

### Integrating agriculture in the regional planning – A step to overcome unsustainable forms of land development in Mumbai Metropolitan Region, India

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#### Introduction

'Tragedy of the Commons'

Sustainable development of the peri-urban villages has a public value to it

Other market actors, private developers focus on increasing individual benefits, which is **inversely related to public benefit**

Short-term economic benefits outweigh long-term socio-environmental sustainability

- Urbanisation & socio-economic changes are also related to spatial changes
- 'Urban bias' in development planning of metropolitan region
- Rural land is considered as 'developable land'

- Prevalence of agricultural to non-agricultural land-use change in peri-urban areas
- Integrating agriculture in regional planning goals as a precursor to sustainable peri-urban development

#### Peri-urban land

Private developers – cheap & abundant land for development

Local citizens – profit from developing or selling for non-agricultural purposes

Predatory effect on agricultural land

Socio-environmental disadvantages in future

- Loss of fertile land is detrimental to the sustainability of the region
- Environmental burden of construction of warehouses, residential townships, industries require a corresponding provision of basic services

#### 3 ways of change in land-use :

Acquisition of land by authority for infrastructure development

Sale of agricultural land to private developers

Change permitted land-use for commercial development

#### Study Area

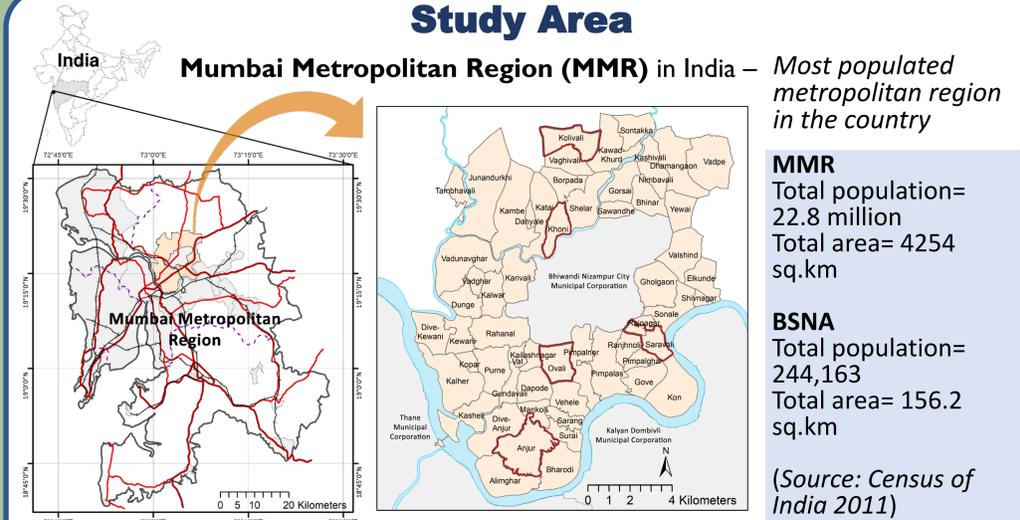


Fig. 1: Location map of MMR and BSNA

BSNA (Bhiwandi Surrounding Notified Area) consists of 60 villages with secondary and tertiary sector development

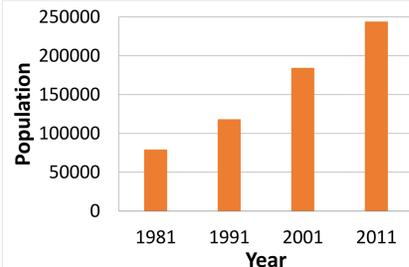


Fig. 2: Population growth of BSNA

Total built-up land = 13.4%

- Comprising mainly of
- Warehousing (4.54%)
  - Residential (3.67%)
  - Industrial (2.59%)

Total agricultural land = 58.55%

83.1% of the main working population, 70.4% of the marginal working population engaged in non-agricultural activities in BSNA (Census of India 2011)

Villages witnessing 'urban' phenomena

Five case study villages were selected for surveys: Khoni (n=35); Saravali (n=26); Ovali (n=21); Anjur (n=20); Kolivali (n=20)

#### Socio-Institutional Nexus Approach

Effectiveness of development planning strategies is influenced by institutional structure

Community as a resource in bridging the gap between government provisions and local needs

