

Revised Master Plan for Bengaluru-2031 (Draft)

Volume 1 - Vision Document



Bangalore Development Authority



ಕರ್ನಾಟಕ ರಾಜ್ಯಪತ್ರ

ಅಧಿಕೃತವಾಗಿ ಪ್ರಕಟಿಸಲಾದುದು
ವಿಶೇಷ ರಾಜ್ಯ ಪತ್ರ

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|-----------------|---|---------------------|

ಕರ್ನಾಟಕ ಸರ್ಕಾರದ ನಡವಳಿಕೆಗಳು

ನಗರಾಭಿವೃದ್ಧಿ ಸಚಿವಾಲಯ

ವಿಷಯ: ಬೆಂಗಳೂರು ಅಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರದ ಸ್ಥಳೀಯ ಯೋಜನಾ ಪ್ರದೇಶಕ್ಕೆ ತಯಾರಿಸಿರುವ ಪರಿಷ್ಕೃತ ಮಹಾಯೋಜನೆ-2031ಕ್ಕೆ ಸರ್ಕಾರದ ತಾತ್ಕಾಲಿಕ ಅನುಮೋದನೆ ನೀಡುವ ಬಗ್ಗೆ.

ಓದಲಾಗಿದೆ: 1. ಸರ್ಕಾರದ ಆದೇಶ ಸಂಖ್ಯೆ: ನಅಇ 540 ಬೆಂಆಸೇ 2004, ದಿನಾಂಕ: 25-06-2007.

2. ಆಯುಕ್ತರು, ಬೆಂಗಳೂರು ಅಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರ, ಬೆಂಗಳೂರು ಇವರ ಪತ್ರ ಸಂಖ್ಯೆ: ಬೆಂಆಪ್ರ/ನಯೋಸ/RMP-2031/1312/2017-18, ದಿನಾಂಕ:12-10-2017.

3. ಮಹಾನಗರ ಆಯುಕ್ತರು, ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪ್ರದೇಶಾಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರ ಇವರ ಪತ್ರ ಸಂಖ್ಯೆ: BMRDA/BDA/Master Plan/2006-07(Part-II), ದಿನಾಂಕ:03-11-2017.

ಪ್ರಸ್ತಾವನೆ:-

ಮೇಲೆ ಓದಲಾದ ಕ್ರಮಸಂಖ್ಯೆ (1) ರ ಸರ್ಕಾರದ ಆದೇಶದಲ್ಲಿ ಬೆಂಗಳೂರು ಅಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರದ ಸ್ಥಳೀಯ ಯೋಜನಾ ಪ್ರದೇಶಕ್ಕೆ ತಯಾರಿಸಲಾಗಿದ್ದ ಪರಿಷ್ಕೃತ ಮಹಾಯೋಜನೆ-2015ಕ್ಕೆ ಕರ್ನಾಟಕ ನಗರ ಮತ್ತು ಗ್ರಾಮಾಂತರ ಯೋಜನಾ ಕಾಯ್ದೆ, 1961ರ ಕಲಂ 13(3) ರಡಿಯಲ್ಲಿ ಸರ್ಕಾರದ ಅಂತಿಮ ಅನುಮೋದನೆ ನೀಡಲಾಗಿತ್ತು.

ಮೇಲೆ ಓದಲಾದ ಕ್ರಮಸಂಖ್ಯೆ (2) ರಲ್ಲಿನ ಪತ್ರದಲ್ಲಿ ಆಯುಕ್ತರು, ಬೆಂಗಳೂರು ಅಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರ, ಬೆಂಗಳೂರು ಇವರು ಬೆಂಗಳೂರು ಅಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರವು ಬೆಂಗಳೂರು ನಗರ ಸ್ಥಳೀಯ ಯೋಜನಾ ಪ್ರದೇಶಕ್ಕೆ ತಯಾರಿಸಿರುವ ಪರಿಷ್ಕೃತ ಮಹಾಯೋಜನೆ-2031ಕ್ಕೆ ಕರ್ನಾಟಕ ನಗರ ಮತ್ತು ಗ್ರಾಮಾಂತರ ಯೋಜನಾ ಕಾಯ್ದೆ, 1961ರ ಕಲಂ 13(1) ರಡಿಯಲ್ಲಿ ಸರ್ಕಾರದ ತಾತ್ಕಾಲಿಕ ಅನುಮೋದನೆಗಾಗಿ ಪ್ರಸ್ತಾವನೆಯನ್ನು ಮಹಾನಗರ ಆಯುಕ್ತರು, ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪ್ರದೇಶಾಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರ ಇವರಿಗೆ ಸಲ್ಲಿಸಿರುತ್ತಾರೆ.

ಮೇಲೆ ಓದಲಾದ ಕ್ರಮಸಂಖ್ಯೆ (3) ರಲ್ಲಿನ ಪತ್ರದಲ್ಲಿ ಮಹಾನಗರ ಆಯುಕ್ತರು, ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪ್ರದೇಶಾಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರ ಇವರು ಬೆಂಗಳೂರು ಅಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರದ ವತಿಯಿಂದ ತಯಾರಿಸಿ ಸಲ್ಲಿಸಿರುವ ಬೆಂಗಳೂರು ನಗರದ ಸ್ಥಳೀಯ ಯೋಜನಾ ಪ್ರದೇಶದ ತಾತ್ಕಾಲಿಕ "ಪರಿಷ್ಕೃತ ಮಹಾಯೋಜನೆ-2031"ನ್ನು ಕರ್ನಾಟಕ ನಗರ ಮತ್ತು ಗ್ರಾಮಾಂತರ ಯೋಜನಾ ಕಾಯ್ದೆ, 1961ರ ಕಲಂ 13(1) ರಡಿಯಲ್ಲಿ ಸರ್ಕಾರದ ತಾತ್ಕಾಲಿಕ ಅನುಮೋದನೆ ಕೋರಿ ಸರ್ಕಾರಕ್ಕೆ ಪ್ರಸ್ತಾವನೆ ಸಲ್ಲಿಸಿರುತ್ತಾರೆ.

ಬೆಂಗಳೂರು ಅಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರವು ಮಹಾಯೋಜನೆಯನ್ನು ತಯಾರಿಸುವ ಉದ್ದೇಶದ ಬಗ್ಗೆ ಕರ್ನಾಟಕ ನಗರ ಮತ್ತು ಗ್ರಾಮಾಂತರ ಯೋಜನಾ ಕಾಯ್ದೆ, 1961ರ ಕಲಂ 10(1) ರಡಿಯಲ್ಲಿ ದಿನಾಂಕ:07-05-2012ರ ರಾಜ್ಯ ಪತ್ರದಲ್ಲಿ ಹಾಗೂ ದಿನಾಂಕ:08-05-2012ರ ದಿನಪತ್ರಿಕೆಯಲ್ಲಿ ಪ್ರಕಟಿಸಿ ಕಾನೂನಿನನ್ವಯ ಎಲ್ಲಾ ಪ್ರಕಾರ್ಯಗಳನ್ನು ಕೈಗೊಂಡು ತಾತ್ಕಾಲಿಕ ಮಹಾಯೋಜನೆಯನ್ನು ತಯಾರಿಸಿರುತ್ತದೆ.

ಸದರಿ ತಾತ್ಕಾಲಿಕ ಮಹಾಯೋಜನೆಯಲ್ಲಿ 2031ನೇ ಇಸವಿಗೆ ಆಗಬಹುದಾದ ಸಂಭವನೀಯ ಜನಸಂಖ್ಯೆಯನ್ನು ಗಮನದಲ್ಲಿಟ್ಟುಕೊಂಡು ಜನಸಾಂದ್ರತೆಗನುಗುಣವಾಗಿ 2015ನೇ ಮಹಾಯೋಜನೆಗಿಂತ ಕೇವಲ 80 ಚದರ ಕಿಲೋ ಮೀಟರ್ ಪ್ರದೇಶವನ್ನು ಮಾತ್ರ ಹೆಚ್ಚುವರಿ ನಗರೀಕರಣ ಪ್ರದೇಶವನ್ನಾಗಿ ಪ್ರಸ್ತಾಪಿಸಲಾಗಿದೆ.

ನಗರೀಕರಣಕ್ಕೆ ಅವಶ್ಯಕವಾಗುವ ವ್ಯವಸ್ಥೆಗಳಾದ ಸಾರಿಗೆ ಮತ್ತು ಸಂಚಾರ ವ್ಯವಸ್ಥೆ, ಸಂಪರ್ಕ ರಸ್ತೆಗಳು, ವಸತಿ ಸೌಲಭ್ಯದ ಬೇಡಿಕೆ, ನೀರು ಸರಬರಾಜು ಬೇಡಿಕೆ, ಘನ ತ್ಯಾಜ್ಯ ನಿರ್ವಹಣೆಗೆ ಬೇಕಾದ ಜಮೀನು, ಪರಿಸರ ಸಂರಕ್ಷಣೆಗೆ ಸಂಬಂಧಿಸಿದ ಬೇಡಿಕೆಗಳು, ದೊಡ್ಡ ಉದ್ಯಾನವನಗಳು(Tree Park), ವಲಯ ನಿಯಮಾವಳಿಗಳು ಮುಂತಾದ ಪ್ರಮುಖ ಅಂಶಗಳನ್ನು ಗಣನೆಗೆ ತೆಗೆದುಕೊಂಡು ಪರಿಷ್ಕೃತ ಮಹಾಯೋಜನೆ-2031ನ್ನು ತಯಾರಿಸಿರುವುದಾಗಿ ಪ್ರಸ್ತಾವನೆಯಲ್ಲಿ ವಿವರಿಸಲಾಗಿದೆ.

ಸದರಿ ಪ್ರಸ್ತಾವನೆಯನ್ನು ಸರ್ಕಾರವು ಪರಿಶೀಲಿಸಿ ಈ ಕೆಳಕಂಡಂತೆ ಆದೇಶಿಸಿದೆ.

ಸರ್ಕಾರದ ಆದೇಶ ಸಂಖ್ಯೆ: ನಅಇ 516 ಬೆಂಆಸೇ 2017, ಬೆಂಗಳೂರು ದಿನಾಂಕ: 22-11-2017

ಪ್ರಸ್ತಾವನೆಯಲ್ಲಿ ವಿವರಿಸಿರುವ ಅಂಶಗಳ ಹಿನ್ನೆಲೆಯಲ್ಲಿ, ಬೆಂಗಳೂರು ಅಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರವು ತಯಾರಿಸಿ ಸಲ್ಲಿಸಿರುವ ಬೆಂಗಳೂರು ನಗರದ ಸ್ಥಳೀಯ ಯೋಜನಾ ಪ್ರದೇಶದ ಪರಿಷ್ಕೃತ ಮಹಾಯೋಜನೆ-2031ಕ್ಕೆ ಕರ್ನಾಟಕ ನಗರ ಮತ್ತು ಗ್ರಾಮಾಂತರ ಯೋಜನಾ ಕಾಯ್ದೆ, 1961ರ ಕಲಂ 13(1) ರಡಿಯಲ್ಲಿ ಈ ಕೆಳಕಂಡ ಷರತ್ತುಗಳಿಗೊಳಪಟ್ಟು ಸರ್ಕಾರದ ತಾತ್ಕಾಲಿಕ ಅನುಮೋದನೆ ನೀಡಲಾಗಿದೆ.

1. ಪ್ರಸ್ತಾಪಿತ ತಾತ್ಕಾಲಿಕ ಮಹಾಯೋಜನೆಯನ್ನು ಸಾರ್ವಜನಿಕವಾಗಿ ಪ್ರಕಟಿಸಿ 60 ದಿನಗಳ ಕಾಲಾವಕಾಶ ನೀಡಿ, ಮಹಾಯೋಜನೆ ಕುರಿತಂತೆ ಸಾರ್ವಜನಿಕರಿಂದ ಸಲಹೆ ಮತ್ತು ಆಕ್ಷೇಪಣೆಗಳನ್ನು ಸ್ವೀಕರಿಸುವುದು;
2. ಇದುವರೆಗೆ ಸರ್ಕಾರವು ಅನುಮೋದಿಸಿದ ವಲಯ ಬದಲಾವಣೆ ಮತ್ತು ಪ್ರಾಧಿಕಾರವು ಅನುಮೋದಿಸಿದ ವಿನ್ಯಾಸ ಹಾಗೂ ಇತರೆ ಅಭಿವೃದ್ಧಿ ಅನುಮೋದನೆ ಯೋಜನೆಗಳಿಗೆ ನೀಡಲಾದ ಪ್ರಕರಣಗಳನ್ನು ತಪ್ಪದೆ ಅಳವಡಿಸಿಕೊಳ್ಳತಕ್ಕದ್ದು;
3. ಪರಿಸರ ಸೂಕ್ಷ್ಮ ಪ್ರದೇಶಗಳಾದ ಕಣಿವೆಗಳು, ನದಿತೊರೆ ಪಾತ್ರಗಳು, ಕೆರೆಯ ಅಂಗಳಗಳು ಮುಂತಾದವುಗಳನ್ನು ಸೂಕ್ತವಾಗಿ ಅಳವಡಿಸಿಕೊಂಡು ಭೂ ಉಪಯೋಗ ಪ್ರಸ್ತಾಪಿಸಿರುವ ಬಗ್ಗೆ ಖಚಿತಪಡಿಸಿಕೊಳ್ಳತಕ್ಕದ್ದು;
4. ನಕ್ಷೆಗಳಲ್ಲಿ ಅಳವಡಿಸಲಾದ ಕೆಡೆಸ್ಟ್ರಿಯಲ್ ಮಾಹಿತಿಗಳು ಸರಿಯಾಗಿ ಅಳವಡಿಸಿದ ಬಗ್ಗೆ ಖಚಿತಪಡಿಸಿಕೊಳ್ಳತಕ್ಕದ್ದು;
5. ಹಾಲಿ ಅಭಿವೃದ್ಧಿಗೊಂಡ ಮತ್ತು ಅನುಮೋದಿತ ವಿನ್ಯಾಸಗಳ ಉದ್ಯಾನವನ ಮತ್ತು ನಾಗರಿಕ ಸೌಲಭ್ಯ ನಿವೇಶನಗಳನ್ನು ಪ್ರಸ್ತಾವಿತ ಭೂ ಉಪಯೋಗ ನಕ್ಷೆಗಳಲ್ಲಿ ತಪ್ಪದೇ ಅಳವಡಿಸಿಕೊಳ್ಳತಕ್ಕದ್ದು;

ಕರ್ನಾಟಕ ರಾಜ್ಯಪಾಲರ ಆದೇಶಾನುಸಾರ
ಮತ್ತು ಅವರ ಹೆಸರಿನಲ್ಲಿ,

ಎನ್. ನರಸಿಂಹಮೂರ್ತಿ
ಸರ್ಕಾರದ ಉಪ ಕಾರ್ಯದರ್ಶಿ
ನಗರಾಭಿವೃದ್ಧಿ ಇಲಾಖೆ.



