights and “[…] bargaining power and decision-making on consumption, human capital investment, and intergenerational transfers” (Meinzen-Dick, Quisumbing, Doss, & Theis, 2017)

Empowering women self-help groups

Creating information campaigns about women’s land rights. Setting up loans accessible to women self-groups. Funding will be provided with jobs related to agro-urbanism and the protection of ecologically sensitive areas.

Including Women in GIS problem focused Mapping

Authorities will include local input while creating details maps and GIS data or non-urban areas in the periphery, it is important to ensure 50% participation of women from the local community. Men and women map different observations because they have different roles in agriculture (Meinzen-Dick et al., 2012). And both sides of information are critical to account for while planning and designing.
Section References


Design Proposals

Application of the strategy at various scales

When a Village Stops Being 146
The Vasai-Virar Pilot 152
Future of the Salt-Pans 166
Agro-ICT Centres 170
Metropolitan Governance 172

8.0. Urban Villages have historically existed within the urban fabric of Indian cities. Planning processes need to legitimate and design for their coexistence with the cityscape.

Image Source

8.0. ‘Urban Villages and the Indian City.’ Sketch by Author (2018).
When a Village Stops Being

Local - An agro-urban village in the Vasai Virar Sub region

This section identifies and describes a fictional village in the Vasai-Virar sub-region with diverse ecological systems and non-urban agricultural economy.

Sources
8.1 Abstract Map identifying elements of a semi-fictional village settlement. Illustrations by Author (2019).

8.1 This village located in the Vasai-Virar sub-region that is under threat from real-estate driven urbanisation.


Non-urban groups are forced out further toward peripheral regions because they do not always fit the urbanisation model.

Potential expansion of real-estate into agricultural and ecologically sensitive lands.

Sources

With the new design proposal the village will be able to embrace both urban and agricultural values.
8.2 The Vasai-Virar Pilot
An Agro-Urban Sub-region: Introduction

This section identifies and describes land-use types that are relevant to implementing the agro-urbanism strategy at a sub-regional level.
8.2 An Agro-Urban Sub-region: Introduction

This section describes policies and design proposals to work towards the agro-urbanism strategy at a sub-regional level.

Image Sources
8.5. Abstract Map of the Vasai-Virar sub-region identifying relevant land-uses transformed through key policies and design proposals through icons. Illustrations by Author (2018)
To improve work towards an agro-urban strategy for the Vasai-Virar sub-region the following policies and design proposals are to be implemented for land-uses defined as urban.

1) Affordable Housing
- Policies that help 3rd and 4th generation residents living in informal settlements gain collective ownership of land improving options for affordable housing.
- Policies that will help circular migrants find housing through chawls and rooms in urban villages

2) Redefining Urban typologies to include urban farming
- Government and Private institutions have a lot of single-ownership surface area that can be leased out to farmers or migrant worker to grow vegetables/crops.
- Social Amenities - Including urban farming and gardening into the programmes of schools and hospitals.
- Defining a percentage of organised open spaces as places suitable for urban farming.

3) Defining Urban Limits
- Defining and urban limit to reduce speculative acquisition of agricultural lands.
- Reduce the need for housing expansion through legitimisation slums.
- Densification within limits with planned typologies that innovatively make the most of the available surface area while retaining spatial quality.
- Improving management of water resources in urban areas to reduce pressure on agricultural lands.

Notes
Axonometric showing the layers of different policies for defining urban land-uses.

Sources
8.6 Urban Land-use Definition, Illustration by Author (2018).
8.2

Slums and urban villages struggle to gain legitimacy in the urban dominance of metropolitan policy. But they are but an archetype of rural housing and can gain urban legitimacy through the provision of basic infrastructure and architectural solutions.

Sources
8.2 Agriculture Land-use Definition

To improve work towards an agro-urban strategy for the Vasai-Virar sub-region the following policies and design proposals are to be implemented for land-uses defined as agricultural or plantation land.

1) Making the Agricultural Economy of the sub-region spatially visible in urban areas
   - Introduction of a special agricultural zone (SAZ) detailed in the next chapter (8.3). This proposal will seek to promote agricultural institutions to undertake research and improving farming techniques by working in situ with farmers. The region has a variety of agricultural produce, and would make a good test bed. For example, using hydroponic farming for farms struggling with less surface area. Additionally using green houses designed for the Indian climate that reduce the water consumption of farms by reducing the temperature.
   - The proposal seeks to centrally locate the agriculture produce market yard from a peripheral location in the sub-region to a more central location (along with a the special agricultural zone) to make it more visible.