#### Interview Surveys –

- 122 - Household Surveys
- 5 - Interviews with Village Development Officers

#### Land cover change analysis –

- Pixel counting in year-wise land cover maps

- Quantification of land cover change
- Analytic generalisation for ways to retain & promote agriculture

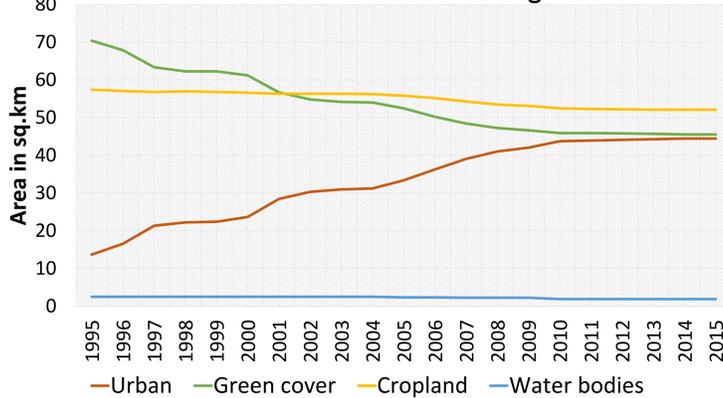
#### Drivers of land use conversion in BSNA villages:

- (National level) Economic liberalisation policy– 1991
- (State level) Reduction of restrictions on land use conversion – 1994, and further simplification in 2017
- (Regional level) Industrial relocation policies in Regional Plan – 2<sup>nd</sup> Regional Plan for MMR 1996-2011 period

>> Formal planning processes are the main contributors of peri-urbanisation in BSNA villages

#### Methodology and Results

##### Area under land-cover categories



Village Leader, Khoni village (February, 2018)

"Agriculture is **not viable** anymore because it takes around INR 20,000 to prepare an agricultural field for cultivation, and only INR 12,000 is recovered through the harvest. I sold **75% of my land** and a textile factory was constructed on it. We get a fixed monthly amount. This way we get to earn money with least efforts involved."

% of interviewed households that sold agricultural land (since 2000)

Village	Yes %
Khoni	17.14
Saravali	46.15
Ovali	66.66
Anjur	15.00
Kolivali	0.00

- Absence of proper data records – difficult to deduce exact % of land use conversion
- Land speculation

Village	Population	Practise agriculture (%)		Farming purpose (%)			Main produce (%)		
		Yes	No	Self-use	Market	Both	Rice	Vegetables	Both
Khoni	26,016	20.0	80.0	71.4	14.3	14.3	42.8	42.8	14.3
Saravali	3,532	53.8	46.2	57.1	7.1	35.7	57.1	7.1	35.7
Ovali	1,566	52.4	47.6	45.4	36.4	18.2	9.1	36.4	54.5
Anjur	3,807	75.0	25.0	86.6	6.6	6.6	60.0	6.7	33.3
Kolivali	2,854	70.0	30.0	64.3	14.3	21.4	15.4	7.7	76.9

Details of agricultural practice in interviewed households in 5 villages

Main market locations – within village; neighbouring urban local bodies

Village	Yes %	No %
Khoni	94.3	5.7
Saravali	88.5	11.5
Ovali	85.7	14.3
Anjur	80.0	20.0
Kolivali	75.0	25.0

Preference to work in non-agricultural occupations

Reasons for choice – higher & more stable income, convenience of work

#### Conclusions

- Unrestrained land-use conversion in peri-urban villages is found to have resulted in **adjoining incompatible land uses** – residential or agricultural neighbouring industrial, etc.
- The sanitation and waste management services corresponding to residential, commercial and industrial development is not present in peri-urban villages as they are under 'rural' administrative category – **environmental issue requiring attention of policy makers**

#### Recommendations for various levels –

- National & State Level – Framework of policies promoting agriculture and environment sensitive development
  - Regional Level – Recognition of agriculture as a special land use category; Land suitability analysis in the process of spatial planning; Developing a robust land information system; Aligning agriculture with community sanitation and waste management through provisions for composting, waste water reuse, etc.
  - Peri-urban rural level – Encouraging agriculture through IEC activities; Promoting entrepreneurship for agriculture and allied activities
- Understanding of positive aspects of incorporating agriculture in peri-urban planning is more important than cost-benefit analysis approach and achievement of benchmarks – important to account for **food security** in the future