TABLE OF CONTENTS

| | | |
|----------|--|-----------|
| 1 | INTRODUCTION | 1 |
| 1.1 | An Overview | 1 |
| 1.2 | Evolution of Bengaluru..... | 2 |
| 1.3 | Administrative Jurisdiction and Extent of BMA | 3 |
| 1.4 | Master Plan Preparation Process..... | 5 |
| 1.4.1 | Provisions under the KTCP Act..... | 5 |
| 1.4.2 | Methodology..... | 5 |
| 1.5 | BDA's Approach to RMP-2031 | 7 |
| 1.6 | Assumptions for Successful Implementation of the Master Plan..... | 8 |
| 1.7 | Structure of the Master Plan Document..... | 9 |
| 2 | REVIEW OF RMP-2015 AND STRUCTURE PLAN FOR BMR..... | 10 |
| 2.1 | Review of the Revised Master Plan-2015 | 10 |
| 2.1.1 | Structure of RMP-2015 | 10 |
| 2.1.2 | Population Projections and Density Considerations..... | 11 |
| 2.1.3 | Directive Principles and Vision | 12 |
| 2.1.4 | Governing Concept | 12 |
| 2.1.5 | Emerging Growth Directions..... | 12 |
| 2.1.6 | Regional Planning Framework of RMP 2015: BMR SP 2011 | 12 |
| 2.1.7 | Ecology and Environment | 14 |
| 2.1.8 | Preservation of Agricultural Area..... | 15 |
| 2.1.9 | Economy..... | 15 |
| 2.1.10 | Traffic and Transportation | 16 |
| 2.1.11 | Landuse and Zoning | 16 |
| 2.1.12 | Mixed land use | 19 |
| 2.1.13 | Zoning Regulations..... | 22 |
| 2.2 | Regional Planning Framework: BMR - REVISED STRUCTURE PLAN – 2031 | 23 |
| 2.2.1 | Spatial Population Allocation under BMR RSP 2031..... | 23 |
| 2.2.2 | Governing Principles of RSP 2031 | 24 |
| 2.3 | RMP 2031: Accounting for heterogeneity in the BMA | 26 |



| | | |
|----------|---|-----------|
| 3 | RMP 2031: VISION, GOALS AND OBJECTIVES | 28 |
| 3.1 | Stakeholder Engagement..... | 28 |
| 3.2 | BMR -RSP 2031 Guiding Principles..... | 29 |
| 3.3 | RMP 2031: Guiding Principles and Vision | 30 |
| 4 | Scenarios and Strategies | 34 |
| 4.1 | Scenario Development for RMP 2031..... | 34 |
| 4.2 | Containment Scenario | 36 |
| 4.3 | Corridor Driven Growth Scenario | 37 |
| 4.4 | Differential Strategy Scenario | 39 |
| 4.5 | Evaluation and Selection of the Scenario for RMP 2031 | 40 |
| 4.6 | Detailing of RMP-2031 | 46 |



LIST OF TABLES

| | |
|---|----|
| Table 1: Highlights of Master Plans of BMA | 3 |
| Table 2: Broad Land Distribution in BMA as per RMP 2015 | 3 |
| Table 3: Proposed Land use RMP- 2015 vs Existing Land use 2015 within Conurbation | 18 |
| Table 4: Guiding principles, Goals and Strategies..... | 32 |
| Table 5: Categorisation of Suggestions and Feedback into Indicators | 41 |



LIST OF FIGURES

| | |
|---|----|
| Figure 1: Administrative Jurisdictions under BMA..... | 4 |
| Figure 2: Master Plan Process for preparation of RMP 2031 | 7 |
| Figure 3: Map of Existing Land Use 2015 | 17 |
| Figure 4: Proposed Landuse at Koramangala- Sony World Junction in RMP 2015..... | 21 |
| Figure 5: Existing Landuse – 2015 at Koramangala Sony World Junction | 21 |
| Figure 6: Three Concentric Rings in BMA as recognised by the RMP 2015 | 22 |
| Figure 7: Clusters and Nodes in RSP 2031 | 25 |
| Figure 8: Three Distinct Development Zones within BMA..... | 27 |
| Figure 9: Pointers received from various Stakeholder Groups..... | 28 |
| Figure 10: Guiding Principles BMR RSP 2031 | 29 |
| Figure 11: Guiding Principles RMP 2031 | 31 |
| Figure 12: Planning Philosophy for RMP-2031 | 33 |
| Figure 13: Scenario Evaluation Methodology | 40 |



ABBREVIATIONS

| | |
|-------------|-------------------------------------|
| BBMP | Bruhat Bengaluru Mahanagara Pallike |
| BDA | Bangalore Development Authority |
| BMA | Bengaluru Metropolitan Area |
| BMR | Bengaluru Metropolitan Region |
| GP | Gram Panchayat |
| PRR | Peripheral Ring Road |
| RMP | Revised Master Plan |
| RSP | Revised Structure Plan |
| RWH | Rain Water Harvesting |
| STP | Sewage Treatment Plant |
| SWM | Solid Waste Management |



1 INTRODUCTION

1.1 An Overview

Bengaluru, a multifunctional Metropolitan and the capital city of Karnataka, is one of the fastest growing cities in India and is branded as the 'Silicon Valley of India' for spearheading the growth of Information and Communication Technology (ICT) based industries. Bangalore has become a cosmopolitan city attracting people and business alike, within India and internationally and has become a symbol of India's integration with the global economy. With the growth of IT and industries in other sectors (e.g. textiles, light engineering and defence) and the onset of economic liberalization since the early 1990s, Bangalore has taken a lead in service-based industries fuelling growth of the city both economically and spatially.

The city has grown rapidly in the past few decades from pensioner's paradise to the information technology capital of India. The presence of IT/ITES industries, large public sector undertakings like BEL, BEML and HAL, along with major hardware garment industries has led to in-migration and rapid growth of the city. Bengaluru has also emerged as the start-up hub of the nation, bringing innovation and contribution to GDP, diversity of economy and adding to employment opportunities. The city is also a major education hub with a very large number of higher educational institutions in and around the city.

Bengaluru, with its strong economic base, contributes about 1.9% to India's GDP (2013-14) and 34% to Karnataka's GSDP (2013-14). The Metropolis houses about 40% of urban population of Karnataka and has witnessed 42% growth in population during the decade 2001-2011, thus playing the role of a primate city in the State. In context of the State, the population in the city of Bengaluru accounts for nearly 14.60% of the State's population concentrated in only about 0.64% of land area.

The Local Planning Area (LPA) of Bangalore Development Authority (BDA) spreads over an area of about 1219.50 Sq Km (area under LPA of BDA as per RMP-2015) with a population of ~85 Lakh as per Census 2011. The LPA of BDA comprises of the major part of the Bruhat Bangalore Mahanagara Palike¹ (excluding area under BMICAPA) and 251 villages in the periphery of BBMP. The city has experienced an unprecedented population growth translating into varied challenges of urbanisation and urban management in general and urban land management in particular. BDA entrusted with the responsibility of preparing and revising the Master Plan as a Planning Authority for the Local Planning Area of BDA under the KTCP Act, 1961 has undertaken the revision of the RMP-2015 for the horizon period of 2031 (herein referred as RMP-2031).

¹ BBMP-constituted on 16-01-2007 and currently comprises of 198 wards



1.2 Evolution of Bengaluru

The growth of Bengaluru may be traced through three distinct periods – Pre-colonial era, colonial era and post-independence era. The city took shape as a fortified settlement under the ruler of the Vijaynagara state- Kempegowda, when he established the mud fort in the year 1537. The markets in the central area like Chikkapete were established during this time. By 17th century, Bengaluru had become the commercial capital of Tipu Sultan who ruled from Mysore. The 18th century saw the advent of British in Bengaluru and the start of the colonial era. The cantonment was established, separated from the market areas by large open spaces, now Cubbon Park and Lalbagh. Employment increased and people started settling in the urban fringes outside the cantonment.

A City Improvement trust was formed in 1945 and the Bangalore City Corporation was eventually established in 1949. The post-independence planning history for the city of Bengaluru has a spanning more than sixty five years. The first step towards planning for development of Bengaluru city was initiated with the Outline Development Plan, prepared by the Bangalore Development Committee in 1952. The city's planning got statutory backing in 1961, when KTCP Act 1961 was enacted.

The history of post-independence planned development in Bangalore is highlighted below:

- 1952 – Bangalore Development Committee founded
- 1961- KTCP Act enacted
- 1963- ODP submitted to Govt.
- 1965- KTCP Act enforced
- 1972- ODP approved
- 1976- BDA constituted
- 1984- 1st CDP for 1985 approved
- 1995- 2nd CDP/RMP for 2005 approved
- 2007- 3rd CDP/RMP for 2015 approved

To achieve coordinated development activities of the city, the Government of Karnataka (GoK) constituted the Bangalore Development Authority (BDA) in 1976 under separate statute, viz. the Bangalore Development Authority Act, 1976 with the functions related to planning, development, enforcement and implementation of the schemes coming under one agency. BDA is the planning and development authority for the LPA. Under the aegis of BDA there have been continuous efforts to plan and manage the growth of city through three Plans viz. Comprehensive Development Plans (CDP) 1984, CDP 1995 and Revised Master Plan 2015 for its LPA. Currently operational Revised Master Plan (RMP) 2015 was notified by Government vide G.O. No UDD 540 BEM AA SE 2004, dated 22.06.2007 for the

horizon year 2015. The highlights of previous master plans are given in the Table 1 as follows.

Table 1: Highlights of Master Plans of BMA

| SI No. | Master Plan | ODP | CDP 2000 | RCDP 2011 | RMP 2015 |
|--------|-----------------------------|-----------|-----------|-----------|-----------|
| 1 | Plan period | 1961-1976 | 1984-2000 | 2000-2011 | 2005-2015 |
| 2 | Projected Population (lakh) | 19 | 70 | 70 | 88.0 |
| 3 | LPA Extent (sqkm) | 500 | 1279 | 1279 | 1219.5* |
| 4 | Conurbation (sqkm) | 264 | 440 | 564 | 804.0** |
| 5 | Agriculture Zone | 236 | 866 | 742 | 415.5 |
| 6 | Existing Landuse (sqkm) | 142 | 202 | 284 | 420.0 |
| 7 | Existing Density (PPH) | 116 | 144 | 143 | 138.0 |
| 9 | Proposed Density PPH | 72 | 159 | 125 | 110.0 |

*- Area under LPA of BDA as per RMP-2015 excluding the area under BMICAPA

1.3 Administrative Jurisdiction and Extent of BMA

Although the extent of Local Planning Area (LPA) of BDA has changed over the decades since its initial notification, two important changes have shaped the BDA LPA since the publication of the RMP 2015 which has a bearing on Land Use Deviations. These are:

- The revised delineation of the BBMP boundary with the amalgamation of the erstwhile BMP and the 7 CMCs' and 1 TMC, through the Notification no. UDD 92 MNY 2006, Urban Development Department, Bangalore, dated 16 January 2007.
- Amendments in the boundaries of BMICAPA within the BMA limits
- The deletion of 8 villages from the LPA of BDA and addition to Hoskote LPA, through the Notification no. UDD 36N BMR 2009 dated 26 September 2012.

Table 2 below shows the broad break-up of the area under BMA as per RMP 2015.

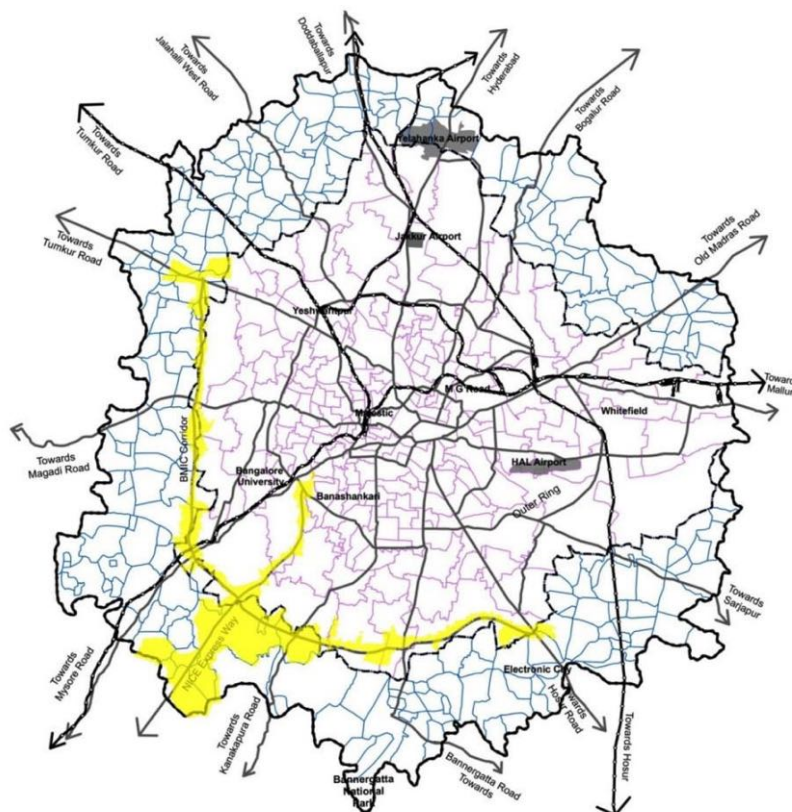
Table 2: Broad Land Distribution in BMA as per RMP 2015

| Specification | Area in sq. km | Percentage |
|--|----------------|----------------|
| Conurbation Area of LPA of BDA | 804.00 | 61.50% |
| Area outside Conurbation of LPA of BDA | 415.50 | 31.80% |
| BMICAPA | 87.50 | 6.70% |
| Total | 1307.00 | 100.00% |

A pertinent issue that merits mention here is that of the **Conurbation** limits as defined by the RMP 2015. The RMP 2015 earmarks a conurbation area of about 804 SqKm² which covers major parts of BBMP (excluding the area of BBMP under BMICAPA and certain part of the peripheral wards as the process of inclusion of 110 villages and the surrounding CMCs and TMCs to the erstwhile BMP to constitute BBMP was an ongoing exercise) and part/complete area of over 100 villages out of 251 villages in the BMA Limits. The LPA's of the BDA and the BMICAPA (which include BBMP and the surrounding 251 villages) overlap administratively and spatially.

As per the amendment in the boundaries of the BMA, the total area of the two LPAs under the BMA is 1294 SqKm³. Of this, 87.03 SqKm comprises the jurisdiction of LPA of BMICAPA and the remaining 1206.97 SqKm comprises the jurisdictions of the LPA of BDA.⁴ Of this total area under the two LPAs, approximately 708 Sq Km falls under BBMP and the remaining 586 Sq Km falls under the 251 villages.

Figure 1: Administrative Jurisdictions under BMA



² The area conurbation is sum total of the areas under different land uses under Planning District Maps

³ deletion of 8 villages from the LPA of BDA and addition to Hoskote LPA

⁴ As per the existing Master Plan for the LPA for BMICAPA for 2021 of the 87.03 Sq Km, approximately 25.69 Sq Km falling within the BBMP and the remaining 52.88 Sq Km is outside BBMP. The BMICAPA master plan when revised should be revised not just within the purview of the BMR RSP 2031, but should also align with the provisions of the RMP 2031.

The administrative and spatial overlapping of the LPAs of the BMICAPA and the BDA point to an intrinsic interconnection between these, one that by the legal statute is governed and administered separately. This, in effect, adds a layer of complexity to the plan evolution, enforcement and implementation.

1.4 Master Plan Preparation Process

Planning is a continuous process that facilitates updating and revision of the existing Master Plan due to the ever changing dynamics of the city and its region. It also provides an opportunity to undertake mid-course corrections and incorporate policy changes, if any, arising out of the needs of the population and its activities. The Master Plan is formulated on the basis of certain assumptions related to the present administrative set up, growth rates, household size, present policies, orders and guidelines with respect to urban development, transportation planning etc., which are liable to be modified as per the State policies. The first Master Plan for Bengaluru was approved in 1984 and as per the Act has been revised periodically since then. The first revision of the master plan was the Revised Master Plan -1995, followed by the Revised Master Plan-2007 and the Revised Master Plan 2015 only RMP 2015. The Revised Master Plan for Bengaluru -2031 is the fourth such revision.