2) Modernisation of the farming sector through ICT
   - Improving the relevance of farming through a pilot project in the sub-region that uses block-chain technology to empower farmer to better participate in the food supply chain.
   - To achieve this the project introduces various Agro-ICT Centres that help present day farmers achieve this at the first phase and subsequently create a new generation of tech-savvy future farmers

3) Protection of farmland as an ecologically sensitive no development zone
As described in the agriculture policy toolkit, block-chain technology is a means to better the agriculture economy by modernising it. The increase in efficiency will not only add value to agricultural production but also make agriculture a more popular field for younger and more urban residents.

8.2

CASE Example: Dutch Company Moyee
Coffee working with Ethiopian farmers

The company uses a fair-chain model to ensure that profits are shared 50-50 between Dutch and Ethiopian farmers.
8.2 Strengthening Ecological Systems

One of the goals for the MMR is to promote the protection of ecologically sensitive areas and safe-guard them from urbanisation.

1) Water Management
- The sub-region receives a lot of rainfall (220cm annually) but still faces water shortage. This proposal seeks to address this problem by increasing traditional water collection points (talavs and bhowkals) with purification methods like aquaponics.
- Reducing urban demand of water through compulsory implementation of water harvesting and recycling when possible.

2) Desalination of the salt pans to increase its agricultural potential
- Room for the estuaries - the two rivers the frame the region are prone to flooding. This natural process is blocked by embankments, but subsequently leads to increased salinity and damage to property by flooding.
- Increasing the permeability of urban surfaces to improve the ground water table.

3) Forest Management - Conservation and Afforestation
- To achieve this in the subregion - 500m buffer-zones are proposed from the existing forest boundary notification.
- Monitor overlaps with urban areas and industrial zones to ensure no further encroachment takes place.
- Proposal for housing for indigenous groups who can help in the monitoring of urban expansion.
- Employing forest indigenous tribes to help recover the bio-diversity of forest by providing them resources to bring about change.

Notes
8.11. Eco and agro tourism is a means for the public to understand the importance of these ecological and agricultural systems. Citizen involvement is critical to ensure that government policies do not undermine these systems in favour for real-estate development.

Sources

Notes
Future of the Salt-Pans
Pilot Project: Special Agricultural Zone (SAZ)

The project proposes a regional Special Agricultural Zone (SAZ) for the Vasai-Virar sub-region.

The objective behind this project is to create an area that combines agricultural research and recreation. That allows for different types of agricultural innovation in various zones. These may include water management techniques, effective and cautious extraction of resources, composting techniques and application of technology in agriculture.

Land Feasability

Making the salt-pans feasible for agricultural programmes by introducing a new water management system (detailed in the previous Chapter) and seasonal desalination of soil through salt leaching (Sawant, 2014).

Proposed Programme

1. Agricultural Produce Market Yard with additional Public Functions
2. Room for the Estuary
3. Aquaponics and Aquaculture Zone
4. Mangrove Afforestation
5. Farming Experimentation
6. Collaborative Farming
7. Managing Market Food Waste
8. Leisure Walking Routes and Bike Paths

Sources

8.15. ‘Community Collaborative Farming’. Illustration by Author (2018).
8.16. Sketch Plan and icons by Author (2018)

CASE Example: Parco Agricolo Sud Milano Regional buffer zone that is a protected rural area located south and south-east of Milano.

CASE Example: Macritchie Reservoir Wetlands recreational areas.

Community Collaborative Farming

Farming currently has an uncertain future. A farmer has to take on multiple roles - farmer, agriculturist, nutritionist, economist. Technology can be used to connect migrant workers to farms and urban educated class interested in leisure farming who can also invest money and technical expertise.
Beyond the Salt Pans

8.3

Water-intense Farming
Mixing water-intensive farming with aquaponics and testing salt-tolerant crops in saline areas.

Mangrove Reforestation
Mixing water-intensive farming with aquaponics and fish farming.

Managing Food Waste
Linking the Agricultural Produce Market with Food Waste not sold.