1.4.1 Provisions under the KTCP Act

The Master Plan for any local planning area in the State of Karnataka is prepared under the provisions of Section 9 of the Karnataka Town and Country Planning Act 1961 (KTCP Act, 1961). The Master Plan is to be revised once every ten years as per the provisions of Section 13D of the KTCP Act, 1961. The Master Plan for BMA (i.e. RMP 2015), prepared and approved on June 25, 2007 is currently in force.

As per Section 81B for the KTCP Act, 1961, the Bangalore Development Authority shall be the Local Planning Authority and BDA shall exercise the powers, perform the functions and discharge the duties under the provisions of the KTCP Act, 1961 as the Local Planning Authority for the Bengaluru Local Planning Area

1.4.2 Methodology

The Master plan preparation process began with the declaration of intent of revision of RMP 2015. This was followed by the preparation of Base Map and ELU map. While preparing the baseline scenario, public engagement was done through structured socio economic survey and general public meeting.

Large scale data was collected from various line departments and agencies, analysed the sectoral status was prepared. This included an analysis of the prevailing legal and statutory

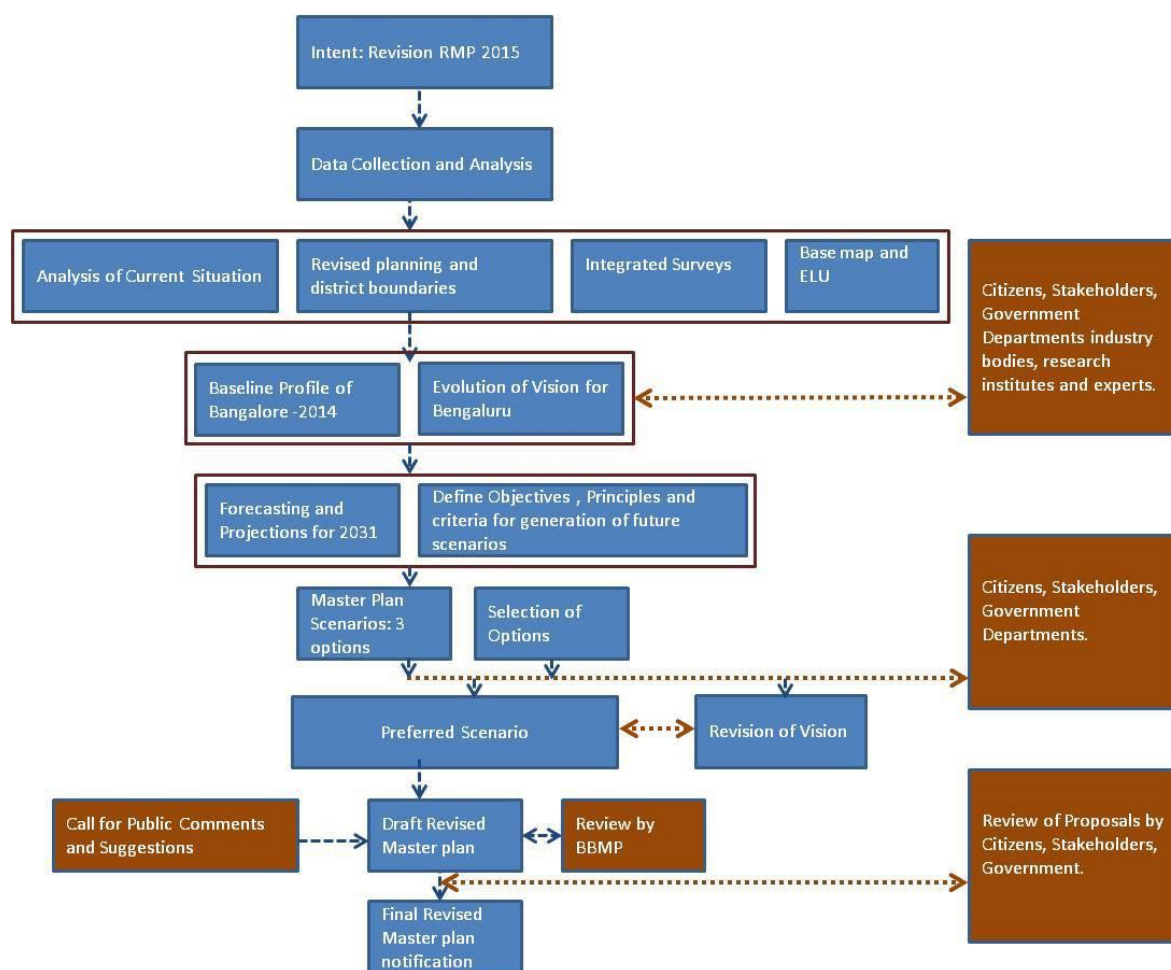


framework governing and managing the BMA in particular and the legal statutes within which the plan is prepared and implemented, demography, housing, transportation, heritage, and hazard and disaster management.

The review of RMP 2015 was conducted to understand the present status of plan implementation and enforcement as well as identify attendant issues and challenges inhibiting streamlined growth and development in the BMA. Simultaneously several studies and surveys were conducted to formulate the baseline scenario. This preliminary analysis facilitated demographic projections and associated demand for land, infrastructure and services for the horizon year 2031, which in turn helped in arriving at the master plan scenarios of how the city should grow.

These scenarios (assumptions, scenario theme, merits and demerits) along with the city vision were presented to various stakeholders including citizens, through public consultation meetings for dissemination of information across the planning area (in 8 BBMP zones and their neighbouring villages).

The outcome of the stakeholder consultation have been analysed for evolving the vision statement. The scenarios were also evaluated based on the suggestions received at the consultation meetings. Based on the outcomes of the cumulative feedback received from the various stakeholders including the citizen groups, various agencies, professional associations, the BDA board selected the preferred scenario for detailing out the Draft Revised Master Plan for 2031. Figure 2 showcases the methodology and processes involved therein in the preparation of the RMP 2031.

Figure 2: Master Plan Process for preparation of RMP 2031

1.5 BDA's Approach to RMP-2031

The BDA has endeavoured to revise the Master Plan for Bengaluru for 2031 as a spatial-policy framework to guide the future growth of the city especially keeping the aspirations of the citizens.

The RMP-2031 also sought inputs from the key infrastructure and urban management agencies including BBMP, BMRCL, BWSSB, BESCOM, BMTCL, KIADB etc and to the extent possible has integrated their requirements, especially those pertaining to land.

The BDA has paid special attention to the lessons learnt from the previous Master Plans in terms of balancing the growth through planning strategies and regulations focussing on four most critical issues of ecology and environment, traffic and transportation, optimal and efficient utilisation of land, and the affordable housing targeted towards better liveability for the city of Bengaluru.



1.6 Assumptions for Successful Implementation of the Master Plan

- i. The Master Plan is formulated on certain assumptions related to the present administrative set up, growth rates, household size, current policies and guidelines with respect to urban development, transportation planning, environment etc. This Master Plan makes a sincere effort to capture the current policies in force for various subjects.
- ii. This Master Plan has projected the population for 2031 based on the previous decade's growth rate and trends. Therefore, any major policy change, decisions impacting the economic and physical growth of the state, region and the city may impact these projections. A continuous review and monitoring of the plan implementation would be taken up as an on-going process for any mid-term correction requirements, if any, during the horizon period in addition to the statutory requirements of revision every ten years.
- iii. This Master Plan seeks to frame policy and proposals based on the existing jurisdiction of BMA, expecting that all other authorities will follow its proposals and regulations accordingly. It is expected that the various authorities concerned would align their plans, projects, administrative and institutional arrangements and coordination and integration mechanisms with BMA and this Master Plan, keeping in view the overall development and management of the city. This Master Plan has made use of the existing secondary data and there may be some data that would have changed in due course of time and may continue to do so till the time the Master Plan is finally notified and the implementation commences. This Master Plan needs to be taken as a guiding plan for the regulation of development, however, specific studies and actions for detailed projects under various sectors may need to be taken up over the horizon period for the plan.
- iv. The Revised Master Plan has made efforts to minimize non-confirming land uses, certain uses which are already developed such as industrial or commercial units in the residential areas, etc would continue to exist and the transformation would happen as a part of the process, but further permissions shall keep a check over such non-confirming uses.
- v. The Master Plan has projected infrastructure requirements for public and semi-public uses and public utilities and designates certain land parcels for such purposes. While effort has been made to collect and collate and integrate as much sectoral data as possible, it is however the responsibility of the agencies concerned to get the land allotted from the revenue authorities/acquires the land.
- vi. Success of Master Plan depends on peoples' will and willingness to adhere to certain disciplines in the use of land, road and public spaces. The level of civic awareness in general with a long term perspective and proactive effort from the Government agencies will help implement the plan effectively.



1.7 Structure of the Master Plan Document

The Master Plan Document comprises of six volumes as given hereunder:

- i. Volume-1: Vision Document
- ii. Volume-2: Base Map and Existing Land Use Maps
- iii. Volume-3: Master Plan Report
- iv. Volume-4: Planning District Report
- v. Volume-5: Proposed Land Use Maps
- vi. Volume-6: Zoning Regulations

2 REVIEW OF RMP-2015 AND STRUCTURE PLAN FOR BMR

A review of the RMP 2015, its objectives and key provisions including an understanding of the extent to which the plan has been enforced and implemented, constitutes the basis for the evolution of the RMP 2031. The following section presents certain aspects of master plan evolution, enforcement and implementation based on the RMP 2015 reports, maps and GIS database.

The review of RMP 2015 focusses on:

- i. the contents of the RMP 2015, inclusive of its population projections, vision, strategies, major provisions and mandates; and,
- ii. the degree to which the plan has been enforced and implemented.

The latter is based on an understanding derived from an on ground assessment of the various proposals of the plan vis-à-vis their implementation based on the surveys and studies carried out by the Authority as part of the revision of RMP-2015 for evolving the Revised Master Plan for the horizon year 2031.

A detailed analysis of the RMP 2015, BMR SP 2011 (as the framework within which the RMP 2015 was prepared), the BMR RSP 2031 (the framework for the revision of the RMP 2015) constitutes the first step for the Authority to move forward towards revising RMP 2015.

2.1 Review of the Revised Master Plan-2015

2.1.1 Structure of RMP-2015

The RMP 2015, a statutory document, prepared in accordance with the provisions of KTCP Act, 1961 to promote and guide the growth of the BMA through a land use plan and zonal regulations, comprises of five volumes:

- (a) **Volume 1-** Vision Document: This report covers the key principles of the Revised Master Plan 2015 and the Vision detailing the principles of macro zoning and proposals envisioning the city by 2015.
- (b) **Volume 2-** Proposed Land Use Maps at City and Planning District Levels
- (c) **Volume 3-** Zoning Regulations: The land use zonal regulations define the development control regulations with respect to the permissible activities and the FAR etc.
- (d) **Volume 4-** Planning District Report: The Planning District Report addresses all 47 planning districts and contains the analysis, observations and proposals for each area. The recommendations and proposals, covering land use and transportation along with identified projects are covered under this volume.

(e) **Volume 5-** Existing Land Use Maps: The existing land use maps for the year 2003 are provided in this volume

The review of RMP-2015 focuses primarily on the larger overarching proposals and mandates of the plan with regard to i) population projections and density considerations; ii) directive principles, concepts and emerging growth directions identified by the plan; iii) the policy frameworks as outlined in the BMR-SP 2011; iv) economic provisions, including proposals regarding job creation and the attendant transport and mobility directions; v) land use zoning and attendant regulations; and, vi) provisions regarding plan enforcement and implementations. The main objective of this review is to arrive at emerging imperatives that should guide the evolution, enforcement and implementation of the RMP 2031.

2.1.2 Population Projections and Density Considerations

The RMP 2015 projected the population for the BMA at 8.01, 8.8 and 9.96 million for 2011, 2015 and 2021 respectively. As against the projected population of 8.01, the BMA hosts a population of 9.04 million as per the 2011 census. It is therefore critical to understand the historical trends of population growth and other demographics not just in the city but also in the city-region, other factors, including those that are exogenous to the city and the region, likely to impact the population in the coming decade and a half. In other words, an immediate emerging imperative is to rationalise and arrive at a population projection that captures the trends while keeping in mind the demographic projections of the BMR-RSP 2031 which are largely for the region.

Given that the projections of the RMP 2015 are much below what is achieved in 2011 and that the projections of BMR RSP 2031 are based on RMP 2015 implies a re-look into the population projections of the BMR RSP 2031. Thus, the projections of the BMR RSP 2031 for the BMA have been analysed critically before using them as a guiding / policy framework for the RMP 2031 projections.

The overall density for 2015 with a projected population of 8.80 million spread across an area of 1219 Sq Km translate to a gross density of about 72 PPH at the BMA level. The extent of conurbation area of RMP 2015 measuring about 800 Sq Km translates to a gross density of about 100-110 PPH (considering 90-95% of the projected population of BMA within the conurbation limit). The density based on the residential area was estimated at 300 PPH under the RMP-2015. However, given the pace of development, these density stipulations are not likely to lead to dense compact development. Density stipulations have been re-looked into to achieve the optimal utilisation of developable land targeted toward the objective of compact city development.



2.1.3 Directive Principles and Vision

To steer and manage the city that will accommodate the projected populations, the plan aims to address long term sustainable development in the urban agglomeration of Bangalore through four stated directive principles emphasising: i) Preserving and managing natural and hydraulic balance; ii) economic efficiency focusing on economic competitiveness to facilitate quality spaces; iii) social equity through equal access to facilities; and, iv) conservation of heritage.

Based on these directive principles, the RMP 2015 was developed to address the overall vision “ *to retain its per-eminent position as a City of the Future through its cosmopolitan character and global presence, and to enable and empower its citizens with: growth opportunities to promote innovation and economic prosperity; a clean and green environment; high-quality infrastructure for transport and communication; wide-ranging services aimed improving the quality of life for all; conservation of its heritage and diverse culture; and responsive and efficient governance.*”

2.1.4 Governing Concept

Deriving from the above directive principles, RMP 2015 adopted the concept of “structured continuity” in the Bangalore Metropolitan Area to be achieved through i) selective extension of urbanisation, while preserving large parts of the Green Belt and environmentally sensitive areas; ii) access to new extensions through peripheral ring road; and, iii) natural renewal of areas already urbanized. Thus, the plan clearly aimed for a selective urbanisation process – one that aimed for a compact city.

2.1.5 Emerging Growth Directions

Recognizing the criticality of water resource, the RMP 2015 pivoted the growth /expansion of the BMA around the following: i) preserve areas towards the Western belt through a restricted development zone, this belt being rich in water resources, thereby the need to preserve it; ii) open-up green belt towards the North and the South-eastern areas for future urbanisation as per the current trends and investments; iii) promote IT and related mixed use developments towards the south-eastern belt. In line with the larger concept of structured continuity, the RMP 2015 aimed to ensure that vacant lands in strategic areas are occupied and the spread of layouts minimized. While green field development through new layouts and other schemes aimed to integrate the natural features in the BMA, old neighbourhoods in the central area were proposed to be redeveloped.

2.1.6 Regional Planning Framework of RMP 2015: BMR SP 2011

It is important to remember that the RMP 2015 was prepared within the purview of the BMR SP 2011. A major contestation that emerged between the two plans was in the future



growth strategies that the two plans adopted. The BMR SP 2011 focused on an integrated strategy which aimed at modifying trends of economic investments in the North-North East segment, containing and guiding the future growth of Bangalore and deflecting and inducing new and emerging economic activities from the BMA to strategic satellite towns, growth centres and nodes within the Bangalore Metropolitan Region. Termed as the “Western Arc” strategy, it focused on re-orienting the future growth of the region towards the West and the South (Bangalore-Nelamangala and Bangalore-Mysore corridors), rather than continuing with the past trend of development towards the East and North while containing development within the BMA.

An assessment of the Revised Master Plan 2015 for Bangalore reveals that contrary to the BMR SP 2011, the RMP 2015 strategizes development in the North and the South-East and restricts development in the West. The basic premise for the contrary strategies adopted by both the BMR SP 2011 and RMP 2015 is the availability of water. The RMP 2015 recognizes, (i) the presence of ecologically sensitive areas (such as the T G Halli catchment area) as a natural constraint to development to the West, (ii) the water resource rich area towards the West and South and, therefore the need to preserve the same and (iii) the continuing trend of existing development to the North, North-East and the South-East.⁵ In this context the RMP 2015 restricts development towards the West and opens up the green belt selectively towards the North and the East. Reconciling these contradictory visions was identified as a priority by the BMR RSP 2031 and by extension constitutes an emerging imperative for the RMP 2031.

However, as assessed by the RMP 2015, the spatial restructuring as envisaged by the BMR SP 2011 between the Western and the Eastern Arc was not fully successful. A corresponding failure of the population redistribution strategy of the BMR SP 2011 has allowed the growth trends to continue in the North, North-East and the South-East, a growth direction that was prioritised by the RMP 2015 for reasons mentioned above.

Accordingly, both the RMP 2015 and the BMR SP 2011 recognise the criticality of this resource and an attempt to address these has resulted in contrasting development strategies, the former to protect it, therefore outlining development in the water scarce area and the latter to capitalize on the same, defining development in the water rich areas i.e. West and the South-West.

⁵ The trends on ground reflect the directives of the RMP 2015 as urban development and growth of IT industry is concentrated in the eastern south-eastern and northern segments of Bangalore (Electronic City, Sarjapur, Bannerghatta and Whitefield in the south & east and areas around Hebbal and Devanahalli to the north).

2.1.7 Ecology and Environment

The three plans (BMR RSP 2011, RMP 2015 and BMR RSP 2031) recognise the ecologically sensitive geography of the Bangalore Metropolitan Area and its larger region, the criticality of water resources, the need to retain the agriculture belt (popularly referred to as the Green Belt) around the BMA and the subsequent imperative to steer the growth and urban expansion accordingly. To quote an example, both the BMR-SP 2011 and the RMP 2015 advocate a buffer of 1 km radius around national Parks. Additionally, this buffer area also extends to the landfill sites proposed in the RMP 2015. The BMR SP 2011 encourages quarrying and mining activity with environmental clearances and NOC of such activity from competent authorities, although the same is not reflected in the RMP 2015. Yet, the RMP 2015 takes a strong and positive stand on protecting the ecology of the region by acknowledging the Thippagondanahalli (T.G. halli) catchment area, water resource availability in the south and south western, reserved forest areas and hydrology (valley system) defines these as “sensitive area zones” in the proposed Land Use.

The RMP 2015 has made provisions with regard to the buffer requirements for streams from the centre line of the stream and also the buffers for lakes, however, the demarcation and classification of the streams into primary, secondary and tertiary on the PLU Map was not available. The National Green Tribunal (NGT) in its recent judgement dated May 04, 2016, states that the buffers assigned by RMP 2015 are unscientific. The NGT Order directs that all the water bodies and streams in Bangalore to have the following buffers (from the edge of the water body/stream)⁶

- In case of lakes, 75m from the periphery of all water bodies to be maintained as green belt and buffer zone for all the existing water bodies i.e, lakes / wetlands.
- 50m from the edge of the primary Rajakaluwas.
- 35 m from the edges in the case of secondary Rajakaluwas.
- 25 m from the edges in the case of tertiary Rajakaluwas.

The NGT also ordered that this buffer/ green zone would be treated as no construction zones for all the intent and purposes. RMP 2031 zonal regulations have taken into account the directions of the NGT as applicable to the metropolitan area in general and to the identified ecological zones, including the agriculture zone in the BMA. In addition, RMP 2031 has also classified the streams with respect to primary, secondary and tertiary and including the applicable buffer for these streams. These are demarcated as part of the Proposed Land Use Map for the Planning Districts.

⁶ It is important to note that several drains on Revenue Village Maps do not have the defined width and are part of survey numbers. Similarly edge of the lake stream can only be determined based on the actual demarcation on ground based on Revenue Village Maps and Revenue Records available with Govt.



2.1.8 Preservation of Agricultural Area

The RMP 2015 restricts development towards the west and opens up the agricultural zone selectively towards the north and the east. This provision of the RMP 2015, while critical to conserving and protecting the ground water table is also in line with the provisions of the BMR SP 2011 that allows for change in land-uses such that these will help upgrade existing social facilities within village limits and outside the village limit, in accordance with structure plan policies.

The BMR RSP 2031 on the other hand acknowledges current trends of development that have resulted in encroachment of the green belt and conversion of prime agricultural lands for urbanization (largely haphazard) at a regional level. It also acknowledges that the agricultural zone around the BMA, while having failed to serve its purpose of containing urbanization, is critical not just as a lung space within the region, but also to meet the food requirements of the BMA. It therefore should be considered a part of the regional green network, supporting productive recreational uses while serving to protect the most sensitive ecological features of the region. To retain and conserve the remaining portion of the green belt, the BMR-RSP 2031 stipulates all new development in accordance with the development control regulations of the Agriculture Conservation Zone (ACZ) 1 and (ACZ) 2. The green network proposed as a Conservation Zone takes precedence over the urbanization zone.

Thus, it is clear that all the plans have made provisions for the conservation and protection of the ecologically sensitive nature of the BMA and the BMR. Continuing with this trend emerges a critical imperative for the RMP 2031. Yet, an added layer of complexity is that of the recent NGT order that while seeking to protect and manage the ecology of the region, when implemented leads to several contestations and conflicts. Thus, realising the NGT order in its entirety is a challenge. The key impact is also in terms of the requirements for urbanisable land and managing these requirements through zoning regulations.

2.1.9 Economy

The plan accorded priority to the service sector and accordingly proposed to strengthen and extend existing employment areas along major roads and other clusters such as Peenya, Bommasandra and the Electronic City. The Plan recognizes high tech industrial as a separate land use category, accounting for the prevailing and growing Information Technology and Bio-Technology (IT&BT) sector. In addition, it pushed for the redevelopment of derelict industrial lands depending on the economic potential of these parcels of land. Yet, as is discussed later in this chapter, many of these provisions have not been realised on the ground.

2.1.10 Traffic and Transportation

RMP 2015 proposes development of a city network through a sustainable transportation system focusing on development of a structured road network, organizing transportation/logistics facilities and developing a multi-modal public transportation system. During the preparation of RMP 2015, the Namma Metro Project Phase 1 was a project in the pipeline that was included as proposed. However, while integrating the Phase 1 of Namma Metro, RMP 2015 does not go further in suggesting future metro networks.

The circulation plan of RMP 2015 has proposed/ identified several projects like Elevated Core Ring Road, Outer Ring Road, Proposed Ring Road, Intermediate Ring road, Satellite Town Ring Road, Grade Separators and Airport Link Road etc. However, except Outer Ring Road (ORR) or some other road projects, most of them are yet to be implemented. In several cases, the road proposals of RMP 2015 are not implementable on ground due to developments either fully or partly, which has been recognised as part of the review process. Based on the ground situation, the revisions in the road network require balancing the circulation pattern and minimisation of the impact on the common man. Also, the land earmarked for transportation activities like Bus Depot, Transport Nagar, etc could not be realised as envisaged. The learning from these experiences clearly indicates a requirement for strengthening the plan implementation strategies in general and for transportation sector in particular.

2.1.11 Landuse and Zoning

Drawing from the directive principles of the Master Plan and the service delivery requirement for the city, the proposed land requirement for the Bangalore Metropolitan Area is premised on the need to open up the conurbation to accommodate the demands of an expanding metropolis, preservation of agriculture land, enhancing open spaces and, conserving the lake, tank and valley system of Bangalore. In addition, the plan also accounts for the proposed peripheral ring road and the growth that it is likely to generate as well as other externalities which include the Metro Phase-I.

In light of these, the RMP 2015 proposed a land-use plan for the LPA of the BDA, excluding the jurisdiction of the BMICAPA. Critically, and perhaps for the first time ever in the planning history of the BMA, the plan recognised that mixed land-use is already a feature of the existing land use at the time and instead of placing land in sharply demarcated land use zones, the RMP 2015 sought to preserve the character of the BMA by allowing and encouraging mixed uses.

[illegible]

An analysis of the area statements as indicated in the Table 3 points to the degree to which the RMP 2015 was realised.



Table 3: Proposed Land use RMP- 2015 vs Existing Land use 2015 within Conurbation

Area in Sq Km

| Landuse | PLU as per RMP 2015* | Existing Land use within Conurbation of RMP 2015 |
|--|-----------------------------|---|
| Residential + Residential Mix | 422.56 | 194.93 |
| Commercial (includes Commercial (Central) + Commercial (Business)+ Mutation Corridor+ Commercial Axes as per RMP-2015) | 34.66 | 35.02 |
| Industrial (includes Industrial (General) and Hi-Tech Industrial as per RMP-2015) | 91.07 | 39.43 |
| Public & Semi Public | 39.26 | 54.92 |
| PSP (Unclassified) | 28.58 | 35.33 |
| Public Utility | 11.78 | 4.17 |
| Parks and Open Spaces | 62.35 | 59.93 |
| Transport and Communication | 113.74 | 75.45 |
| Vacant | | 304.82 |
| Total | 804.00 | 804.00 |

*Derived from the Proposed Land Use statement for planning districts in the RMP 2015

As is evident from Table 3, there are differences in the degree to which the Proposed Land Use has been realised. These differences are significant with respect to residential and residential mix, transport communication as well as industrial category. Public and semi-public on the other hand shows a higher degree of realisation. This can be attributed to the redesignation of certain parcels of land uses under industrial category to PSP and PSP (unclassified) as part of the Existing Land Use for 2015. However, the above is a simplistic reading of the land use statements and should not be used as a reflection of the implementation of the RMP 2015.

There are multiple dimensions associated with the extent of realisation of land use including the cases of change of land use, the utilisation of land as per the prevailing FARs in the existing zoning regulations and consolidation/ densification of existing areas as a result of higher FARs. In addition, it is equally important to recognise that there has been intrusion of



urban development activities outside the conurbation limits in the Agriculture Zone of RMP 2015 due to growing population pressure and land markets.

The existing land use surveys carried out as part of RMP 2031 clearly indicates that nearly 16% of the land under agricultural zone has undergone transformation to other uses including informal and not fully regulated layouts.

Based on this rationalisation (primarily as a means to understand the extent to which the RMP 2015 has been implemented), an analysis points to those mandates of the plan which have been enforced adequately and others where deviations are noticed. The deviations as discussed here are the differences between the existing land use (and circulation pattern ELU, 2015 arrived at as part of the RMP 2031 revision) and the proposed land use and circulation pattern of the RMP 2015. These deviations are indicative of the degree to which the RMP 2015 has been realised, although, it is re-iterated that the non-realisation /deviations should not be read as a failure of the RMP 2015.

It is also critical to understand that the RMP 2015 actively promotes and encourages mixed land-use in all zones of the BMA. As a result, even though a certain zone may have a main land use, the regulations for the zone permit a certain percentage of other ancillary uses.⁷ Therefore, in the strict sense, these cannot be considered as deviations. To quote an example, the plan proposed increase in the industrial land use from existing 58.83 sq km to 84.72 sq km. Large tracts of Hi-tech industrial land proposed by the RMP 2015 are yet to be developed.

In several areas Hi-tech industrial land use have undergone significant land use change and in the ELU 2015 emerge as residential use. This may also be because the ZRs of the RMP 2015 allow 40% of residential areas within Hi-Tech Industry zone as well as the cases of change of land use in these areas.

2.1.12 Mixed land use

RMP-2015 advocates mixed land use as a means to achieve its directive principle as well as the concept of expanding the city through structured continuity. This is a major departure that the RMP 2015 makes from the previous plans as well as the provisions of the KTCP Act,

⁷ The RMP 2015 in Volume 4 details out the 47 planning districts in terms of their existing situation (in 2003-04), the predominant character in terms of “development trends, level of mixed uses, existing urban fabric, location of slums, social level, level of infrastructure, land prices, and urban structure”⁷. Accordingly, the proposals, for land use, transportation and projects are presented in detail at local level in the Planning District Report. Aside from the main land use zones, it also proposes areas that are to designated for specific uses, specially developed or appropriately conserved and classifies them as “Traditional Area Zone”, “Transformation Area”, “Development Street”, “Area Improvement Perimeter”, “Heritage Conservation Area”, “Constraints Area”, “Protected Land Zone”, “Co-ordinated Planning Scheme”, “Supporting Service Zone”, “Transport And Utilities Perimeter”, etc.

1961, where land use planning is strictly regimented along single uses (with a small degree of permissible uses). This approach allowed for the plan to adopt a differential strategy that could account for the varying character of the city, subject to the socio-economic status of neighbourhoods and their preference to have commercial activities within the neighbourhood. Thus, the RMP 2015 portrays strength in understanding the existing fabric of the city as that of a mixed land use.

Consequently, it proposes a land use zoning regulation that recognises the mixed land-use character of the city, the realisation of which in its true spirit would have allowed the plan to achieve its objective of “high density compact urban development with a concentration of mixed use activities that include commercial, retail, services, supported by housing and urban amenities.” Yet, this has not happened. The key reasons include:

- i. KTCP Act, 1961, till recently, through Section 14a (3) allows change of land use from industrial land use to residential and commercial land use.
- ii. Implementation of the building bye-laws and the zonal regulations is largely the responsibility of the BBMP and in the absence of the need for planning permission for land up to 2 Ha, the permissions for large scale developments were split into smaller plots to bypass these provisions (related to open spaces and civic amenity site as required under sub-division/ layout and Development Plan for the plots above 2 Ha for residential and above 1.2 Ha for non-residential use).
- iii. The mixed land-use as advocated by the RMP 2015 is not supported by a detailed mobility plan – a critical component to ensure the success of a mixed land use plan.
- iv. While the plan spells out a detailed zoning regulations promoting mixed use, the regulations are not always in conformity. For example, in many cases, the ancillary use can emerge a main land use in a parcel of land.
- v. The PLU under RMP 2015 has introduced land use sub-categories such as mutation corridor, Commercial Axis and Residential (mixed). Given that these categories are not embedded in the KTCP Act, 1961 and the accompanying rules of the Authority, there have been several court litigations challenging this.

Consequently, what has translated on the ground is vastly different from what was anticipated. To quote an example: the provision of section 14 A (3) of KTPC Act, 1961 and zoning regulations of Mutation Corridor Land Use has led to large scale commercial developments at certain junctions limiting the improvement of junctions. This has resulted in traffic congestion which can be observed in the proposed and existing land use at the Sony World Junction area in the Koramangala Planning District (Figure 4 and Figure 5). Similarly, in a recent judgment, the Hon’ble High Court has directed that no commercial activity shall be allowed in residential land use zone on roads upto 40 ft. The Authority has accordingly incorporated the directions as part of the Zoning Regulations as well as the Proposed Land Use for RMP-2031.