Pedestrian - Bike path
Part of a sub-regional goal to promote recreational cycling around places of interest.

Wastelands
Experimenting with greenhouses to farm in wastelands.

Agriculture Produce Market Yard
Relocation and re-invention of the Agricultural Produce Market Yard to a more central location with space allotted for regular citizens to access a farmer’s market and food trucks that use local produce.

Room for the Estuary
Creating low-lying areas for the estuary to flood.

Pedestrian - Bike path
Part of a sub-regional goal to promote recreational cycling around places of interest.

Managing Food Waste
Linking the Agricultural Produce Market with Food Waste not sold.

Wastelands
Experimenting with greenhouses to farm in wastelands.

Image Sources
To transition the farming sector into the project’s proposal to enhance agriculture through Blockchain (BCT) and ICT, the sub-region proposes a network of Agro-ICT centres. These centres are located in dense village settlements to help farmers adapt to the BCT for Vasai strategy in the sub-regional plan.

**Bridging Farming and Technology**

A typical ICT centre would be a place where farmers can access ICT infrastructure like tablets/software. Additionally, there will be places for workshops to help farmers to digitally collect and record relevant data.

**Conservation of Water bodies**

Other potential programmes are proposed to ensure multi-functionality. A main characteristic of these centres is that they will be strategically located around a bhowkal or a talav (based on the location). These were an integral part of the traditional water system, but they have fallen into disuse. A significant feature of these centres would be a conservation project that looks at conservation and restoration of these water bodies with techniques like organic hydroponics.

**Prototype for Alternate Farming**

Additionally, the centre will also be a prototype for advanced or alternate farming models. Visitors can learn how they can adapt their urban buildings with vegetable gardens or urban farms. The centre will also have connections with specific industries in the region that produce relevant equipment and help network with both conventional farmers and urban dwellers interested in retrofitting their houses.
8.5 Metropolitan Governance

Key roles for the new MMRDA

The MMRDA needs to be redefined with new roles to ensure decentralisation of urban governance and subsequently devolution of top-down hierarchical governance systems.

1. The MMRDA will be responsible for setting a regional strategy with a vision that the entire region and all the relevant stakeholders can work towards.

   For example, a strategy of agro-based urbanism to achieve key goals towards the betterment of the region.

2. Overall goals, checkpoints, restrictions and regulations

   The MMRDA will set goals towards a strategy for agro-urbanism - decentralisation, capacity building, reducing speculative land acquisition and protecting ecologically sensitive areas.

   Checkpoints to achieve these goals and specific will be set with different sub-region groups based on meetings with local stakeholders and representatives to ensure local relevance and modification of goals. A time-frame to achieve the goals will be based on local feasibility.

   Regulations - at the regional scale the MMRDA will also look at national/state policies for regulations and modify them where necessary. Clear publications will be issued with PR campaigns on the regions policy on regulations.

Restrictions - the MMRDA will also set some restrictions in the region. For example, a ban against factories producing single use plastic items.

3. The MMRDA will start a region-wide PR campaign to promote agro-urbanism and the importance of protecting ecologically sensitive areas to create general awareness. Also information on incentives for various stakeholders adhering to these values.

4. The MMRDA will be responsible for mediating regional infrastructure proposed by state and union authorities with local authorities. They will mitigate consequences on non-urban groups who are usually displaced by such projects. The MMRDA will advocate for the region and ensure that its regional strategy is not compromised by parastatal policies.

Sources
B.22. Decentralisation of the MMR with focus on the periphery. Illustration by Author (2018).
Epilogue
A first step to shifting the urban bias

Conclusion
Reflection

Appendix
Bibliography
Image References
List of Abbreviations and Vocabulary
9.1 Conclusion

Countering the urban bias

Addressing the research questions

In what way does regional planning in the Mumbai Metropolitan Region manifest an urban bias in development processes that results in a rural to urban population flux?

This project set out to research the urban bias in the regional planning processes in the metropolitan region revealing an unbalanced growth model. It was noted that despite a physically decentralised structure of the region, the parts that make the whole were in service to the centre rather than independent self-sustaining entities. Ecological areas are encroached by slum dwellers who lack access to affordable housing, agricultural land is acquired for urban and industrial development, rural labour migrants and adivasis (forest indigenous tribal population) work as construction workers in the real-estate industry to create speculative housing and regional landfills are located in the peripheries to accommodate urban waste amongst other issues.