Figure 4: Proposed Landuse at Koramangala- Sony World Junction in RMP 2015

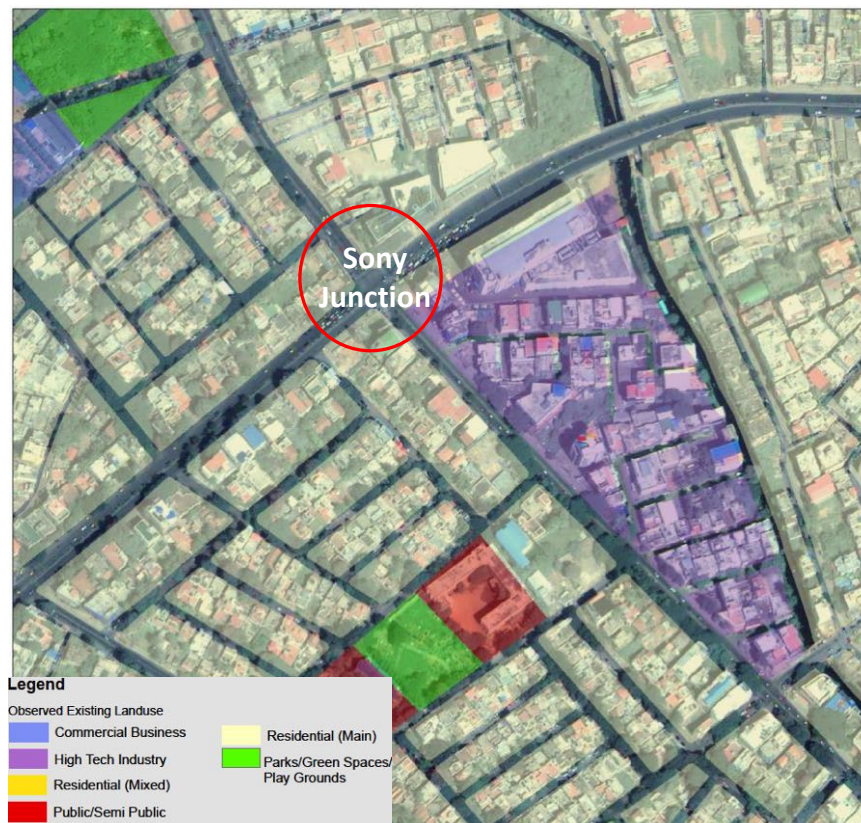


Figure 5: Existing Landuse – 2015 at Koramangala Sony World Junction

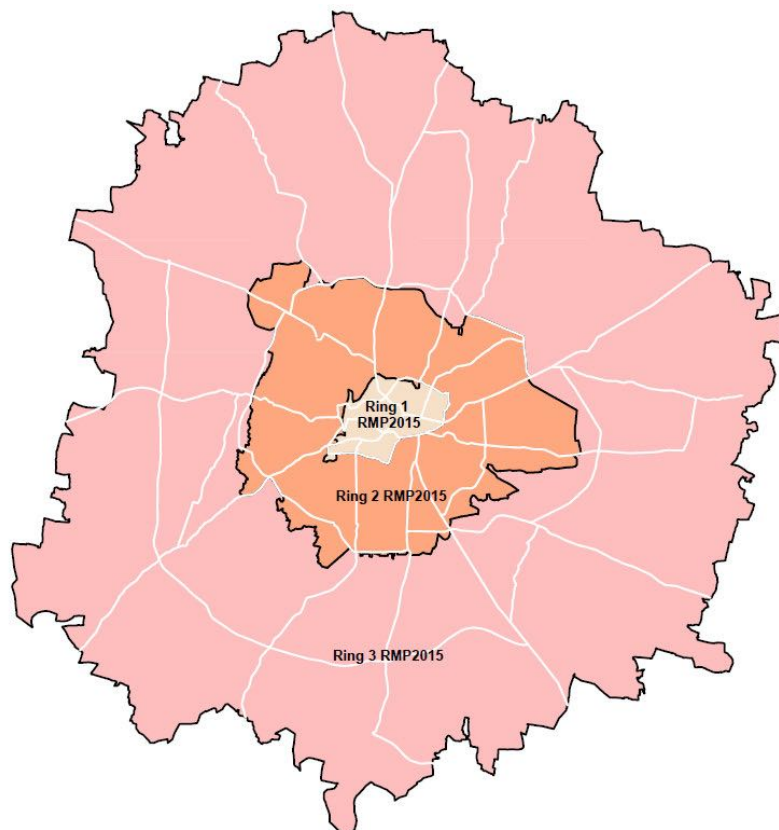


Mixed Land Use, although relevant has to be implemented and enforced cautiously to avoid situations like that at the Sony World Junction. The RMP 2031 brings in these changes through zoning regulations as well as the balanced distribution of different land use zones within the conurbation limits for RMP-2031.

2.1.13 Zoning Regulations

The zoning regulations of the RMP 2015 encourages mixed land-use concept and offers many positives and proactive provisions to steer and manage the growth of the BMA. Critically, the RMP 2015 divided the BMA into three concentric zones as per their characteristics, although this division is primarily to inform the zonal regulations. Three concentric zones in BMA as recognised by RMP 2015, is shown in Figure 6.

Figure 6: Three Concentric Rings in BMA as recognised by the RMP 2015



The zonal regulations rolled out by the RMP 2015 are not just informed by these three concentric zones, but are also applicable differently to these zones. However, there are certain provisions that required a re-look in the RMP 2031, not just from the perspective of the current trends and requirements of the metropolis, but also given the experience of implementing these provisions and the impact it has had on shaping and moulding the built environment in the metropolis. Some of the critical provisions requiring a relook are:



- a) RMP 2015 provides for an average FAR ranging between 2.5-3, which as the base FAR is high. Furthermore, when clubbed with the Transfer of Development Rights, the cumulative FAR is often not realisable on an average parcel of land in the city. Furthermore, the plan allows for Transit Oriented Development (TOD) by allowing for higher FAR around metro stations. It mentions that that areas falling within 150m radius from the metro terminals is eligible for a maximum Floor Area Ratio (FAR) of 4 for all permissible uses, after consent from the BMRCL. Again, it is not possible to realise these high FAR's given the average plot sizes in the city and the available road widths in many of the areas around the stations. Additionally, what is also clear is that this high base FAR has hampered the effective utilisation of the TDR as a planning tool to manage and steer the growth of the city as also a revenue generating tool. Thus, the RMP 2031, while acknowledging the strengths of the RMP 2015 zonal regulation and their differential treatment of the city, needs to necessarily address this conundrum of higher base FARs.
- b) RMP 2015 acknowledges the need for, and provision of efficient parking facilities by providing for multilevel car parking as an independent use without any restriction on the FAR. This implies that if additional car parking is provided as part of any parking complex or a parking lot which is more than the required car parking, such area is also exempted from the calculation of FAR. This provision helps to augment the supply of parking facilities as it incentivises parking service providers. The zonal regulations of the RMP 2031 also acknowledges the need for parking but equally encourages public transport not just through its provisions but also incentivising the same through the zonal regulations.

2.2 Regional Planning Framework: BMR - REVISED STRUCTURE PLAN – 2031

The recently approved BMR, RSP 2031 constitutes the planning framework within which the RMP 2031 needs to be evolved. That the two plans, for the first time are being prepared for the same time horizon i.e. 2031 constitutes an opportunity that the RMP 2031 leverages in guiding the growth and development of the BMA in context of the region.

While in the past there has been a discrepancy in the time lines of the Master Plans and the Structure Plans, the aligning of the RMP 2031 and BMR RSP 2031 is a positive move and an emerging imperative. This will ensure that the Revised Master Plan dovetails with the Revised Structure Plan which will eventually lead to a streamlined planning process within the region.

2.2.1 Spatial Population Allocation under BMR RSP 2031

The BMR-RSP 2031 projects demographics in the region deriving from historical and current trends and existing and proposed developments in the region, although the plan takes the population projections of the RMP 2015 (for the BMA) as a given. In projecting the

population for the region, the Plan assumes the following: i) erstwhile BMP will grow as per RMP-15 projections and will saturate by 2016; ii) BBMP will be the core of the region and present jurisdiction of BMA will not exist; and, iii) the present BMR jurisdiction will be the future BMA jurisdiction.

Population projection was attempted for the BBMP area for the years 2011, 2021 and 2031 which are correspondingly 8.50, 11.24 and 14.40 million respectively. Further, the plan projects the population of the region at 18 million based on the following

- a) Conformity to water availability based population carrying capacity of 21 million assessed at 300 lpcd (including losses) for the BMR for 2031,
- b) Proportional distribution of population between the state and the region, conforming to the past trends, and
- c) Share of population between the core (BMA) and the rest of BMR conforming to the trends.

Based on these assumptions, the plan identifies the preferred population for the BMR region as 11.00 million, 14.20 million and 18.00 million for the years 2011, 2021 and 2031 respectively. The plan also assumes redistribution of projected population in the region in terms of core (BBMP area) and periphery (rest of BMR) as 80:20 as against the ratio of 66:34 in 2001. However, what requires a re-assessment at this stage is the acceptance by the BMR RSP 2031 of population projections of the RMP 2031. Thus, a rationalisation of population projections is an emerging imperative given the actual census figures for 2011.

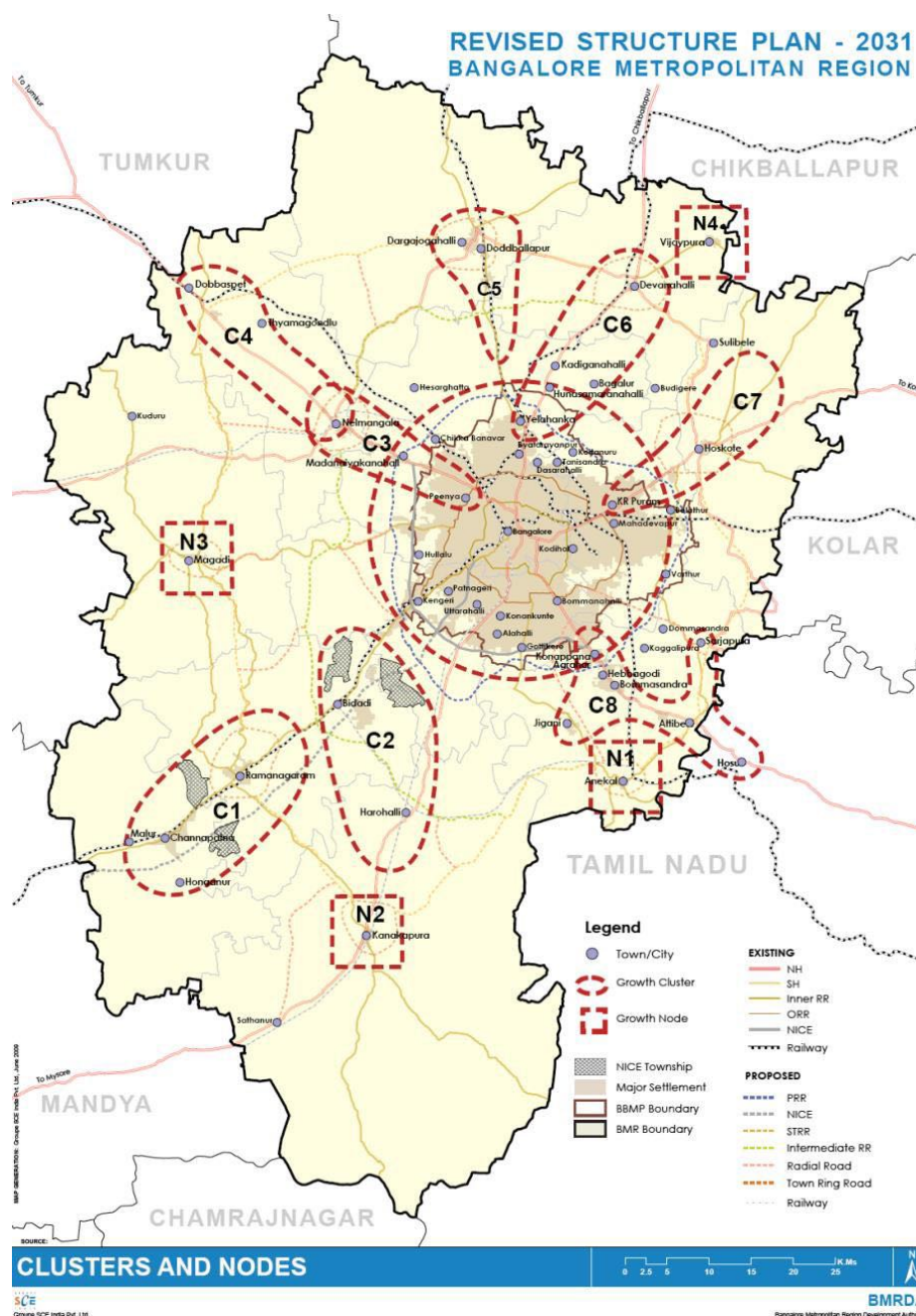
2.2.2 Governing Principles of RSP 2031

In addition, the BMR-RSP 2031 outlines the following three as its governing principles:

- a) Streamlined planning and governance frameworks - recognising the presence of multiple plans with multiple jurisdictions, across multiple time horizons.
- b) Natural resource cognition and management - recognising the ecologically sensitive nature of the region especially with respect to water resources.
- c) Balanced and integrated economy coupled with enhanced liveability factors across the region (addressed through inclusiveness) in recognition of the fact that while Bangalore city (the core) enjoys a position of primacy in the region, there are a host of other human settlements in the 8005 sq km positing similar requirements as the primate.

Deriving from these governing principles, the plan outlines a cluster and node growth model which is not premised on a particular growth direction as was the case in the BMR-SP 2011 and the RMP 2015. The cluster and node growth model derives from a detailed Land Capability Analysis. Basis this analysis, RSP 2031 looks at focusing growth in identified clusters (existing human settlements in the region) and nodes while retaining the primacy of Bangalore.

Figure 7: Clusters and Nodes in RSP 2031



Source: RSP- 2031. BMRDA

An emerging imperative here is to take cognisance of the vision, concept, growth, strategies and policies laid out in the BMR RSP 2031 and to ensure alignment to the extent possible. Critical amongst the provisions of the BMR-RSP 2031, apart from the population projections, are those provisions that impact the BMA, especially its pain points. These include i) its ecologically sensitive areas /zones and the associated characteristics. In particular, the treatment, provisions and attendant policies and regulations for the Green Belt emerge critical; ii) water needs and conservation policies; iii) transport and mobility frameworks.

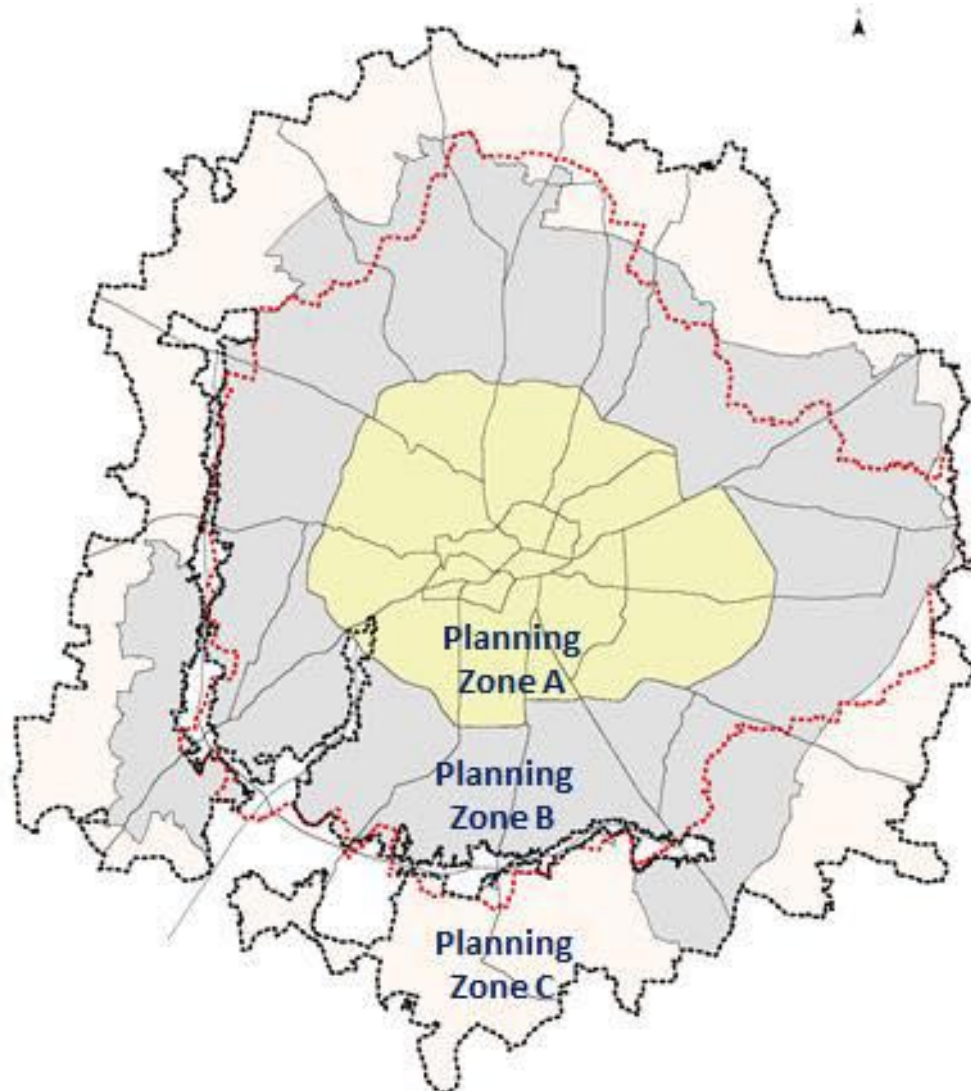
2.3 RMP 2031: Accounting for heterogeneity in the BMA

The BMA can be broadly classified into three distinct zones with different development profiles as given hereunder:

- a) **Planning Zone A (Ring 1+Ring 2 of the RMP 2015)** comprises of the innermost core falling within erstwhile BMP. Owing to limited availability of land and high densities, there is very little scope for further growth in this zone. This is also the zone that – owing to its high densities – is crippled by traffic congestion and environmental pollution. This zone requires, strategies to stabilise the growth in this zone and interventions that discourage further commercialisation and development of economic centres within this area.
- b) **Planning Zone B (Part of Ring 3 of the RMP 2015)**, the areas between the outer ring road and the Conurbation limit of RMP-2015 form part of this zone. The infrastructure is poor in several areas in this zone, in spite of being major part falling under the jurisdiction of BBMP (LI). Numerous lakes and water bodies present an opportunity to conserving the overall valley and tank network in the BMA. This zone is characterised by narrow roads and absence of a good network hierarchy. Improvement of infrastructure will lead to increased capacity to hold higher densities and more population in Zone B. The zone envisaged as zone of consolidation – one where development can be further encouraged through strengthened infrastructure.
- c) **Planning Zone C (Part of Ring 3 of the RMP 2015)** is the outermost zone that extends from the conurbation limits till the boundary of the BMA. This area consists of agricultural land use and has sparse developments. RMP 2031 views this zone as a preservation zone, one where the agriculture land-use, to the extent possible, will be retained, although it requires certain additional interventions beyond zoning regulations in order to facilitate better economic utilisation of the agricultural lands. This may be conceptualised as productive landscapes.

Figure 8 shows the three zones in BMA that have variable characteristics in terms of development profile. Accounting these variable zones in the BMA is an emerging imperative for the RMP 2031 growth and development strategy.

Figure 8: Three Distinct Development Zones within BMA



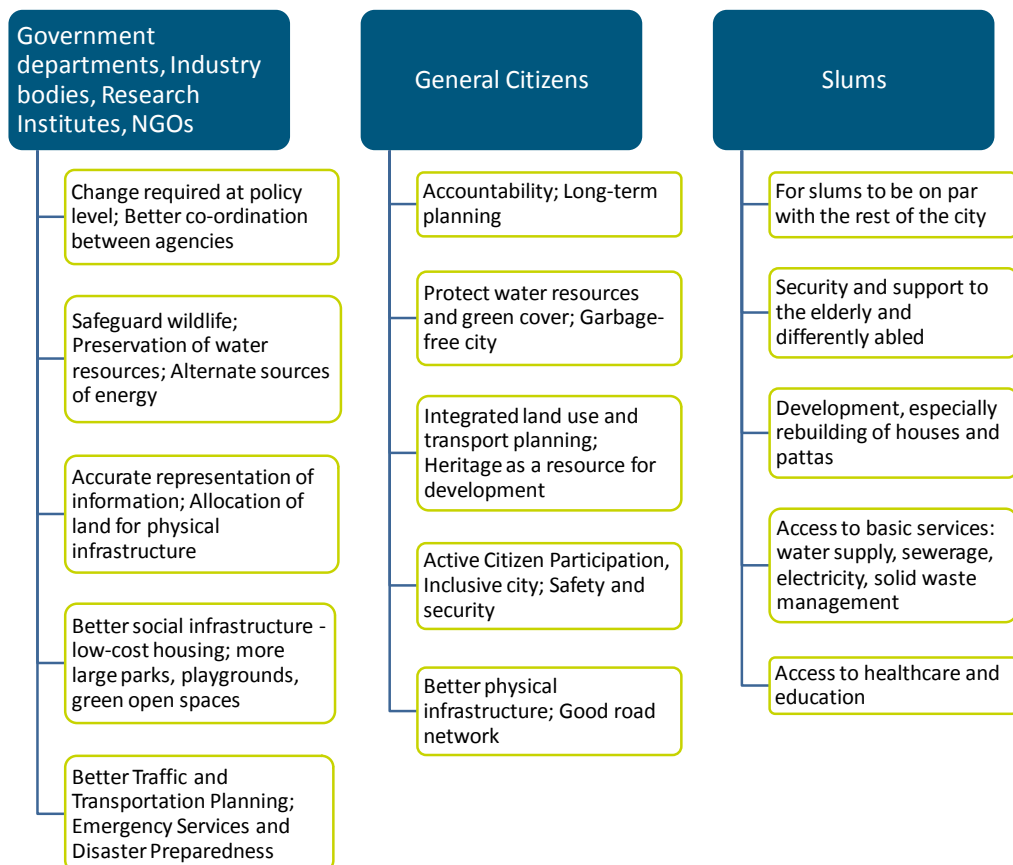
3 RMP 2031: VISION, GOALS AND OBJECTIVES

3.1 Stakeholder Engagement

The stakeholder engagement process provided major inputs in the City Visioning exercise. A draft Vision Statement was formulated on the basis of suggestions and vision statements received through various modes of stakeholder engagements while preparing the baseline scenario 2015. The draft vision statement underwent significant revisions as a result of inputs received during public consultations meetings as presented in Figure 9 below.

Following the stakeholder consultation, the responses, suggestions, objections and vision statements received, were collated, coded, tabulated, classified into broad themes and distilled to arrive at a draft Vision Statement. The pointers for vision statement received from stakeholder groups were classified as follows (Figure 9):

Figure 9: Pointers received from various Stakeholder Groups



Based on the analysis of the pointers and inputs received from various stakeholders as part of visioning exercise, a draft City Vision was evolved as presented in Section 3.3 below. The

outcomes of the Stakeholder Consultations and Public Consultation Meetings have pointed to the criticality of and need for the following:

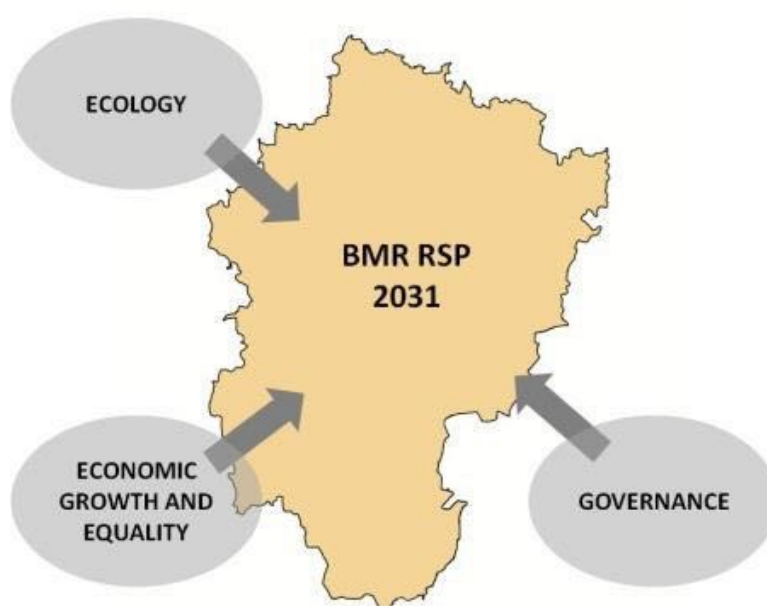
- comprehensive mobility
- conserving Bengaluru's extensive lake and valley system while
- steering its future growth and development inclusively and
- Ensuring enhanced plan enforceability through a streamlined management and governance framework.

The above informed the Guiding Principle of RMP 2031 as outlined under.

3.2 BMR -RSP 2031 Guiding Principles

In defining the vision for the Bengaluru Metropolis for 2031, the RMP 2031 also takes cognizance of the BMR Revised Structure Plan 2031. Acknowledging the opportunity that emerges from the two plans (Structure Plan for the region and the Master Plan for the metropolis) converging on the same horizon year (2031) for the first time, the RMP 2031 aims to further strengthen and participate in the vision that is set out for the region as a whole. Before outlining the vision for the BMA for 2031, the vision and the guiding principles of the BMR RSP 2031 merit mention. These have been arrived at after due consideration to the emerging sectoral challenges and opportunities that the region offers. The BMR RSP 2031 outlines three guiding principles (Figure-10) that should determine the growth and development of the region.

Figure 10: Guiding Principles BMR RSP 2031



The BMR RSP 2031 in its detailed ecological mapping of the area as juxtaposed with the existing and proposed industrial and residential uses shows varying levels of conflict with the natural valley system. Based on this, it outlines suitable measures at the regional level whereby forests, valleys and lakes and other water bodies are visualized as positive constraints to development, to be mapped upfront before any development proposals are finalized.

3.3 RMP 2031: Guiding Principles and Vision

The RMP 2031 accepts the guiding principles of RSP 2031. While ecological sustainability is a larger concept, the availability of water assumes primacy in the context of Bengaluru. In the absence of a perennial source of water (in close proximity), the city has historically relied on a vast network of valleys and tanks. Not only has this network sustained the water requirements of the city, it has also rendered the city livable from a climate perspective. While once a system that the city prided, this network has lost its place of primacy in sustaining the metropolis and its population over the years, as a consequence of rapid urbanization.

Thus, protecting, restoring, and enhancing this network of valleys and tanks is critical to the sustenance of Bengaluru. It is in this context that the phrase ecological sustainability has been used.

In addition, the RMP 2031 accepts the other two emerging imperatives of the BMR RSP 2031, namely:

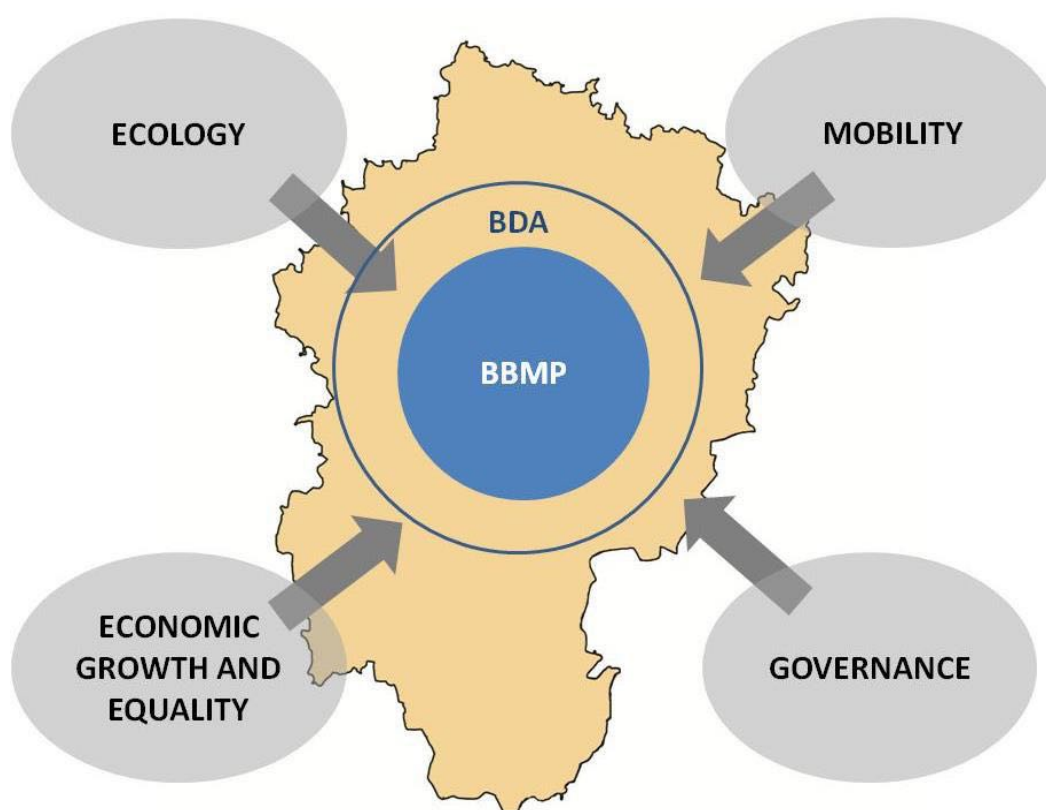
- i. Dovetailing and streamlining of the governance and planning structures. Public Consultation process realised so far, pointed towards poor plan enforcement, implementation and adherence as the major pain points expressed by civil society and citizens at large. Thus, efficiency in governance structure has been recognized as the need of the hour – not just to enhance liveability in Bengaluru, but also to ensure that plan enforcement and implementation emerges a priority for all arms of the government.
- ii. Economic growth while /ensuring inclusiveness.

In addition to these, an emerging imperative to Bengaluru is the need to address the traffic and transportation challenges that the metropolis faces. This, the RMP 2031 argues can only be achieved by establishing a hierarchy of roads in the metropolis leveraging the current ring and radial road pattern to service the larger area while ensuring integrated mobility not just across the 1300 Sqkm but also to the extended 8000 Sqkm in the region.

Accordingly, the RMP 2031 relies on four guiding principles (as against the three of the regional plan) for its future growth and potential:

1. Ecological sustainability (protecting and restoring the extensive valley and tank network)
2. Streamlined governance and management (activating the wards and ward committee governance structures)
3. Inclusive economic growth and social advancement
4. Comprehensive and streamlined mobility (establishing hierarchy of roads and a multi-modal transport network.

Figure 11: Guiding Principles RMP 2031



By 2031 it is projected that the BMA will accommodate 18-20 million population. This is approximately twice the population that Bengaluru supported in 2011. Given the current dynamics of the BMA where the growth trends vary across the various zones of the BMA and, therefore projecting varying demands, the RMP 2031 intends to achieve balanced growth in the metropolis by responding to these varying demands while giving primacy to the guiding principles outlined previously. Basis these Guiding Principles, the RMP outlines the following as the Vision for the Metropolis for the year 2031.