How can development and planning processes in Mumbai encourage balanced growth with equal emphasis to agrarian or rural lifestyles?

This project seeks to address this urban bias by reverting focus from the central core toward the edge cities with a balanced rural and urban development. It identifies rural and urban values to promote in the region. It addresses this through different scales. At a regional scale it proposes schemes around the initial research themes to achieving the goals of the strategy. This is supported through a decentralisation of governance project, with a new role for the MMRDA.

The project Beyond Urban addresses key urban issues through the following themes in a regional strategy proposal. These include -

**Politics of Governance**
Decentralised Planning governance model that helps effective development and management of the region

**Agricultural Production and Rural Lifestyles**
Reviving agricultural sector through technological interventions

**Benchmark for Sustainable Urban Regions**
Creating an identity for the MMR that is progressively focused on urban ecologies that other metropolitan regions can follow

**Urban Ecological Systems**
A regional narrative of protecting ecologically sensitive areas to protect cities from disasters and loss of life/property

**Mobility**
Refocusing secondary transport systems at a sub-regional scale

**Housing**
Enabling and empowering 3rd and 4th generation slum dwellers to collectively own the land they live on. Transitioning climate-change migrants through chawl/dorm type housing

**Water Management**
Policies and design solutions that reduce water demand or urban areas and ensure equal water access to peripheral areas.

**Non-urban Groups**
Working with Indigenous groups in a knowledge change that benefits them and their eco-systems.

**Gender Balance**
Using land ownership and community oriented mapping as means to empower women

At a sub-regional scale application of the regional strategy is at the precipice of change - it is expected to undergo changes in the shadow of the Delhi-Mumbai Industrial corridor and the multi-modal Virar-Alibag project. This could potentially imply that regional landscape could change drastically. But under the new sub-regional plan there is focus and direction for development. Agriculture takes a forefront with a pilot project that uses BCT (block chain technology) to help farmers make the most of the global food supply. This would boost the agricultural sector and create meaningful employment for migrants and non-migrant groups.

The sub-regional plan is conscious of local land-uses and conditions and promotes location specific strategies based on the analysis to affect change. This pilot project is articulated in the re-invention of the salt-pan lands and the introduction of agro-ICT centres that help farmers transition to this technology model.
**Reflection**

### Design as Politics

This project carried out within the department of Urbanism as a part of the Design as Politics (DasP) research group. The DasP group covers a variety of themes ranging from finances to welfare. This year, the studio focused on migration under the banner – A City of Comings and Goings.

### Introducing Beyond Urban

In the backdrop of this studio, this project investigates the urban bias in regional planning in the Metropolitan Region of Mumbai, India. The metropolitan region is home to a variety of communities not typically considered as ‘urban’; these include rural migrants, agrarian communities, fishing villages and indigenous tribal groups. All these groups struggle to gain urban citizenship within the narrative of bourgeois urbanism in the race to become a world class city (Priya et al., 2017). The project seeks to counter this urban bias by revivifying the primary sector in order the preserve and enhance existing social-economic structures. Further, this is also a strategy to create meaningful employment for migrants following cyclical migration pattern between their villages and the city.

### Role

The project takes on the perspective of a consultant to the Mumbai Metropolitan Regional Development Authority (MMRDA), who are the current authors of the Mumbai Regional Development Authority (MMRDA), consultant to the Mumbai Metropolitan Region. The project aims to investigate the urban bias in regional planning and continue to aspire to a western model of order. James C. Scott describes this phenomenon as (Scott, 2008).

### Scientific Relevance

This project addresses literature gaps in the field of planning in two key aspects:

1. A new planning model for local needs - Current planning in the global south is often based on colonial planning systems and continue to aspire to a western model of order. James C. Scott describes this phenomenon as (Scott, 2008).