‘A liveable and well-governed Bengaluru premised on efficient mobility and vibrant ecology’



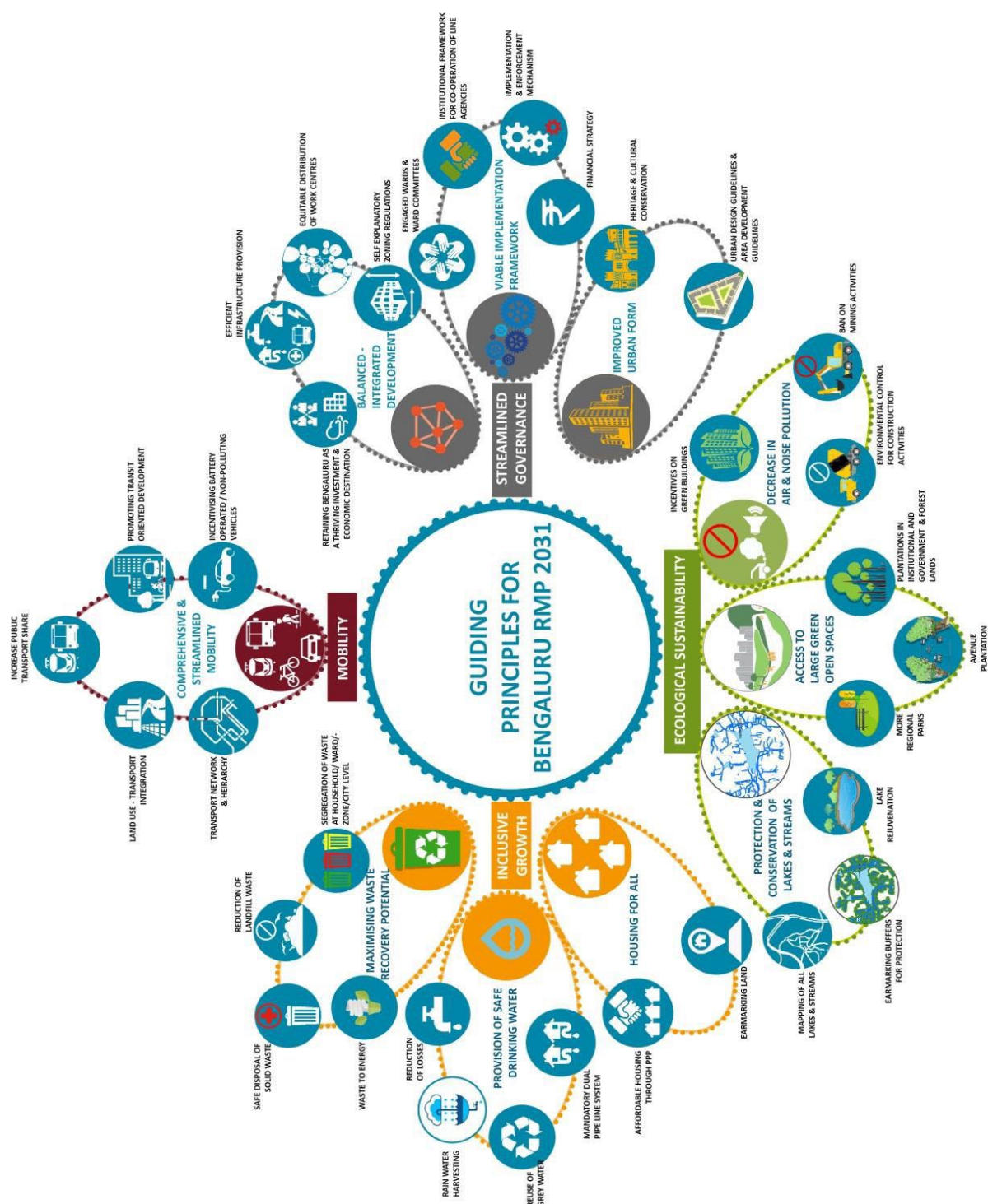
The City Vision as supported by, and derived from the four guiding principles, are further elaborated as goals and strategies in **Table 4**.

Table 4: Guiding principles, Goals and Strategies

| Guiding Principle | Goals | Strategies |
|---------------------------|---|---|
| Mobility | Comprehensive and streamlined mobility | <ol style="list-style-type: none"> 1. Transport Network and Hierarchy 2. Land Use-Transport Integration 3. Increase in Public Transport share 4. Promoting Transit Oriented Development 5. Incentivising Battery Operated Vehicles/ Non-Polluting Vehicles |
| Ecological sustainability | Protection and Conservation of Lakes, Tanks & Streams | <ol style="list-style-type: none"> 1. Mapping of All Lakes, Tanks and Streams 2. Earmarking Buffers for Protection 3. Lake Rejuvenation |
| | Access to large green open spaces for all citizens | <ol style="list-style-type: none"> 1. More Regional Parks 2. Avenue Plantation 3. Plantations in institutional, government and forest lands |
| | Decrease in Air and Noise Pollution | <ol style="list-style-type: none"> 1. Environmental Controls for Construction Activities 2. Ban on Mining Activities 3. Incentives on Green Buildings |
| Streamlined Governance | Balanced-integrated development | <ol style="list-style-type: none"> 1. Retaining Bengaluru as a thriving investment and economic destination 2. Efficient infrastructure provision 3. Equitable distribution of work centres 4. Self-explanatory Zoning Regulations |
| | Viable Implementation Framework | <ol style="list-style-type: none"> 1. Engaged wards and ward committees 2. Institutional Framework for co-operation of line agencies 3. Implementation & Enforcement Mechanism 4. Financial Strategy |
| | Improved Urban Form | <ol style="list-style-type: none"> 1. Heritage and Cultural Conservation 2. Urban design guidelines and Area Development guidelines |
| Inclusive Growth | Maximising Waste Recovery Potential | <ol style="list-style-type: none"> 1. Segregation of waste at Household/ Ward/ Zonal/ City Level 2. Reduction in Landfill Waste 3. Safe Disposal of Solid Waste 4. Waste to Energy |
| | Provision of Safe Drinking Water | <ol style="list-style-type: none"> 1. Reduction of Losses 2. Rain Water Harvesting 3. Reuse of Grey Water 4. Mandatory Dual Pipe System for all New Developments |
| | Housing For All | <ol style="list-style-type: none"> 1. Promotion of Affordable Housing through PPP 2. Earmarking Land for Affordable Housing |

The City Vision, guiding principles and strategies attempt to encapsulate the key emergent imperatives that inform the RMP 2031. Figure 12 summarises the overall philosophy of the plan preparation process for RMP 2031.

Figure 12: Planning Philosophy for RMP-2031



4 Scenarios and Strategies

4.1 Scenario Development for RMP 2031

Various growth scenarios were developed as part of revision of RMP 2031 which represents the options for the appropriate development path that Bengaluru should see. The objective was to embrace both ‘conventional wisdom’ and other more radical options, all of which might conceivably be implemented (albeit in some cases with difficulty) by current planning procedures. The two non-negotiable factors for all the three scenarios are the green network and the transportation network.

The growth scenarios start in 2016 and are modelled to a ‘horizon’ at 2031. The population of Bengaluru is expected to double in next two decades from 9.1 Million in 2011 to 18.9 Million by 2031. Workforce participation is expected to increase to 49% while the household sized is expected to drop from 4.01 in 1991 to 3.89 in accordance with the observed trend. BMA will have larger influence in development of South Karnataka and the BMR.

Before detailing the growth scenarios, it is critical to understand the implications of a Business as Usual (BAU) case. This case assumes that there will be no significant change in state’s policies and priorities, economic activity or interventions by 2031. This premise may be summarised as follows: 1) The State Urban Development Policy will remain Bengaluru-centric, 2) the migration rate to the city will continue to be significant, 3) investments in Karnataka will continue to be Bengaluru-centric and 4) The Agriculture Zone will continue to remain in the current state. Also, that only addition to the existing road network by 2031 will be that of the northern leg PRR and the completion of Metro Phase 1 and Phase 2.

It is projected that in such a case, the city’s population will be 24.7 million in 2031, accounting for approximately 58% of the urban population of Karnataka in 2031. The agriculture areas within the BMA are likely to be urbanised in an unplanned manner because of BMA centric development with spill over of urbanisation in the peripheries of BMA in the respective LPAs. This process will be exacerbated by the fact that the adjacent LPAs have proposed interventions that are almost touching the BMA. The BAU Case is expected to not only encroach on agriculture land, but also impact surrounding village settlements, although with scarce infrastructure. Furthermore, given the current lack of plan enforcement and implementation, there is likely to be a mixed but haphazard development along major transport corridors. Most transport corridors are expected to be further commercialized. Water will continue to be a dire need given the high population figures. In the absence of any major policy changes on the subjects of recycling, reuse and augmenting new water resources, the city will be heavily dependent on ground water for its survival.



The traffic forecast indicates 3 time increase in vehicular traffic then the present status, resulting in high traffic congestion, economic and environment losses. The Public Transport share is expected to decrease to 36% from the present 47% even if the bus fleet is doubled.

The BAU Case shows that the city is likely to grow in an uncontrolled manner, detrimental to the quality of life of all citizens. It is therefore imperative that the current growth trajectory be modified to steer and manage the growth of the city.

RMP 2031 evolved three alternative growth scenarios outlining possible development options for the growth and development of Bengaluru. The objective was to embrace both 'conventional wisdom' and other more radical options, all of which might conceivably be implemented (albeit in some cases with difficulty) by current planning procedures. The two non-negotiable factors for all the three scenarios are the **green network** and the **transportation network**.

The growth scenarios start in 2016 and are modelled to a 'horizon' at 2031. The population of Bengaluru is expected to double in next two decades from 9.1 Million (including BMICAPA) in 2011 and likely to range between 18-20 Million for the BMA (including BMICAPA). Workforce participation is expected to increase to 49% while the household sized is expected to drop from 4.01 in 1991 to 3.89 in accordance with the observed trend. BMA will have larger influence in development of South Karnataka and the BMR. The following are the key considerations for the conceptualization of options and scenarios for the city:

- i. Existing Developments and Present Situation
- ii. Regional Growth Direction
- iii. The spatial differentiation and associated growth and development trends as noticed in the different zones of the city: a) Core Area (inside ORR or the erstwhile BMP), b) Outer Core (ORR to BBMP Limits) and c) Transition Area (251 Villages in the BMA)
- iv. Population projections for the city for 2031
- v. Constraints for development: These are environmental constraints and are therefore viewed as positive:- namely topography and natural features in the City,
- vi. In addition, the growth scenarios adopt following critical 'non-negotiables'
 - a. Circulation Network (Road Network and Commuter Rail System) with focus on public transport system
 - b. Green networks as consistent with the city's topography (Lakes & Valleys, Forests, Eco-Sensitive Zones).
 - c. Promotion of Public Transport – as per National Urban Transport Policy
 - d. Provision of Affordable Housing – as per Housing for All Policy

The three scenarios developed and debated amongst stakeholders are described hereunder.

4.2 Containment Scenario

The containment scenario is based on the concept of containment premised on prioritising the natural features/ constraints within the BMA and the application of the buffers as ordered by the NGT. The scenario aims to achieve this by: (a) confining all new developments to the BBMP area – at consequently higher densities than at present; (b) prohibiting development in the existing villages and (c) promoting extensive developments in the rest of BMR, outside the BMA.

The envisaged population ratio between BMA and BMR is 70:30, which is broadly in line with the proposals of the BMR Revised Structure Plan 2031. It is proposed that additional land for new developments will only be in the existing urban areas and in those villages in which the population has crossed the threshold of 5000 persons. Commercial and industrial activities, however, are likely to take precedence over residential developments, owing to high land prices and demand for locations in the city centre. As a result, although population within BBMP does grow, it is anticipated to grow at a faster rate in the outer rural areas (of BMR).

The implications of the growth in this scenario are twofold. First, there will be limited availability of land for development considering the proposed NGT buffer and the choice of retaining villages under the agriculture belt. Second the economics of the city would be effected significantly considering there will be no additional large economic nodes could be planned owing to constrained development. On the development front, the west, south-west and south of the city shall continue to be low rise-high density due to comparatively low land values and second, that due to the existing economic activities in the east, south east and north of the city (such as Whitefield, Electronic City, Bellary road, etc) it is expected to be high rise-high density with higher land values. The settlements in the villages shall continue to have the same character with no new developments in these areas.

Importantly, this scenario is likely to accommodate only 15.4 million populations, of which 13.2 Million in the BBMP and 2.2 Million in rest of the villages in BMA by 2031, resulting in average densities of 190 persons per hectare (PPH) in BBMP and 38 PPH in villages.

When juxtaposed with the transport model, the Containment Scenario suggests that the public transport share could be increased to 66.5% from the present 48%. Traffic congestion in the road network is observed in the core part of the city, though there is some relief from traffic congestion in the outer parts of the BBMP.

On the infrastructure front, the Containment Scenario creates no major challenge in meeting the demand and supply gap of infrastructure facilities. Considering that the city would eventually realise the allocated 29 TMC of water from the river Cauvery, there will be no major gap in requirement. It is also expected that the commercial and industrial demand



will be met by recycled water. The UFW has to decrease to moderate levels to 25% from the existing 46% and the service jurisdictions will be limited to BBMP leaving the rest of villages dependent upon ground water. The limitations of this scenario are:

- Population is lower than what metropolis can hold optimally.
- Unplanned proliferations in the agriculture zone likely to continue, given that most developments are envisaged within the BBMP limits and the Agriculture Belt will be retained as one in its strictest sense.
- Congestion in the core part and certain sections on the roads to be continued in the city
- Limited space for economic activities and thereby effect on the city/region/state economy

4.3 Corridor Driven Growth Scenario

This scenario aims to achieve high density development along all radial roads and major ring roads – this corresponds to the idea of TOD– and by development of regional economic nodes adjacent to BMA in the LPAs of BMR. The concept is derived from the existing economic promotion policies of the state which are Bengaluru-centric. Growth in this scenario will be extended to the entire BMA, rather than just the BBMP as in the containment scenario. The scenario is premised on the argument that areas within 500 m of public transit corridors (Metro/ CRS) will be eligible for higher FSIs, which is expected to result in high-rise, high-density developments.

The land use and density strategy of this scenario promote development of BMA while the rest of the BMR will grow at a lower growth rate. This strategy is combined with development of extensive road network, economic centres provided with ample transport access, mass rapid transport systems, extensive connectivity to all the economic nodes and protection of environmentally sensitive areas in the peripheries.

High-density development is promoted along the entire network of ‘Namma Metro’, all the radial roads, along with the ORR, IRR and PRR. The concept promotes commercialisation of the core city (within outer ring road) as well as promotion of economic activities along the ring and radial roads and limited in the peripheral areas of the city. In this scenario, entire BMA is made available for development, with the exception of those which are in environmentally sensitive areas.

Given the envisaged dense development along all transit corridors, it is estimated that under this scenario, the BMA will hold a population of 24.7 million. The employment opportunities generated in this scenario is expected to be high and concentrated especially along all the major radials and rings. The central part of the city is also expected to experience higher growth considering the fact that the proposed high-density corridors pass

through the centre as well. The villages in BMA are proposed to increase in density at par with the BBMP. The four economic nodes proposed under this scenario are coherent with the present developments and expected to mitigate the movement to the core city.

The adopted land use policy promotes the development of economic corridors in coherence with residential areas surrounding to them for greater flexibility and higher densities. However, due to higher levels of commercialisation and further densification in the core part of the city certain environmental protection measures (such as buffer to lakes/streams) may not be effective. The high density corridors will develop both residential and economic activities, especially within a 500-metre radius of a Metro/CRS station. This is intended to reduce travel distance to work, particularly for the underprivileged. However allowing high density corridors inside the Core City may further enhance the problems city is undergoing.

The results of the transportation model for this scenario indicate that the public transport share in the scenario is expected to reach its peak to 68.3% by 2031 from the existing 48% in the base year – provided that all transportation related proposals are implemented. The two-wheeler and four-wheelers are expected to account for about 28.9% of the modal share and IPT about 2.7%. Although traffic congestion is considerably eased in comparison to the Business-As-Usual Case, certain sections in the core and eastern parts of the BMA will remained congested, due to the increased density along the ORR and metro corridors.

The present allocation of water from Cauvery could best serve to only about 13-14 million people (without any intervention towards recycling and reuse and rain water harvesting measures) whereas rest of the population would be dependent on the ground water and other sources, including rain water harvesting and reuse (grey water). Under this scenario, almost the entire LPA of BDA will need to be opened and will still pose very risk for infringement of the eco-sensitive zones and the NGT buffers. Considering the NGT buffer of large extent of land would be essentially non developable zone the available land in BMA and it will not be sufficient to envisage such scale of development. The limitations of this scenario are:

- The Population at the rate of 24.7 Million will be higher than the optimal level effectively translating to a gross density of over 250 PPH spread across entire area of BMA excluding the unclassified areas and the non-developable eco-sensitive areas
- Traffic Results pose a major challenge in mobility
- High FAR in the core part of the city likely to further commercialize the core and all the transport corridors which is not desirable
- Heavy fuel losses thereby environmental pollution
- Congestion on the network will remain

4.4 Differential Strategy Scenario

The Differential Strategy Scenario aims to minimise commercialization in the city core and promoting additional economic activities in a planned manner along the periphery of BMA. This is attempted by opening the present agricultural zone for development in a controlled manner and ensuring that equitable densities are achieved in the entire conurbation limit but still retaining the major part of agricultural zone of RMP 2015. The scenario aims to decentralise some of the core capital city functions and the economic activities with balanced spatial spread to peripheral areas for better accessibility as well as transforming the uni-directional to multi-directional traffic flow across different directions.

One of the main aims of the scenario is to develop the adjacent LPAs at par with the BMA and promote growth in the region as well, rather than focussing on development in the BMA alone. Another key intention of this scenario is to juxtapose the green and open spaces network with optimal and planned development. The accompanying transport strategy includes proposing segregated highways with mass rapid transport systems, new radial roads and ring roads for easy accessibility and development of new neighbourhoods supported by city level and planning district level social infrastructure facilities

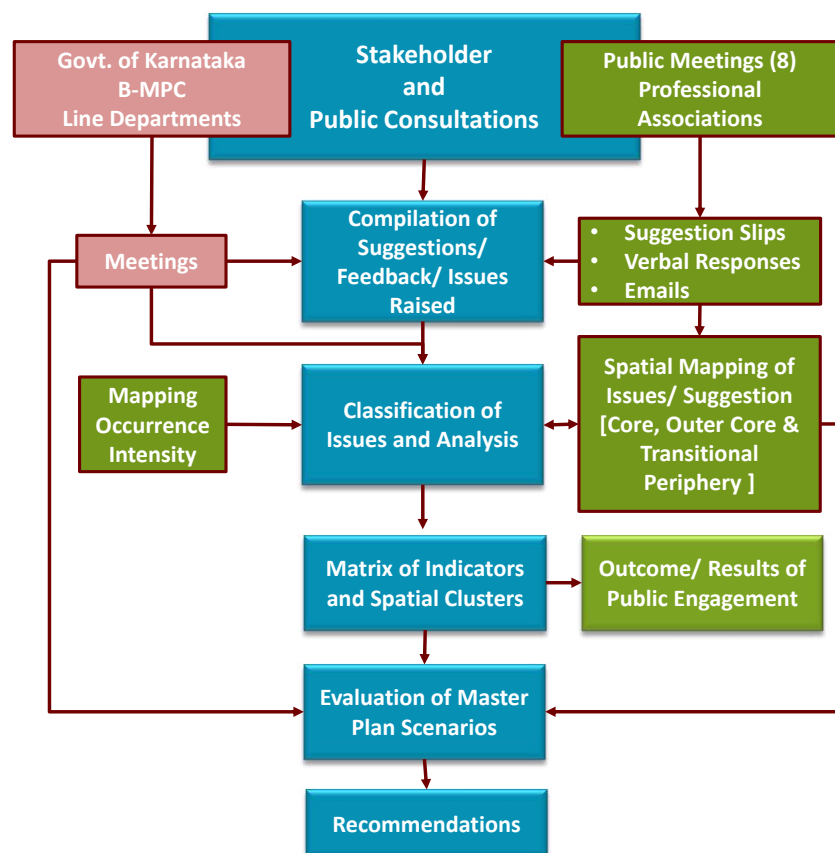
The Differential Strategy Scenario is based on the idea that the challenges and opportunities of different zones in the BMA (as well as those in the rest of the BMR) are different, and must be planned for accordingly. This scenario is likely to support a population of 19-20 million which is the optimal that the BMA can hold given the water and land constraints. This scenario intends to decongest the core city of BMA and propose planned interventions in the periphery such that regional needs can be met without the need to travel to the core part of the city. With respect to travel pattern, the Differential Strategy Scenario tends to increase public transport share to 66.6% from the present 48%. The Volume Capacity Ratio of the network indicates congestion free movement of traffic due to prior allocation of economic nodes and decongesting the core part of the city.

On the infrastructure front the differential strategy scenario has been built based on the optimum population capacity for the scenario. With 20 million populations city would require at the rate of 135 LPCD an average supply of 3600 MLD including the water demand for non-domestic needs. However it is important to reduce unaccounted for water (UFW) significantly to reduce the gap. Moreover, with adoption of dual pipe line system and streamlining rain water harvesting (RWH) in the city the gap city would have sufficient water for supply.

4.5 Evaluation and Selection of the Scenario for RMP 2031

The three scenarios were evaluated through a series of stakeholder and public consultations eliciting views and opinion of different sections of the society as well as the agencies. The suggestions and comments received during the public consultation meetings and stakeholder meetings conducted by the Authority were categorised to arrive at the indicators for evaluation of master plan scenarios. The methodology evolved to evaluate the Master Plan Scenarios includes several steps as described hereunder and graphically presented in Figure 13.

Figure 13: Scenario Evaluation Methodology



The suggestions and comments received during the public consultation meetings and stakeholder meetings conducted by the BDA were categorised to arrive at the indicators for evaluation of master plan scenarios. It is important to mention here that while the numbers of responses that have been received are very limited when compared to the size of Bengaluru, nevertheless they have been relied upon to represent the challenges faced by citizens, in the absence of substantial response. This analysis has been done to determine the citizens' key issues and priorities, especially when tagged to specific spatial zones within the city. **Table 5** presents the Categorisation of Suggestions and Feedback of Public Consultations into Issues and Indicators for Scenario Evaluation.

Table 5: Categorisation of Suggestions and Feedback into Indicators

| Sl. No | Indicator for Evaluation | Categorisation of Feedback | Description of feedback and suggestions from public consultations and other stakeholders |
|--------|--------------------------|--|---|
| 1 | Population | Limit growth of BMA | Limit any further population growth in BMA. Develop satellite towns in BMR and develop other cities in the state to decongest the city core. |
| 2 | | Allow further population growth of BMA | Allow further population growth of BMA |
| 3 | Physical Infrastructure | Water Supply | Identification of other sources of water supply (in addition to the present source) to meet the future water demand. Extension of water supply network to all areas in BMA. |
| 4 | | Sewerage and Sanitation | Extension of sewerage network to entire BMA. Provision of adequate sewage treatment plants along the valley system. Prevent mixing of sewage with storm water. Provision of adequate Public Toilets throughout the city. |
| 5 | | Storm Water Drainage | Provision of Storm Water Drainage network in BMA to prevent urban flooding and water logging. Prevent storm water drains connecting lakes from being clogged, encroached or polluted. Prevent mixing of sewage and the industrial effluents with storm water. |
| 6 | | Ground Water | Exploitation of Ground Water to be reduced; pollution and contamination of Ground Water to be prevented. Initiatives to be undertaken for ground water recharge. |
| 7 | | Rain Water Harvesting | Consider RWH as an alternative to meet part of the future water demand and replenish ground water. |
| 8 | | Power | Addressing the present Power shortages and meeting future demands for power supply. Identification of alternative sources of energy such as solar etc. Provision of underground electric cabling network for entire BMA. |



| Sl. No | Indicator for Evaluation | Categorisation of Feedback | Description of feedback and suggestions from public consultations and other stakeholders |
|--------|--------------------------|------------------------------------|--|
| 9 | | Solid Waste Management | Need for efficient solid waste management in BMA, at ward and household levels. This shall include waste segregation/ collection at source, provision of dry waste collections centres, transfer stations and prevention of garbage dumping in open sites/ lake beds. Finding alternative strategies to land fill and provision of organic processing centres at ward and site level. Management of efficient transport and disposal of garbage. |
| 10 | Social Infrastructure | Educational Infrastructure | There is a need for extending adequate government educational infrastructure in peripheral areas and also improving the physical accessibility to existing educational infrastructure. |
| 11 | | Healthcare Infrastructure | There is a need for extending adequate public health centres in the peripheral areas |
| 12 | | Other Social Infrastructure | Adequate provision of other social infrastructure like police station, fire station, post office, community halls, and crematorium / burial grounds also needs to be taken-up. |
| 13 | Environment and Ecology | Rivers, Lakes and Streams | Prevention of pollution of rivers, streams and lakes. Revival of Arkavathy and Vrishvabhavathy rivers. Protection of lakes by fencing and removal of encroachments. Strong mechanisms needed for better management and monitoring of lakes and streams. Development of lakes as public spaces. |
| 14 | | Parks, Open Spaces and playgrounds | Creation of more regional parks such as Cubbon Park and Lalbagh for a clean/green Bengaluru. Provision of adequate play grounds. |
| 15 | | Forest and avenue plantations | Protection of forests and removal of encroachments in forest areas. Provision for tree plantations along roads. Prevention of tree felling for road widening. Undertaking regular pruning of tree branches for easy traffic movement along roads. |

| Sl. No | Indicator for Evaluation | Categorisation of Feedback | Description of feedback and suggestions from public consultations and other stakeholders |
|--------|--------------------------|----------------------------------|---|
| 16 | | Pollution | Improving air quality and reduction of air pollution due to severe traffic congestion and construction activities etc. Prevention of pollution of lakes/water bodies from sewage contamination. Reduction of noise pollution in neighbourhoods- by making stricter provisions for silent zones. Prevention of ground water contamination. |
| 17 | Transportation | Transportation Infrastructure | Improvement of road connectivity by creating more radial/ring roads and realisation of PRR. Need for road connectivity between layouts and major roads. Need for road widening along various important stretches and also within layouts. Improvement of junctions, creation of flyovers and underpasses, creation of signal free corridors, improvement of pedestrian foot over bridges/ underpasses, making foot paths walk able, provision of adequate bus stops/ bus bays and street furniture. Resolving traffic management issues. Prevention of on-street parking, mandating provision of parking at site level and provision of multi-level car parking at important locations. |
| 18 | | Public Transport | Realisation of Commuter Rail System to cater to the traffic demand till 2031. Provision of alternate public transport systems such as monorail, BRTS, Extension of Metro Rail services and provision of additional buses. Provision of first and last mile connectivity through better integration of different modes of transportation, better planning of multi-modal transportation systems. Provision of emergency corridors. |
| 19 | Agriculture Zone | Maintaining the agriculture zone | Retain the agriculture zone and contain the growth of BMA. Develop satellite towns in BMR and develop other cities in the state to decongest the city. |
| 20 | | Opening up of agriculture zone | Opening-up the agricultural zone to promote planned development and balanced growth of BMA |



| Sl. No | Indicator for Evaluation | Categorisation of Feedback | Description of feedback and suggestions from public consultations and other stakeholders |
|--------|------------------------------|---|--|
| | | for development | as well as developing employment centres in the peripheral areas instead of developing core areas of the city to disperse the movement patterns within the city. The retention of agriculture zone given the pressure on land is likely to result in sporadic development without infrastructure. This is for the fact that if these areas are not opened-up with planned intervention the provisions related to change of land use may lead to spotted developments within Agriculture zone. The retention of agriculture zone on the periphery is critical from the perspective of land use pattern in the master plans of adjoining LPAs, for which the zoning regulations need to factor in the strategies to discourage spotted development in the agriculture zone and retention of agriculture use. |
| 21 | Affordable Housing and Slums | | Improvement of living conditions within the slums. Provision of affordable housing for poor. |
| 22 | Commercialization | Further commercialization to continue in the core | Densification of city by adopting vertical growth instead of horizontal growth. |
| 23 | | No further commercialization of core | Decongesting the core. Prevention of aggressive proliferation of commercial activities into residential areas leading to issues of excessive noise, parking problems and SWM issues. Prevent unplanned and incompatible land use mix. |
| 24 | Enforcement, Implementation | Implementation | Lack of implementation of PRR due to issues of land acquisition and non-payment of compensation. Lack of implementation of RMP 2015 roads, large industrial land uses, civic amenity sites for provision of social infrastructure. Lack of funding and phasing of projects. Mandating traffic impact studies for large projects before giving building permission. |

| Sl. No | Indicator for Evaluation | Categorisation of Feedback | Description of feedback and suggestions from public consultations and other stakeholders |
|--------|--------------------------|----------------------------|--|
| 25 | | Enforcement | Lax in enforcement of Arkavathy buffer zone (TG Halli) notification and agricultural zone has led to farmers demanding removal of restrictions. Lack of enforcement of lakes and streams buffers has led to its encroachments. Lack of enforcement of zoning regulations has led to illegal developments. Need for efficient TDR mechanism. |
| 26 | | Governance | Citizen expect transparency in the governance in the institutions responsible for implementation and enforcement of Master Plan as well as demanded for inter-departmental coordination.” Simplify change of land use process. Akrama Sakrama is defeating the very purpose of planning; if it has to be enforced levy high penalty on offenders. Need for proactive neighbourhood planning. Sites to be allotted only after providing basic infrastructure. Strengthen the development monitoring mechanisms. |
| 27 | | MPC | Non-realisation of 74th CAA in totality. Consultation at ward level has not been conducted. Ward level/local area plans have not been prepared. |
| 28 | | Vision | There is a lack of clarity in the vision. Process of formulation of city vision needs to be more inclusive in nature and public needs to be consulted. |

The outcomes of the analysis of the stakeholder consultation process highlighting the citizens’ key issues and priorities, especially when tagged to specific spatial zones within the city, were deliberated in the Board Meeting of the Authority on June 9, 2017 and after the detailed discussions, the Authority selected the Differential Strategy Scenario for the formulation of the RMP-2031. The details of the Minutes of the Meeting are uploaded on the web-site of BDA.



4.6 Detailing of RMP-2031

In addition to the emerging imperative with regard to population projections under the previous plans vis-à-vis the actual growth rates, the lessons learnt from the land use strategy and the zoning regulations adopted under RMP 2015, the approach towards transportation and environmental aspects, a critical emerging imperative is that of land requirement and the strategy for regulation of development to define the future requirements. The questions considered while projecting the land requirements for the horizon year 2031 are:

- i. The degree to which the conurbation needs to be modified especially considering the extent of vacant land available within the conurbation limits of RMP-2015 for achieving a compact dense urban development pattern;
- ii. Integration and consideration for the BMICAPA planning area and proposals of this plan.
- iii. Integration of the peripheral development adjoining the conurbation limit of RMP-2015
- iv. Requirements for Economic centres and its spatial distribution for accommodating the future growth

In context of the selected scenario for detailing of the RMP-2031 by the Authority based on the inputs from various stakeholders, the detailing of the draft RMP 2031 has been done. The detailed Master Plan Report covering the studies, sectoral assessments, projections including land assessment, the basis for extension of conurbation limits for the RMP 2031 and the strategies and programs/ projects including the implementation framework are given in Volume-3.

Town Planner Member
BDA

Commissioner
BDA

Chairman
BDA



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