2. Additionally, urbanisation of the countryside has a global impact. While current discourse does emphasize on self-reliant cities in food production (Steel, 2013), there needs to be a large change in the planning process. At present, developing countries like India and China are following dangerously in the footsteps of the consumerist culture and dependency on a global hinterland, and are renouncing food self-reliance. In 2016, India made its first purchase of corn in 16 years as reported by Reuters (Bhardwaj, 2016). Similarly China, struggling to feed its increasing urban population, has become the world’s largest importer of grain and soya (Steel, 2013). Land rich countries like Brazil and Argentina have benefitted economically from this move, but at what cost? Brazil’s ambitions to meet export demands has pushed soya farmers to suicide. Maharashtra, the home state of Mumbai has one of the highest rates of farmer suicide in the country. Urbanism has the potential to improve the farming sector to enhance cities and generate meaningful employment for labour migrants and peri-urban agriculture. Such a model not only strengthens food-security but also generates job opportunities for migrants and the urban poor. This project urges planning to not dismiss agriculture in Indian planning processes, but instead enhance the system through better strategies supported by new technology.

3. This project seeks to apply Blockchain Technology (BCT) in farming and while this is being considered amongst many ICT research groups globally, its spatial implication through strategies and planning have not been considered. Not doing so could lead to large scale consequence that may have a more negative rather than positive impact.

### Societal Relevance

The project easily fits into an ongoing societal discourse. As described in the newspaper articles, migration of rural-urban migrants has increased due to lack of emphasis in the development of the countryside. The decline in agriculture has not only triggered migration into cities but has also driven farmers to suicide. Maharashtra, the home state of Mumbai has one of the highest rates of farmer suicide in the country. Urbanism has the potential to improve the farming sector to enhance cities and generate meaningful employment for labour migrants and peri-urban agriculture. Such a model not only strengthens food-security but also generates job opportunities for migrants and the urban poor. This project urges planning to not dismiss agriculture in Indian planning processes, but instead enhance the system through better strategies supported by new technology.

### Threat to the habitat systems

The current rate of urban expansion has led to a change in regulations to convert saltpans into urban development zones. This extent of expansion is expected to have an adverse impact on the habitat of migratory birds.

### Sources


in cities. At present, most labour migrants seek employment as construction workers in a real-estate industry bent on creating speculative housing. Contributing to the food self-sufficiency of the region creates better livelihoods and resilient cities.

Positioning the project

The project can be understood by positioning it against the studio framework to grasp its academic relevance. Design as Politics places projects as a function of – conflict, position and price [Fig. 9.8]. Beyond Urban looks at mitigating urban biases in the planning processes of the metropolitan region. The conflict here is urban versus the non-urban. The graduation project is positioned to empower non-urban groups to achieve better urban environment. The price here is in cities and non-urban regions.

The regional project is limited to key issues that are not addressed in this project. It remains as a potential for future research.

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Chapter 3 – Urban Conditions


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Chapter 4 – Urban Conditions


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Chapter 7 – Strategy and Framework


7.3. Illustration of core goals for the region. Illustrations by Author (2018).

7.4. Strategy for Agro-urbanism where different urban systems work towards supporting the agriculture economy. Illustrations by Author (2018).

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Chapter 8 – Design Proposals


8.3. Abstract Map showing strategies for agro-urbanism to preserve the semi-figurative village settlement from speculative urban development. Illustrations by Author (2018).

8.4. Abstract Map of the Vasai-Virar sub-region identifying relevant land-uses transformed through key policies and design proposals through icons. Illustrations by Author (2018).


Chapter 9 – Epilogue


List of Abbreviations

BCT – Block-chain Technology
BMC – Brihanmumbai Municipal Corporation
CIDCO – City and Industrial Development Corporation
DCRs – Development Control Regulations
GES – Gaothan Expansion Scheme
JNNURM – Jawaharlal Nehru National Urban Renewal Mission
MCGM – Municipal Corporation of Greater Mumbai
MHADA – Maharashtra Housing and Area Development Authority
MIDC – Mumbai-Delhi Industrial Development Corridor
MMR – Mumbai Metropolitan Region
MMMRDA – Mumbai Metropolitan Region Development Authority
MOR – Ministry of Environment and Forestry
MPC – Metropolitan Planning Commission
MSRDC – Maharashtra State Road Development Corporation
NCR – National Capital Region
NHx – National Highway [Number]
SHx – State Highway [Number]
NHAI – National Highway Authority of India
SMEs – Small & Medium Enterprises
SPAs – Special Planning Authorities
SRA – Slum Rehabilitation Authority
TERI – The Energy and Resources Institute
ULBs – Urban Local Bodies
VVSR – Vasai Virar Sub-Region
VVCMC – Vasai-Virar City Municipal Corporation